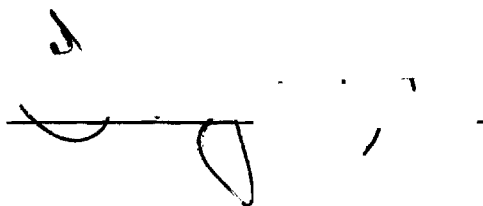


In presenting the dissertation as a partial fulfillment of the requirements for an advanced degree from the Georgia Institute of Technology, I agree that the Library of the Institute shall make it available for inspection and circulation in accordance with its regulations governing materials of this type. I agree that permission to copy from, or to publish from, this dissertation may be granted by the professor under whose direction it was written, or, in his absence, by the Dean of the Graduate Division when such copying or publication is solely for scholarly purposes and does not involve potential financial gain. It is understood that any copying from, or publication of, this dissertation which involves potential financial gain will not be allowed without written permission.

A handwritten signature, possibly reading "J. D. ...", is written in dark ink. The signature is somewhat stylized and appears to be written over a horizontal line.

7/25/68

THE DETERMINANTS OF PAY  
AND PAY SATISFACTION:  
A COMPARATIVE STUDY

A THESIS

Presented to  
The Faculty of the Graduate Division  
by  
Gerald Joseph Organt

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science in Psychology

Georgia Institute of Technology

June 1970

THE DETERMINANTS OF PAY AND  
PAY SATISFACTION: A COMPARATIVE STUDY

Approved:

*[Signature]*  
Chairman

Date approved by Chairman: 24 April 1970

## ACKNOWLEDGMENTS

Special thanks go to Dr. William W. Ronan, my thesis advisor, without whose encouragement, enthusiasm, generous contribution of time, and competent advice this thesis would not have been possible. Thanks are also due to the other members of my reading committee, Dr. Charles Riche and Philip Adler, who also gave unselfishly of their time and effort to this endeavor.

The author also wishes to acknowledge the very able assistance of Ollie B. Francis, whose aid with the computer programming involved in this thesis was invaluable.

Gratitude is also expressed to all members of the faculty of the Department of Psychology whose continuous financial, educational, and moral support enabled me to complete this degree.

This thesis is dedicated to the author's wife, Betty, without whose patience, aid, understanding, and encouragement this level of education could not have been attained.

## TABLE OF CONTENTS

|  | Page |
|--|------|
| ACKNOWLEDGMENTS .....  | ii   |
| LIST OF TABLES .....   | v    |
| LIST OF ILLUSTRATIONS .....  | vii  |
| SUMMARY .....  | viii |
| Chapter  |      |
| I. INTRODUCTION .....  | 1    |
| Pay as a Dimension of Job Satisfaction                             |      |
| Wages and Productivity   |      |
| Wage Satisfaction  |      |
| Wage Satisfaction and Productivity                                 |      |
| Statement of Problem   |      |
| Implications   |      |
| II. PROCEDURE AND METHODOLOGY .....                                | 20   |
| The Instrument   |      |
| Data Collection  |      |
| Analytic Design  |      |
| III. RESEARCH FINDINGS AND RELATED DISCUSSION .....                | 34   |
| Cross-Validation   |      |
| Group Similarity   |      |
| Intercorrelations Among Independent Variables                      |      |
| Wages  |      |
| Wage Satisfaction  |      |
| Group Variability  |      |
| Wages versus Wage Satisfaction                                     |      |
| Sex Differences  |      |
| IV. RESEARCH LIMITATIONS, RECOMMENDATIONS AND<br>CONCLUSIONS ..... | 65   |
| Conclusions and Recommendations                                    |      |
| Limitations of This Research                                       |      |
| APPENDIX A .....   | 76   |

|                    |     |
|--------------------|-----|
| APPENDIX B .....   | 86  |
| BIBLIOGRAPHY ..... | 107 |

## LIST OF TABLES

| Table   | Page |
|---|------|
| 1. Questionnaires Mailed versus Returned .....  | 24   |
| 2. Breakdown of Sample by Variable .....  | 25   |
| 3. Sample Sizes of Both Original and<br>Cross-Validation Samples .....  | 33   |
| 4. Differences in $\bar{R}$ Between Cross-Validation<br>Samples: Wage Criteria .....  | 35   |
| 5. Differences in $\bar{R}$ Between Cross-Validation<br>Samples: Wage Satisfaction Criteria .....                           | 35   |
| 6. Test for Hypothesis of Equality of Errors<br>of Estimate .....   | 36   |
| 7. Intercorrelation Among Demographic Variables<br>Used to Predict Pay and Satisfaction with Pay<br>by Employee Group ..... | 39   |
| 8. Measures of Multiple Relationships Between<br>Demographic Variables and Wages .....                                      | 41   |
| 9. Relative Importance of Demographic Variables<br>in Predicting Management Wages .....                                     | 42   |
| 10. Relative Importance of Demographic Variables in<br>Predicting Wages of Male Salaried Personnel .....                    | 44   |
| 11. Relative Importance of Demographic Variables in<br>Predicting Wages of Male Hourly Employees .....                      | 44   |
| 12. Measures of Multiple Relationships Between<br>Demographic Variables and Wage Satisfaction .....                         | 46   |
| 13. Relative Importance of Demographic Variables in<br>Predicting Wage Satisfaction of Management<br>Employees .....        | 48   |
| 14. Relative Importance of Demographic Variables in<br>Predicting Wage Satisfaction of Male Salaried<br>Employees .....     | 50   |

| Table   | Page |
|---|------|
| 15. Relative Importance of Demographic Variables<br>in Predicting Wage Satisfaction of Male Hourly<br>Employees ..... | 51   |



## LIST OF ILLUSTRATIONS

| Figure   | Page |
|--|------|
| 1. Partial Correlations of Independent Variables and Wages .....                               | 56   |
| 2. Partial Correlations of Independent Variables and Wage Satisfaction .....                   | 57   |
| 3. Partials with Wages versus Partials with Satisfaction--Management .....                     | 60   |
| 4. Partials with Wages versus Partials with Satisfaction--Salaried .....                       | 61   |
| 5. Partials with Wages versus Partials with Satisfaction--Hourly .....                         | 62   |
| 6. Incorporated Model of Wages, Wage Satisfaction, and Their Relation to Job Performance ..... | 72   |

## SUMMARY

Recent studies have pointed out the importance and consistency of pay and related financial benefits as a dimension of job satisfaction. However, three questions present themselves:

1. What are the factors that determine the pay an employee receives?

2. What are the factors which determine an employee's satisfaction with his pay?

3. How do these factors differ in their relation to pay and pay satisfaction for different employee groups?

This study was designed to answer these questions. Eleven thousand, one-hundred fifty-six employees from three different work groups responded to a Porter-type questionnaire indicating their perceived level of present pay and how much they thought it should be. The difference between these scores was taken as a measure of pay satisfaction. Demographic characteristics of the respondents were also recorded. Multiple correlation and regression analysis revealed that, in general, variables such as age, tenure, job level and level of education were highly related to the determination of one's wages, but were not significantly related to one's satisfaction with his earnings. The only variable showing even a modest relationship with pay satisfaction was pay itself.

Generally, within any work group, those paid highest were the most satisfied with their income. It was also shown that samples of hourly, salaried-nonsupervisory, and managerial employees may not be assumed to come from the same population. Important group differences between these samples exist. In addition, sex differences appear to have a moderating effect on pay satisfaction. A conceptual model concerning the relationship between pay, pay satisfaction and job performance was developed based on a "path-goal" hypothesis.

## CHAPTER I

### INTRODUCTION

After reviewing the programmatic history of the organization research conducted by the University of Michigan Survey Research Center, Kahn (1960) states without qualification, "productivity and job satisfaction do not necessarily go together." The same conclusion was reached by Brayfield and Crockett (1955) in their well-known systematic review of the literature. Although Herzberg and his associates took a somewhat more optimistic view of the empirical evidence in their review of the same literature (Herzberg, Mausner, Peterson, and Capwell, 1957), one conclusion is obvious from all three of these reviews--there is not the strong, pervasive relationship between job satisfaction and productivity that many people have felt to be the case (Porter and Lawler, 1968). The latest review of the job satisfaction literature (Vroom, 1964) supports this conclusion.

With the above consideration in mind, Kahn goes on to report that the results of the Survey Research Center work suggest that the concept "job satisfaction" contains several independent dimensions; both with respect to its determinants and its consequences. Thus, Kahn calls for the development of theoretical models of morale and job satisfaction reflecting this dimensionality, and research into these basic dimen-

sions in the work situation.

### Pay as a Dimension of Job Satisfaction

One of the most consistent dimensions found to emerge in the recent deluge of factor analytic studies of job satisfaction involves pay and closely related financial benefits (Ash, 1954; Dabas, 1958; Ewen, 1964; Gordon, 1955; Harrison, 1961; Hulin and Locke, 1963; King, 1960; Malinovsky and Barry, 1965; Rettig, 1960; Richardson and Blocker, 1963; Will and King, 1965; Wherry, 1958). The importance of this factor has been demonstrated in several investigations. Ronan (1967), for instance, found salary to be the major reason for leaving and organization among administrative, professional and clerical personnel. In a study of 1,000 bank and savings and loan association employees, Phelan (1969) systematically investigated differential need satisfaction in terms of a Maslow-type system. Among the eight need categories (security, social, esteem, autonomy, self-actualization, pay, information, and pressure needs), financial reward was regarded by both males and females as the least fulfilled need at all work levels (top, middle and low management, technician, and clerk). Georgopoulos, Mahoney and Jones (1957) had 722 workers from two plants rank ten job related items in order of their importance. Results showed that while "getting along well with work group" was given the highest mean rank in importance (4.5), two financially related items, "more money in the long run" and "promotion to a higher base rate" ranked

second with the same mean rank; 5.1. Another example of the importance of wages to job satisfaction is reported in a survey conducted by the National Industrial Conference Board (Raube, 1947). Seventy-one morale related items were presented to all non-supervisory personnel in 6 different plants located in 5 different states and manufacturing 5 different products. Plant size ranged from 190 to 2,300 non-supervisory employees. The results showed that among the 71 items listed, "compensation (base pay)" was considered the most important job aspect by 8.7% of all cooperating employees. Only "job security" showed a higher percentage of first place selection (30.6%). In addition, 27.9% of the employees ranked compensation within the top five most important items affecting morale. This was third behind "job security" (44.7%) and "opportunities for advancement" (30.7%). In this same report; Raube presents a list of 32 factors furnished the Conference Board by C. Stech of Stech Associates, New York, and representing the relative importance of each factor based on attitude surveys of "several thousand employees in 13 different organizations." "Fair pay for work done" was listed as the most important factor. In England, Wilkins (1949), while investigating the "incentives" of young workers, asked 300 males, aged 18-19 to rank eight items concerning jobs in order of their importance for them. Of the eight items (Prospects, Security, Variety, Efficient Organization, Workmates, Hours, Pay, and Leave), pay was ranked second only to "friendly

workmates." Studies in India, however, have shown income to be rated as the most important factor of job satisfaction (Ganguli, 1957a, 1957b).

After reviewing the factor analytic literature of the dimensions of job satisfaction, Ronan (1970) concludes that, although differences by occupational groups occur, these studies agree on work itself, advancement, pay and benefits, supervision, and co-workers as important in determining job satisfaction--usually in that order. Goodwin (1969) found similar factors when he investigated the general goals Americans expect to fulfill through work and the factors that influence satisfaction and dissatisfaction on the job. Using a self-anchoring scale, each respondent was asked to describe in his own words the attributes of an ideal job and then, the worst possible job. The worker was also asked to rate his present job along a 10-point scale from the ideal to the worst job which he had described. The respondent then indicated why he did not make his rating of his job higher and why he did not make it lower. Content analysis of the responses revealed the following results:

1. Forty-three percent of the employees mentioned "good financial reward" as an ideal attribute of a job (N = 1136). This was second only to "enjoyment of work" at 72 per cent.

2. "Inadequate financial reward" was a topic of 27 per cent of the worst attributes of a job (N = 1135). This

was second only to "dislike one's work" (48%).

3. "Good financial reward" was listed by 33 per cent of the general work force as a positive aspect of their present job (N = 1000). This was once again second to "enjoyment of work" (37%).

4. The item most frequently mentioned as a negative aspect of present job was "bad financial reward in present job" having been mentioned by 32% of the sample (N = 1000).

Finally, in what this author considers one of the most thorough and complete investigations into employee attitudes, Evans and Laseau (1950) found wages, salary and benefits derived from them to be the most often mentioned theme in 174,854 letters written by employees of General Motors on the topic "My Job and Why I Like It." The theme "the income I get and the things it provides for me and my family" was mentioned in 52.2 per cent of the entries.

In short, there seems to be ample evidence to indicate that in certain circumstances, wages can be a significantly important empirical factor in determining job satisfaction.

#### Wages and Productivity

The literature with respect to the effectiveness of wages as an incentive to work abounds with controversy and contradiction (Rothe, 1960). In addition, as pointed out in Porter and Lawler (1963), it is surprising that so little research on the incentiveness of wages has been done. Salaries are one of the largest expenses for any organization,



yet few organizations have attempted to systematically investigate how effectively they are spending their money. It is equally as curious that psychologists have not attempted to study the psychological aspects of compensation since the basic assumption--that pay motivates people to work--is a psychological one (Haire, Ghiselli & Porter, 1963).

Historically, it was a common assumption that man worked for pay alone. This was fostered by the conceptualization of "economic man" as a creature who uses his reason primarily to calculate the amount of satisfaction he may obtain from the smallest amount of effort expended; and "satisfaction" is derived only from money (Brown, 1954).

This concept of man's motivational referents led to an abundance of effort in designing and installing a great variety of incentive plans during the early part of this century. When these plans showed little in the way of results, disillusionment set in. When this disillusionment was capped by the Western Electric Studies at their Hawthorne Plant, "economic man" was dead.

The Hawthorne Studies clearly indicated that factors other than pay had a great influence on productivity. The major indication was that social relations had a decisive motivating force (Mayo, 1945). This ushered in the "human relations" movement. During this era the emphasis was on "social man" and his apparent need to associate with his fellow workers. Money as a motivator was almost totally

excluded.

Not long into the "human relations" movement a theory presented by Maslow (1943) began to enter motivational circles. Maslow has suggested that the needs which motivate man are arranged in a hierarchy. At the bottom of this hierarchy are maintenance needs such as food, water, safety and physical comfort. As these needs are met one moves up the hierarchy attempting to fulfill social needs, esteem needs, and finally to needs for autonomy and self-actualization. Maslow's basic tenet is that as the lower order needs become relatively satisfied, they cease to be important as motivators and an individual strives to satisfy the higher order needs. This has led to a picture of "self-actualizing" man that has enjoyed wide acceptance and application in theories of motivation during recent years. It obtains favor in its ability to account for the failure of pay as an incentive. If it is assumed that pay satisfies primarily lower order needs, as many theorists do, and that in our present society the vast majority of working individuals receive an income adequate to satisfy such needs, then pay is relatively unimportant. Pay can not be a motivator if it is not important (Porter and Lawler, 1968). But the key point on which this assumption is based is that pay satisfies primarily lower order needs. The validity of this assumption has come under serious question.

Analyzing explanations by respondents as to why events on the job caused favorable or unfavorable feelings, Myers

(1964) discovered that pay contributed to the higher order needs for achievement and recognition. Recent studies have also revealed that wages remain significantly important to high-paid managers despite their relatively greater potential for satisfying lower order needs. Porter (1961), in a study of 278 employees at the bottom and middle levels of management, showed that more importance was attached to the amount of pay received than to the amount of autonomy, esteem, or social need fulfillment. In a similar study, Phelan (1969), found that, even though mean need fulfillment deficiencies decreased as job level increased from clerk to top management, financial rewards were perceived as the least fulfilled needs at all work levels. That is, the need for financial remuneration was less well satisfied than Maslow's needs of security, social, esteem, autonomy or self-actualization.

Studies attempting to relate productivity directly to pay have provided contradictory and inconclusive evidence. However, many studies do suggest a positive relationship between these variables provided workers perceive productivity as instrumental in determining wages. For example, Lawler (1964) found that for 563 middle and lower management personnel, the more importance attributed to job performance as a determiner of pay by an individual, the higher his rating tended to be on all job performance measures. The strongest relationships were between rating of effort expended and the managers' attitudes about how pay is determined ( $r = .24$  for superior's performance ranking, and  $r = .34$

for self-rankings;  $p < .01$  for both). Experiments by Atkinson and Reitman (1956) and Kaufmann (1963) have shown that subjects who were told that their earnings were contingent on the effectiveness of their performance maintained a higher level of performance than those who were not.

After reviewing and critically evaluating the literature related to the effects of financial compensation on employee motivation, Opsahl and Dunnette (1966) cite five theories or interpretations concerning the role of money. These five theories and Opsahl and Dunnette's conclusions about them are briefly stated below:

1. A widely held hypothesis is that money operates as a motivator because it is a generalized conditioned reinforcer. Generalized reinforcing effects come about through repeated pairings with primary reinforcers. However, solid evidence of the behavioral effectiveness of such reinforcers is unfortunately lacking, and what evidence there is has been based almost entirely on animal studies.

2. Money is seen by Dollard and Miller (1950) as a conditioned incentive. According to this hypothesis, repeated pairings of money with objects or external conditions perceived as capable of satisfying an aroused motive (primary incentives) establishes a learned drive for money. The distinction to be made between the conditioned incentive and the above conditioned reinforcer interpretation is the introduction of drive reduction in the incentive hypothesis. No

such drive need be hypothesized under empirical reinforcement principles.

3. Brown (1961) suggested, in another drive-reduction hypothesis, that one learns early in childhood by means of higher-order conditioning to become anxious in the presence of a variety of cues signifying the absence of money. These cues are primarily presented by one's parents. The presence of money, then, acts to reduce or prevent anxiety. The concept of anxiety as a learned motivating agent to money-seeking behavior is congruent with and could be seen as operating jointly with the two previous hypotheses as an additional explanatory device. Brown presented no experimental evidence to support his theory.

4. In the Herzberg, Mausner, and Snyderman (1959) "two-factor" theory of worker motivation, money is seen as a "hygiene factor" serving as a potential dissatisfier if not adequate, but not as a potential satisfier or positive motivator. Its hygienic role is one of avoiding the pain of dissatisfaction, but not one of promoting heightened motivation. The interpretation of salary in this framework by Herzberg, et al. is mystifying in light of their own data. Fifteen per cent of employee descriptions of satisfying events involved the mention of salary and 17 per cent of their descriptions of unsatisfying events mentioned salary. Hardly a large enough difference to justify the conclusions. Herzberg et al. suggested, however, that salary may be viewed

as a "dissatisfier" because its impact on favorable job feelings was largely short-term while its impact on unfavorable feelings extended over a longer period of time. Close inspection of the data do not support this conclusion. In 22 per cent of the unusually good job feelings lasting several months, salary was reported as a causal factor; of the short term feelings, it was a factor 5 per cent of the time. In contrast, of the unusually bad job feelings lasting several months, salary was mentioned only 18% of the time. Thus, the data seem to be inconsistent with this interpretation and lend no support to the hypothesis of a differential role for money. Subsequent literature attempting to test this notion has been contradictory and inconclusive.

5. Vroom (1964) develops a cognitive model of motivation according to which money derives affective orientations (valence) as a result of its perceived instrumentality for obtaining desired outcomes. Although valence has no direct implication, the "force" compelling a person to action is postulated as a product of the valence of an outcome and the person's expectancy that a certain action will lead to attainment of the outcome. Thus, for example, if a person perceives money as instrumental for obtaining the outcome of status, and if status is desired, money acquires a positive valence. The probability of a money-seeking response will then be decided by the product of the amount of desire for status and the expectancy that certain actions on the job will lead to

attaining more money.

In summary, then, it seems clear that, although money may mean different things to different people and people may behave in many ways depending on momentary needs, pay can be in most cases an efficient motivator of behavior.

### Wage Satisfaction

In 1946, Centers and Cantril interviewed 1,239 persons representing a cross-section of the national population 18 years of age or older. Over half of this population expressed dissatisfaction with their present income. The implication to be drawn from the study is that satisfaction with wages depends upon its absolute value and as income increases one is more likely to be satisfied with it.

It has been suggested, however, that satisfaction resulting from the receipt of wages is based not on the absolute amount of these wages, but on the relationship between that amount and some standard of comparison used (Vroom, 1964). That standard may be wages received at a previous time or the perception of wages received by other workers. The most thorough investigation into such possibilities has been conducted by Patchen (1961) who formulated the problem of wage satisfaction with respect to a theory of social comparison. Patchen suggests that an individual compares his own earnings with those of others and evaluates differences in terms of his perception of disparity on factors believed to directly determine pay (skill, tenure, education, etc.). Thus, for

example, if one compares himself with someone earning more than he, but who is perceived as being similar in basic dimensions related to pay, a dissatisfying situation exists. Similarly, if an individual compares himself with someone earning the same wage, but seen as inferior on these dimensions, dissatisfaction may occur. On the other hand, if the comparison shows an individual as receiving less pay than someone superior, or the same pay as someone similar on pay related dimensions, satisfaction with wages would be expected. Patchen has received support for his basic conceptualization in a study of oil refinery workers and this conceptual framework is very convincing in its ability to account for such wide variances among satisfaction scores of individuals working the same job for the same wage.

#### Wage Satisfaction and Productivity

Very little information exists on the direct association between wage satisfaction and productivity, but what little evidence there is points to a low positive relationship (Porter and Lawler, 1968). Herzberg, et al. (1959) found in their study that when pay was perceived as unfairly low it acted as a dissatisfier and frequently Lawler (1964), showed that the more managers perceived their pay as a satisfier, the higher they were rated in relationship between managers' perception of pay as a satisfier and ratings of effort expended on the job ( $r = .17$ ,  $p = .01$ ).

Evidence of the relationship between pay satisfaction



and wages may also be drawn from "equity theory." A feature of this theoretical approach is the assumption that compensation either above or below that which is perceived by the employee as "equitable" results in tension and dissatisfaction due to dissonant conditions (Opsahl and Dunnette, 1966).

The tension motivates the employee to adjust his behaviors or cognitions in an attempt to restore consonance. The most recent and rigorous theory of equity has been advanced by Adams (1963). Adams states that inequity exists for an individual when he perceives the ratio of his outcomes (in this case--pay) to inputs (effort, skill, etc.) as unequal in relation to others. This theory predicts that the dissonance caused by the inequity may be reduced by lowering or raising inputs to bring them in line with outcomes. Although all evidence seems to support the postulates of this theory, the work has been primarily concerned with overpayment and little has been done to investigate the principles involved in underpayment. Overpayment does seem to cause an increase in productivity, but the evidence, slight as it is, suggests that predictions derived from equity theory in cases of under-reward may require reformulation (Opsahl and Dunnette, 1966). After reviewing this literature, Weick (1965) concluded that the evidence indicates that underpaid employees, contrary to the predictions of equity theory, work harder and also like the task more than employees who are not underpaid. Weick (1965) accounts for these findings with the hypothesis that

high effort for insufficient reward is an attempt by an employee to raise his objective outcomes rather than lowering inputs. Moreover, Weick states, "the increased satisfaction found among underpaid workers can be seen as a cognitive attempt to heighten outcomes to bring them in line with inputs." However, the principles underlying the choice of action taken to reduce dissonance in unequitable situations have not been specified, and therein lies the major weakness of equity theory.

#### Statement of the Problem

In view of Kahn's plea for closer investigation into the separate dimensions of job satisfaction (see page 1), and after the establishment of pay and pay satisfaction as an important dynamic factor of job satisfaction and productivity, three questions immediately present themselves: (1) What are the factors that determine the pay an employee receives? (2) What are the factors which determine an employee's satisfaction with his pay? and (3) How do these factors differ in their relation to pay and satisfaction with pay for different employee groups?

The most significant effort to answer these questions up to now has concerned itself with the first two of the above stated questions. Lawler and Porter (1966), using a questionnaire designed to measure satisfaction with several aspects of the job, collected data from 1,916 managers throughout the country. Imbedded among the others were two items to

assess manager's satisfaction with the absolute amount of their pay. A second part of the questionnaire asked the respondents to supply factual information concerning their age, position, time in position, time with company, level of education, organization size, level of management and salary.

The authors found managers' pay to be best predicted by management level ( $\bar{r} = .49$ ), and further, age and seniority are other demographic variables which were fairly good predictors of actual pay ( $\bar{r} = .25$  and  $.22$  respectively). Less highly related variables were organization size ( $\bar{r} = .14$ ) and time in position ( $\bar{r} = .08$ ). Type of position (Line/Staff) was negatively related to actual pay ( $\bar{r} = -.12$ ). All the above partial correlations were significant at the  $.01$  level. Education was not significantly related to managers' pay ( $\bar{r} = .02$ ). The multiple correlation between the seven demographic variables and actual pay in this study was  $.62$  ( $p < .001$ ).

Lawler and Porter defined dissatisfaction with pay as the difference score between the managers rating on a seven point scale of the questions how much their pay "is now" and how much they felt it "should be". (The rationale behind such a measure of job dissatisfaction will be presented later in this paper). Thus, larger difference scores indicated greater dissatisfaction with pay. The multiple correlation coefficient for the relationship between the eight demographic variables and the managers' satisfaction with pay

was .28 ( $p < .01$ ). However, only the variable of salary appeared as a good predictor of pay satisfaction ( $\bar{r} = .27$ ). Other things equal, higher pay was associated with higher satisfaction with pay.

It is interesting to note that contrary to other studies (Klein and Maher, 1966; Penzer, 1969) no significant relationship between education and pay satisfaction was found.

Lawler and Porter's (1966) study was a definite step toward answering some of the questions concerning the determinants of wages and wage-satisfaction. However, since this study was restricted to managerial personnel, it revealed nothing of the factors related to the remuneration of hourly and salaried personnel and their satisfaction with pay. Nor did the Lawler and Porter study add anything to the question of differences between factors among these groups (Question #3). The purpose of the present paper will be to investigate these problems as posed in the three questions stated previously for hourly and salaried personnel as well as managers.

Other studies have investigated the relationships of such demographic variable as, age, occupational level, sex, seniority, experience and level of education to pay and pay-satisfaction with significant results (Lawler and Porter, 1963; Chandler, Foster and McCormack, 1963; Goodwin, 1969; Penzer, 1969; Klein and Maher, 1966; Andrews and Henry, 1963; Wilkens, 1949; Stockford and Kunze, 1950; Patton, 1957; Grigsby and

Burn, 1962). There are, however, several reasons why these studies do not clarify the issue. First, as noted by Lawler and Porter (1966), most have studied only one variable at a time, and thus, show no assessment of relative relationships to the pay factor. Secondly, many of these studies were based on small, restricted samples making generalization beyond that sample difficult. In addition, findings have been contradictory. Finally, no study has attempted to cross-validate its findings. The present thesis is designed to overcome these difficulties.

### Implications

There seem to be nearly as many different organizational policies for determining employees wages as there are organizations. The aim of these policies should be to provide equitable payment for work done. This implies a wage scale with which the employee can feel satisfied. Knowledge of how the demographic characteristics of an employee are related to the determination of wages should be invaluable in the endeavor. The ideal distribution of wages would seem to be one in which the same factors which best predict satisfaction with pay are utilized to determine an employees actual wage level.

It also seems important to determine the factors which are related to wages since it has become increasingly common to see salary used as a criterion of job success (Lawler and Porter, 1966). For example, Scollay (1956) selected salary as

a criterion measure of success on the job since "people are usually rewarded by salary increases for good job performance. Those who perform the best service would be expected to receive the highest increases." Williams and Harrell (1964) have investigated the predictive value of test scores, professors' ratings, college grades and activities with regard to management success using salary as a criterion. Hilton and Dill (1962) have shown salary growth rate to be a stable measure of career progress independent of number of years for at least the first six years of employment. With the use of salary as a criterion measure of job success it seems paradoxical to find so little research information concerning those factors which may be significantly related to it.

## CHAPTER II

### PROCEDURE AND METHODOLOGY

The method used in the present study will be, with some modifications, essentially an extension of that by Lawler and Porter (1966). The actual data used were collected in conjunction with a previous study designed to measure employee satisfaction of a local manufacturer's work force (Loveland, Ronan and York, 1968).

#### The Instrument

In order to determine the nature of the information desired in future data collection, interviews were conducted on a cross-sectional sample of 241 employees at all work levels in the organization. Interviews were also held with executive personnel concerning organizational objectives of the study.

From the information collected in these interviews, questionnaires were developed attempting to relate to motivational aspects of the employees' perceptions of their job and the company. Three questionnaires were developed--one each for the Managerial - Supervisory, Salaried Non-Supervisory, and Hourly employee groups (see Appendix A). These questionnaires differed only slightly in their original form and not at all in the portions used in the present study.

The data which were extracted for use in the present

study were taken from only one item on the questionnaire, namely "Pay for the work which you do," and demographic data collected as part of the questionnaire.

#### Item Format

The format used for the questionnaire items was that of Porter (1962). Three questions were asked for each item:

Pay for the work which you do:

- (a) How high is it?  
very low            1 2 3 4 5 6 7 very high
- (b) How high should it be?  
very low            1 2 3 4 5 6 7 very high
- (c) How important is this to you?  
not important 1 2 3 4 5 6 7 very important

Respondents were asked to circle the number which represented their feeling for each question on each item. Data from question (c) were not used in the present study. Question (a) represents the individual employee's perception of his actual level of pay. Question (b) represents an individual's perception of what he feels he should be paid. A measure of an individual's satisfaction with his pay was defined as the answer to question (a) subtracted from the answer to question (b); that is, the difference score between "how high it is now" and "how high should it be." This score may be conceived as an indirect index of individual level of perceived satisfaction with "Pay for work done" presumably based on individual "needs."

Rationale for this measure of satisfaction is given by Porter (1962):



The degree of perceived deficiency in fulfillment for each respondent on a questionnaire item was obtained by subtracting the answer to Part a of an item ('How much of the characteristic is now connected with your position?') from Part b of the item ('How much of the characteristic do you think should be connected with your position?'). An a priori assumption was made that the larger the difference-- a subtracted from b--the larger the degree of dissatisfaction or the smaller the degree of satisfaction. This method of measuring perceived need satisfaction thus is an indirect measure derived from two direct answers by the respondent for an item. This method has two presumed advantages: (a) The subject is not asked directly concerning his satisfaction. Therefore, any tendency for a simple 'response set' to determine his expression of satisfaction is probably reduced somewhat. It is more difficult, although by no means impossible, for the respondent to manipulate his satisfaction measure to conform with what he thinks he 'ought' to put down versus what he actually feels to be the real situation. (b) Secondly, this method of measuring need fulfillment is a more conservative measure than would be a single question concerning simple obtained satisfaction. It takes into account the fact that higher level positions should be expected to provide more rewards because it utilizes the difference between obtained and expected satisfaction. In effect, this method asks the respondent 'how satisfied are you in terms of what you expected from this particular (management) position?' Thus, it is designed to be a realistic and meaningful measure in comparing different (management) groups... (p. 378).

Ronan (In Press) gives support to this measure of satisfaction. The author states that an apparent weakness in previous studies of job satisfaction revolves around the use of separate and different ratings to infer the structure of job satisfaction. In some studies satisfaction is inferred from ratings of "what is present in the job,; in others satisfaction is inferred from ratings of "what is personally important in the job." Accordingly, Ronan sees such procedures as inadequate in that "job satisfaction most likely

stems from the discrepancy between what the respondent perceives the actual job situation to be, and what he desires or feels it should be." Further, according to Ronan, "this discrepancy more nearly reflects the positive (or negative) feeling state of the respondent associated with his perceptions of his job setting."

The demographic data used in the present study were measures of the following variables:

| <u>Independent Variables</u> | <u>Dependent Variables</u>                     |
|------------------------------|--|
| 1. Sex                       | 6. Actual wages                                |
| 2. Age                       | 7. Satisfaction with pay<br>(Difference Score) |
| 3. Time with company         |  |
| 4. Job level                 |  |
| 5. Level of education        |  |
| 6. Actual wages              |  |

In general then, data in the present study were descriptive of three work groups (Management, Salaried, Hourly), the individuals in these work groups, and their satisfaction with pay received. Of interest are the differences and interrelationships among these measures.

### Data Collection

Prior to distribution of questionnaires, every effort was made to encourage participation. The union was notified as to the Company's intentions. Announcement of the project was printed in the company newspaper and by memoranda from the company president.

Questionnaires were mailed to the homes of all employees of the Company accompanied by a letter from the company

president encouraging participation. Returns were made via pre-stamped envelopes addressed directly to the project staff at Georgia Institute of Technology. Anonymity was stressed. A total of 25,980 questionnaires mailed and tabulation of participation is summarized in Table 1.

Table 1. Questionnaires Mailed versus Returned <sup>a</sup>.

| Employee Group            | Number Mailed | Number Returned | Percent Participation |
|---------------------------|---------------|-----------------|-----------------------|
| Management <sup>b</sup> . | 2,052         | 1,311           | 63.9                  |
| Salaried <sup>c</sup> .   | 5,590         | 3,653           | 65.3                  |
| Hourly                    | 18,338        | 6,192           | 33.8                  |
|                           | 25,980        | 11,156          | 42.9                  |

<sup>a</sup>. Taken from Loveland, et al., 1968.

<sup>b</sup>. Supervisory Employees and Above

<sup>c</sup>. Non-supervisory

The low return rate for hourly employees was checked with respect to representativeness by demographic comparison to the same data for the entire organization. The only difference revealed was that slightly more women returned the questionnaire than would be representative of their number in the company. This difference, as far as could be determined, was not large enough to cause any serious distortion of the data considering the size of the sample.

Eliminating questionnaires omitting relevant data pertinent to the present study left 9,866 usable questionn-

aires. Table 2 gives a by-variable breakdown of this sample.

Table 2. Breakdown of Sample by Variable

| Variable             | Management | Salaried     | Hourly        |
|----------------------|------------|--------------|---------------|
| <u>Sex:</u>          |            |              |               |
| Male                 | 1196       | 3116         | 4506          |
| Female               | 4          | 92           | 952           |
| <u>Age:</u>          |            |              |               |
| 18-29                | 58         | 905          | 2072          |
| 30-39                | 413        | 1091         | 1415          |
| 40-49                | 533        | 911          | 1245          |
| 50-59                | 176        | 265          | 620           |
| 60+                  | 20         | 38           | 106           |
| <u>Tenure:</u>       |            |              |               |
| (Yr. Hired)          |            |              |               |
| 1967                 | 2          | 181          | 339           |
| 1965-66              | 34         | 1007         | 1508          |
| 1963-64              | 74         | 291          | 881           |
| 1961-62              | 77         | 371          | 415           |
| 1959-60              | 34         | 159          | 49            |
| 1957-58              | 33         | 90           | 34            |
| 1955-56              | 175        | 303          | 441           |
| 1953-54              | 180        | 214          | 590           |
| 1951-52              | 509        | 1162         | 543           |
| before '51           | 82         | 39           | 49            |
| <u>Education:</u>    |            |              |               |
| H.S. or less         | 45         | 13           | 890           |
| H.S. graduate        | 254        | 171          | 2303          |
| Bus./Tech.           | 95         | 161          | 906           |
| Some College         | 310        | 762          | 1262          |
| Bach. Degree         | 406        | 1738         | 85            |
| Adv. Degree          | 90         | 363          | 12            |
| <u>Job Level:</u>    |            |              |               |
| Lower:               | 761        | Assoc.: 477  | Factory: 2816 |
| Middle:              | 380        | Interm.: 635 | Office: 1673  |
| Top:                 | 59         | Senior: 1194 | Prof: 506     |
|                      |            | Sp'list: 554 | Other: 463    |
|                      |            | Other: 378   |               |
| <u>Level of Pay:</u> |            |              |               |
| (Weekly)             |            |              |               |
| \$135-less:          | 1          | 135-less: 15 | 96-less: 70   |
| 136-193:             | 234        | 136-174: 586 | 97-104: 135   |
| 194-250:             | 285        | 175-211: 948 | 105-112: 401  |
| 251-325:             | 361        | 212-249: 792 | 113-121: 912  |
| 326-383:             | 174        | 250-288: 549 | 122-129: 1099 |
| 384+:                | 145        | 289+: 318    | 130-138: 885  |
|                      |            |              | 139+: 1956    |

Table 2 continued

Satisfaction:  
(Diff. Score)<sup>a</sup>.

|    |     |     |      |
|----|-----|-----|------|
| 1  | 0   | 6   | 3    |
| 2  | 1   | 0   | 3    |
| 3  | 0   | 2   | 3    |
| 4  | 3   | 20  | 11   |
| 5  | 9   | 35  | 31   |
| 6  | 35  | 64  | 65   |
| 7  | 370 | 842 | 1251 |
| 8  | 383 | 962 | 1435 |
| 9  | 250 | 731 | 1458 |
| 10 | 94  | 334 | 613  |
| 11 | 38  | 144 | 285  |
| 12 | 10  | 50  | 114  |
| 13 | 7   | 26  | 79   |

<sup>a</sup>. A constant value of seven was added to each difference score to avoid negative numbers. Scores were reversed so that higher difference scores indicate greater satisfaction.

#### Analytic Design

To determine the degree to which the independent demographic variables used in the present study were actually related to the criterion of salary and salary satisfaction within each work group, separate multiple regression and correlation analyses were conducted. Multiple correlation ( $R$ ) yields a measure of the combined contribution of the several independent factors as a means of explaining the variance in the dependent factor. For the sample of hourly employees, the variables of sex, age, seniority, level of education and job level were correlated with the dependent variable of actual pay. The same independent variables plus actual pay were also correlated with the dependent variable of satisfaction with pay. This same procedure was used for the salaried and

management samples. Due to the lack of females in the management work group, however, the sex variable was dropped in the analysis for that sample and the hourly and salaried data were reanalyzed using all male samples to allow for across-group comparisons. Since no causal relationships could be assumed, a prediction model was followed.

The actual analysis of the above procedure was done utilizing an available computer program (Clark, 1964) for the Burroughs 5500 computer. This program relates the dependent variable to the independent variables by means of a linear equation and determines how well each equation fits the data. Normal equations are developed with sums of squares and cross-products, corrected to the mean, and the abbreviated Doolittle method is employed to invert this matrix and to calculate the regression coefficients. In the process the following measures are computed for each dependent variable:

1. Multiple correlation coefficient ( $\bar{R}$ ) - a measure of the combined importance of the several independent factors as a means of explaining the differences in the dependent factor (Ezekiel, 1962).

2. Standard error of estimate ( $\sigma_{est}$ ) - the standard deviation of the differences between the actual values of the dependent variable and those estimated by the regression equation (English and English, 1958).

3. Coefficient of multiple determination ( $\bar{R}^2$ ) - the percentage of variance of the dependent variable ascribable directly to the several independent variables (Ezekiel, 1962).

4. An analysis of variance for the multiple linear regression - allows for testing the significance of  $\bar{R}$  for each dependent variable.

In addition to the measures dependent on all the independent variables combined, it is desirable to have measures of the contribution or importance of each of the individual variables taken separately, while simultaneously eliminating or allowing for the variation associated with the remaining independent variables (Ezekiel, 1962). An appreciation of the relative contribution of the independent variables in accounting for the variance in the dependent variables is not readily grasped by simple inspection of the multiple regression coefficients (Ferguson, 1959). Thus, the following measures for each independent variable were computed or calculated:

1. Correlation coefficient ( $r$ ) - a measure of the relationship between the criterion variable and each independent variable.

2. Partial correlation coefficient ( $\bar{r}$ ) - since the correlation of any independent factor and the criterion may be greatly influenced by its relationship to the other independent variables in the regression equation, a more meaningful statistic in most cases is the partial correlation. The partial correlation coefficient is a measure of the relationship between the dependent factor and each of the several independent factors, while eliminating any (linear) tendency

of the remaining independent factors to obscure the relation. The coefficient of partial correlation may be defined as representing the extent to which that part of the variation in the dependent variable, which was not explained by the other independent factors, can be explained by the addition of the factor in question (Ezekiel, 1962).

3. Reduction in unexplained variance ( $\bar{r}^2$ ) - a measure of the percentage of variance in the dependent variable left unexplained by the other independent variables which may be accounted for by the variable in question. That is, the relative reduction in error when estimating the criterion which results from using that independent variable.

4. Beta coefficient ( $\beta$ ) - the importance of individual variables may also be compared by their net regression coefficients (Ezekiel, 1962). These coefficients, however, are expressed in the units in which each variable is stated. They may be made more comparable by representing them in terms of their own standard deviation. This standard score is referred to as Beta.

5. Usefulness - the amount  $\bar{R}^2$  would be expected to drop if the variable in question were removed from the regression equation and the weights of the remaining predictor variables were then recalculated (Darlington, 1969).

So that the above measures may be more accurately interpreted and relationships more fully understood, a matrix of intercorrelations was computed showing the inter-relation-



ships existing among the independent variables used.

Although all the above measures of relative importance will be presented for the ease and convenience of the reader, only the partial correlation coefficient and usefulness measure will be given full exploration in the results of the present study. These are the most meaningful and appropriate measures applicable to the design and objectives of the present research. When all independent variables are uncorrelated, all five of these measures are equivalent (Darlington, 1969). But with the independent factors used in the present study this is clearly not the case.

Beta ( $\beta$ ) weights may be of considerable interest as a measure of the "importance" of a variable when certain assumptions can be met:

1. All variables which might affect the dependent variable are either included in the regression equation or are uncorrelated with the variables which are included.
2. Terms are included in the regression equation to handle any curvilinear or interactive effects.
3. The dependent variable has no effect on the independent variables (Darlington, 1969). Since these assumptions are by no means met in this study,  $\beta$  should be looked at with caution.

When a prediction model is followed rather than causal analysis, "usefulness" is a measure of greater interest (Darlington, 1969). In addition, according to Lawler and

Porter (1966), because partial correlations have the effect of holding constant other factors while determining the degree of relationship between two variables, they are considered to give the best indication of the relative ability of each factor to account for the variance in pay and satisfaction with pay.

Actually, Darlington's "usefulness" of the independent variables and the squared partial correlation are proportional. Thus, based on the above evidence, those two measures of the relative "importance" of the independent factors are felt to be the most meaningful within the constraints of the present research.

#### Across-Groups Comparison

To answer the question of how the various independent and dependent factors differ in their relationships for different employee groups, it was first desirable to determine whether or not the groups may be considered as coming from the same population. To test this hypothesis (that the hourly, salary and management groups are simply samples from different portions of the same universe), a technique devised by Gulliksen and Wilks (1950) was used.

According to Gulliksen and Wilks, it is clear that if one selects explicitly on one variable  $\underline{x}$  (work groups), means, variances, and covariances may be quite different, yet this selection may not systematically affect the slope of the regression of  $\underline{y}$  on  $\underline{x}$  nor does it, of necessity,

systematically affect the variation about this regression system. Utilizing application of the Neyman-Pearson likelihood ratio test theory, the authors devise three criteria making it possible to test the various samples and determine whether they can be regarded as having come from populations with the same regression line and hence be considered the same group. If tests of the following three hypotheses, made in sequence, yield non-significant results, the various samples may be treated as being from the same population:

- H1: the hypothesis that all standard errors of estimate are equal.
- H2: the hypothesis that all regression lines are parallel (assuming H1),
- H3: the hypothesis that all regression lines are identical (assuming H2).

#### Cross-Validation

Samples for all three work groups were divided into two equal size samples and all analyses were run on both samples in the same manner. This was accomplished by initially applying the multiple regression and correlational analysis to the data from every other questionnaire and repeating the analysis for the remaining data. The actual sample sizes upon which the results of the present study are based may be seen in Table 3.

Cross-validation was necessary to insure against spuriously high coefficients of multiple correlation due to the accumulation of sampling errors in the original sample.

Table 3. Sample Sizes of Both Original  
and Cross-Validation Samples

| Sample       | Management | Salaried | Hourly |
|--------------|------------|----------|--------|
| Males Only   | 600        | 1558     | 2253   |
| With Females | -          | 1604     | 2729   |

## CHAPTER III

## RESEARCH FINDINGS AND RELATED DISCUSSION

To evaluate the results of the present study, an alpha level of .001 will be taken as indication of significant findings. It was decided to work at this level due to the nature of the samples used and the objectives of this research. It was felt that a more conservative interpretation of the data and a primary effort to avoid type I error was appropriate in view of the extreme size of the samples. The effect of such large samples is to drive the probability of any type II error down to an acceptable level, thus allowing alpha to be decreased with only slight losses in power. In addition, when working with correlation coefficients and large samples, the coefficients significant at the traditional .05 level become so small as to be very difficult to interpret meaningfully. The frequent use of the .05 and .01 levels of significance is a convention having little scientific or logical basis (Winer, 1962). The question becomes one of distinguishing between practical significance and statistical significance. If all correlations are significant in all cases, little information is obtained. Even if a correlation of .03 is statistically significant at the .05 level, there appears to be little practical significance in being able to account for .0009% of the variance involved.

### Cross-Validation

Tables 4 and 5 summarize and compare multiple correlations determined on the original sample groups with those of the cross-validation samples. As can be readily seen, in no

Table 4. Differences in  $\bar{R}$  Between Cross-Validation Samples--Wages Criteria

| Group               | N <sup>a.</sup> | $\bar{R}_1$ | $\bar{R}_2$ | Z <sup>b.</sup> |
|---------------------|-----------------|-------------|-------------|-----------------|
| <u>Males Only</u>   |                 |             |             |                 |
| Management          | 600             | .80         | .78         | 0.93            |
| Salaried            | 1558            | .64         | .68         | 1.97            |
| Hourly              | 2253            | .45         | .48         | 1.28            |
| <u>With Females</u> |                 |             |             |                 |
| Salaried            | 1604            | .67         | .66         | 0.81            |
| Hourly              | 2729            | .59         | .58         | 0.59            |

a. For each sample

b. Normal curve critical value ( $Z_{.001}=3.291$ )

Table 5. Differences in  $\bar{R}$  Between Cross-Validation Samples-- Satisfaction Criteria

| Group               | N    | $\bar{R}_1$ | $\bar{R}_2$ | Z    |
|---------------------|------|-------------|-------------|------|
| <u>Males Only</u>   |      |             |             |      |
| Management          | 600  | .36         | .24         | 2.26 |
| Salaried            | 1558 | .18         | .20         | 0.86 |
| Hourly              | 2253 | .16         | .14         | 0.34 |
| <u>With Females</u> |      |             |             |      |
| Salaried            | 1604 | .195        | .185        | 0.28 |
| Hourly              | 2729 | .213        | .211        | 0.18 |

case was there any significant shrinkage in multiple corre-

lation coefficients between the original and cross-validation samples. This indicates a degree of stability in regression equations determined on the original sample. Thus, in the remainder of this paper, all discussion and data will be based on the original samples. Refer to Appendix B for supplemental data on the cross-validation groups.

### Group Similarity

Results of the application of the Gulliksen and Wilks (1950) technique to determine the degree of similarity among the regression systems for the three different work group samples are given in Table 6. According to this analysis, the

Table 6. Test for Hypothesis of Equality of Errors of Estimate

| Wages Criteria |            |          |         |
|----------------|------------|----------|---------|
|                | Management | Salaried | Hourly  |
| n              | 600        | 1558     | 2253    |
| $G_{est.}$     | .765       | .947     | 1.29    |
| S              | 459.00     | 1475.43  | 2906.37 |
| $G_a =$        | 80.2077*   |          | df=2    |

| Satisfaction Criteria |            |          |         |
|-----------------------|------------|----------|---------|
|                       | Management | Salaried | Hourly  |
| n                     | 600        | 1558     | 2253    |
| $G_{est.}$            | 1.20       | 1.37     | 1.54    |
| S                     | 720.00     | 2133.86  | 3469.62 |
| $G_a =$               | 135.536*   |          | df=2    |

\* $p < .001$ ;  $\chi^2_{.001} = 13.82$

employee groups must be considered as samples from distinct

and separate populations and not samples taken from different portions of the same universe.

As indicated previously the Gulliksen and Wilks method sets up three criteria which must be met to conclude that results obtained from various samples may be regarded as coming from the same population. If the conclusion of testing any of the three hypotheses relating to these criteria results in a significant value ( $G$ ) distributed as a chi-square with  $(K - 1)$  degrees of freedom, further tests are inapplicable.

In this case, the first test applied resulted in a significantly large value of  $G$  for both the dependent variables of wages and wage satisfaction. This indicates that the standard errors of estimate vary too much from sample to sample to consider them as coming from the same population ( $p < .001$ ).

The importance of this finding can not be underestimated in view of existing literature and theory concerning wage and job satisfaction. There exists a prevailing tendency to conduct research on only one relatively homogeneous employee group, such as management. This results in a dangerous temptation to generalize the findings of such studies to a more general population i. e., "the worker". Of the studies cited in this author's bibliography which are directly related to wages and wage satisfaction, 26 were conducted using one group of homogeneous workers, three used different occupational groups but analyzed the data as one sample, two used



different occupational groups and found serious group differences affecting satisfaction with wages, and one study specifically addressed itself to the problem of occupational differences and the implication of such differences for both research and application. That study (England and Stein, 1961) found large occupational differences existing in worker attitudes toward several aspects of the job, including pay, among 3207 employees representing seven different occupational categories. The author's conclude, and data from the present study support their suggestion, that "attitude data should be stratified occupationally before being related to other variables." Perhaps much of the confusion and conflict in satisfaction--productivity studies, as summarized by Brayfield and Crockett (1955) could be traced to inadequate control of the occupational reference group variable (England and Stein, 1961).

#### Intercorrelations Among Independent Variables

An indication of the interrelationships among variables for the present samples may be seen by referring to Table 7. This Table represents the Pearson coefficients of correlation among the demographic variables describing the different work group. Although nearly all correlations are significant at the indicated level, the majority are rather low, indicating a degree of relative independence among these variables.

Although most of the relationships among the demographic variables are similar to those that have been found in other studies, where other studies are available, and as one

would intuitively expect, several relationships deserve special mention. These point out possible sources of group differences.

Table 7. Intercorrelations Among Demographic Variables  
Used to Predict Pay and Satisfaction With Pay  
By Employee Group

| Management |        |           |           |      |
|------------|--------|-----------|-----------|------|
|            | Tenure | Education | Job Level | Pay  |
| Age        | .41*   | .03       | .22*      | .42* |
| Tenure     |        | -.09      | .16*      | .27* |
| Education  |        |           | .20*      | .53* |
| Job Level  |        |           |           | .60* |
| Salaried   |        |           |           |      |
| Age        | .51*   | -.23*     | .46*      | .50* |
| Tenure     |        | -.23*     | .42*      | .38* |
| Education  |        |           | .19*      | .13* |
| Job Level  |        |           |           | .47* |
| Hourly     |        |           |           |      |
| Age        | .65*   | -.22*     | .00       | .30* |
| Tenure     |        | -.19*     | .80*      | .40* |
| Education  |        |           | .17*      | .05  |
| Job Level  |        |           |           | .14* |
| *P < .001  |        |           |           |      |

Significant negative intercorrelations of a moderate level exist between education and the variables of age and tenure in the hourly and salaried employee groups, but no significant relationship exists between these variables for management personnel (See Table 7). This may be a result of the restricted range of education level typical of the manage-

ment sample due to a specific (higher) level of education required at the time of hire into a management position. It is also interesting to note the relationship between tenure and job level. There is an apparent substantial reduction in the level of correlation between tenure and job level as one moves up from the hourly to the management levels. The extremely high correlation at the hourly level (.80) clearly represents the unions support for promotions based on seniority. Since salaried positions are often filled through the promotion of hourly personnel it seems tenable that this attitude toward promotion based on seniority may carry over to some degree. Management personnel, being farther removed from the unions, typically stress merit and ability as basis for promotion. Of course the high intercorrelations between the variables dependent on time (age and tenure) are to be expected. One puzzling item in light of other relationships is the zero correlation between age and job level in the hourly group. It is quite possible that the job level categories used for the hourly employee questionnaire were not appropriate.

### Wages

#### Multiple Relationships

In Table 8 are summarized the measures of multiple relationship between the demographic variables and actual pay for management, salary, and hourly employees. It is somewhat peculiar to note an apparent linear increase in  $\bar{R}$  from the

hourly to the salaried to the management work groups. One would not expect demographic variables to have a stronger relationship with management pay than with salaried or hourly wages. Variables reflective of merit are more typically

Table 8. Measures of Multiple Relationships Between Demographic Variables and Actual Pay

| Work Group | N <sup>a</sup> . | $\bar{R}$ | $\sigma_{est.}$ | F     | $\bar{R}^2$ |
|------------|------------------|-----------|-----------------|-------|-------------|
| Management | 600              | .801*     | .765            | 265.5 | .641        |
| Salaried   | 1558             | .643*     | .947            | 273.9 | .414        |
| Hourly     | 2253             | .451*     | 1.290           | 143.2 | .203        |

<sup>a</sup>. Males Only

\* $p < .001$

pointed to as determiners of salaries for managers and less typically for non-management employees. Such a situation would more likely result in a lower relationship between demographic variables and management pay than for salaried or hourly groups. The existing relationship may perhaps represent the greater degree of heterogeneity among employees in the hourly and salaried samples used in this study. Another possibility may be that management promotions are not based on merit!

#### Determinants of Wages

Tables 9, 10, and 11 report measures reflecting the relative predictive value or "importance" of each of the four independent variables in accounting for the variance found in the dependent variable of actual pay for each of the employee groups.

Management. Education is clearly the best predictor of management compensation, with job level being almost as important. Age may also be considered a reasonably good predictor of actual pay. Tenure though significant in its relationship to salary adds little to the multiple predictive power of the demographic variables. Its "usefulness" indicates a decrease of only .014 in the coefficient of multiple determination if the variable of time with company were to be removed from the regression equation. More simply it appears that the better educated, higher level, older managers who have been with the company somewhat longer are the best paid. Table 9 summarizes these data.

Table 9. Relative Importance of Demographic Variables in Predicting Management Compensation

| Variable  | $r$  | $\bar{r}$ | $\beta$ | $\bar{r}^2$ | Usefulness (F) |
|-----------|------|-----------|---------|-------------|----------------|
| Education | .53* | .59*      | .45     | .34         | .123 (205.27)* |
| Job Level | .60* | .57*      | .44     | .33         | .117 (194.50)* |
| Age       | .42* | .35*      | .25     | .12         | .044 ( 73.00)* |
| Tenure    | .27* | .20*      | .08     | .04         | .014 ( 24.00)* |

\* $p < .001$

The multiple correlation coefficient between the four demographic variables and actual wages was .80 (see Table 8). This is a rather high multiple correlation; especially considering the size of some of the intercorrelations among the variables, and represents 64.1% of the variance in the dependent variable.

These findings compare favorably with Lawler and Porter (1966) with respect to the variables of job level, age, and time with company where they recorded partial correlations of .49, .25, and .22 respectively ( $p < .01$ ). Although Lawler and Porter (1966) used seven demographic variables, their multiple correlation with wages was somewhat lower (.62) than that found in the present study. A major discrepancy between the results of this study and that of Lawler and Porter is that the latter found no significant correlation of education level with pay. The present study shows education to be the most useful variable in predicting pay for managers. A possible source of this difference may be that the sample used in this research was from one organization whereas Lawler and Porter (1966) selected their managers from a number of organizations distributed throughout the United States.

Salaried. The variable which accounts for the greatest amount of variance in pay of salaried employees is age, followed closely by education and job level. A low positive relationship also exists between tenure and salary. This situation is much like that found for the manager group. That is, the older, more educated, higher level salaried personnel, who have been with the company somewhat longer, are paid the highest. The rank order of these variables in their relative predictive power differs between the two groups, however. (See Table 10).

The multiple correlation coefficient of the four demo-

Table 10. Relative Importance of Demographic Variables  
in Predicting Pay of Male Salaried Personnel

| Variable  | $r$  | $\bar{r}$ | $\beta$ | $\bar{r}^2$ | Usefulness (F) |
|-----------|------|-----------|---------|-------------|----------------|
| Age       | .50* | .36*      | .36     | .13         | .074 (186.00)* |
| Education | .13* | .35*      | .29     | .12         | .071 (177.30)* |
| Job Level | .47* | .32*      | .30     | .10         | .061 (152.30)* |
| Tenure    | .38* | .15*      | .14     | .02         | .014 ( 33.80)* |

\* $p < .001$

graphic variables and salary, though not as high as for the managerial group, is still quite substantial (.64).

Hourly. Table 11 reports measures of the relative importance of the demographic variables to pay determination for hourly personnel and reflects a dramatic difference in the relative importance of the different variables when compared to the manager and salary groups. Tenure, the least useful

Table 11. Relative Importance of Demographic Variables  
in Predicting Wages of Male Hourly Employees

| Variable  | $r$  | $\bar{r}$ | $\beta$ | $\bar{r}^2$ | Usefulness (F) |
|-----------|------|-----------|---------|-------------|----------------|
| Tenure    | .40* | .32*      | .40     | .10         | .081 (226.80)* |
| Job Level | .14* | .16*      | .15     | .03         | .021 ( 58.30)* |
| Education | .05  | .12*      | .11     | .01         | .011 ( 31.60)* |
| Age       | .30* | .05       | .06     | .00         | .002 ( 6.80)   |

\* $p < .001$

variable in the two previous samples, becomes the most critical

factor in the equation; that is, the variable which accounts for the greatest portion of the variance in the dependent variable. Job level and education, though significant, account for very little of the variance in a practical sense. Age does not contribute any significant unique explanation of variance in wages of hourly employees. This means that hourly workers who have been with the company the longest are the highest paid regardless of age, with a slight tendency for higher level, better educated hourly employee to be paid more. The dominance of tenure in the regression equation is, as mentioned previously, likely indicative of the typical insistence on promotions and pay raises based on tenure above all among hourly employees.

The multiple correlation of the demographic variables and hourly wages, as seen in Table 8 is .45 ( $p < .001$ ) with a coefficient of multiple determination of .203.

One inference which seems reasonable from all these data is that the amount of an employee's wages is very likely to be determined by many factors, a large portion of which are variables such as age, education, tenure and job level. Such variables may not be related to performance to any appreciable degree. This has far reaching implications for both research and industry.

In industry one would hope a greater emphasis would be placed upon merit, effort and productivity in determining wages. This is a possible explanation for the poor relation-



ships typically found between wages, and productivity and motivation. Secondly, these data cast doubt upon the relevance of a salary criterion. As mentioned in the introduction, salary has been used increasingly as a measure of job success (Scollay, 1956, Hilton and Dill, 1962; Williams and Harrell, 1964). According to Scollay, one assumption underlying the selection of salary as a criterion is that people are usually rewarded by salary increases for good job performance. Those who perform the best service would be expected to receive the highest increases. Evidence in this study makes this assumption tenuous to say the least. Pay seems to be based largely upon variables that are demographic in nature.

### Wage Satisfaction

#### Multiple Relationships

Table 12 reflects the measures of multiple relationship

Table 12. Measures of Multiple Relationship Between  
Demographic Variables and Pay Satisfaction

| Work Group | N <sup>a</sup> . | R    | G <sub>est.</sub> | F     | R <sup>2</sup> |
|------------|------------------|------|-------------------|-------|----------------|
| Management | 600              | .37* | 1.20              | 18.34 | .130           |
| Salaried   | 1558             | .17* | 1.37              | 8.92  | .028           |
| Hourly     | 2253             | .16* | 1.54              | 11.44 | .025           |

<sup>a</sup>. Males Only

\*p < .001

between the demographic variables, including the additional variable of actual pay, and satisfaction with pay for manage-

ment, salaried and hourly employees. As can be seen, all coefficients of multiple correlation are statistically significant and are in a low positive direction.

#### Determinants of Wage Satisfaction

Tables 13, 14, and 15 present the measure of relative importance of each of the five demographic variables in determining wage satisfaction among management, salaried and hourly workers respectively. Since satisfaction with pay was defined as the difference between answers to "what it is now" and "what it should be" plus a constant value, higher difference scores indicated greater dissatisfaction. Before entering data in the computer program, however, scores of wage dissatisfaction were reversed to allow a positive correlation to represent greater satisfaction.

Management Employees. The results of the multiple regression analysis for management employees revealed a significant partial correlation between actual pay and satisfaction with salary ( $p < .001$ ). Thus, it was suggested that with all other things held constant higher paid managers were more highly satisfied with their pay. It is also evident that no other variable used in this study is significantly useful in predicting satisfaction with salary.

These results are in good agreement with Lawler and Porter (1966) who also found present salary to be the only variable significantly related to salary dissatisfaction. Lawler and Porter state, however, that their results differ

from those of Andrews and Henry (1963). The author's contend that Andrews and Henry found a negative relationship between level of education and wage satisfaction. The present data agree with Lawler and Porter, but they also agree with the findings of Andrews and Henry. The latter did not find higher

Table 13. Relative Importance of Demographic Variables in Predicting Salary Satisfaction of Management Employees

| Variable  | $r$  | $\bar{r}$ | $\beta$ | $\bar{r}^2$ | Usefulness (F) |
|-----------|------|-----------|---------|-------------|----------------|
| Pay       | .33* | .24*      | .39     | .060        | .0520 (34.70)* |
| Education | .06  | -.13      | -.16    | .017        | .0149 ( 9.40)  |
| Tenure    | .09  | -.05      | -.06    | .003        | .0023 ( 1.53)  |
| Age       | .19* | .05       | .04     | .002        | .0017 ( 1.13)  |
| Job Level | .24* | .03       | .03     | .001        | .0007 ( 0.47)  |

\* $p < .001$

education as predictive of lower wage satisfaction as Lawler and Porter report. In the authors' words "Degree of satisfaction with pay showed no clear trend as a function of education (p. 33)."

Further, the Andrews and Henry study, which utilized data on 490 managers in five firms, is in agreement with the present findings that age holds no significant relationship to a manager's satisfaction with his earnings, and that higher salary is associated with higher levels of pay satisfaction. The only point of disagreement between the findings of Lawler and Porter (1966), the present study, and Andrews and Henry (1963) concerning management pay satisfaction is that the latter concluded that the degree of pay satisfaction increased steadily with increase in management level ( $p < .001$ ), and

the former two did not. This apparent discrepancy is easily explained and, in a sense, is not really a discrepancy at all. In Table 13, it can be seen that the Pearson  $r$  between job level and pay satisfaction is a significant one ( $p < .001$ ). When pay is held constant (partial correlation), however, this relationship washes out. Thus, the significant relationship between management level and wage satisfaction is, as would be expected, a function of the relatively high inter-relationship between management level and pay ( $r = .60$ ,  $p < .001$ ); higher level managers are paid more. Andrews and Henry using  $\chi^2$  statistics were unable, though they suspected such, to observe or confirm this inter-relationship.

Other studies have shown significant relationships between wage satisfaction and education as well as other demographic variables. Discussion of these studies will be deferred, however, until the data from the salaried and hourly groups are presented.

The multiple correlation coefficient for the relationship between the five demographic variables and managers satisfaction with their pay was  $.37$  ( $p < .001$ ). This coefficient, though, statistically significant itself, was not significantly greater than the correlation of  $.33$  which was found between the best single predictor (actual pay) and satisfaction with pay; and is of little practical value since it leaves 87% of the variance in the dependent variable unexplained.

Salaried. In Table 14, data reflecting the relative importance of demographic variables in determining wage satisfaction are presented for salaried employees. Once again the most, and only, "useful" variable in this relationship is actual earnings. The relationship is not as strong as for the

Table 14. Relative Importance of Demographic Variables in Predicting Pay Satisfaction of Male Salaried Employees

| Variable  | r    | $\bar{r}$ | $\beta$ | $\bar{r}$ | Usefulness (F) |
|-----------|------|-----------|---------|-----------|----------------|
| Pay       | .14* | .14*      | .18     | .018      | .0177 (29.50)* |
| Education | -.03 | -.06      | -.06    | .004      | .0034 ( 5.67)  |
| Tenure    | .02  | -.05      | -.06    | .002      | .0022 ( 3.67)  |
| Job level | .03  | -.05      | -.06    | .002      | .0022 ( 3.67)  |
| Age       | .09* | .04       | .05     | .001      | .0014 ( 3.67)  |

\*p < .001

management sample, but it is evident that higher paid salaried employees are more satisfied with their pay. The multiple correlation of the demographic variables used with pay satisfaction was .17; also significant at the .001 level, but with a coefficient of multiple determination of .025 meaningless in a practical sense.

This author has been unable to find any other study dealing with a similar group of employees to compare with these data, but there is no reason to suspect that similar findings would not result.

Hourly Employees. Table 15 shows a very close resemblance to the two previous tables, and also that, again for

hourly employees, the most useful variable in understanding the bases for hourly wage satisfaction is actual income. No other variable shows even this low relationship with wage satisfaction in hourly employees. Thus, once again, for this sample it appears that higher wages are associated with higher satisfaction with one's income.

Table 15. Relative Importance of Demographic Variables in Predicting Wage Satisfaction of Male Hourly Employees

| Variable  | $r$  | $\bar{r}$ | $\beta$ | $\bar{r}^2$ | Usefulness (F) |
|-----------|------|-----------|---------|-------------|----------------|
| Pay       | .14* | .11*      | .12     | .012        | .0114 (26.27)* |
| Age       | .09* | .06       | .08     | .004        | .0036 ( 8.29)  |
| Education | .03  | .03       | .03     | .001        | .0011 ( 2.53)  |
| Job Level | .05  | .02       | .02     | .001        | .0006 ( 1.38)  |
| Tenure    | .07* | -.02      | .02     | .000        | .0003 ( 0.69)  |

\* $p < .001$

The multiple correlation coefficient of .16 ( $p < .001$ ) represents less than 3% of the variance associated with the dependent variable; more than 2% of which may be accounted for by salary alone.

It is interesting to note that unlike the other work groups the Pearson  $r$  for the independent variable of tenure becomes significant ( $p < .001$ ). This reemphasizes the very high dependence of pay upon "time with company" among hourly employees.

Thus, although a great deal of variability exists in the relative importance of the five demographic variables in determining wage satisfaction among the different employee

samples, generally it is safe to say the only variable showing even a modest relationship to satisfaction is one's present level of income. The higher a person's income the more likely is he to be satisfied with it. This is not a surprising finding, but somewhat paradoxical in light of past research.

One of the earliest studies on income satisfaction was conducted in 1946 by Centers and Cantril. A total of 1239 persons representing a cross-section of the national population 18 years of age or older were asked in what weekly income group they belonged, and "About how much more money than that do you think your family would need to have things that might make your family happier or more comfortable than it is now?" The general conclusions of their study are in complete accord with the data at hand. It was determined that:

1. Over one-half of the population is dissatisfied with present income. The present study indicates 67.3% of all workers are dissatisfied to some degree.

2. The higher an employee's income the more likely he is to be satisfied with it.

3. Occupational differences exist but are subordinate in importance to income differences.

4. Satisfaction and dissatisfaction vary with income quite irrespective of education within the income group.

In addition to the above, Centers and Cantril (1946) determined that "for those who are dissatisfied, it is generally true that the more money a person has the more money

he wants." Herein were planted the seeds of paradox.

Ganguli (1957b) translated the above statement of Centers and Cantril to form the beginnings of a theory of income aspiration. Ganguli (1957b), in a study of Indian factory workers, found a correlation of .40 between present earnings and income expectation. In other words, a person's present income serves a frame of reference by which he sets his aspirations; "...the more money he gets the more money he wants." Ganguli also found that although age had no effect, a person's financial aspiration depends to some extent on his education and also on length of service with the company. Thus, a person with a higher education or the person with longer service would expect more money than the less educated or more recently hired individual. The paradox was completed when carried to its logical conclusion. Workers with higher financial expectation were significantly more dissatisfied than those with lower expectation (Ganguli, 1957b). Thus, the paradox: If higher financial aspiration leads to higher income dissatisfaction, and higher pay is associated with higher levels of aspiration, it follows that higher paid workers should have higher levels of dissatisfaction. But all income satisfaction studies report the higher paid as being more satisfied with their income!

Other conclusions would also logically follow which are not generally supported by research findings. First, since better educated workers report higher income aspiration,



one would expect those employees with a higher level of education to be less satisfied with their wages. One study of education level and satisfaction with pay does appear to confirm this hypothesis. Klein and Maher (1966), reporting on operational measurements of the general concept of personal expectations of 727 foreman or first-line supervisors, reached the following conclusions:

1. Higher education is associated with relative dissatisfaction with pay, and
2. These differences in satisfaction for individuals with different levels of education are not due to differences in actual level of salary.

This author would suggest, however, that Klein and Maher (1966) based their second conclusion on faulty assumptions. Klein and Maher assume that by controlling for age and skill level as "approximations of salary level" they have removed any affects of differential wages among these groups. This may or may not be the case.

How then can this paradox be resolved? A very simple solution is possible. Higher paid employees may well expect higher wages and it may well be that higher wage aspirations may lead to a predisposition to dissatisfaction. But those groups of individuals who have been shown to expect higher wages in studies such as Ganguli (1957b), Centers and Cantril (1946) and Klein and Maher (1966) are the same groups which, in fact, do receive higher wages as shown in research such as

Lawler and Porter (1966) and the present study. Thus, these expectations of higher wages are, to some degree at least, met. It is suggested that expectation will only relate to dissatisfaction in employees where these expectations are not fairly well fulfilled. Higher-level managers, for instance, may expect more pay, but they get it. Higher educated employees are also paid more. The findings of Klein and Maher (1966), as well as the findings of Andrews and Henry (1963), can be attributed to the methodology used for statistical analysis. Both, using chi-square methodology, were unable to effectively control for differences in actual income. All studies which have reported present pay as the only variable useful in predicting wage satisfaction (Centers and Cantril, 1946; Lawler and Porter, 1966; and the present study) employed multiple regression techniques allowing one to partial out the effects of each variable individually.

#### Group Variability

Throughout previous sections of this paper numerous references have been made to group differences in the relative importance of the demographic variables. A clearer picture of these group differences may be seen in Figure 1 and 2. Figure 1 is a graphic representation of the magnitude of the partial correlations for each independent variable and actual pay for male hourly, salaried and management employees. Figure 2 shows the same representation for the dependent variable of wage satisfaction.

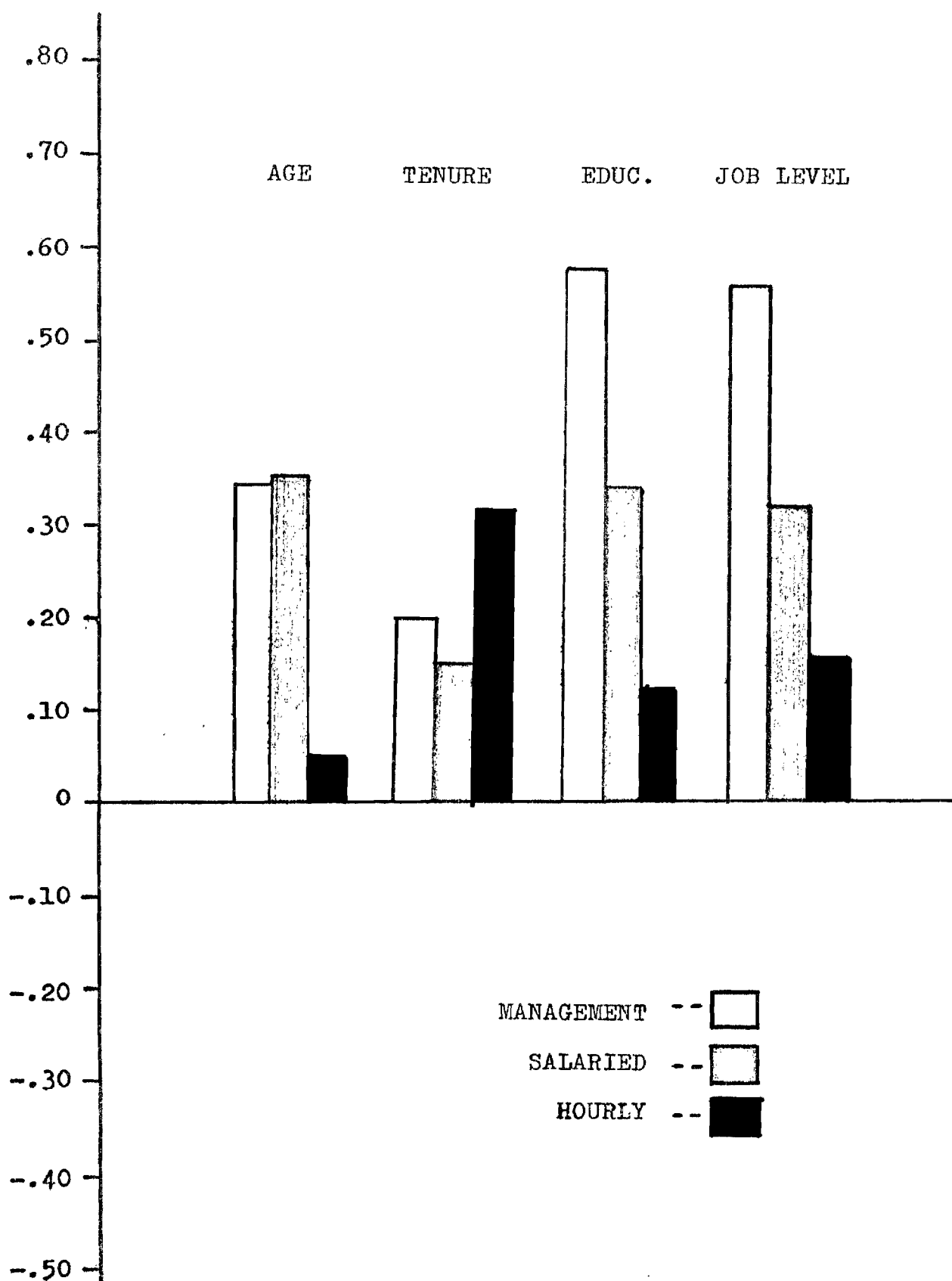


Figure 1. Partial Correlations of Independent Variables and Wages.

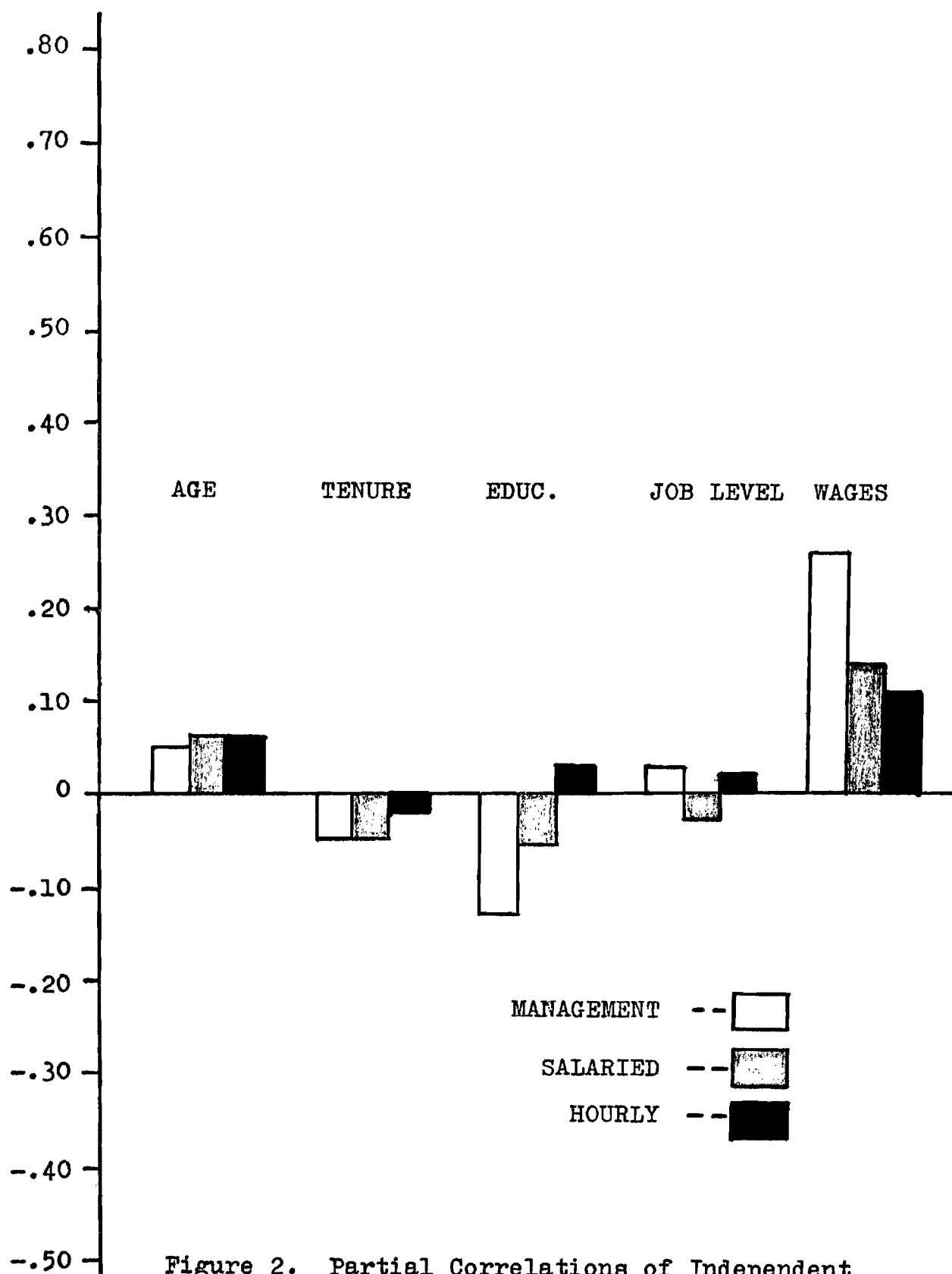


Figure 2. Partial Correlations of Independent Variables and Wage Satisfaction.

An interesting and significant feature of Figure 2 should be noted. When considering their importance in contributing to one's satisfaction with his income it appears that actual pay holds a greater relative importance for management personnel than for salaried employees, and for members of the hourly group. It will be recalled that according to Maslow's theory of need fulfillment (See Introduction) pay, a lower-order need, should become less important as the need for it becomes better fulfilled. Thus, the present study is at variance with Maslow. According to Figure 2, as one's occupational level, and along with it one's income, increases, pay becomes more, not less important.

It appears as if income is a much more complex factor than Maslow's theory would indicate. It is easy to see that money for higher-paid employees becomes more than just a maintenance need which when fulfilled to a comfortable level loses its importance. Money becomes important for fulfillment of higher-order needs such as esteem, prestige and self-actualization. Money may become an index by which an individual measures his success in life. Thus, money is far more complex and important than indicated by Maslow's point of view. Evidence supporting these findings and suppositions are given by Myers (1964), Porter (1961), Phelan (1969) and were discussed in the introduction to this paper.

#### Wages versus Wage Satisfaction

It was earlier suggested that perhaps it may be desira-

ble for the determinants of a person's pay to be related to the determinants of that individual's satisfaction with his income. While no pretense is made that any evidence bearing on the validity of the above assumption is presented by this study, it is apparent that for the employees in the present sample, variables highly related to wages have no significant importance in determining the degree to which they are satisfied with their perceived income. This relationship is quite dramatically obvious in Figures 3, 4 and 5. Figure 3 is a graphic representation of the magnitude of the partial and multiple correlation of the demographic variables with both wages and wage satisfaction for the management group. Figures 4 and 5 present the same information for the salaried and hourly samples respectively. In each case the comparison of the coefficients of multiple correlation for both dependent variables revealed a highly significant difference ( $p < .001$ ;  $t = 12.47, 16.56$  and  $10.97$  for management, salaried and hourly personnel in that order).

The implications of the above results are obvious. If it is an objective of an organization to provide its employees with an income which will result in a general attitude of wage satisfaction, then distribution of wages should be based primarily on variables other than age, job level, education or length of service and probably other variables of the demographic type.

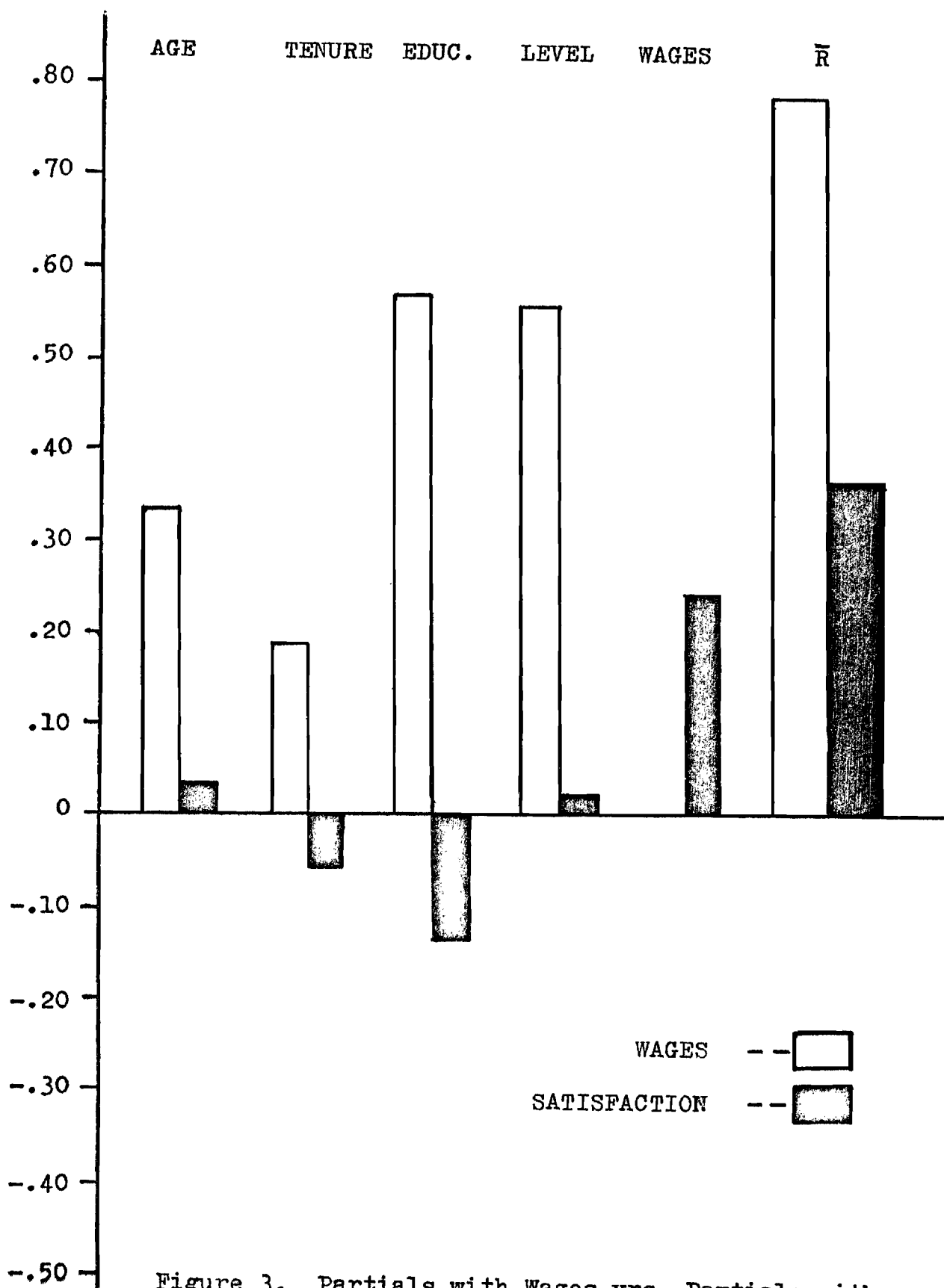


Figure 3. Partials with Wages vrs. Partials with Satisfaction--Management

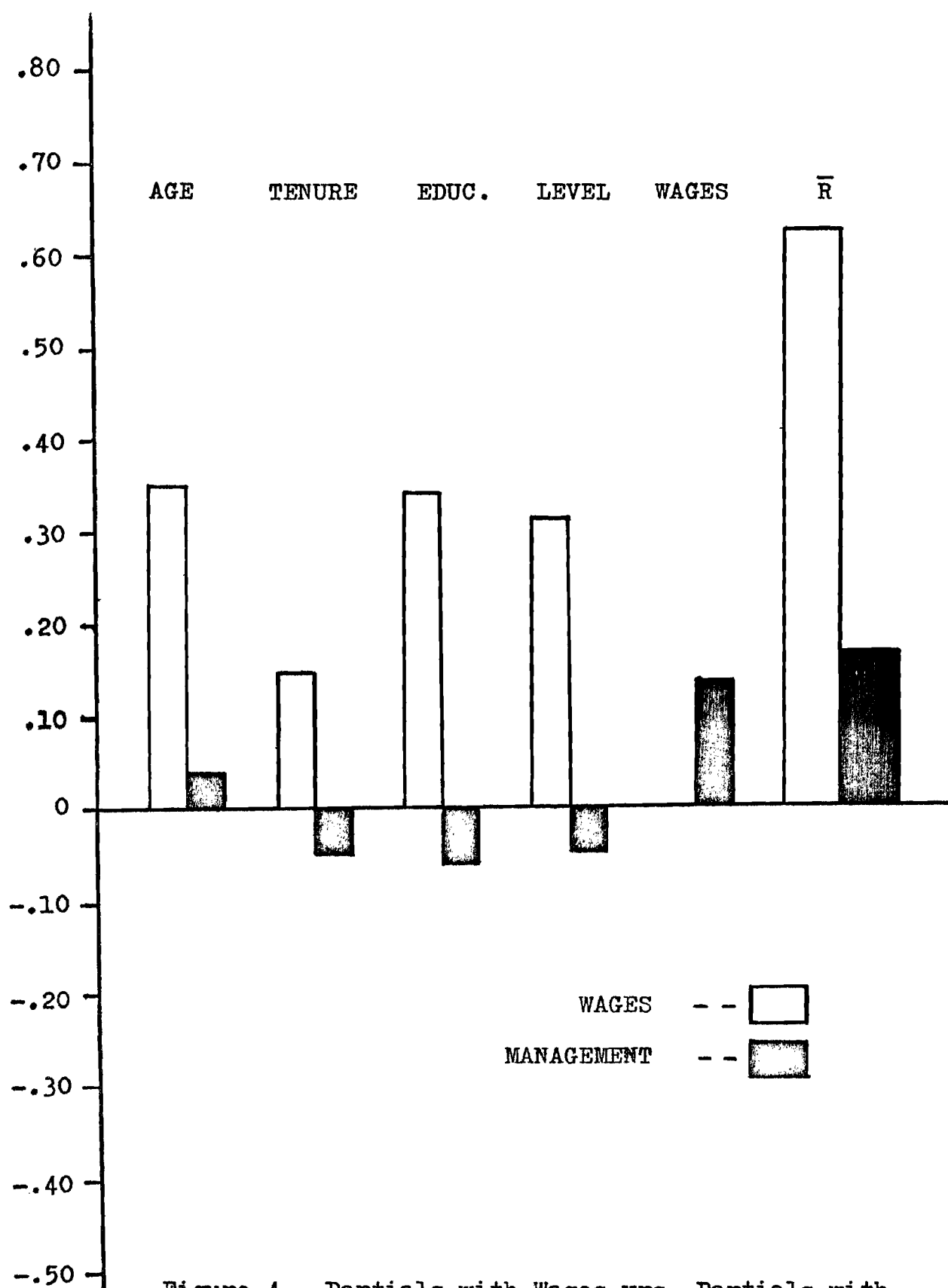


Figure 4. Partials with Wages vrs. Partials with Satisfaction--Salaried.



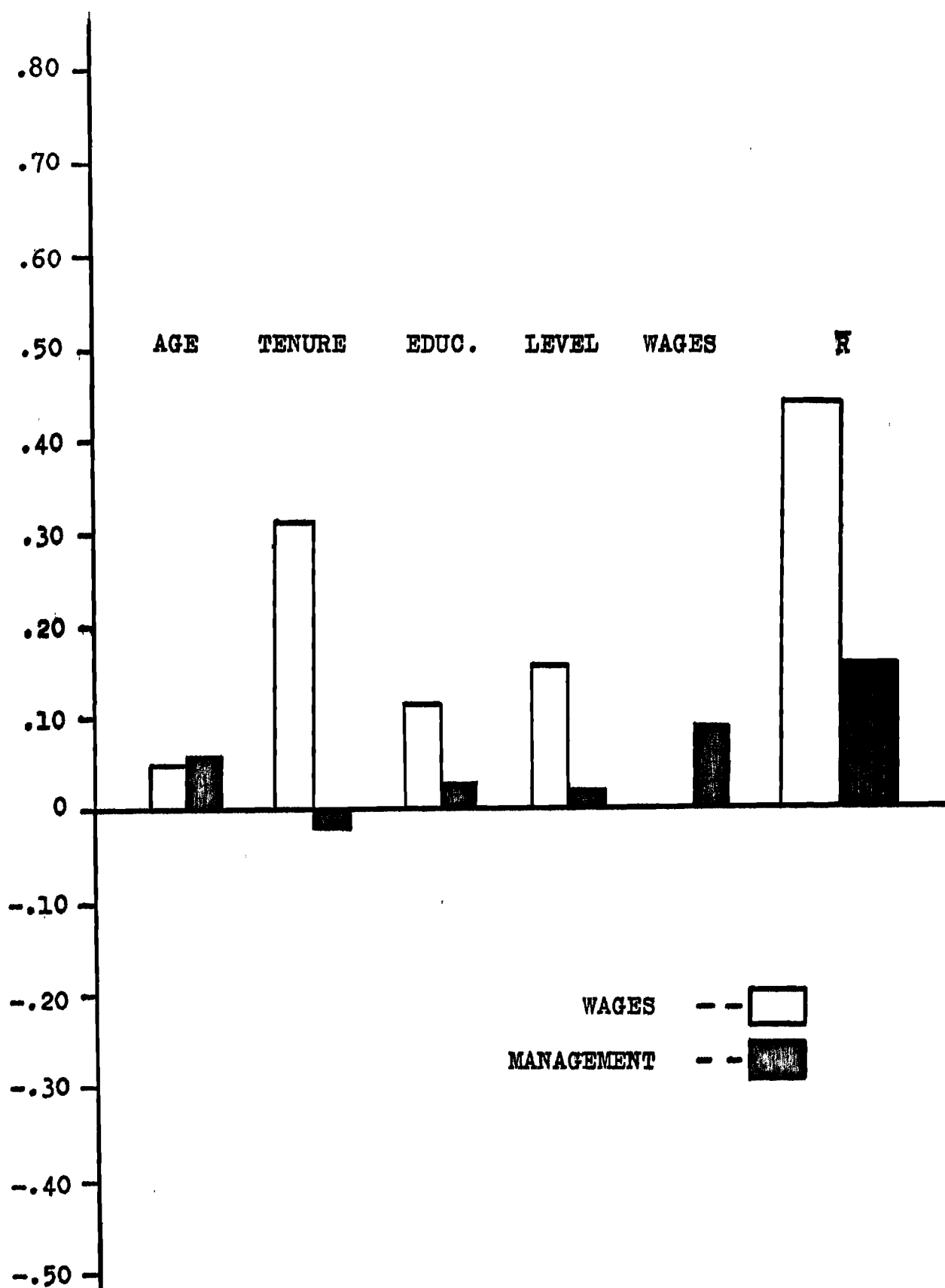


Figure 5. Partials with Wages vrs. Partials with Satisfaction-- Hourly

### Sex Differences

A prevalent finding in studies of satisfaction with the job has been the moderating effect of the sex variable. However, the studies comparing men and women in job satisfaction do not lead to any simple conclusion about such differences (Herzberg, Mausner, Peterson, and Capwell, 1957).

Suspecting that sex differences may also be found in the determinants of wages and wage satisfaction, the general regression analysis was recomputed in this study for the salaried and hourly samples with females included. A lack of female management employees precluded any recomputation for sex differences in that group. Not only were sex differences found but group differences were again shown.

The results imply that both hourly and salaried female employees receive significantly less pay than males ( $p < .001$ ). For hourly employees sex becomes the most important variable in determining one's wage ( $\bar{r} = -.45$ ). For salaried employees sex is the least important, though still significant, factor in determining wages. Although hourly women are paid less than men in the same group, they are more satisfied with their earnings than men ( $\bar{r} = .18$ ,  $p < .001$ )! Thus, it seems that being paid less than their male counterparts is not a source of dissatisfaction for female hourly workers. This is consistent with the finding that wages are usually ranked lower in importance by females than males (Herzberg, et al., 1957). Women are more concerned with working conditions and social

aspects of the job than pay. Sex is not a significantly important variable in salaried worker's wage satisfaction ( $r = .06$ ). This last fact, coupled with the finding that sex is a relatively unimportant factor in determining wages of salaried workers, supports the general notion that job attitudes of women who are career oriented are more similar to those of men than are job attitudes of non-career women (Herzberg, et al., 1959). Hourly females are less likely to be career workers than salaried women.

Herzberg, Mausner, Peterson and Capwell (1957) review 21 studies bearing on this problem. Six of these show women more satisfied than men, three show women less satisfied than men; and in five, no differences are found. It is quite possible, as suggested from the above, that differences in occupational groups from which samples were selected may be responsible for some of the contradiction among these studies.

## CHAPTER IV

### RESEARCH LIMITATIONS, CONCLUSIONS AND RECOMMENDATIONS

#### Conclusions and Recommendations

Several of the major findings of the present study have important implications for both research and application concerning salary. In general these findings are as follows:

1. The determinants of pay for managerial, salaried and hourly employees appear to be largely demographic in nature such as age, education, seniority and job level. This is suggested by the relatively high multiple correlations of these variables with the actual pay received by members of these work groups.

2. The low multiple correlations between these same demographic variables and satisfaction of managerial, salaried, and hourly employees with their pay indicate that it is very difficult to predict satisfaction with income from these kinds of factors. Satisfaction with pay must, undoubtedly, bear a lawful relationship with some factors, but the present research suggests that such demographic variables are not important determinants of it.

3. Actual pay was the only variable even modestly related to pay satisfaction. Higher-paid employees are, in

general, better satisfied with their pay. It had been assumed by some that being paid more will simply raise one's expectations of what he should be paid and as a result one would be no better, if not less, satisfied with his pay. The results of the present study do not support this view. Other things equal, higher pay within a work group is associated with higher wage satisfaction.

4. Samples of hourly, salaried-nonsupervisory, and management employees may not be assumed to come from the same population. Important group differences exist between these samples which preclude generalization to another work group research findings based on data from one of them alone.

5. Sex may have a moderating effect on wage satisfaction such that women, though paid less, are more satisfied with their earnings than their male co-workers.

Those who are responsible for company salary policies often voice the belief that pay should be primarily a function of the job difficulty, amount of responsibility, and level of performance required. Thus, they frequently design and implement a program of job analyses, job descriptions, job evaluations, salary structures, and merit reviews. Unfortunately, a number of problems arise with such a program. It is often very difficult to obtain satisfactory measures of levels of work and responsibility, and even more difficult to obtain reliable and relevant evaluations of individual job performance.

For these reasons, another approach to salary distribution has become common which involves the use of more easily measured variables assumed to be closely related to salary (Chandler, et al., 1963). Employee characteristics of age, seniority, education, sex and job level have been shown to be highly related to one's income. It is relatively easy to obtain reliable measures of such demographic variables. It is questionable, however, that a salary program so highly dependent on these variables would be desirable since it has also been shown that these variables have no significant relationship with one's satisfaction with his pay. Thus, further research is recommended to determine those variables more highly related to salary satisfaction. These variables will be much more subtle and more difficult to measure, but salary and wage programs based on them are more likely to result in satisfied workers.

Profitable directions for future work are hinted at by the work of Patchen (1961). As mentioned previously, it is Patchen's view that satisfaction with one's wages is highly dependent upon his choice of wage comparisons; that is, upon his relative standing on earnings and his relative status on dimensions related to earnings with those to whom he chooses to compare himself. Those who choose dissonant comparisons are less likely to be satisfied with their earnings than those who choose consonant comparisons. The "direction" of a wage comparison is meaningful to individuals only in the context

of relative standing on other status attributes (Patchen, 1961). What is now needed is a more complete understanding of what factors dictate the wage comparisons an individual will choose.

Another fruitful direction may be pointed to by the recent work of Lawler and Hackman (1970) who have discovered that employees who were allowed to participate in the development of pay incentive plans were possibly more satisfied with them and possibly with their job as evidenced by a substantial, long-lasting reduction in absenteeism. In fact, it has been suggested that greater wage satisfaction may result if the employee is allowed to select or reject on an individual basis, various benefits such as insurance, savings, vacation, retirement, and profit sharing plans such that he actually tailormakes his compensation package (Haire, Ghiselli and Porter, 1963).

In short, when investigating and implementing wage programs designed to create satisfied workers the temptation to deal with the most convenient, easily measured variables must be avoided and methods must be developed to reach into the more complex aspects of pay satisfaction for more meaningful factors upon which to base such programs.

Not independent of the above discussion, which carries with it a feel for the importance of reference groups, is the prevalent indication of group differences in the present research. This author is inclined to agree with the position

of England and Stein (1961) who concluded that, "specific attitudinal areas may be crucial for some occupational groups and not for others and this implies that the use of scores on the same attitude scale for all groups may hide more than it reveals." This and the statement of Strong (1958) that "A way must be found to consider only those who are really satisfied or dissatisfied with each factor and to disregard those who don't really care about the factor," seem most appropriate for wage and wage satisfaction research. Perhaps attitude scales should be developed for each occupational group. The present research indicates that studies of workers in the organization should at least draw separate samples of hourly and non-hourly employees stratified by sex.

Turning to the motivational aspects of wages and wage satisfaction, the inability of Maslow's basic need theory to account for the finding of the present research that level of pay appears as a relatively more important factor in determining wage satisfaction in higher-paid employees than the less highly paid and the general difficulty of Herzberg's "dual factor" theory with respect to pay (supported by the indication in the present research that wages are important as a satisfier as well as a dissatisfier), leads this author to search for another conceptual model upon which to base future research.

A base for such a model is the work of Georgopoulos, Mahoney and Jones (1957). These authors addressed themselves



to the problem of explaining industrial motivation by first assuming that individuals in the work situation have certain goals in common. The achievement of these goals satisfy certain corresponding needs. By also assuming that human behavior is in part a function of rational calculability, or decision making in terms of goal-directedness, they arrived at a "path-goal" approach to the problem. This approach is based on the following assumptions: "individual productivity is, among other things a function of one's motivation to produce at a given level; in turn, such motivation depends upon (a) the particular needs of the individual as reflected in the goals toward which he is moving and (b) his perception regarding the relative usefulness of productivity behavior as an instrumentality, or a path to the attainment of these goals." People will maintain certain needs, they will seek and pursue among available goals those which they perceive will satisfy these needs. Thus, the "path-goal hypothesis": "If a worker sees high productivity as a path leading to the attainment of one or more of his personal goals, he will tend to be a high producer. Conversely, if he sees low productivity as a path to the achievement of his goals, he will tend to be a low producer (Georgopoulos, et al., 1957)." Certainly money must be considered a primary goal of the worker. In addition, monetary incentives can not be considered apart from all of the worker's other needs (Whyte, 1963). The important point is that the worker must be made to perceive his

change in behavior (increased productivity) as a path to a goal (money). The advantage of a monetary incentive is that it may serve to fulfill a vast number of complex needs beyond those of maintenance (which Maslow suggested). Pay is more important for what it represents (Myers, 1964). Pay may represent a form of self-actualization, an index of achievement or status, power, etc. Underlying this hypothesis is the conviction that company goals (increased productivity in whatever form) can best be served by providing the employee an opportunity to obtain his personal goals. The hypothesis maintains that goal paths will be chosen according to their utility for reaching the goals. Parker (1963) tested this hypothesis on 1,716 pharmaceutical warehouse workers and found a significant relationship between perceived performance instrumentality and group productivity. This was taken to indicate that, if worker goals and perceptions concerning what types of behavior lead to the goals are known, prediction of behavior seems possible.

Using the "path-goal" approach and incorporating the general conclusions of the present and other research, a conceptual model of the relationship between wages, wage-satisfaction (as a dimension of job satisfaction) and job performance may be developed which hopefully will be productive in development of future research. This model is represented schematically in Figure 6. This closed loop system depends upon each link to provide a clear relationship

Assuming earning money is a goal of the average worker:

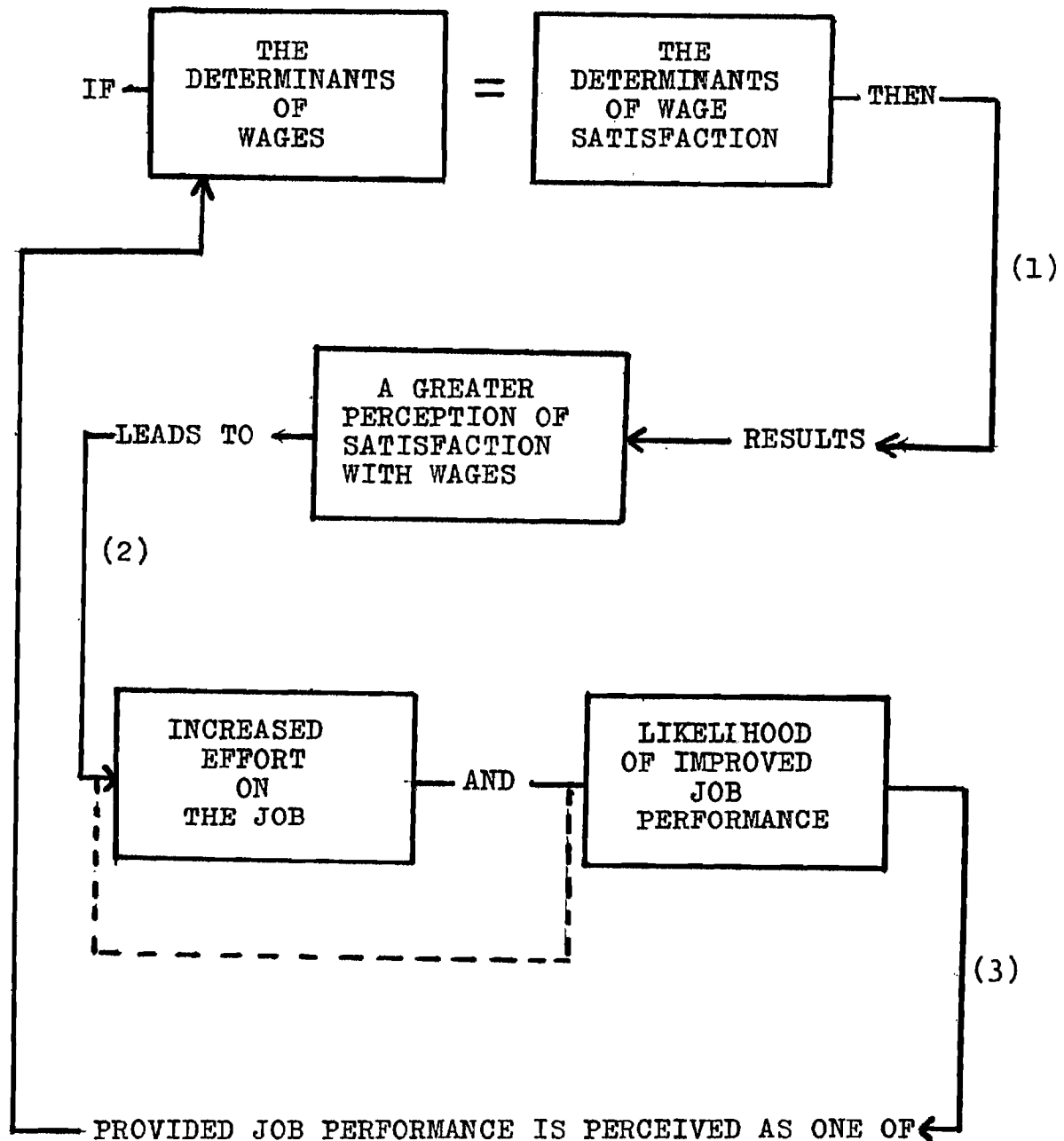


Figure 6. Incorporated Model of Wages, Wage Satisfaction, and Their Relation to Job Performance

between a wage program and job performance. If the determinants of wages are not associated with the determinants of satisfaction, the relationship is broken. Likewise, if the worker does not perceive improved performance as a path to gaining higher monetary compensation of the model does not hold. Link (1), the only original contribution, was postulated as a result of the present research and remains untested. Link (2) was derived from and empirically supported by Lawler (1964) (See Introduction), Link (3) is a common argument of Lawler (1964) and Georgopoulos, et al. (1963) and receives positive empirical support in both studies. As mentioned before, the overall framework of Figure 6 is the path-goal hypothesis of Georgopoulos, Mahoney and Jones which has been successfully supported by Parker (1963). It is recommended that research be conducted to verify or reject this model. The general model states that: if the determinants of wages closely approximate the determinants of wage satisfaction, then a greater perception of satisfaction with wages is more likely to result among employees. It has been shown that those more satisfied with their wages are more often rated high on measures of effort and performance. And this total relationship exists only if the worker perceives job performance as a determinant of wages. This model could probably be applied to any other well-established dimension of job satisfaction.

In summary then, it appears as though, like job

satisfaction, pay as an important dimension of job satisfaction, is an extremely complex factor which cannot be easily separated from many other needs and goals of the industrial worker. A great deal of research is needed to discover those factors which determine whether an employee is satisfied with his present income or not. Upon discovery of these factors, wage and salary, and incentive programs should be built around them.

#### Limitations of This Research

The present research has dealt with pay satisfaction as a gross measure of equity. No distinction was made between those who indicated dissatisfaction due to perceived overpayment and those dissatisfied by perceived underpayment. It is quite possible the factors in this study may be related differently within such groups.

A more serious limitation of the present research is the lack of more sophisticated statistical techniques with which to compare correlation coefficients across more than two samples or more than two variables. A technique similar to multiple comparisons among group means is needed to avoid problems of serial dependency in testing for significant differences. Thus, many comparisons in the present research were based on observation as have similar comparisons in past research.

Another possible limitation is the use of a linear

model in all regression analyses. It is conceivable that many of the relationships tested have curvilinear properties left undetected by the techniques used.

## APPENDIX A

|                                | Page |
|--------------------------------|------|
| Management Questionnaire ..... | 77   |
| Salaried Questionnaire .....   | 80   |
| Hourly Questionnaire .....     | 83   |

# EMPLOYEE OPINION STUDY

77

This questionnaire has been prepared by Georgia Tech, at the request of Lockheed management, to obtain employees' opinions of their jobs and the Company. The Company and Georgia Tech agreed that this survey will be absolutely anonymous. No individual will be identified; the Company will see no records of individual opinions. Only a summary of the ideas and opinions collected will be given to the Company.

**NOTE:** (1) This questionnaire was mailed directly from Georgia Tech. It should be returned directly to Georgia Tech. It will never be seen by anyone from [redacted].

(2) You are not required to answer every question.

## PLEASE DO NOT SIGN YOUR NAME

Use the enclosed envelope to mail this questionnaire directly to: **GEORGIA INSTITUTE OF TECHNOLOGY, Opinion Study Project, Atlanta, Georgia 30332.**

## GENERAL INFORMATION

**Your Organization:** In Row One, circle the first number of your organization.

In Row Two, circle the second number of your organization.

(Example: If you are in 72-44, you would circle 7 in Row One and 2 in Row Two.)

|    |         |   |   |   |   |   |   |   |   |   |   |   |
|----|---------|---|---|---|---|---|---|---|---|---|---|---|
| 8- | Row One | — | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 9- | Row Two | — | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(Answers from small organizations will be combined with those from related organizations to protect individual anonymity.)

**Your sex is:** Male \_\_\_\_\_ 10-1 Female \_\_\_\_\_ -2

### AGE (check one)

|       |       |      |
|-------|-------|------|
| 18-29 | _____ | 11-1 |
| 30-39 | _____ | -2   |
| 40-49 | _____ | -3   |
| 50-59 | _____ | -4   |
| 60 +  | _____ | -5   |

### WEEKLY SALARY (check one)

|               |       |      |
|---------------|-------|------|
| \$135 or Less | _____ | 12-1 |
| \$136 - 193   | _____ | -2   |
| \$194 - 250   | _____ | -3   |
| \$251 - 325   | _____ | -4   |
| \$326 - 383   | _____ | -5   |
| \$384 +       | _____ | -6   |

### WORK LOCATION (check one)

|             |       |      |
|-------------|-------|------|
| Charleston  | _____ | 13-1 |
| Chattanooga | _____ | -2   |
| Clarksburg  | _____ | -3   |
| Dawsonville | _____ | -4   |
| LIP         | _____ | -5   |
| Logan       | _____ | -6   |
| Marietta    | _____ | -7   |
| Other       | _____ | -8   |

(write in)

### YEAR FIRST HIRED

|             |       |      |
|-------------|-------|------|
| 1967        | _____ | 14-1 |
| 1965-66     | _____ | -2   |
| 1963-64     | _____ | -3   |
| 1961-62     | _____ | -4   |
| 1959-60     | _____ | -5   |
| 1957-58     | _____ | -6   |
| 1955-56     | _____ | -7   |
| 1953-54     | _____ | -8   |
| 1951-52     | _____ | -9   |
| Before 1951 | _____ | -0   |

### LEVEL OF EDUCATION

|                           |       |      |
|---------------------------|-------|------|
| Less than High School     | _____ | 15-1 |
| High School Graduate      | _____ | -2   |
| Business/Technical School | _____ | -3   |
| Some College              | _____ | -4   |
| Bachelor's Degree         | _____ | -5   |
| Advanced Degree           | _____ | -6   |

### FIELD OF EDUCATION

|                     |       |      |
|---------------------|-------|------|
| Business or Finance | _____ | 16-1 |
| Engineering         | _____ | -2   |
| Law                 | _____ | -3   |
| Liberal Arts        | _____ | -4   |
| Science             | _____ | -5   |
| Other               | _____ | -6   |

(write in)

### LEVEL OF MANAGEMENT (check one)

Office Level or Higher \_\_\_\_\_; 17-1 Department or Division Mgr. \_\_\_\_\_; -2 1st Line Supervisor \_\_\_\_\_ -3

## SECURITY REGULATIONS REMINDER

In your written comments do not reveal any classified information or Company proprietary information.

## INSTRUCTIONS

On the following pages are some questions which ask you to give your opinions on various aspects of your job and the Company. Rate your answers to each question by circling one number on each rating scale, with 7 being the highest rating, and 1 the lowest. Numbers between 1 and 7 should be used for ratings between "very little" and "very much" or between "not important" and "very important." (LOOK AT THE EXAMPLE WHICH IS ALREADY MARKED.)

### YOUR SUPERVISOR'S ABILITY TO GIVE CLEAR INSTRUCTIONS:

How much ability does he have?  
very little 1 2 3 4 5 6 7 very much

How much should he have?  
very little 1 2 3 4 5 6 7 very much

How important is this to you?  
not important 1 2 3 4 5 6 7 very important

DO NOT CIRCLE ANYTHING BUT NUMBERS



**FEELING A PART OF THE TEAM:**

- 15- How much do you feel a part of the team?  
very little 1 2 3 4 5 6 7 very much
- 16- How much should you feel a part of it?  
very little 1 2 3 4 5 6 7 very much
- 17- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**COMPANY TREATMENT OF EMPLOYEES:**

- How much does the Company consider individuals in making decisions?
- 18- very little 1 2 3 4 5 6 7 very much
- 19- How much should it consider individuals?  
very little 1 2 3 4 5 6 7 very much
- 20- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**COMPANY REPUTATION:**

- How much prestige does the Company have in the aircraft industry?
- 21- very little 1 2 3 4 5 6 7 very much
- 22- How much should it have?  
very little 1 2 3 4 5 6 7 very much
- 23- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**YOUR CONTRIBUTION TO COMPANY PRODUCTS:**

- How much do you feel your job contributes?
- 24- very little 1 2 3 4 5 6 7 very much
- 25- How much would you like to feel it contributes?  
very little 1 2 3 4 5 6 7 very much
- 26- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**CONTACT WITH FELLOW WORKERS OUTSIDE WORKING HOURS:**

- How much do you associate with fellow workers outside working hours?
- 27- very little 1 2 3 4 5 6 7 very much
- 28- How much should you associate?  
very little 1 2 3 4 5 6 7 very much
- 29- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**YOUR WORK PLACE:**

- How much do your working conditions help you do a good job?
- 30- very little 1 2 3 4 5 6 7 very much
- 31- How should they help?  
very little 1 2 3 4 5 6 7 very much
- 32- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY TO OBTAIN GOOD EQUIPMENT, SUPPLIES AND MATERIALS:**

- How much is there?
- 33- very little 1 2 3 4 5 6 7 very much
- 34- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 35- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**HIGHER MANAGEMENT'S SUPPORT OF YOUR SUPERVISOR:**

- How much backing does he get?
- 36- very little 1 2 3 4 5 6 7 very much
- 37- How much backing should he get?  
very little 1 2 3 4 5 6 7 very much
- 38- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**COOPERATION AMONG YOUR FELLOW WORKERS:**

- How much teamwork is there?
- 39- very little 1 2 3 4 5 6 7 very much
- 40- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 41- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**PRESTIGE OF YOUR JOB OUTSIDE THE COMPANY:**

- How much prestige does your job have outside the Company?
- 42- very little 1 2 3 4 5 6 7 very much
- 43- How much prestige should your job have outside the Company?  
very little 1 2 3 4 5 6 7 very much
- 44- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**THE PRESTIGE OF YOUR JOB IN THE COMPANY:**

- How much prestige does your job have?
- 45- very little 1 2 3 4 5 6 7 very much
- 46- How much should it have?  
very little 1 2 3 4 5 6 7 very much
- 47- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**YOUR JOB WORK LOAD:**

- How much work do you have?
- 48- very little 1 2 3 4 5 6 7 very much
- 49- How much should you have?  
very little 1 2 3 4 5 6 7 very much
- 50- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**COOPERATION BETWEEN DEPARTMENTS:**

- How much is there?
- 51- very little 1 2 3 4 5 6 7 very much
- 52- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 53- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**HIGHER MANAGEMENT APPRECIATION OF THE IMPORTANCE OF YOUR WORK:**

- How much is there?
- 54- very little 1 2 3 4 5 6 7 very much
- 55- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 56- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**RECOGNITION FOR GOOD IDEAS OR GOOD WORK:**

- How much do you get?
- 57- very little 1 2 3 4 5 6 7 very much
- 58- How much should you get?  
very little 1 2 3 4 5 6 7 very much
- 59- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY TO CHANGE JOBS WITHIN THE COMPANY:**

- How much is there?
- 60- very little 1 2 3 4 5 6 7 very much
- 61- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 62- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY FOR PROMOTION FROM YOUR JOB:**

- How much opportunity is there?
- 63- very little 1 2 3 4 5 6 7 very much
- 64- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 65- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**FAIRNESS OF PROMOTION PROCEDURES:**

- How much fairness is there?
- 66- very little 1 2 3 4 5 6 7 very much
- 67- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 68- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**GOOD PLANNING AND SCHEDULING OF WORK BY YOUR SUPERVISOR:**

- How much is there?
- 69- very little 1 2 3 4 5 6 7 very much
- 70- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 71- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**COMPANY PLANNING FOR THE FUTURE:**

- How much is there?
- 72- very little 1 2 3 4 5 6 7 very much
- 73- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 74- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**FREEDOM TO MAKE DECISIONS IN YOUR WORK:**

- How much is there?
- 75- very little 1 2 3 4 5 6 7 very much
- 76- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 77- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY TO USE YOUR SPECIAL SKILLS AND ABILITIES:**

- How much opportunity do you have?
- 78- very little 1 2 3 4 5 6 7 very much
- 79- How much opportunity should you have?  
very little 1 2 3 4 5 6 7 very much
- 80- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**YOUR SUPERVISOR'S TECHNICAL JOB KNOWLEDGE:**

- How much knowledge does he have?
- 7- very little 1 2 3 4 5 6 7 very much
- 8- How much should he have?  
very little 1 2 3 4 5 6 7 very much
- 9- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**COMPANY SPONSORED TRAINING FOR YOUR JOB:**

- How much training have you received?
- 10- very little 1 2 3 4 5 6 7 very much
- 11- How much should you have received?  
very little 1 2 3 4 5 6 7 very much
- 12- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY FOR EDUCATION OR TRAINING TO KEEP ABREAST OF YOUR FIELD:**

- How much opportunity is there?
- 13- very little 1 2 3 4 5 6 7 very much
- 14- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 15- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY IN YOUR JOB TO DEVELOP NEW SKILLS AND KNOWLEDGE:**

- How much is there?
- 16- very little 1 2 3 4 5 6 7 very much
- 17- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 18- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**PROMPT ACTION ON YOUR COMPLAINTS AND PROBLEMS BY YOUR SUPERVISOR:**

- How much is there?
- 19- very little 1 2 3 4 5 6 7 very much
- 20- How much should there be?  
very little 1 2 3 4 5 6 7 very much
- 21- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**INFORMATION ABOUT WHAT YOUR SUPERVISOR EXPECTS OF YOU:**

- How much information about your job responsibilities do you get?
- 22- very little 1 2 3 4 5 6 7 very much
- 23- How much should you get?  
very little 1 2 3 4 5 6 7 very much
- 24- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**INFORMATION RELATING TO COMPANY OPERATIONS:**

- How much information does the Company provide?
- 25- very little 1 2 3 4 5 6 7 very much
- 26- How much should be provided?  
very little 1 2 3 4 5 6 7 very much
- 27- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**YOUR SUPERVISOR'S ABILITY TO GET ALONG WITH PEOPLE:**

- How much ability does he have?
- 28- very little 1 2 3 4 5 6 7 very much
- 29- How much should he have?  
very little 1 2 3 4 5 6 7 very much
- 30- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**FEELING OF SATISFACTION FROM THE TYPE OF WORK YOU DO:**

- How much satisfaction do you get?
- 31- very little 1 2 3 4 5 6 7 very much
- 32- How much should you get?  
very little 1 2 3 4 5 6 7 very much
- 33- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**SATISFACTION FROM GOOD WORK:**

- How much satisfaction do you get from doing good work on your job?
- 34- very little 1 2 3 4 5 6 7 very much
- 35- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**PAY FOR THE WORK WHICH YOU DO:**

- How high is it?
- 36- very low 1 2 3 4 5 6 7 very high
- 37- How high should it be?  
very low 1 2 3 4 5 6 7 very high
- 38- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

## THE "ZERO DEFECTS" PROGRAM

79

Rate each of the following by circling a number on the rating scale from 1 to 7.

|     |                                  | very<br>poor |   |   |   |   |   |   | very<br>good |
|-----|----------------------------------|--------------|---|---|---|---|---|---|--------------|
| 18- | The Idea of Zero Defects         | 1            | 2 | 3 | 4 | 5 | 6 | 7 |              |
| 19- | Applicability of ZD to Your Job  | 1            | 2 | 3 | 4 | 5 | 6 | 7 |              |
| 20- | The Fairness of ZD Awards        | 1            | 2 | 3 | 4 | 5 | 6 | 7 |              |
| 21- | Charting of ZD Progress          | 1            | 2 | 3 | 4 | 5 | 6 | 7 |              |
| 22- | Effect of ZD on Your Performance | 1            | 2 | 3 | 4 | 5 | 6 | 7 |              |

What do you feel is the purpose of the Zero Defects program? \_\_\_\_\_

What is the chief result of the Zero Defects program? \_\_\_\_\_

## OTHER ASPECTS OF YOUR JOB AND THE COMPANY

Consider the following items. Rate your opinion of each by circling a number from 1 to 7 at the left. Then indicate its importance to you by circling a number at the right.

|     | very poor |   |   |   |   |   |   |  | very good |   |   |   |   |   |   |   | Not Important |   |   |   |   |   |   |   | Very Important |  |  |  |  |  |  |
|-----|-----------|---|---|---|---|---|---|--|-----------|---|---|---|---|---|---|---|---------------|---|---|---|---|---|---|---|----------------|--|--|--|--|--|--|
| 23- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Credit Union                             | 53-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 24- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Savings Plan                             | 54-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 25- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Retirement Plan                          | 55-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 26- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Tuition Reimbursement                    | 56-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 27- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Group Insurance Plan                     | 57-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 28- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Vacation Policy                          | 58-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 29- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Sick Leave Policy                        | 59-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 30- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Disciplinary Policy                      | 60-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 31- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Promotion from Within                    | 61-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 32- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | B.O.M.C                                  | 62-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 33- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | G.L.E.R.C.                               | 63-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 34- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Plant Medical Services                   | 64-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 35- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Food Services                            | 65-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 36- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Management Club                          | 66-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 37- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Southern Star                            | 67-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 38- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Southern Craftsman                       | 68-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 39- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | This Opinion Survey                      | 69-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 40- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Housekeeping                             | 70-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 41- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Your Job Security                        | 71-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 42- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Parking                                  | 72-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 43- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Performance of Subordinates              | 73-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 44- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Safety Practices                         | 74-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 45- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Company Interest in Community            | 75-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 46- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Management Support of Your Decisions     | 76-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 47- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Your Pay Compared to Other Companies     | 77-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 48- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Usefulness of Paperwork on Your Job      | 78-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 49- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Opportunity to Feel a Part of Management | 79-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 50- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Plant Maintenance                        | 80-       | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 51- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Information on Company Policies          | 7-        | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |
| 52- | 1         | 2 | 3 | 4 | 5 | 6 | 7 | Morale of Your Co-workers                | 8-        | 1 | 2 | 3 | 4 | 5 | 6 | 7 |               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                |  |  |  |  |  |  |

## YOUR WRITTEN COMMENTS

You may have ideas and opinions not fully covered in this survey. Write in the space below. If you need more space, attach a separate sheet.

---



---



---



---



---



---



---



---



---



---

# EMPLOYEE OPINION STUDY

80

This questionnaire has been prepared by Georgia Tech. at the request of [redacted] management, to obtain employees' opinions of their jobs and the Company. The Company and Georgia Tech agreed that this survey will be absolutely anonymous. No individual will be identified; the Company will see no records of individual opinions. Only a summary of the ideas and opinions collected will be given to the Company.

**NOTE:** (1) This questionnaire was mailed directly from Georgia Tech. It should be returned directly to Georgia Tech. It will never be seen by anyone from [redacted].

(2) You are not required to answer every question.

## PLEASE DO NOT SIGN YOUR NAME

Use the enclosed envelope to mail this questionnaire directly to: **GEORGIA INSTITUTE OF TECHNOLOGY, Opinion Study Project, Atlanta, Georgia 30332.**

## GENERAL INFORMATION

Your Organization: In Row One, circle the first number of your organization.

In Row Two, circle the second number of your organization.

(Example: If you are in 72-44, you would circle 7 in Row One and 2 in Row Two.)

8- Row One — 0 1 2 3 4 5 6 7 8 9  
9- Row Two — 0 1 2 3 4 5 6 7 8 9

(Answers from small organizations will be combined with those from related organizations to protect individual anonymity.)

Your sex is: Male \_\_\_\_\_ 10-1 Female \_\_\_\_\_ -2

### AGE (check one)

18-29 . . . . . 11-1  
30-39 . . . . . -2  
40-49 . . . . . -3  
50-59 . . . . . -4  
60 + . . . . . -5

### WEEKLY SALARY (check one)

\$135 or Less . . . . . 12-1  
\$136 - 174 . . . . . -2  
\$175 - 211 . . . . . -3  
\$212 - 249 . . . . . -4  
\$250 - 288 . . . . . -5  
\$289 + . . . . . -6

### WORK LOCATION (check one)

Charleston . . . . . 13-1  
Chattanooga . . . . . -2  
Clarksburg . . . . . -3  
Dawsonville . . . . . -4  
LIP . . . . . -5  
Logan . . . . . -6  
Marietta . . . . . -7  
Other \_\_\_\_\_ -8

(write in)

### YEAR FIRST HIRED

1967 . . . . . 14-1  
1965-66 . . . . . -2  
1963-64 . . . . . -3  
1961-62 . . . . . -4  
1959-60 . . . . . -5  
1957-58 . . . . . -6  
1955-56 . . . . . -7  
1953-54 . . . . . -8  
1951-52 . . . . . -9  
Before 1951 . . . . . -0

### LEVEL OF EDUCATION

Less than High School \_\_\_\_\_ 15-1  
High School Graduate \_\_\_\_\_ -2  
Business/Technical School \_\_\_\_\_ -3  
Some College . . . . . -4  
Bachelor's Degree . . . . . -5  
Advanced Degree . . . . . -6

### FIELD OF EDUCATION

Business or Finance \_\_\_\_\_ 16-1  
Engineering . . . . . -2  
Law . . . . . -3  
Liberal Arts . . . . . -4  
Science . . . . . -5  
Other \_\_\_\_\_ -6

(write in)

### YOUR JOB IS:

Engineer . . . . . 17-1  
Scientist . . . . . -2  
Other \_\_\_\_\_ -3

(write in)

### AT WHAT LEVEL IS YOUR JOB?

Associate . . . . . 18-1  
Intermediate . . . . . -2  
Senior . . . . . -3  
Specialist . . . . . -4  
Other . . . . . -5

### IF IN ENGINEERING, WHICH ORGANIZATION?

Advanced Design . . . . . 19-1  
C-5 . . . . . -2  
C-130 . . . . . -3

C-141 . . . . . -4  
Development Tests . . . . . -5  
Engineering Adm. . . . . -6

Research . . . . . -7  
Structures . . . . . -8  
Subsystems . . . . . -9

## SECURITY REGULATIONS REMINDER

In your written comments do not reveal any classified information or Company proprietary information.

## INSTRUCTIONS

On the following pages are some questions which ask you to give your opinions on various aspects of your job and the Company. Rate your answers to each question by circling one number on each rating scale, with 7 being the highest rating, and 1 the lowest. Numbers between 1 and 7 should be used for ratings between "very little" and "very much" or between "not important" and "very important." (LOOK AT THE EXAMPLE WHICH IS ALREADY MARKED.)

### YOUR SUPERVISOR'S ABILITY TO GIVE CLEAR INSTRUCTIONS:

How much ability does he have?  
very little 1 2 3 4 5 6 7 very much

How much should he have?  
very little 1 2 3 4 5 6 7 very much

How important is this to you?  
not important 1 2 3 4 5 6 7 very important

DO NOT CIRCLE ANYTHING BUT NUMBERS

**FEELING A PART OF THE TEAM:**

- 13- How much do you feel a part of the team?  
very little 1 2 3 4 5 6 7 very much
- 16- How much should you feel a part of it?  
very little 1 2 3 4 5 6 7 very much
- 17- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**COMPANY TREATMENT OF EMPLOYEES:**

- How much does the Company consider individuals in making decisions?  
18- very little 1 2 3 4 5 6 7 very much
- How much should it consider individuals?  
19- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
20- not important 1 2 3 4 5 6 7 very important

**COMPANY REPUTATION:**

- How much prestige does the Company have in the aircraft industry?  
21- very little 1 2 3 4 5 6 7 very much
- How much should it have?  
22- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
23- not important 1 2 3 4 5 6 7 very important

**YOUR CONTRIBUTION TO COMPANY PRODUCTS:**

- How much do you feel your job contributes?  
24- very little 1 2 3 4 5 6 7 very much
- How much would you like to feel it contributes?  
25- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
26- not important 1 2 3 4 5 6 7 very important

**CONTACT WITH FELLOW WORKERS OUTSIDE WORKING HOURS:**

- How much do you associate with fellow workers outside working hours?  
27- very little 1 2 3 4 5 6 7 very much
- How much should you associate?  
28- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
29- not important 1 2 3 4 5 6 7 very important

**YOUR WORK PLACE:**

- How much do your working conditions help you do a good job?  
30- very little 1 2 3 4 5 6 7 very much
- How should they help?  
31- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
32- not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY TO OBTAIN GOOD EQUIPMENT, SUPPLIES AND MATERIALS:**

- How much is there?  
33- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
34- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
35- not important 1 2 3 4 5 6 7 very important

**HIGHER MANAGEMENT'S SUPPORT OF YOUR SUPERVISOR:**

- How much backing does he get?  
36- very little 1 2 3 4 5 6 7 very much
- How much backing should he get?  
37- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
38- not important 1 2 3 4 5 6 7 very important

**COOPERATION AMONG YOUR FELLOW WORKERS:**

- How much teamwork is there?  
39- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
40- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
41- not important 1 2 3 4 5 6 7 very important

**PRESTIGE OF YOUR JOB OUTSIDE THE COMPANY:**

- How much prestige does your job have outside the Company?  
42- very little 1 2 3 4 5 6 7 very much
- How much prestige should your job have outside the Company?  
43- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
44- not important 1 2 3 4 5 6 7 very important

**THE PRESTIGE OF YOUR JOB IN THE COMPANY:**

- How much prestige does your job have?  
45- very little 1 2 3 4 5 6 7 very much
- How much should it have?  
46- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
47- not important 1 2 3 4 5 6 7 very important

**YOUR JOB WORK LOAD:**

- How much work do you have?  
48- very little 1 2 3 4 5 6 7 very much
- How much should you have?  
49- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
50- not important 1 2 3 4 5 6 7 very important

**COOPERATION BETWEEN DEPARTMENTS:**

- How much is there?  
51- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
52- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
53- not important 1 2 3 4 5 6 7 very important

**HIGHER MANAGEMENT APPRECIATION OF THE IMPORTANCE OF YOUR WORK:**

- How much is there?  
54- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
55- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
56- not important 1 2 3 4 5 6 7 very important

**RECOGNITION FOR GOOD IDEAS OR GOOD WORK:**

- How much do you get?  
57- very little 1 2 3 4 5 6 7 very much
- How much should you get?  
58- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
59- not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY TO CHANGE JOBS WITHIN THE COMPANY:**

- How much is there?  
60- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
61- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
62- not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY FOR PROMOTION FROM YOUR JOB:**

- How much opportunity is there?  
63- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
64- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
65- not important 1 2 3 4 5 6 7 very important

**FAIRNESS OF PROMOTION PROCEDURES:**

- How much fairness is there?  
66- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
67- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
68- not important 1 2 3 4 5 6 7 very important

**GOOD PLANNING AND SCHEDULING OF WORK BY YOUR SUPERVISOR:**

- How much is there?  
69- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
70- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
71- not important 1 2 3 4 5 6 7 very important

**COMPANY PLANNING FOR THE FUTURE:**

- How much is there?  
72- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
73- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
74- not important 1 2 3 4 5 6 7 very important

**FREEDOM TO MAKE DECISIONS IN YOUR WORK:**

- How much is there?  
75- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
76- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
77- not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY TO USE YOUR SPECIAL SKILLS AND ABILITIES:**

- How much opportunity do you have?  
78- very little 1 2 3 4 5 6 7 very much
- How much opportunity should you have?  
79- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
80- not important 1 2 3 4 5 6 7 very important

**YOUR SUPERVISOR'S TECHNICAL JOB KNOWLEDGE:**

- How much knowledge does he have?  
7- very little 1 2 3 4 5 6 7 very much
- How much should he have?  
8- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
9- not important 1 2 3 4 5 6 7 very important

**COMPANY SPONSORED TRAINING FOR YOUR JOB:**

- How much training have you received?  
10- very little 1 2 3 4 5 6 7 very much
- How much should you have received?  
11- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
12- not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY FOR EDUCATION OR TRAINING TO KEEP ABREAST OF YOUR FIELD:**

- How much opportunity is there?  
13- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
14- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
15- not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY IN YOUR JOB TO DEVELOP NEW SKILLS AND KNOWLEDGE:**

- How much is there?  
16- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
17- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
18- not important 1 2 3 4 5 6 7 very important

**PROMPT ACTION ON YOUR COMPLAINTS AND PROBLEMS BY YOUR SUPERVISOR:**

- How much is there?  
19- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
20- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
21- not important 1 2 3 4 5 6 7 very important

**INFORMATION ABOUT WHAT YOUR SUPERVISOR EXPECTS OF YOU:**

- How much information about your job responsibilities do you get?  
22- very little 1 2 3 4 5 6 7 very much
- How much should you get?  
23- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
24- not important 1 2 3 4 5 6 7 very important

**INFORMATION RELATING TO COMPANY OPERATIONS:**

- How much information does the Company provide?  
25- very little 1 2 3 4 5 6 7 very much
- How much should be provided?  
26- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
27- not important 1 2 3 4 5 6 7 very important

**YOUR SUPERVISOR'S ABILITY TO GET ALONG WITH PEOPLE:**

- How much ability does he have?  
28- very little 1 2 3 4 5 6 7 very much
- How much should he have?  
29- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
30- not important 1 2 3 4 5 6 7 very important

**FEELING OF SATISFACTION FROM THE TYPE OF WORK YOU DO:**

- How much satisfaction do you get?  
31- very little 1 2 3 4 5 6 7 very much
- How much should you get?  
32- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
33- not important 1 2 3 4 5 6 7 very important

**SATISFACTION FROM GOOD WORK:**

- How much satisfaction do you get from doing good work on your job?  
34- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
35- not important 1 2 3 4 5 6 7 very important

**PAY FOR THE WORK WHICH YOU DO:**

- How high is it?  
36- very low 1 2 3 4 5 6 7 very high
- How high should it be?  
37- very low 1 2 3 4 5 6 7 very high
- How important is this to you?  
38- not important 1 2 3 4 5 6 7 very important

## THE "ZERO DEFECTS" PROGRAM

82

Rate each of the following by circling a number on the rating scale from 1 to 7.

|     |  | very<br>poor | 1 | 2 | 3 | 4 | 5 | 6 | very<br>good |
|-----|--|--------------|---|---|---|---|---|---|--------------|
| 20- | The Idea of Zero Defects . . . . .         |              | 1 | 2 | 3 | 4 | 5 | 6 | 7            |
| 21- | Applicability of ZD to Your Work . . . . . |              | 1 | 2 | 3 | 4 | 5 | 6 | 7            |
| 22- | The Fairness of ZD Awards . . . . .        |              | 1 | 2 | 3 | 4 | 5 | 6 | 7            |
| 23- | Charting of ZD Progress . . . . .          |              | 1 | 2 | 3 | 4 | 5 | 6 | 7            |
| 24- | Effect of ZD on Your Performance . . . . . |              | 1 | 2 | 3 | 4 | 5 | 6 | 7            |

What do you feel is the purpose of the Zero Defects program? \_\_\_\_\_

\_\_\_\_\_

What is the chief result of the Zero Defects program? \_\_\_\_\_

\_\_\_\_\_

## OTHER ASPECTS OF YOUR JOB AND THE COMPANY

Consider the following items. Rate your opinion of each by circling a number from 1 to 7 at the left. Then indicate its importance to you by circling a number at the right.

|     | very<br>poor | 1 | 2 | 3 | 4 | 5 | 6 | 7 | very<br>good |  | not<br>important | 1 | 2 | 3 | 4 | 5 | 6 | 7 | very<br>important |
|-----|--------------|---|---|---|---|---|---|---|--------------|--|------------------|---|---|---|---|---|---|---|-------------------|
| 25- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Credit Union   | 57-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 26- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Savings Plan   | 58-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 27- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Retirement Plan  | 59-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 28- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Tuition Reimbursement                                  | 60-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 29- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Group Insurance Plan                                   | 61-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 30- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Vacation Policy  | 62-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 31- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Sick Leave Policy                                      | 63-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 32- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Disciplinary Policy                                    | 64-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 33- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Promotion from Within                                  | 65-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 34- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | B.O.M.C.   | 66-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 35- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | G.L.E.R.C.   | 67-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 36- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Plant Medical Services                                 | 68-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 37- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Food Services  | 69-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 38- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Management Club  | 70-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 39- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Southern Star  | 71-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 40- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Southern Craftsman                                     | 72-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 41- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | This Opinion Survey                                    | 73-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 42- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Housekeeping   | 74-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 43- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Morale of Your Co-workers                              | 75-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 44- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Your Job Security                                      | 76-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 45- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Parking  | 77-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 46- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Pay for Overtime Worked                                | 78-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 47- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Fairness of Overtime Distribution                      | 79-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 48- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Safety Practices                                       | 80-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 49- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Company Interest in Community                          | 7-               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 50- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Your Pay Compared to Other<br>Companies                | 8-               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 51- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Chance to Meet New People<br>in Your Work              | 9-               | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 52- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Usefulness of Paperwork<br>on Your Job                 | 10-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 53- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Your Opportunity for Contact<br>with Higher Management | 11-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 54- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Plant Maintenance                                      | 12-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 55- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Information on Company Policies                        | 13-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |
| 56- |              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |              | Your Supervisor's Concern for<br>You as a Person       | 14-              | 1 | 2 | 3 | 4 | 5 | 6 | 7 |                   |

## YOUR WRITTEN COMMENTS

You may have ideas and opinions not fully covered in this survey. Write in the space below. If you need more space, attach a separate sheet.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# EMPLOYEE OPINION STUDY

83

This questionnaire has been prepared by Georgia Tech, at the request of [redacted] management, to obtain employees' opinions of their jobs and the Company. The Company and Georgia Tech agreed that this survey will be absolutely anonymous. No individual will be identified; the Company will see no records of individual opinions. Only a summary of the ideas and opinions collected will be given to the Company.

NOTE: (1) This questionnaire was mailed directly from Georgia Tech. It should be returned directly to Georgia Tech. It will never be seen by anyone from [redacted].

(2) You are not required to answer every question.

## PLEASE DO NOT SIGN YOUR NAME

Use the enclosed envelope to mail this questionnaire directly to: **GEORGIA INSTITUTE OF TECHNOLOGY, Opinion Study Project, Atlanta, Georgia 30332.**

## GENERAL INFORMATION

Your Organization Number is: \_\_\_\_ 8- \_\_\_\_ 9- \_\_\_\_ 10- \_\_\_\_ 11-

(Answers from small organizations will be combined with those from related organizations to protect individual anonymity.)

Your sex is: Male \_\_\_\_ 12-1 Female \_\_\_\_ -2

### AGE (check one)

18-29 . . . . . \_\_\_\_ 13-1  
30-39 . . . . . \_\_\_\_ -2  
40-49 . . . . . \_\_\_\_ -3  
50-59 . . . . . \_\_\_\_ -4  
60 + . . . . . \_\_\_\_ -5

### HOURLY RATE (check one)

\$2.40 or Less . . . . . \_\_\_\_ 14-1  
\$2.41 - 2.61 . . . . . \_\_\_\_ -2  
\$2.62 - 2.82 . . . . . \_\_\_\_ -3  
\$2.83 - 3.03 . . . . . \_\_\_\_ -4  
\$3.04 - 3.24 . . . . . \_\_\_\_ -5  
\$3.25 - 3.45 . . . . . \_\_\_\_ -6  
\$3.46 or over . . . . . \_\_\_\_ -7

### WORK LOCATION (check one)

Charleston . . . . . \_\_\_\_ 15-1  
Chattanooga . . . . . \_\_\_\_ -2  
Clarksburg . . . . . \_\_\_\_ -3  
Dawsonville . . . . . \_\_\_\_ -4  
LIP . . . . . \_\_\_\_ -5  
Logan . . . . . \_\_\_\_ -6  
Marietta . . . . . \_\_\_\_ -7  
Other \_\_\_\_ -8  
(write in)

### YEAR FIRST HIRED

1967 . . . . . \_\_\_\_ 16-1  
1965-66 . . . . . \_\_\_\_ -2  
1963-64 . . . . . \_\_\_\_ -3  
1961-62 . . . . . \_\_\_\_ -4  
1959-60 . . . . . \_\_\_\_ -5  
1957-58 . . . . . \_\_\_\_ -6  
1955-56 . . . . . \_\_\_\_ -7  
1953-54 . . . . . \_\_\_\_ -8  
1951-52 . . . . . \_\_\_\_ -9  
Before 1951 . . . . . \_\_\_\_ -0

### LEVEL OF EDUCATION

Less than High School \_\_\_\_ 17-1  
High School Graduate \_\_\_\_ -2  
Business/Technical School \_\_\_\_ -3  
Some College . . . . . \_\_\_\_ -4  
Bachelor's Degree . . . . . \_\_\_\_ -5  
Advanced Degree . . . . . \_\_\_\_ -6

### FIELD OF EDUCATION

Business or Finance \_\_\_\_ 18-1  
Engineering . . . . . \_\_\_\_ -2  
Law . . . . . \_\_\_\_ -3  
Liberal Arts . . . . . \_\_\_\_ -4  
Science . . . . . \_\_\_\_ -5  
Other \_\_\_\_ -6  
(write in)

SHIFT NUMBER \_\_\_\_ 19-  
(see time card)

### YOUR JOB IS:

Factory . . . . . \_\_\_\_ 20-1  
Office & Technical . \_\_\_\_ -2  
Professional & Tech. \_\_\_\_ -3  
Other \_\_\_\_ -4  
(write in)

About how many miles is it from your home to the plant? \_\_\_\_ 21-, 22-, 23-

## SECURITY REGULATIONS REMINDER

In your written comments do not reveal any classified information or Company proprietary information.

## INSTRUCTIONS

On the following pages are some questions which ask you to give your opinions on various aspects of your job and the Company. Rate your answers to each question by circling one number on each rating scale, with 7 being the highest rating, and 1 the lowest. Numbers between 1 and 7 should be used for ratings between "very little" and "very much" or between "not important" and "very important." (LOOK AT THE EXAMPLE WHICH IS ALREADY MARKED.)

### YOUR SUPERVISOR'S ABILITY TO GIVE CLEAR INSTRUCTIONS:

How much ability does he have?  
very little 1 2 3 (4) 5 6 7 very much

How much should he have?  
very little 1 2 3 4 5 (6) 7 very much

How important is this to you?  
not important 1 2 3 4 (5) 6 7 very important

DO NOT CIRCLE ANYTHING BUT NUMBERS

**FEELING A PART OF THE TEAM:**

- 15- How much do you feel a part of the team?  
very little 1 2 3 4 5 6 7 very much
- 16- How much should you feel a part of it?  
very little 1 2 3 4 5 6 7 very much
- 17- How important is this to you?  
not important 1 2 3 4 5 6 7 very important

**COMPANY TREATMENT OF EMPLOYEES:**

- How much does the Company consider individuals in making decisions?  
18- very little 1 2 3 4 5 6 7 very much
- How much should it consider individuals?  
19- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
20- not important 1 2 3 4 5 6 7 very important

**COMPANY REPUTATION:**

- How much prestige does the Company have in the aircraft industry?  
21- very little 1 2 3 4 5 6 7 very much
- How much should it have?  
22- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
23- not important 1 2 3 4 5 6 7 very important

**YOUR CONTRIBUTION TO COMPANY PRODUCTS:**

- How much do you feel your job contributes?  
24- very little 1 2 3 4 5 6 7 very much
- How much would you like to feel it contributes?  
25- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
26- not important 1 2 3 4 5 6 7 very important

**CONTACT WITH FELLOW WORKERS OUTSIDE WORKING HOURS:**

- How much do you associate with fellow workers outside working hours?  
27- very little 1 2 3 4 5 6 7 very much
- How much should you associate?  
28- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
29- not important 1 2 3 4 5 6 7 very important

**YOUR WORK PLACE:**

- How much do your working conditions help you do a good job?  
30- very little 1 2 3 4 5 6 7 very much
- How should they help?  
31- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
32- not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY TO OBTAIN GOOD EQUIPMENT, SUPPLIES AND MATERIALS:**

- How much is there?  
33- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
34- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
35- not important 1 2 3 4 5 6 7 very important

**HIGHER MANAGEMENT'S SUPPORT OF YOUR SUPERVISOR:**

- How much backing does he get?  
36- very little 1 2 3 4 5 6 7 very much
- How much backing should he get?  
37- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
38- not important 1 2 3 4 5 6 7 very important

**COOPERATION AMONG YOUR FELLOW WORKERS:**

- How much teamwork is there?  
39- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
40- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
41- not important 1 2 3 4 5 6 7 very important

**PRESTIGE OF YOUR JOB OUTSIDE THE COMPANY:**

- How much prestige does your job have outside the Company?  
42- very little 1 2 3 4 5 6 7 very much
- How much prestige should your job have outside the Company?  
43- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
44- not important 1 2 3 4 5 6 7 very important

**THE PRESTIGE OF YOUR JOB IN THE COMPANY:**

- How much prestige does your job have?  
45- very little 1 2 3 4 5 6 7 very much
- How much should it have?  
46- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
47- not important 1 2 3 4 5 6 7 very important

**YOUR JOB WORK LOAD:**

- How much work do you have?  
48- very little 1 2 3 4 5 6 7 very much
- How much should you have?  
49- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
50- not important 1 2 3 4 5 6 7 very important

**COOPERATION BETWEEN DEPARTMENTS:**

- How much is there?  
51- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
52- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
53- not important 1 2 3 4 5 6 7 very important

**HIGHER MANAGEMENT APPRECIATION OF THE IMPORTANCE OF YOUR WORK:**

- How much is there?  
54- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
55- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
56- not important 1 2 3 4 5 6 7 very important

**RECOGNITION FOR GOOD IDEAS OR GOOD WORK:**

- How much do you get?  
57- very little 1 2 3 4 5 6 7 very much
- How much should you get?  
58- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
59- not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY TO CHANGE JOBS WITHIN THE COMPANY:**

- How much is there?  
60- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
61- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
62- not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY FOR PROMOTION FROM YOUR JOB:**

- How much opportunity is there?  
63- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
64- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
65- not important 1 2 3 4 5 6 7 very important

**FAIRNESS OF PROMOTION PROCEDURES:**

- How much fairness is there?  
66- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
67- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
68- not important 1 2 3 4 5 6 7 very important

**GOOD PLANNING AND SCHEDULING OF WORK BY YOUR SUPERVISOR:**

- How much is there?  
69- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
70- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
71- not important 1 2 3 4 5 6 7 very important

**COMPANY PLANNING FOR THE FUTURE:**

- How much is there?  
72- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
73- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
74- not important 1 2 3 4 5 6 7 very important

**FREEDOM TO MAKE DECISIONS IN YOUR WORK:**

- How much is there?  
75- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
76- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
77- not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY TO USE YOUR SPECIAL SKILLS AND ABILITIES:**

- How much opportunity do you have?  
78- very little 1 2 3 4 5 6 7 very much
- How much opportunity should you have?  
79- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
80- not important 1 2 3 4 5 6 7 very important

**YOUR SUPERVISOR'S TECHNICAL JOB KNOWLEDGE:**

- How much knowledge does he have?  
7- very little 1 2 3 4 5 6 7 very much
- How much should he have?  
8- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
9- not important 1 2 3 4 5 6 7 very important

**COMPANY SPONSORED TRAINING FOR YOUR JOB:**

- How much training have you received?  
10- very little 1 2 3 4 5 6 7 very much
- How much should you have received?  
11- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
12- not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY FOR EDUCATION OR TRAINING TO KEEP ABREAST OF YOUR FIELD:**

- How much opportunity is there?  
13- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
14- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
15- not important 1 2 3 4 5 6 7 very important

**OPPORTUNITY IN YOUR JOB TO DEVELOP NEW SKILLS AND KNOWLEDGE:**

- How much is there?  
16- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
17- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
18- not important 1 2 3 4 5 6 7 very important

**PROMPT ACTION ON YOUR COMPLAINTS AND PROBLEMS BY YOUR SUPERVISOR:**

- How much is there?  
19- very little 1 2 3 4 5 6 7 very much
- How much should there be?  
20- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
21- not important 1 2 3 4 5 6 7 very important

**INFORMATION ABOUT WHAT YOUR SUPERVISOR EXPECTS OF YOU:**

- How much information about your job responsibilities do you get?  
22- very little 1 2 3 4 5 6 7 very much
- How much should you get?  
23- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
24- not important 1 2 3 4 5 6 7 very important

**INFORMATION RELATING TO COMPANY OPERATIONS:**

- How much information does the Company provide?  
25- very little 1 2 3 4 5 6 7 very much
- How much should be provided?  
26- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
27- not important 1 2 3 4 5 6 7 very important

**YOUR SUPERVISOR'S ABILITY TO GET ALONG WITH PEOPLE:**

- How much ability does he have?  
28- very little 1 2 3 4 5 6 7 very much
- How much should he have?  
29- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
30- not important 1 2 3 4 5 6 7 very important

**FEELING OF SATISFACTION FROM THE TYPE OF WORK YOU DO:**

- How much satisfaction do you get?  
31- very little 1 2 3 4 5 6 7 very much
- How much should you get?  
32- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
33- not important 1 2 3 4 5 6 7 very important

**SATISFACTION FROM GOOD WORK:**

- How much satisfaction do you get from doing good work on your job?  
34- very little 1 2 3 4 5 6 7 very much
- How important is this to you?  
35- not important 1 2 3 4 5 6 7 very important

**PAY FOR THE WORK WHICH YOU DO:**

- How high is it?  
36- very low 1 2 3 4 5 6 7 very high
- How high should it be?  
37- very low 1 2 3 4 5 6 7 very high
- How important is this to you?  
38- not important 1 2 3 4 5 6 7 very important

### THE "ZERO DEFECTS" PROGRAM

Rate each of the following by circling a number on the rating scale from 1 to 7.

|     |  | very<br>poor |   |   |   |   |   | very<br>good |
|-----|--|--------------|---|---|---|---|---|--------------|
| 24- | The Idea of Zero Defects . . . . .         | 1            | 2 | 3 | 4 | 5 | 6 | 7            |
| 25- | Applicability of ZD to Your Job . . . . .  | 1            | 2 | 3 | 4 | 5 | 6 | 7            |
| 26- | The Fairness of ZD Awards . . . . .        | 1            | 2 | 3 | 4 | 5 | 6 | 7            |
| 27- | Charting of ZD Progress . . . . .          | 1            | 2 | 3 | 4 | 5 | 6 | 7            |
| 28- | Effect of ZD on Your Performance . . . . . | 1            | 2 | 3 | 4 | 5 | 6 | 7            |

What do you feel is the purpose of the Zero Defects program? \_\_\_\_\_

\_\_\_\_\_

What is the chief result of the Zero Defects program? \_\_\_\_\_

\_\_\_\_\_

### OTHER ASPECTS OF YOUR JOB AND THE COMPANY

Consider the following items. Rate your opinion of each by circling a number from 1 to 7 at the left. Then indicate its importance to you by circling a number at the right.

|     | very<br>poor |   |   |   |   |   | very<br>good |   | not<br>important |   |   |   |   |   | very<br>important |   |
|-----|--------------|---|---|---|---|---|--------------|---|------------------|---|---|---|---|---|-------------------|---|
| 29- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Credit Union                                  | 57-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 30- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Savings Plan                                  | 58-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 31- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Retirement Plan                               | 59-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 32- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Tuition Reimbursement                         | 60-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 33- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Group Insurance Plan                          | 61-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 34- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Vacation Policy                               | 62-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 35- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Sick Leave Policy                             | 63-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 36- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Disciplinary Policy                           | 64-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 37- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Promotion from Within                         | 65-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 38- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | B.O.M.C.                                      | 66-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 39- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | G.L.E.R.C.                                    | 67-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 40- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Plant Medical Services                        | 68-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 41- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Food Services                                 | 69-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 42- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Southern Star                                 | 70-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 43- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Southern Craftsman                            | 71-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 44- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | This Opinion Survey                           | 72-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 45- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Housekeeping                                  | 73-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 46- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Your Job Security                             | 74-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 47- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Parking                                       | 75-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 48- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Safety Practices                              | 76-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 49- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Company Interest in Community                 | 77-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 50- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Your Pay Compared to Other Companies          | 78-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 51- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Chance to Do Different Things on Your Job     | 79-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 52- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Plant Maintenance                             | 80-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 53- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Information on Company Policies               | 7-               | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 54- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Distribution of Overtime                      | 8-               | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 55- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Your Supervisor's Concern for You as a Person | 9-               | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |
| 56- | 1            | 2 | 3 | 4 | 5 | 6 | 7            | Morale of Your Co-workers                     | 10-              | 1 | 2 | 3 | 4 | 5 | 6                 | 7 |

### YOUR WRITTEN COMMENTS

You may have ideas and opinions not fully covered in this survey. Write in the space below. If you need more space, attach a separate sheet.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## APPENDIX B

|  | Page |
|--|------|
| Original Sample (Males Only) .....           | 87   |
| Cross-Validation Sample (Males Only) .....   | 93   |
| Original Sample (With Females) .....         | 99   |
| Cross-Validation Sample (With Females) ..... | 103  |

# MANAGEMENT EMPLOYEES ORIGINAL SAMPLE

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

THESES MGMT/SAL RANMATH1=45 X  
MALES ONLY

### INDEPENDENT VARIABLES:

1. AGE
2. EDUCATION
3. TENURE
4. JOB LEVEL

### DEPENDENT VARIABLE

5. ACTUAL PAY

SAMPLE SIZE 600  
NO. OF INDEPENDENT VARIABLES 4  
NO. OF DEPENDENT VARIABLES 1

### MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.77000000E+00 2 7.52000000E+00 3 3.90833333E+00 4 2.57666667E+00 5 3.80833333E+00

### VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 6.61535893E-01 2 4.65068447E+00 3 2.00326934E+00 4 3.58052309E-01 5 1.62096550E+00

DEPENDENT VARIABLE NO. 1

### REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 2.95731332E+00  
1 3.80590755E-01 2 6.00606393E-02 3 4.01718542E-01 4 -9.30458868E-01

THE ERROR SUM SQUARE IS 3.48623731E+02

THE ERROR MEAN SQUARE IS 5.85922237E-01

THE STANDARD ERROR OF ESTIMATE IS 7.65455575E-01

THE COEFFICIENT OF DETERMINATION IS 6.40948825E-01

THE MULTIPLE CORRELATION COEFFICIENT IS 8.00592796E-01

### STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 4.27921313E-02 2 1.60535690E-02 3 2.27594948E-02 4 5.49760322E-02

### T-VALUE OF REGRESSION COEFFICIENTS

1 9.08089276E+00 2 4.98709287E+00 3 1.76505913E+01 4 -1.69248094E+01

### ANALYSIS OF VARIANCE FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 4    | 6.22334602E+02 | 1.55583651E+02 | 2.65538347E+02 |
| DEVIATION ABOUT REGRESSION | 595  | 3.48623731E+02 | 5.85922237E-01 |                |
| TOTAL                      | 599  | 9.70958333E+02 |                |                |

DEPENDENT VARIABLE NO. 1

### CORRELATION COEFFICIENTS

| ROW   | 1              | 2               | 3              | 4              | 5              |
|-------|----------------|-----------------|----------------|----------------|----------------|
| ROW 1 | 1.00000000E+00 | 4.07134780E-01  | 3.38620841E-02 | 2.20975412E-01 | 4.15213189E-01 |
| ROW 2 | 1.00000000E+00 | -8.71833163E-02 | 1.55143334E-01 | 2.65589245E-01 |                |
| ROW 3 | 1.00000000E+00 | 2.0591908E-01   | 5.32200348E-01 |                |                |
| ROW 4 | 1.00000000E+00 | 6.04120487E-01  |                |                |                |
| ROW 5 | 1.00000000E+00 |                 |                |                |                |

### PARTIAL CORRELATION COEFFICIENTS

1 3.48887878E-01 2 2.00307294E-01 3 5.86225851E-01 4 5.70066013E-01

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

MANAGEMENT EMPLOYEES  
ORIGINAL SAMPLE

SAMPLE SIZE 400  
NO. OF INDEPENDENT VARIABLES 5  
NO. OF DEPENDENT VARIABLES 1

THIS IS MGMT/DIF RANMATE=45 X  
MALES ONLY

## INDEPENDENT VARIABLES:

1. AGE
2. PAY
3. TENURE
4. EDUCATION
5. JOB LEVEL

## DEPENDENT VARIABLE:

6. SATISFACTION (DIF SCORE)

## MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.77000000E+00 2 3.60833333E+00 3 7.52000000E+00 4 3.90833333E+00 5 2.57666667E+00 6 5.86100000E+00

## VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 0.61535093E+01 2 1.02096550E+00 3 4.65060447E+00 4 2.00326934E+00 5 3.58052309E+01 6 1.65802027E+00

## DEPENDENT VARIABLE NO. 1

## REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 5.14155497E+00  
1 7.95217074E+02 2 3.76319875E+01 3 -3.27359370E+02 4 -1.46650472E+01 5 -7.37962938E+02

THE ERROR SUM SQUARE IS 8.60655487E+02

THE ERROR MEAN SQUARE IS 1.44891496E+00

THE STANDARD ERROR OF ESTIMATE IS 1.20370884E+00

THE COEFFICIENT OF DETERMINATION IS 1.33727638E+01

THE MULTIPLE CORRELATION COEFFICIENT IS 3.65690631E+01

## STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 7.18041523E+02 2 6.44070180E+02 3 2.57670830E+02 4 4.41773730E+02 5 1.05224048E+01

## T-VALUE OF REGRESSION COEFFICIENTS

1 -1.10740062E+00 2 -5.14756144E+00 3 -1.27045565E+00 4 -3.31958335E+00 5 -7.01325365E+01

ANALYSIS OF VARIANCE  
FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 5    | 1.32062347E+02 | 2.65725693E+01 | 18.3396335E+01 |
| DEVIATION ABOUT REGRESSION | 594  | 8.60655487E+02 | 1.44891496E+00 |                |
| TOTAL                      | 599  | 9.93718333E+02 |                |                |

## DEPENDENT VARIABLE NO. 1

## CORRELATION COEFFICIENTS

| ROW | 1              | 2               | 3              | 4              | 5              | 6              |
|-----|----------------|-----------------|----------------|----------------|----------------|----------------|
| 1   | 1.00000000E+00 | 4.15213189E+01  | 4.07134750E+01 | 3.38620841E+02 | 2.20975412E+01 | 1.92701083E+01 |
| 2   | 1.00000000E+00 | 2.5589245E+01   | 5.32203148E+01 | 5.04120487E+01 | 3.33128376E+01 |                |
| 3   | 1.00000000E+00 | -0.71833163E+02 | 1.59143334E+01 | 3.90576390E+02 |                |                |
| 4   | 1.00000000E+00 | 2.03591708E+01  | 6.03054554E+02 |                |                |                |
| 5   | 1.00000000E+00 | 2.40757114E+01  |                |                |                |                |
| 6   | 1.00000000E+00 |                 |                |                |                |                |

## PARTIAL CORRELATION COEFFICIENTS

1 4.53736373E+02 2 2.44077015E+01 3 -0.25567430E+02 4 -1.34958065E+01 5 2.87438219E+02

**SALARIED EMPLOYEES  
ORIGINAL SAMPLE**

**GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS**

THESES SALARY/SAL RANMAT2=737X  
MALES ONLY

**INDEPENDENT VARIABLES:**

1. AGE 3. EDUCAT  
2. TENURE 4. JOB LVL

**DEPENDENT VARIABLE:**

5. ACTUAL PAY

SAMPLE SIZE 1554  
NO. OF INDEPENDENT VARIABLES 4  
NO. OF DEPENDENT VARIABLES 1

**MEANS OF INDEPENDENT AND DEPENDENT VARIABLES**

1 2.1848523E+00 2 4.67715019E+00 3 4.64184852E+00 4 2.93453145E+00 5 3.74446983E+00

**VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES**

1 6.9323218E-01 2 7.94643966E+00 3 8.51735052E-01 4 1.33161349E+00 5 1.52656107E+00

DEPENDENT VARIABLE NO. 1

**REGRESSION COEFFICIENTS**

THE CONSTANT TERM IS -3.53029061E-01

1 4.66745450E-01 2 6.13715682E-02 3 3.94955048E-01 4 3.25433123E-01

THE ERROR SUM SQUARE IS 1.39360416E+03

THE ERROR MEAN SQUARE IS 8.97362625E-01

THE STANDARD ERROR OF ESTIMATE IS 9.47292259E-01

THE COEFFICIENT OF DETERMINATION IS 4.13677396E-01

THE MULTIPLE CORRELATION COEFFICIENT IS 6.43177577E-01

**STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS**

1 3.12423952E-02 2 1.02818976E-02 3 2.70095933E-02 4 2.41735215E-02

**T VALUE OF REGRESSION COEFFICIENTS**

1 1.50035055E+01 2 5.96889513E+00 3 1.46227692E+01 4 1.34623796E+01

**ANALYSIS OF VARIANCE  
FOR THE MULTIPLE LINEAR REGRESSION**

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 4    | 9.93251428E+02 | 2.45812857E+02 | 2.71928120E+02 |
| DEVIATION ABOUT REGRESSION | 1553 | 1.39360416E+03 | 8.97362625E-01 |                |
| TOTAL                      | 1557 | 2.37685558E+03 |                |                |

DEPENDENT VARIABLE NO. 1

**CORRELATION COEFFICIENTS**

R<sub>01</sub> 1 1.00000000E+00 2 9.10340245E-01 3 -2.27419599E-01 4 4.58310560E-01 5 5.01420064E-01  
R<sub>01</sub> 2 1.00000000E+00 3 -2.26912967E-01 4 4.20956597E-01 5 3.84014530E-01  
R<sub>01</sub> 3 1.00000000E+00 4 1.67273197E-01 5 1.24777107E-01  
R<sub>01</sub> 4 1.00000000E+00 5 4.71251923E-01  
R<sub>01</sub> 5 1.00000000E+00

**PARTIAL CORRELATION COEFFICIENTS**

1 3.55806619E-01 2 1.49755335E-01 3 3.47842642E-01 4 3.23271766E-01

# Salaries Employees Original Sample

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

SAMPLE SIZE 1558  
NO. OF INDEPENDENT VARIABLES 5  
NO. OF DEPENDENT VARIABLES 1

THISIS SALARY/DIF RAWMAT2=737X  
MALES ONLY

### INDEPENDENT VARIABLES

1. AGE 4. EDUCATION
2. PAY 5. JOB LEVEL
3. TENURE

### DEPENDENT VARIABLE

6. SATISFACTION (DIF SCORE)

#### MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.18485237E+00 2 3.74646983E+00 3 4.67715019E+00 4 4.64184852E+00 5 2.93453145E+00 6 5.66880616E+00

#### VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 0.93232188E+01 2 1.52656107E+00 3 7.94643966E+00 4 8.51735052E+01 5 1.33161349E+00 6 1.92235323E+00

#### REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 5.56378739E+00  
1 7.03209087E-02 2 1.97014473E-01 3 -2.86009375E-02 4 -9.63582027E-02 5 -7.00894688E-02

THE ERROR SUM SQUARE IS 2.90953171E+03

THE ERROR MEAN SQUARE IS 1.87469827E+00

THE STANDARD ERROR OF ESTIMATE IS 1.36919621E+00

THE COEFFICIENT OF DETERMINATION IS 2.79216060E-02

THE MULTIPLE CORRELATION COEFFICIENT IS 1.67097594E-01

#### STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 4.63191202E-02 2 3.66771030E-02 3 1.50307382E-02 4 4.16400107E-02 5 3.69224024E-02

#### T VALUE OF REGRESSION COEFFICIENTS

1 1.45534332E+00 2 5.37158136E+00 3 -1.90282986E+00 4 -2.31407728E+00 5 -1.89829112E+00

#### ANALYSIS OF VARIANCE FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 5    | 8.35722701E+01 | 1.67144540E+01 | 8.91581025E+00 |
| DEVIATION ABOUT REGRESSION | 1552 | 2.90953171E+03 | 1.87469827E+00 |                |
| TOTAL                      | 1557 | 2.99310398E+03 |                |                |

#### DEPENDENT VARIABLE NO. 1

#### CORRELATION COEFFICIENTS

| ROW   | 1              | 2               | 3               | 4               | 5              | 6              |
|-------|----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ROW 1 | 1.00000000E+00 | 5.0161064E-01   | 5.10340245E-01  | -2.27419599E-01 | 4.56310560E-01 | 9.42933718E-02 |
| ROW 2 | 1.00000000E+00 | 3.88014530E-01  | 1.24777107E-01  | 4.71253923E-01  | 1.41786362E-01 |                |
| ROW 3 | 1.00000000E+00 | -2.26912967E-01 | 4.20956597E-01  | 2.37303563E-02  |                |                |
| ROW 4 | 1.00000000E+00 | 1.87273197E-01  | -2.90146052E-02 |                 |                |                |
| ROW 5 | 1.00000000E+00 | 3.38074022E-02  |                 |                 |                |                |
| ROW 6 | 1.00000000E+00 |                 |                 |                 |                |                |

#### PARTIAL CORRELATION COEFFICIENTS

1 3.69167498E-02 2 1.35100294E-01 3 -4.82445314E-02 4 -5.86386623E-02 5 -4.81297226E-02

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

Hourly Employees  
Original Sample

THIS IS HOURLY/SAL HANNAT3=700X  
MALES ONLY

INDEPENDENT VARIABLES:  
1. AGE 3. EDUCATION  
2. TENURE 4. JOB LEVEL  
DEPENDENT VARIABLE:  
5. ACTUAL PAY

SAMPLE SIZE 2252  
NO. OF INDEPENDENT VARIABLES 4  
NO. OF DEPENDENT VARIABLES 1

## MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.15002214+00 2 4.84115979+00 3 2.52041923+00 4 1.71637816+00 5 5.70083332+00

## VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.22259880+00 2 8.97763905+00 3 1.18635819+00 4 1.02032222+00 5 2.09519023+00

## REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 3.86098618+00

1 7.87588205+02 2 1.91819338+01 3 1.45355016+01 4 2.13932258+01

THE ERROR SUM SQUARE IS 3.76028866+03

THE ERROR MEAN SQUARE IS 1.67272627+00

THE STANDARD ERROR OF ESTIMATE IS 1.29333919+00

THE COEFFICIENT OF DETERMINATION IS 2.03053186+01

THE MULTIPLE CORRELATION COEFFICIENT IS 4.50614232+01

## STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 3.29832456+02 2 1.20996894+02 3 2.60807938+02 4 2.75318697+02

## T VALUE OF REGRESSION COEFFICIENTS

1 2.39074240+00 2 1.58532447+01 3 5.57170249+00 4 7.77034980+00

ANALYSIS OF VARIANCE  
FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES  | F RATIO       |
|----------------------------|------|----------------|---------------|---------------|
| DUE TO REGRESSION          | 4    | 9.58079737+02  | 2.39519934+02 | 1.43191351+02 |
| DEVIATION ABOUT REGRESSION | 2248 | 3.76028866+03  | 1.67272627+00 |               |
| TOTAL                      | 2252 | 4.71836840+03  |               |               |

DEPENDENT VARIABLE NO. 1

## CORRELATION COEFFICIENTS

| ROW | 1             | 2             | 3             | 4             | 5             |
|-----|---------------|---------------|---------------|---------------|---------------|
| 1   | 1.00000000+00 | 1.53407946+01 | 2.18616252+01 | 3.63218901+03 | 2.95234053+01 |
| 2   | 1.00000000+00 | 1.91145301+01 | 8.06326862+02 | 4.03115359+01 |               |
| 3   | 1.00000000+00 | 1.73297494+01 | 4.50078492+02 |               |               |
| 4   | 1.00000000+00 | 1.34010679+01 |               |               |               |
| 5   | 1.00000000+00 |               |               |               |               |

## PARTIAL CORRELATION COEFFICIENTS

1 5.03597145+02 2 3.17107648+01 3 1.16710942+01 4 1.61728692+01

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

Hourly Employees  
ORIGINAL SAMPLE

THIS IS HOURLY/DIF RAWMATJ=700X  
MALES ONLY

INDEPENDENT VARIABLES:  
1. AGE 4. EDUCATION  
2. PAY 5. JOB LEVEL  
3. TENURE  
DEPENDENT VARIABLES:  
6. SATISFACTION (LIFE SC)

SAMPLE SIZE 2253

NO. OF INDEPENDENT VARIABLES 5

NO. OF DEPENDENT VARIABLES 1

MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.15002219E+00 2 5.70084332E+00 3 4.88015979E+00 4 2.52640923E+00 5 1.71637816E+00 6 5.25477142E+00

VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.22259880E+00 2 2.09519023E+00 3 8.97763905E+00 4 1.18635819E+00 5 1.02032222E+00 6 2.43506270E+00

REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 4.14505058E+00

1 1.13518372E-01 2 1.29405135E-01 3 -1.19550654E-02 4 4.84461910E-02 5 3.72150745E-02

THE ERROR SUM SQUARE IS 5.34767279E+03

THE ERROR MEAN SQUARE IS 2.37991669E+00

THE STANDARD ERROR OF ESTIMATE IS 1.54269786E+00

THE COEFFICIENT OF DETERMINATION IS 2.48166196E-02

THE MULTIPLE CORRELATION COEFFICIENT IS 1.57532916E-01

STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 3.93446991E-02 2 2.51576624E-02 3 1.52179414E-02 4 3.13320444E-02 5 3.32781737E-02

T VALUE OF REGRESSION COEFFICIENTS

1 2.88522658E+00 2 5.14376628E+00 3 -7.85590185E-01 4 1.54621864E+00 5 1.11830279E+00

ANALYSIS OF VARIANCE  
FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 5    | 1.36088416E+02 | 2.72176832E+01 | 1.14364017E+01 |
| DEVIATION ABOUT REGRESSION | 2247 | 5.34767279E+03 | 2.37991669E+00 |                |
| TOTAL                      | 2252 | 5.48376121E+03 |                |                |

DEPENDENT VARIABLE NO. 1

CORRELATION COEFFICIENTS

| ROW   | 1              | 2               | 3               | 4               | 5               | 6              |
|-------|----------------|-----------------|-----------------|-----------------|-----------------|----------------|
| 1     | 1.00000000E+00 | 2.95234053E-01  | 6.53607946E-01  | -2.18616252E-01 | -3.63218901E-03 | 9.33912697E-02 |
| ROW 2 | 1.00000000E+00 | 4.03115359E-01  | 4.50078491E-02  | 1.36010679E-01  | 1.39327552E-01  |                |
| ROW 3 | 1.00000000E+00 | -1.94145301E-01 | -8.06326862E-02 | 6.94993734E-02  |                 |                |
| ROW 4 | 1.00000000E+00 | 1.73297494E-01  | 3.02643463E-02  |                 |                 |                |
| ROW 5 | 1.00000000E+00 | 4.78346750E-02  |                 |                 |                 |                |
| ROW 6 | 1.00000000E+00 |                 |                 |                 |                 |                |

PARTIAL CORRELATION COEFFICIENTS

1 0.07540735E-02 2 1.07879203E-01 3 -1.65709720E-02 4 3.26015649E-02 5 2.35850635E-02

MANAGEMENT EMPLOYEES  
CROSS-VAUATION SAMPLE

GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

THESES NGHT/SAL RANMATI=45 X

MALES ONLY

INDEPENDENT VARIABLES:

1. AGE 3. EDUCATION  
2. TENURE 4. JOB LEVEL

DEPENDENT VARIABLE:

5. ACTUAL PAY

SAMPLE SIZE 600  
NO. OF INDEPENDENT VARIABLES 4  
NO. OF DEPENDENT VARIABLES 1

MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.708333333E+00 2 7.536666667E+00 3 3.830333333E+00 4 2.593333333E+00 5 3.705000000E+00

VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 7.044379520E-01 2 4.676449640E+00 3 1.771816920E+00 4 3.251641620E-01 5 1.567253760E+00

DEPENDENT VARIABLE NO. 1

REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 2.614490620E+00  
1 3.411975130E-01 2 9.991033020E-02 3 4.222657080E-01 4 -8.536977520E-01

THE ERROR SUM SQUARE IS 3.716002580E+02

THE ERROR MEAN SQUARE IS 6.245382500E-01

THE STANDARD ERROR OF ESTIMATE IS 7.902773240E-01

THE COEFFICIENT OF DETERMINATION IS 6.041689430E-01

THE MULTIPLE CORRELATION COEFFICIENT IS 7.772830520E-01

STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 4.344541450E-02 2 1.704207700E-02 3 2.534350040E-02 4 5.987091430E-02

T VALUE OF REGRESSION COEFFICIENTS

1 7.899510150E+00 2 5.862569420E+00 3 1.667353370E+01 4 -1.425897300E+01

ANALYSIS OF VARIANCE  
FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES  | MEAN SQUARES    | F RATIO         |
|----------------------------|------|-----------------|-----------------|-----------------|
| DUE TO REGRESSION          | 4    | 5.471887420E+02 | 1.417961850E+02 | 2.270416350E+02 |
| DEVIATION ABOUT REGRESSION | 595  | 3.716002580E+02 | 6.245382500E-01 |                 |
| TOTAL                      | 599  | 9.187889000E+02 |                 |                 |

DEPENDENT VARIABLE NO. 1

CORRELATION COEFFICIENTS

| RNM | 1               | 2                | 3                | 4                | 5               |
|-----|-----------------|------------------|------------------|------------------|-----------------|
| 1   | 1.000000000E+00 | 4.487860280E-01  | 4.289931560E-02  | -1.784791930E-01 | 3.962107810E-01 |
| 2   | 1.000000000E+00 | -1.008619370E-01 | -1.747161040E-01 | 2.984570040E-01  |                 |
| 3   | 1.000000000E+00 | -2.407215420E-01 | 5.353630030E-01  |                  |                 |
| 4   | 1.000000000E+00 | -5.682281020E-01 |                  |                  |                 |
| 5   | 1.000000000E+00 |                  |                  |                  |                 |

PARTIAL CORRELATION COEFFICIENTS

1 3.080944470E-01 2 2.336072010E-01 3 5.643114830E-01 4 -5.046615120E-01



## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

MANAGEMENT EMPLOYEES  
CROSS-VALIDATION SAMPLE

SAMPLE SIZE 600  
NO. OF INDEPENDENT VARIABLES 5  
NO. OF DEPENDENT VARIABLES 1

THIS IS HIGH/DIF RANMAT11=45 X

MALES ONLY

## INDEPENDENT VARIABLES:

1. AGE
2. PAY
3. TENURE
4. EDUCATION
5. JOB LEVEL

## DEPENDENT VARIABLE:

6. SATISFACTION (DIF SCORE)

## MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.70433333E+00 2 3.70500000E+00 3 7.53666667E+00 4 3.83833333E+00 5 2.59333333E+00 6 5.90166667E+00

## VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 7.08437952E+01 2 1.56725376E+00 3 4.67544969E+00 4 1.77181692E+00 5 3.25164162E+01 6 1.61468837E+00

## DEPENDENT VARIABLE NO. 1

## REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 5.67929422E+00  
1 1.41461148E+01 2 1.91042836E+01 3 -2.96062382E+02 4 -6.63018228E+02 5 -1.50958620E+01

THE ERROR SUM SQUARE IS 9.10878630E+02

THE ERROR MEAN SQUARE IS 1.53346571E+00

THE STANDARD ERROR OF ESTIMATE IS 1.23833182E+00

THE COEFFICIENT OF DETERMINATION IS 5.82297360E+02

THE MULTIPLE CORRELATION COEFFICIENT IS 2.41308384E+01

## STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 7.15480691E+02 2 6.42390383E+02 3 2.74646677E+02 4 4.81032505E+02 5 1.08668323E+01

## T VALUE OF REGRESSION COEFFICIENTS

1 1.97966701E+00 2 2.97393673E+00 3 -1.07797548E+00 4 -1.37832313E+00 5 -1.38916858E+00

ANALYSIS OF VARIANCE  
FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 5    | 5.63197036E+01 | 1.12639407E+01 | 7.34541417E+00 |
| DEVIATION ABOUT REGRESSION | 594  | 9.10878630E+02 | 1.53346571E+00 |                |
| TOTAL                      | 599  | 9.67198333E+02 |                |                |

## DEPENDENT VARIABLE NO. 1

## CORRELATION COEFFICIENTS

| RDM | 1              | 2               | 3               | 4               | 5               | 6              |
|-----|----------------|-----------------|-----------------|-----------------|-----------------|----------------|
| 1   | 1.00000000E+00 | 3.56218781E-01  | 4.46786028E-01  | 4.28993158E-02  | -1.76479193E-01 | 1.54642107E-01 |
| 2   | 1.00000000E+00 | 2.48457004E-01  | 5.35463003E-01  | -5.68228102E-01 | 2.11562610E-01  |                |
| 3   | 1.00000000E+00 | -1.00041937E-01 | -1.74716104E-01 | 6.66242190E-02  |                 |                |
| 4   | 1.00000000E+00 | -2.40721542E-01 | 5.67149581E-02  |                 |                 |                |
| 5   | 1.00000000E+00 | -1.65870733E-01 |                 |                 |                 |                |
| 6   | 1.00000000E+00 |                 |                 |                 |                 |                |

## PARTIAL CORRELATION COEFFICIENTS

1 6.09400814E+02 2 1.21123705E+01 3 -4.41866699E+02 4 -5.64630029E+02 5 -5.69059140E+02

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

SHARAD EMPLOYEES  
CROSS-VALIDATION SAMPLE

THEIR SALARY/SAL HANVAT2=737X  
MALES ONLY

INDEPENDENT VARIABLES:

1. AGE 3. EDUCATION  
2. TENURE 4. JOB LEVEL

DEPENDENT VARIABLE:

5. ACTUAL PAY

SAMPLE SIZE 1559  
NO. OF INDEPENDENT VARIABLES 4  
NO. OF DEPENDENT VARIABLES 1

MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.229781774+00 2 4.643494220+00 3 4.584724010+00 4 2.917701540+00 5 3.710526320+00

VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.024479380+00 2 3.373725510+00 3 0.610253250+01 4 1.372073860+00 5 1.510084630+00

DEPENDENT VARIABLE NO. 1

REGRESSION COEFFICIENTS

THE CONSTANT TERM IS -5.663539230-01

1 4.099070750+01 2 4.201647740-02 3 4.281761160-01 4 3.481734640-01

THE ERROR SUM SQUARE IS 1.256975260+03

THE ERROR MEAN SQUARE IS 8.093452250-01

THE STANDARD ERROR OF ESTIMATE IS 9.996593040-01

THE COEFFICIENT OF DETERMINATION IS 0.656733780-01

THE MULTIPLE CORRELATION COEFFICIENT IS 0.820026510-01

STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 2.774492120+02 2 9.550984540-03 3 2.448077380-02 4 2.213978780-02

T VALUE OF REGRESSION COEFFICIENTS

1 1.493393440+01 2 8.587478820+00 3 1.748866760+01 4 1.572685310+01

ANALYSIS OF VARIANCE  
FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 4    | 1.425072110+03 | 2.730680290+02 | 3.383654890+02 |
| DEVIATION ABOUT REGRESSION | 1557 | 1.256975260+03 | 8.093452260-01 |                |
| TOTAL                      | 1557 | 2.682047370+03 |                |                |

DEPENDENT VARIABLE NO. 1

CORRELATION COEFFICIENTS

| ROW | 1              | 2              | 3                | 4               | 5              |
|-----|----------------|----------------|------------------|-----------------|----------------|
| 1   | 1.000000000+00 | 0.026231320-01 | -0.2024466060-01 | 0.4374263610-01 | 0.045851360-01 |
| 2   |                | 1.000000000+00 | -0.014539240-01  | 0.826412550-01  | 0.868012140-01 |
| 3   |                |                | 1.000000000+00   | -0.513337650-01 | 0.588901160-01 |
| 4   |                |                |                  | 1.000000000+00  | 0.016807380-01 |
| 5   |                |                |                  |                 | 1.000000000+00 |

PARTIAL CORRELATION COEFFICIENTS

1 3.543522520-01 2 2.129148370-01 3 4.056338070-01 4 3.706511060-01

**SALARIED EMPLOYEES  
CROSS-VALIDATION SAMPLE**

**GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS**

SAMPLE SIZE 1558  
NO. OF INDEPENDENT VARIABLES 5  
NO. OF DEPENDENT VARIABLES 1

THIS IS SALARY/DIF RANXAT2=737X  
MALES ONLY

**INDEPENDENT VARIABLES:**

1. AGE
2. PAY
3. TENURE
4. EDUCATION
5. JOB LEVEL

**DEPENDENT VARIABLE:**

6. SATISFACTION (DIF SCORE)

**MEANS OF INDEPENDENT AND DEPENDENT VARIABLES**

1 2.22978177E+00 2 3.71052632E+00 3 4.88549422E+00 4 6.58472401E+00 5 2.91720154E+00 6 5.69383825E+00

**VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES**

1 1.0248799E+00 2 1.51088463E+00 3 6.37172651E+00 4 9.61025325E+01 5 1.37207386E+00 6 2.10080979E+00

DEPENDENT VARIABLE NO. 1

**REGRESSION COEFFICIENTS**

THE CONSTANT TERM IS 5.46832114E+00

1 4.35618146E-02 2 2.55392361E-01 3 -1.84761189E-02 4 -1.28985255E-01 5 -8.84453219E-02

THE ERROR SUM SQUARE IS 3.13542930E+03

THE ERROR MEAN SQUARE IS 2.02025084E+00

THE STANDARD ERROR OF ESTIMATE IS 1.42135528E+00

THE COEFFICIENT OF DETERMINATION IS 0.14347813E-02

THE MULTIPLE CORRELATION COEFFICIENT IS 2.03555352E-01

**STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS**

1 4.63742824E-02 2 4.00902979E-02 3 1.54435500E-02 4 4.23142849E-02 5 3.76590753E-02

**T VALUE OF REGRESSION COEFFICIENTS**

1 9.39352059E-01 2 6.37042612E+00 3 -1.19636463E+00 4 -3.04626739E+00 5 -1.28641826E+00

**ANALYSIS OF VARIANCE  
FOR THE MULTIPLE LINEAR REGRESSION**

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 5    | 1.35531547E+02 | 2.71063095E+01 | 1.34172990E+01 |
| DEVIATION ABOUT REGRESSION | 1552 | 3.13542930E+03 | 2.02025084E+00 |                |
| TOTAL                      | 1557 | 3.27096085E+03 |                |                |

DEPENDENT VARIABLE NO. 1

**CORRELATION COEFFICIENTS**

| ROW   | 1              | 2               | 3               | 4               | 5              | 6              |
|-------|----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ROW 1 | 1.00000000E+00 | 5.04585136E-01  | 5.02623132E-01  | -2.20246606E-01 | 4.37426361E-01 | 1.23260315E-01 |
| ROW 2 | 1.00000000E+00 | 3.86901214E-01  | 1.58680116E-01  | 5.01680738E-01  | 1.84185810E-01 |                |
| ROW 3 | 1.00000000E+00 | -3.01453924E-01 | 3.82641255E-01  | 7.34991725E-02  |                |                |
| ROW 4 | 1.00000000E+00 | -1.51333765E-01 | -4.25283572E-02 |                 |                |                |
| ROW 5 | 1.00000000E+00 | 8.19025600E-02  |                 |                 |                |                |
| ROW 6 | 1.00000000E+00 |                 |                 |                 |                |                |

**PARTIAL CORRELATION COEFFICIENTS**

1 2.38374327E-02 2 1.59631160E-01 3 -3.03541125E-02 4 -7.71455718E-02 5 -3.26366008E-02

# Hourly Employees CROSS-Validation Sample

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

THESES HOURLY/SAL RAHWAT3=700X  
MALES ONLY

### INDEPENDENT VARIABLES:

1. AGE
2. TENURE
3. EDUCATION
4. JOB LEVEL

### DEPENDENT VARIABLE:

5. ACTUAL PAY

SAMPLE SIZE 2253  
NO. OF INDEPENDENT VARIABLES 4  
NO. OF DEPENDENT VARIABLES 1

### MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.1442521E+00 2 4.92853972E+00 3 2.46959609E+00 4 1.68397692E+00 5 5.70439414E+00

### VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.2679298E+00 2 9.01576150E+00 3 1.21277413E+00 4 1.01642610E+00 5 2.00405282E+00  
DEPENDENT VARIABLE NO. 1

### REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 3.67816913E+00

1 1.17165021E-01 2 1.86468942E-01 3 1.93293224E-01 4 2.22288903E-01

THE ERROR SUM SQUARE IS 3.47269235E+03

THE ERROR MEAN SQUARE IS 1.54479197E+00

THE STANDARD ERROR OF ESTIMATE IS 1.24289661E+00

THE COEFFICIENT OF DETERMINATION IS 2.30535117E-01

THE MULTIPLE CORRELATION COEFFICIENT IS 4.80140727E-01

### STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 3.12817906E-02 2 1.15572046E-02 3 2.48451527E-02 4 2.64414797E-02

### T VALUE OF REGRESSION COEFFICIENTS

1 3.80940538E+00 2 1.61344329E+01 3 7.77991694E+00 4 8.40047138E+00

### ANALYSIS OF VARIANCE FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUO TO REGRESSION          | 4    | 1.04043415E+03 | 2.60104537E+02 | 1.64377711E+02 |
| DEVIATION ABOUT REGRESSION | 2248 | 3.47269235E+03 | 1.54479197E+00 |                |
| TOTAL                      | 2252 | 4.51312650E+03 |                |                |

### DEPENDENT VARIABLE NO. 1

### CORRELATION COEFFICIENTS

|     |   |                |                   |                   |                   |                  |
|-----|---|----------------|-------------------|-------------------|-------------------|------------------|
| R01 | 1 | 1.00000000E+00 | 2 0.51426906E-01  | 3 -2.42052978E-01 | 4 -1.14804924E-02 | 5 3.14027525E-01 |
| R02 | 2 | 1.00000000E+00 | 3 -1.73145310E-01 | 4 -8.46209257E-02 | 5 4.17071683E-01  |                  |
| R03 | 3 | 1.00000000E+00 | 4 1.60920127E-01  | 5 8.28148667E-02  |                   |                  |
| R04 | 4 | 1.00000000E+00 | 5 1.17950249E-01  |                   |                   |                  |
| R05 | 5 | 1.00000000E+00 |                   |                   |                   |                  |

### PARTIAL CORRELATION COEFFICIENTS

1 0.0086956E-02 2 3.22153045E-01 3 1.61922601E-01 4 1.74459147E-01

# Hourly Employees CROSS-VALIDATION SAMPLE

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

INDEPENDENT VARIABLES:  
1. AGE 4. EDUCATION  
2. PAY 5. JOB LEVEL  
3. TENURE  
DEPENDENT VARIABLE:  
6. ACTUAL PAY

SAMPLE SIZE 2251  
NO. OF INDEPENDENT VARIABLES 5  
NO. OF DEPENDENT VARIABLES 1

THESES HOURLY/DIF HANMAT3=700X  
MALES ONLY

### MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.14425211E+00 2 5.70439414E+00 3 4.92853972E+00 4 2.46959609E+00 5 1.68397692E+00 6 3.29693742E+00

### VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.24292987E+00 2 2.00405262E+00 3 9.01576150E+00 4 1.21277413E+00 5 1.01642610E+00 6 2.36072330E+00  
DEPENDENT VARIABLE NO. 1

### REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 4.37035524E+00  
1 1.36838425E+01 2 1.75871150E+01 3 -2.64586997E+02 4 6.48977597E+02 5 3.52590388E+02

THE ERROR SUM SQUARE IS 5.20682830E+03

THE ERROR MEAN SQUARE IS 2.31723556E+00

THE STANDARD ERROR OF ESTIMATE IS 1.52224688E+00

THE COEFFICIENT OF DETERMINATION IS 2.06007117E+02

THE MULTIPLE CORRELATION COEFFICIENT IS 1.43529480E+01

### STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 3.84360673E+02 2 2.58316375E+02 3 1.49518938E+02 4 3.08362172E+02 5 3.29136444E+02

### T VALUE OF REGRESSION COEFFICIENTS

1 3.56065268E+00 2 4.09850712E+00 3 -1.76958853E+00 4 2.10459536E+00 5 1.07125903E+00

### ANALYSIS OF VARIANCE FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 5    | 1.09520570E+02 | 2.19041141E+01 | 9.45269203E+00 |
| DEVIATION ABOUT REGRESSION | 2247 | 5.20682830E+03 | 2.31723556E+00 |                |
| TOTAL                      | 2252 | 5.31634887E+03 |                |                |

### DEPENDENT VARIABLE NO. 1

### CORRELATION COEFFICIENTS

| ROW | 1              | 2               | 3               | 4               | 5               | 6              |
|-----|----------------|-----------------|-----------------|-----------------|-----------------|----------------|
| 1   | 1.00000000E+00 | 3.1402725E+01   | 6.51426906E+01  | -2.42052978E+01 | -1.14804924E+02 | 8.55076588E+02 |
| 2   | 1.00000000E+00 | 4.17071683E+01  | 8.28148667E+02  | 1.47950289E+01  | 1.14684723E+01  |                |
| 3   | 1.00000000E+00 | -1.77314530E+01 | -8.46209257E+02 | 4.39683878E+02  |                 |                |
| 4   | 1.00000000E+00 | 1.40920127E+01  | 4.32595778E+02  |                 |                 |                |
| 5   | 1.00000000E+00 | 4.82795694E+02  |                 |                 |                 |                |
| 6   | 1.00000000E+00 |                 |                 |                 |                 |                |

### PARTIAL CORRELATION COEFFICIENTS

1 7.44916731E+02 2 8.61403993E+02 3 -3.73051122E+02 4 4.43546799E+02 5 2.25934257E+02

**SALARIED EMPLOYEES  
ORIGINAL SAMPLE**

**GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS**

THISIS SALARY/SAL HANHAT2=316X  
WITH FEMALES

**DEPENDENT VARIABLE : 6. INCOME**

**INDEPENDENT VARIABLES :**

SAMPLE SIZE 1604  
NO. OF INDEPENDENT VARIABLES 5  
NO. OF DEPENDENT VARIABLES 1

1. SEX 4. EDUCATION  
2. AGE 5. JOB LEVEL  
3. TENURE

**MEANS OF INDEPENDENT AND DEPENDENT VARIABLES**

1 1.02743142E+00 2 2.18952618E+00 3 4.72568579E+00 4 4.58728180E+00 5 2.91147132E+00 6 3.66583541E+00

**VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES**

1 2.66055817E-02 2 9.48461659E-01 3 8.24784887E+00 4 9.73662226E-01 5 1.42447219E+00 6 1.53642407E+00

DEPENDENT VARIABLE NO. 1

**REGRESSION COEFFICIENTS**

THE CONSTANT TERM IS 5.23393722E-01  
1 -9.13478701E-01 2 4.36490943E-01 3 8.03521239E-02 4 4.00548083E-01 5 3.11947769E-01

THE ERROR SUM SQUARE IS 1.34181046E+03

THE ERROR MEAN SQUARE IS 8.39681140E-01

THE STANDARD ERROR OF ESTIMATE IS 9.16341170E-01

THE COEFFICIENT OF DETERMINATION IS 4.55188145E-01

THE MULTIPLE CORRELATION COEFFICIENT IS 6.74676326E-01

**STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS**

1 1.40570845E-01 2 2.86598464E-02 3 9.87772894E-03 4 2.44203110E-02 5 2.22208983E-02

**T VALUE OF REGRESSION COEFFICIENTS**

1 -6.49006244E+00 2 1.52300517E+01 3 8.13467594E+00 4 1.64022515E+01 5 1.40384860E+01

**ANALYSIS OF VARIANCE  
FOR THE MULTIPLE LINEAR REGRESSION**

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 5    | 1.12107732E+03 | 2.24215468E+02 | 2.67024533E+02 |
| DEVIATION ABOUT REGRESSION | 1598 | 1.34181046E+03 | 8.39681140E-01 |                |
| TOTAL                      | 1603 | 2.46288778E+03 |                |                |

DEPENDENT VARIABLE NO. 1

**CORRELATION COEFFICIENTS**

| ROW | 1              | 2               | 3               | 4               | 5               | 6               |
|-----|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 1   | 1.00000000E+00 | -3.26933023E-02 | 3.33294192E-02  | -5.35539161E-02 | -3.35061710E-04 | -1.42607318E-01 |
| 2   | 1.00000000E+00 | 5.12414316E-01  | -2.16517051E-01 | 4.42728622E-01  | 5.06225039E-01  |                 |
| 3   | 1.00000000E+00 | -2.99957056E-01 | 4.35532371E-01  | 3.93064277E-01  |                 |                 |
| 4   | 1.00000000E+00 | -1.62940900E-01 | 1.46271675E-01  |                 |                 |                 |
| 5   | 1.00000000E+00 | 4.81369262E-01  |                 |                 |                 |                 |
| 6   | 1.00000000E+00 |                 |                 |                 |                 |                 |

**PARTIAL CORRELATION COEFFICIENTS**

1 -1.60471274E-01 2 3.56025607E-01 3 1.99407288E-01 4 3.79601020E-01 5 3.31343517E-01

# SALARIED EMPLOYEES ORIGINAL SAMPLE

SAMPLE SIZE 1000  
NO. OF INDEPENDENT VARIABLES 6  
NO. OF DEPENDENT VARIABLES 1

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

THESES SALARY/DIF HANNAI2=310X  
WITH FEMALES

### INDEPENDENT VARIABLES:

1. SEX 4. TENURE
2. AGE 5. EDUCATION
3. PAY 6. JOB LEVEL

### DEPENDENT VARIABLE:

7. SATISFACTION (DIF SCORE)

#### VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.66055417E-02 2 9.48461659E-01 3 1.53642407E+00 4 8.24784887E+00 5 9.73662226E-01 6 1.42447219E+00  
7 2.04644752E+00

#### DEPENDENT VARIABLE NO. 1

#### REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 4.74466618E+00  
1 5.28797559E-01 2 1.23106035E-01 3 1.96564452E-01 4 -1.61418085E-02 5 -6.88335053E-02 6 -5.01024200E-02

THE ERROR SUM SQUARE IS 3.15287774E+03

THE ERROR MEAN SQUARE IS 1.97425031E+00

THE STANDARD ERROR OF ESTIMATE IS 1.40508018E+00

THE COEFFICIENT OF DETERMINATION IS 3.79500075E-02

THE MULTIPLE CORRELATION COEFFICIENT IS 1.94807617E-01

#### STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 2.18175638E-01 2 4.70272433E-02 3 3.83579616E-02 4 1.54565246E-02 5 4.04746226E-02 6 3.61126140E-02

#### T VALUE OF REGRESSION COEFFICIENTS

1 2.42150436E+00 2 2.61775998E+00 3 5.12452810E+00 4 -1.04433621E+00 5 -1.65124468E+00 6 -1.38739389E+00

#### ANALYSIS OF VARIANCE FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 6    | 1.28371639E+02 | 2.07286064E+01 | 1.04994824E+01 |
| DEVIATION ABOUT REGRESSION | 1597 | 3.15287774E+03 | 1.97425031E+00 |                |
| TOTAL                      | 1603 | 3.27724938E+03 |                |                |

#### DEPENDENT VARIABLE NO. 1

#### CORRELATION COEFFICIENTS

ROW 1

1 1.00000000E+00 2 -3.26933023E-02 3 -1.82607318E-01 4 3.33294192E-02 5 -5.35539161E-02 6 -3.35061710E-04

7 3.47870495E-02

ROW 2

2 1.00000000E+00 3 5.06225039E-01 4 5.12414316E-01 5 -2.16517051E-01 6 4.42728622E-01 7 1.42993809E-03

ROW 3

3 1.00000000E+00 4 3.93064277E-01 5 1.46271675E-01 6 4.81369262E-01 7 1.64610899E-01

ROW 4

4 1.00000000E+00 5 -2.99957056E-01 6 4.34532371E-01 7 7.51575485E-02

ROW 5

5 1.00000000E+00 6 -1.62940900E-01 7 -2.60485405E-02

ROW 6

6 1.00000000E+00 7 7.07023314E-02

ROW 7

7 1.00000000E+00

#### PARTIAL CORRELATION COEFFICIENTS

1 6.04435044E-02 2 6.53653496E-02 3 1.27191981E-01 4 -2.61239975E-02 5 -4.12846444E-02 6 -3.46965065E-02

# Hourly Employees ORIGINAL SAMPLE

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

THESIS HOURLY/SAL RANMAT3=227X  
WITH FEMALES

### INDEPENDENT VARIABLES:

1. SEX
2. AGE
3. TENURE
4. EDUCATION
5. JOB LEVEL

SAMPLE SIZE 2720  
NO. OF INDEPENDENT VARIABLES 5  
NO. OF DEPENDENT VARIABLES 1

### DEPENDENT VARIABLE: INCOME

#### MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.17462147E+00 2 2.11249542E+00 3 4.89666545E+00 4 2.53682668E+00 5 1.76328325E+00 6 5.43129351E+00

#### VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.45479637E+01 2 1.18858648E+00 3 9.17773448E+00 4 1.17762057E+00 5 8.92624993E-01 6 2.25341185E+00

#### DEPENDENT VARIABLE NO. 1

#### REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 5.36046872E+00  
1 -1.60168521E+00 2 1.41146329E-01 3 1.83528010E-01 4 1.62505001E-01 5 1.97734537E-01

THE ERROR SUM SQUARE IS 3.97299023E+03

THE ERROR MEAN SQUARE IS 1.45904893E+00

THE STANDARD ERROR OF ESTIMATE IS 1.20791098E+00

THE COEFFICIENT OF DETERMINATION IS 3.53708687E-01

THE MULTIPLE CORRELATION COEFFICIENT IS 5.94734131E-01

#### STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 6.11162919E-02 2 2.91702689E-02 3 1.04531092E-02 4 2.21910717E-02 5 2.51355220E-02

#### T VALUE OF REGRESSION COEFFICIENTS

1 -2.62198972E+01 2 4.83870508E+00 3 1.75572652E+01 4 7.32299023E+00 5 7.86673682E+00

#### ANALYSIS OF VARIANCE FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 5    | 2.17437730E+03 | 4.34875460E+02 | 2.98054062E+02 |
| DEVIATION ABOUT REGRESSION | 2723 | 3.97299023E+03 | 1.45904893E+00 |                |
| TOTAL                      | 2728 | 6.14736753E+03 |                |                |

#### DEPENDENT VARIABLE NO. 1

#### CORRELATION COEFFICIENTS

| ROW | 1              | 2               | 3               | 4               | 5              | 6               |
|-----|----------------|-----------------|-----------------|-----------------|----------------|-----------------|
| 1   | 1.00000000E+00 | -2.57608891E-02 | 2.79400624E-03  | 7.46138390E-02  | 1.04874046E-01 | -3.87261071E-01 |
| 2   | 1.00000000E+00 | 6.78766429E-01  | -2.05053937E-01 | -4.28225249E-02 | 3.34989525E-01 |                 |
| 3   | 1.00000000E+00 | -1.70444613E-01 | -9.78153325E-02 | 4.06625257E-01  |                |                 |
| 4   | 1.00000000E+00 | 1.88345813E-01  | 2.63627900E-02  |                 |                |                 |
| 5   | 1.00000000E+00 | 6.32241318E-02  |                 |                 |                |                 |
| 6   | 1.00000000E+00 |                 |                 |                 |                |                 |

#### PARTIAL CORRELATION COEFFICIENTS

1 -4.49249241E-01 2 9.23307205E-02 3 3.18893340E-01 4 1.38972781E-01 5 1.49070238E-01



# Hourly Employees Original Sample

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

### INDEPENDENT VARIABLES:

1. SEX
2. AGE
3. PAY
4. TENURE
5. EDUCATION
6. JOB LEVEL

### DEPENDENT VARIABLE:

7. SATISFACTION (DIF SCORE)

SAMPLE SIZE 2722  
NO. OF INDEPENDENT VARIABLES 6  
NO. OF DEPENDENT VARIABLES 1

THESES HOURLY/DIF RANKING=2274  
WITH FEMALES

### VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.4547761E+01 2 1.1885364E+00 3 2.2534334E+00 4 9.1777344E+00 5 1.1776205E+00 6 8.9242499E+01  
7 2.0440371E+00

### DEPENDENT VARIABLE NO. 1

### REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 3.5515394E+00  
1 3.4373113E+01 2 1.3405044E+01 3 1.0029177E+01 4 -2.4354526E+02 5 4.5647518E+02 6 3.0396158E+02

THE ERROR SUM SQUARE IS 6.3685607E+03

THE ERROR MEAN SQUARE IS 2.3396622E+00

THE STANDARD ERROR OF ESTIMATE IS 1.5295947E+00

THE COEFFICIENT OF DETERMINATION IS 4.5611905E-02

THE MULTIPLE CORRELATION COEFFICIENT IS 2.1356943E-01

### STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 8.6626281E-02 2 3.7077205E-02 3 2.4267097E-02 4 1.3966087E-02 5 2.8376238E-02 6 3.2189143E-02

### T VALUE OF REGRESSION COEFFICIENTS

1 9.7399001E+00 2 3.6134916E+00 3 4.1328293E+00 4 -1.7438337E+00 5 1.6445984E+00 6 9.4429845E+01

### ANALYSIS OF VARIANCE FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES  | F RATIO       |
|----------------------------|------|----------------|---------------|---------------|
| DUE TO REGRESSION          | 6    | 3.0436495E+02  | 5.0727474E+01 | 2.1481537E+01 |
| DEVIATION ABOUT REGRESSION | 2722 | 6.3685607E+03  | 2.3396622E+00 |               |
| TOTAL                      | 2728 | 6.6729256E+03  |               |               |

### DEPENDENT VARIABLE NO. 1

### CORRELATION COEFFICIENTS

ROW 1

1 1.0000000E+00 2 -2.5760189E-02 3 -3.9726107E-01 4 2.7940062E-03 5 7.4611839E-02 6 -1.0497404E-01

ROW 2

2 1.0000000E+00 3 3.3498952E-01 4 -2.0505393E-01 5 -4.2822574E-02 7 8.0942272E-02

ROW 3

3 1.0000000E+00 4 4.0662525E-01 5 2.6362790E-02 6 6.3224131E-02 7 3.0711468E-02

ROW 4

4 1.0000000E+00 5 -1.7034461E-01 6 -9.7815332E-02 7 4.8653209E-02

ROW 5

5 1.0000000E+00 6 1.8834581E-01 7 4.2609100E-02

ROW 6

6 1.0000000E+00 7 5.2738879E-02

ROW 7

7 1.0000000E+00

### PARTIAL CORRELATION COEFFICIENTS

1 1.4351494E-01 2 6.9024557E-02 3 7.8966900E-02 4 -3.3405534E-02 5 3.1506500E-02 6 1.8096479E-02

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

SALARIED EMPLOYEES  
CROSS-VALIDATION SAMPLE

SAMPLE SIZE 1474  
NO. OF INDEPENDENT VARIABLES 5  
NO. OF DEPENDENT VARIABLES 1

THIS IS SALARY/SAL RAHMAT\*310X  
WITH FEMALES

## INDEPENDENT VARIABLES:

1. SEX
2. AGE
3. TENURE
4. EDUCATION
5. JOB LEVEL

## DEPENDENT VARIABLES:

6. ACTUAL PAY

## MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.02792519E+00 2 2.21321696E+00 3 4.66040898E+00 4 4.61097257E+00 5 2.95199501E+00 6 3.72319202E+00

## VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.90177798E-02 2 9.72601244E-01 3 4.19417574E+00 4 8.97845841E-01 5 1.36575397E+00 6 1.54903135E+00

## DEPENDENT VARIABLE NO. 1

## REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 6.87971581E-01  
1 -1.09587831E+00 2 8.45040912E-01 3 5.62418530E-02 4 4.33979229E-01 5 3.33429552E-01

THE ERROR SUM SQUARE IS 1.40411895E+03

THE ERROR MEAN SQUARE IS 8.78672682E-01

THE STANDARD ERROR OF ESTIMATE IS 9.37375422E-01

THE COEFFICIENT OF DETERMINATION IS 0.34529219E-01

THE MULTIPLE CORRELATION COEFFICIENT IS 0.59198303E-01

## STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 1.39262750E-01 2 2.92475161E-02 3 9.83950442E-03 4 2.60311631E-02 5 2.30264636E-02

## T VALUE OF REGRESSION COEFFICIENTS

1 -7.86714155E+00 2 1.52183661E+01 3 5.71592334E+00 4 1.66715267E+01 5 1.44802762E+01

ANALYSIS OF VARIANCE  
FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 5    | 1.07897831E+03 | 2.15795662E+02 | 2.45592775E+02 |
| DEVIATION ABOUT REGRESSION | 1598 | 1.40411895E+03 | 8.78672682E-01 |                |
| TOTAL                      | 1603 | 2.48309726E+03 |                |                |

## DEPENDENT VARIABLE NO. 1

## CORRELATION COEFFICIENTS

| ROW   | 1              | 2               | 3               | 4               | 5              | 6               |
|-------|----------------|-----------------|-----------------|-----------------|----------------|-----------------|
| ROW 1 | 1.00000000E+00 | -3.79884426E-02 | 6.65576331E-02  | -1.17147772E-01 | 5.73291439E-02 | -1.75610456E-01 |
| ROW 2 | 1.00000000E+00 | 5.07417271E-01  | -2.26275312E-01 | 4.44066340E-01  | 4.88250207E-01 |                 |
| ROW 3 | 1.00000000E+00 | -2.57747751E-01 | 3.88406355E-01  | 3.34748297E-01  |                |                 |
| ROW 4 | 1.00000000E+00 | -2.17428341E-01 | 1.66771041E-01  |                 |                |                 |
| ROW 5 | 1.00000000E+00 | 4.39481754E-01  |                 |                 |                |                 |
| ROW 6 | 1.00000000E+00 |                 |                 |                 |                |                 |

## PARTIAL CORRELATION COEFFICIENTS

1 -1.93144943E-01 2 8.55746148E-01 3 1.41547798E-01 4 3.84915963E-01 5 3.40577741E-01

# GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

104

SALARIED EMPLOYEES  
CROSS-VALIDATION SAMPLE

THESES SALARY/DIF HANNAI2=310X  
WITH FEMALES

## INDEPENDENT VARIABLES:

1. SEX
2. AGE
3. PAY
4. TENURE
5. EDUCATION
6. JOB LEVEL

SAMPLE SIZE 1674  
NO. OF INDEPENDENT VARIABLES 4  
NO. OF DEPENDENT VARIABLES 1

## DEPENDENT VARIABLE:

7. SATISFACTION (DIF SCORE)

### MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.02992519E+00 2 2.21321696E+00 3 3.72319202E+00 4 4.66680898E+00 5 4.61097257E+00 6 2.95199501E+00  
7 3.63166334E+00

### VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 2.90777988E-02 2 9.72601248E-01 3 1.54903135E+00 4 8.19417574E+00 5 8.97845841E-01 6 1.36979339E+00  
7 1.95477275E+00

DEPENDENT VARIABLE NO. 1

### REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 5.07982649E+00  
1 6.77037027E-01 2 1.37694831E-03 3 2.27470450E-01 4 -2.57922558E-02 5 -1.57934705E-01 6 -4.83000825E-02

THE ERROR SUM SQUARE IS 3.03224661E+03

THE ERROR MEAN SQUARE IS 1.89874553E+00

THE STANDARD ERROR OF ESTIMATE IS 1.37794975E+00

THE COEFFICIENT OF DETERMINATION IS 3.42735996E-02

THE MULTIPLE CORRELATION COEFFICIENT IS 1.85131304E-01

### STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 2.08446173E-01 2 4.60035253E-02 3 3.67732007E-02 4 1.46112690E-02 5 4.14604923E-02 6 3.60013893E-02

### T VALUE OF REGRESSION COEFFICIENTS

1 3.24021861E+00 2 2.34101256E-02 3 4.18576697E+00 4 -1.76523038E+00 5 -3.80928194E+00 6 -1.34161718E+00

### ANALYSIS OF VARIANCE FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 4    | 1.07616111E+02 | 1.79360106E+01 | 9.44624664E+00 |
| DEVIATION ABOUT REGRESSION | 1597 | 3.03229661E+03 | 1.89874553E+00 |                |
| TOTAL                      | 1603 | 3.13991272E+03 |                |                |

DEPENDENT VARIABLE NO. 1

### CORRELATION COEFFICIENTS

|       |   |                |                   |                   |                   |                   |                  |
|-------|---|----------------|-------------------|-------------------|-------------------|-------------------|------------------|
| ROW 1 | 1 | 1.00000000E+00 | 2 -3.79844265E-02 | 3 -1.75610456E-01 | 4 6.65576331E-02  | 5 -1.17147772E-01 | 6 5.73291439E-02 |
| ROW 2 | 2 | 1.00000000E+00 | 3 4.80250207E-01  | 4 5.07417271E-01  | 5 -2.26275312E-01 | 6 4.44066340E-01  | 7 7.59057146E-02 |
| ROW 3 | 3 | 1.00000000E+00 | 4 3.34748297E-01  | 5 1.06771041E-01  | 6 4.39481754E-01  | 7 1.34941123E-01  |                  |
| ROW 4 | 4 | 1.00000000E+00 | 5 -2.57747751E-01 | 6 1.88406355E-01  | 7 3.27361949E-02  |                   |                  |
| ROW 5 | 5 | 1.00000000E+00 | 6 -2.17428341E-01 | 7 -4.06683962E-02 |                   |                   |                  |
| ROW 6 | 6 | 1.00000000E+00 | 7 5.63987434E-02  |                   |                   |                   |                  |
| ROW 7 | 7 | 1.00000000E+00 |                   |                   |                   |                   |                  |

### PARTIAL CORRELATION COEFFICIENTS

1 4.10193006E-02 2 5.85802490E-04 3 1.52967671E-01 4 -4.41291593E-02 5 -9.48913294E-02 6 -3.35530150E-02

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

Hourly Employees  
CROSS-VALIDATION SAMPLETHIS HOUR/SAL HANNAH3=227K  
WITH FEMALES

## INDEPENDENT VARIABLES:

1. SEX
2. AGE
3. TENURE
4. EDUCATION
5. JOB LEVEL

## DEPENDENT VARIABLE:

6. ACTUAL INCOME

SAMPLE SIZE 2772  
NO. OF INDEPENDENT VARIABLES 5  
NO. OF DEPENDENT VARIABLES 1

## MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.17222426E+00 2 2.15536877E+00 3 4.909P5709E+00 4 2.50494687E+00 5 1.72957127E+00 6 5.44741664E+00

## VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.42415322E+01 2 1.24931226E+00 3 4.98893873E+00 4 1.13863021E+00 5 6.74788709E+01 6 2.33090333E+00

## DEPENDENT VARIABLE NO. 1

## REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 5.33059504E+00  
1 -1.55428353E+00 2 4.31688664E+02 3 2.10064738E+01 4 1.59314936E+01 5 2.41462621E+01

THE ERROR SUM SQUARE IS 4.19137562E+03

THE ERROR MEAN SQUARE IS 1.53924922E+00

THE STANDARD ERROR OF ESTIMATE IS 1.24044983E+00

THE COEFFICIENT OF DETERMINATION IS 0.40844388E+01

THE MULTIPLE CORRELATION COEFFICIENT IS 5.83818797E+01

## STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 6.33205173E+02 2 2.78867903E+02 3 1.02701997E+02 4 2.31015170E+02 5 2.59788007E+02

## T VALUE OF REGRESSION COEFFICIENTS

1 -2.45778714E+01 2 1.54800412E+00 3 2.04539124E+01 4 6.89629760E+00 5 9.29460233E+00

ANALYSIS OF VARIANCE  
FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 5    | 2.14732467E+03 | 4.33465734E+02 | 2.81608546E+02 |
| DEVIATION ABOUT REGRESSION | 2723 | 4.19137562E+03 | 1.53924922E+00 |                |
| TOTAL                      | 2728 | 6.33870429E+03 |                |                |

## DEPENDENT VARIABLE NO. 1

## CORRELATION COEFFICIENTS

| RNO | 1              | 2               | 3               | 4              | 5              | 6               |
|-----|----------------|-----------------|-----------------|----------------|----------------|-----------------|
| 1   | 1.00000000E+00 | -2.60730819E-02 | -4.41371646E-03 | 1.69479573E-02 | 1.09076170E-01 | -3.69572917E-01 |
| 2   | 1.00000000E+00 | 6.32937619E+01  | -2.14250719E-01 | 5.84230223E-03 | 2.79748322E+01 |                 |
| 3   | 1.00000000E+00 | -1.53398207E-01 | -5.83708575E-02 | 4.08507568E-01 |                |                 |
| 4   | 1.00000000E+00 | 1.58175037E+01  | 5.81561009E-02  |                |                |                 |
| 5   | 1.00000000E+00 | 9.96529483E-02  |                 |                |                |                 |
| 6   | 1.00000000E+00 |                 |                 |                |                |                 |

## PARTIAL CORRELATION COEFFICIENTS

1 -4.26101618E+01 2 2.96522246E+02 3 1.64935003E+01 4 1.31018402E+01 5 1.75357694E+01

# Hourly Employees CROSS-VALIDATION SAMPLE

## GENERAL MULTIPLE REGRESSION AND CORRELATION ANALYSIS

INDEPENDENT VARIABLES:  
 1. SEX 2. EDUCATION  
 3. AGE 4. JOB LEVEL  
 5. PAY 6. TENURE  
DEPENDENT VARIABLE:  
 7. SATISFACTION (DIF SCORE)

THIS IS HOURLY/DIF RANKING=227X  
 WITH FEMALES

SAMPLE SIZE 2729  
 NO. OF INDEPENDENT VARIABLES 6  
 NO. OF DEPENDENT VARIABLES 1

### MEANS OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.17222426E+00 2 2.15536827E+00 3 5.44741664E+00 4 4.90905709E+00 5 2.50494687E+00 6 1.72957127E+00  
 7 5.37156460E+00

### VARIANCES OF INDEPENDENT AND DEPENDENT VARIABLES

1 1.42615322E-01 2 1.24931226E+00 3 2.33090333E+00 4 8.98673873E+00 5 1.13863021E+00 6 8.74788709E-01  
 7 2.41027616E+00

### DEPENDENT VARIABLE NO. 1

### REGRESSION COEFFICIENTS

THE CONSTANT TERM IS 3.48403283E+00  
 1 8.65876141E-01 2 5.61705121E-02 3 1.15903874E-01 4 -2.04158923E-02 5 5.08724094E-02 6 5.12159854E-02

THE ERROR SUM SQUARE IS 6.28105433E+03

THE ERROR MEAN SQUARE IS 2.30751445E+00

THE STANDARD ERROR OF ESTIMATE IS 1.51905051E+00

THE COEFFICIENT OF DETERMINATION IS 4.47404782E-02

THE MULTIPLE CORRELATION COEFFICIENT IS 2.11519451E-01

### STANDARD DEVIATIONS OF THE REGRESSION COEFFICIENTS

1 8.56977584E-02 2 3.41591882E-02 3 2.34635609E-02 4 1.35091497E-02 5 2.85310739E-02 6 3.23086646E-02

### T VALUE OF REGRESSION COEFFICIENTS

1 1.01038365E+01 2 1.70292531E+00 3 4.93973930E+00 4 -1.51159974E+00 5 1.78305274E+00 6 1.56520898E+00

### ANALYSIS OF VARIANCE FOR THE MULTIPLE LINEAR REGRESSION

| SOURCE OF VARIATION        | D.F. | SUM OF SQUARES | MEAN SQUARES   | F RATIO        |
|----------------------------|------|----------------|----------------|----------------|
| DUE TO REGRESSION          | 6    | 2.98179067E+02 | 4.96965112E+01 | 2.12479050E+01 |
| DEVIATION ABOUT REGRESSION | 2722 | 6.28105433E+03 | 2.30751445E+00 |                |
| TOTAL                      | 2728 | 6.57923420E+03 |                |                |

### DEPENDENT VARIABLE NO. 1

### CORRELATION COEFFICIENTS

ROW 1  
 1 1.00000000E+00 2 -2.60730814E-02 3 -3.69572917E-01 4 -4.41371646E-03 5 1.69679573E-02 6 1.09076170E-01  
 7 1.71540715E-01  
 ROW 2  
 2 1.00000000E+00 3 2.79748322E-01 4 6.32937619E-01 5 -2.14250719E-01 6 5.84238223E-03 7 3.60001230E-02  
 ROW 3  
 3 1.00000000E+00 4 4.08507568E-01 5 5.81561010E-02 6 9.96529483E-02 7 3.68564789E-02  
 ROW 4  
 4 1.00000000E+00 5 -1.53398207E-01 6 -5.83708575E-02 7 2.55479136E-02  
 ROW 5  
 5 1.00000000E+00 6 1.58175070E-01 7 4.71278477E-02  
 ROW 6  
 6 1.00000000E+00 7 1.32639108E-02  
 ROW 7  
 7 1.00000000E+00

### PARTIAL CORRELATION COEFFICIENTS

1 1.90128506E-01 2 3.26227313E-02 3 9.42588318E-02 4 -2.89607992E-02 5 3.41559721E-02 6 3.03698111E-02

## BIBLIOGRAPHY

- Adams, J. S. Toward an understanding of inequity. Journal of Abnormal and Social Psychology, 1963, 67, 422-436.
- Andrews, I. R. and Henry, Mildred M. Management attitudes toward pay. Industrial Relations, 1963, 3, 29-39.
- Ash, P. The SRA employee inventory: A statistical analysis. Personnel Psychology, 1954, 1, 337-364.
- Atkinson, J. W. and Reitman, W. R. Performance as a function of motive strength and expectancy of goal attainment. Journal of Abnormal and Social Psychology, 1956, 53, 361-366.
- Brayfield, A. H. and Crockett, W. H. Employee attitudes and employee performance. Psychological Bulletin, 1955, 52, 396-424.
- Brown, J. A. C. The social psychology of industry. Baltimore: Penguin, 1954.
- Brown, J. S. The motivation of behavior. New York: McGraw-Hill, 1961.
- Centers, R. and Cantril, H. Income satisfaction and income aspiration. Journal of Abnormal and Social Psychology, 1946, 51, 64-69.
- Chandler, H. R., Foster, K. and McCormack, R. L. Age and experience as salary predictors. Personnel Journal, 1963, 42, 502-504.
- Clark, C. L. A general multiple regression and correlation analysis program for the Burroughs 5500 computer. Detroit: Burrough Corporation, 1964.
- Dabas, Z. B. The dimensions of morale: An item factorization of SRA. Personnel Psychology, 1958, 11, 217-234.
- Darlington, R. B. Multiple regression in psychological research and practice. Psychological Bulletin, 1968, 69, 161-182.
- Dollard, J., and Miller, N. E. Personality and psycho-therapy. New York: McGraw-Hill, 1950.

- England, G. W. and Stein, C. I. The occupational reference group--a neglected concept in employee attitude studies. Personnel Psychology, 1961, 14, 299-304.
- English, H. B. and English, A. V. A comprehensive dictionary of psychological and psycho-analytical terms. New York: Longmans, Green and Company, 1958.
- Evens, C. E. and Laseau, L. N. My job contest. Employee Relations Publication. Personnel Psychology, Monograph No. 1, 1950.
- Ewen, R. B. Some determinants of job satisfaction: A study of the generality of the Herzberg theory. Journal of Applied Psychology, 1964, 48, 161-163.
- Ezekiel, M. Methods of correlational analysis. New York: Wiley, 1962.
- Ferguson, G. A. Statistical analysis in psychology and education. New York: McGraw-Hill, 1959.
- Ganguli, Harish Chandra. A discussion of some variables affecting attitude of industrial workers. Indian Journal of Psychology, 1957a, 32, 133-150.
- Ganguli, H. C. Some factors influencing income aspiration. Journal of Applied Psychology, 1957b, 41, 32-36.
- Georgopoulos, B. S., Mahoney, G. M., and Jones, M. W., Jr. A path-goal approach to productivity. Journal of Applied Psychology, 1957, 41, 345-353.
- Goodwin, L. Occupational goals and satisfactions of the American work force. Personnel Psychology, 1969, 22, 313-325.
- Gordon, O. J. A factor analysis of human needs and industrial morale. Personnel Psychology, 1955, 9, 1-18.
- Grigsby, O. R. and Burns, W. C. Salary surveys--The deluge. Personnel Journal, 1962, 41, 274-280.
- Gulliksen, H. and Wilks, S. S. Regression tests for several samples. Psychometrika, 1950, June, 91-114.
- Haire, M., Ghiselli, E. E. and Porter, L. W. Psychological research on pay: An overview. Industrial Relations, 1963, 3, 3-8.

- Harrison, R. Cumulative cluster analysis of workers' job attitudes. Journal of Applied Psychology, 1961, 45, 123-125.
- Herzberg, F., Mausner, B., Peterson, R. O. and Capwell, D. F. Job attitudes: Review of research and opinion. Pittsburgh: Psychological Service of Pittsburgh, 1957.
- Herzberg, F., Mausner, B. and Snyderman, B. The motivation to work. (2nd edition) New York: Wiley, 1959.
- Hilton, T. L. and Dill, W. R. Salary growth as a criterion of career progress. Journal of Applied Psychology, 1962, 46, 153-158.
- Hulin, C. L. and Locke, E. A. Cornell studies of job satisfaction. Unpublished Manuscript, 1963.
- Kahn, R. L. Productivity and job satisfaction. Personnel Psychology, 1960, 13, 275-287.
- Kaufmann, H. Task performance, expected performance, and responses to failure as functions of imbalance in the self-concept. Dissertation Abstracts, 1963.
- Kling, D. C. A multiplant factor analysis of employees' attitudes toward their company. Journal of Applied Psychology, 1960, 44, 241-243.
- Klein, S. M. and Maher, J. R. Education level and satisfaction with pay. Personnel Psychology, 1966, 19 (2), 195-208.
- Lawler, E. E. Managers' job performance and their attitudes toward their pay. Dissertation Abstracts, 1964.
- Lawler, E. E., and Hackman, J. Impact of employee participation in the development of pay incentive plans: A field experiment. Journal of Applied Psychology, 1969, 53 (6), 467-471.
- Lawler, E. E. and Porter, L. W. Perceptions regarding management compensation. Industrial Relations, 1963, 3, 41-49.
- Lawler, E. E. and Porter, L. W. Predicting manager's pay and their satisfaction with their pay. Personnel Psychology, 1966, 19, 363-373.
- Loveland, E. H., Ronan, W. W., and York, C. M. A study of operations effectiveness. Atlanta: Georgia Institute of Technology, School of Psychology, 1968.



- Malvinovsky, M. R. and Barry, J. R. Determinants of work attitudes. Journal of Applied Psychology, 1965, 49, 446-451.
- Maslow, A. H. A theory of human motivation. Psychological Review, 1943, 50, 370-396.
- Mayo, E. The social problems of an industrial civilization. Cambridge, Massachusetts: Harvard University Press, 1945.
- Myers, M. S. Who are your motivated workers? Harvard Business Review, 1964, 42 (1), 73-88.
- Opsahl, R. L., and Dunnette, M. D. The role of financial compensation in industrial motivation. Psychological Bulletin, 1966, 66, 94-118.
- Parker, T. C. Relationships among measures of supervisory behavior, group behavior, and situational characteristics. Personnel Psychology, 1963, 16, 319-334.
- Patchen, M. The choice of wage comparisons. Englewood Cliffs, New Jersey: Prentice-Hall, 1961.
- Patton, A. Annual report on executive compensation. Harvard Business Review, 1957, 35 (5), 125-136.
- Penzer, W. N. Education level and satisfaction with pay: an attempted replication. Personnel Psychology, 1969, 22, 185-199.
- Phelan, J. G. Job satisfaction: A study of perceived need satisfaction as a function of job level. Experimental Publication System, 1969, 2, 046A.
- Porter, L. W. A study of perceived need satisfactions in bottom and middle management jobs. Journal of Applied Psychology, 1961, 45, 1-10.
- Porter, L. W. Job attitudes in management: I. Perceived deficiencies in need fulfillment as a function of job level. Journal of Applied Psychology, 1962, 46, 375-384.
- Porter, L. W. and Lawler, E. E. Managerial attitudes and performance. Homewood, Illinois: Richard Irwin, Inc. 1968.
- Raube, S. A. Factors affecting employee morale. National Industrial Conference Board, (Studies in Personnel policy, No. 85), 1947, 5-20.

- Rettig, S. Status and job satisfaction of the professional: A factor analysis. Psychological Reports, 1960, 6, 411-413.
- Richardson, R. C. and Blocker, C. E. Note on the application of factor analysis to the study of faculty morale. Journal of Educational Psychology, 1963, 54, 208-212.
- Ronan, W. W. A study of and some concepts concerning labor turnover. Occupational Psychology. 1967, 41, 193-202.
- Ronan, W. W. Individual and situational variables relating to job satisfaction. Journal of Applied Psychology Monograph, No. 1, 1970, 54 (2).
- Ronan, W. W. The relative importance of job characteristics. Journal of Applied Psychology. (In Press).
- Rothe, H. F. Does higher pay bring higher productivity. Personnel, 1960, 37 (4), 20-28.
- Scollay, Robert W. Validation of personal history items against a salary increase criterion. Personnel Psychology, 1956, 9, 325-335.
- Stockford, L. O. and Kunze, K. R. Psychology and the paycheck. Personnel, 1950, 27, 129-143.
- Strong, E. K. Satisfaction and interests. American Psychologist, 1958, 13, 449-456.
- Vroom, V. H. Work and motivation. New York: Wiley, 1964.
- Weick, K. E. The concept of equity in the perception of pay. Paper read at Midwestern Psychological Association, April, 1965.
- Wherry, R. J. Factor analysis of morale data: Reliability and validity. Personnel Psychology, 1958, 11, 78-89.
- Whyte, W. F. The impact of money. In Gellerman, S. W. Motivation and productivity. American Management Association, Inc. 1963.
- Wilkins, L. T. Incentives and the young worker. Occupational Psychology, 1949, 23, 235-247.
- Will, F. E. and King, D. C. A factor analytic approach to the construct and content validation of a job attitude questionnaire. Personnel Psychology, 1965, 18, 81-90.

- Williams, F. J. and Harrell, T. W. Predicting success in business. Journal of Applied Psychology, 1964, 48, 164-167.
- Winer, B. J. Statistical principles in experimental design. New York: McGraw-Hill, 1962.