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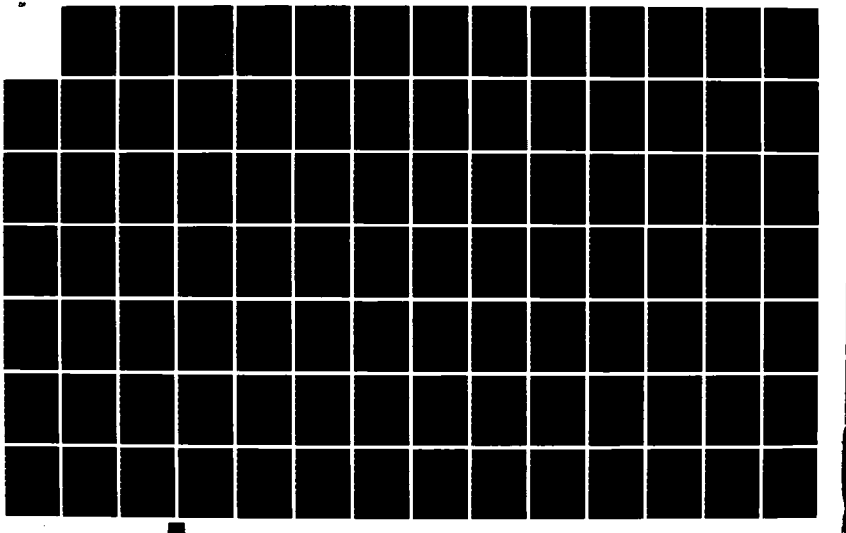

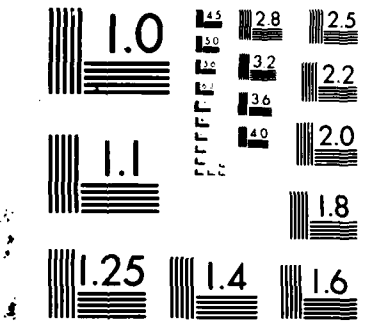

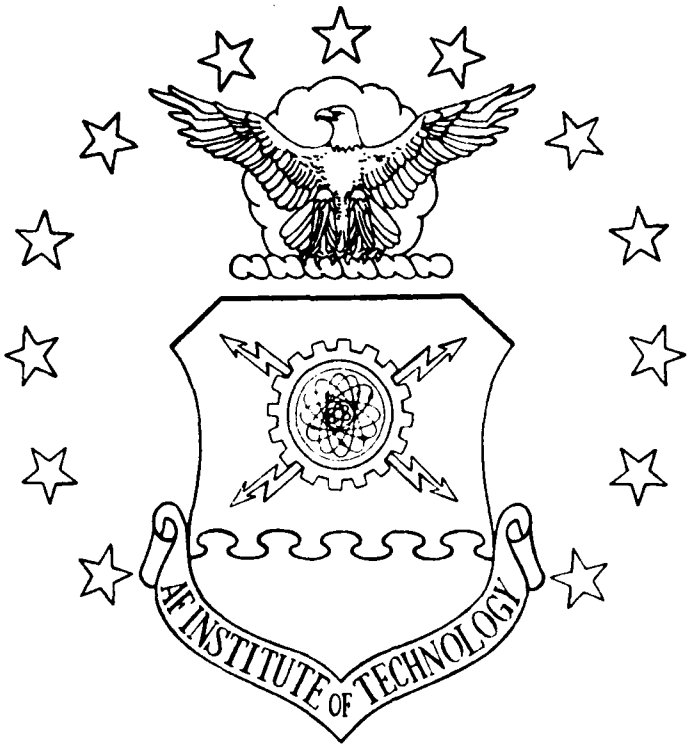

AN ANALYSIS AND COMPARATIVE STUDY OF JOB CHARACTERISTICS AND JOB SATISFACTION IN THE AIR FORCE TRANSPORTATION OFFICER CAREER FIELD

THESIS

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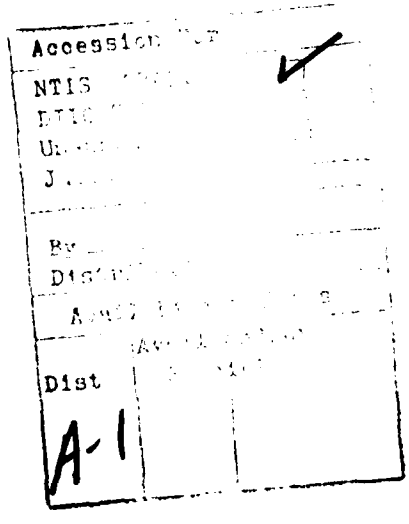

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THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
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In Partial Fulfillment of the
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Abstract

This research project looked at job characteristics, job enrichment potential, and job satisfaction levels in the Transportation Officer career field. The Job Diagnostic Survey was applied to a census of transportation officers. Survey results were analyzed and interpreted in the context of Hackman and Oldham's Job Characteristics Model. Additionally, job satisfaction questions from the survey were used to construct a job satisfaction variable for analyses of groups within the career field. A literature review addressed the evolutionary process in the field of human behavior which resulted in Hackman and Oldham's development of the Job Characteristics Model and the Job Diagnostic Survey. The literature review also explained how the Job Characteristics Model and the Job Diagnostic Survey can be applied to the study of job redesign potential. Survey results indicated that transportation officers are more satisfied with their job than the average managerial worker and as a group would not benefit significantly from job redesign. Analysis, within the career field, revealed that Duty Officers are the least satisfied transportation officers among all assignment groups and First Lieutenants are least satisfied among all grades. No significant difference was found in mean satisfaction levels among

different Major Commands. The study made recommendations on how to improve specific aspects of the job which scored low in the survey. Conclusions addressed possible areas for follow-up research.

AN ANALYSIS AND COMPARATIVE STUDY OF JOB CHARACTERISTICS AND JOB SATISFACTION IN THE AIR FORCE TRANSPORTATION OFFICER CAREER FIELD

I. Introduction

> Lots of jobs are not so well designed. They demotivate people rather than turn them on. They undermine rather than encourage productivity and work quality. They just aren't any fun.
>
> — Hackman and Oldham (1980)

In 1985, twenty-nine cents of every tax dollar spent in the United States went directly for national defense. This spending came to a grand total of 292.6 billion dollars of which 1.2 billion dollars went directly into the Air Force transportation budget (24:17). The current emphasis on reduced spending in government has left Congress and the American public interested in controlling and reducing spending of this magnitude wherever possible. The possibility of reducing transportation costs to the government through increased productivity of Air Force transportation officers is an appealing concept. This research project will look at job characteristics and job satisfaction in the transportation officer career field in an effort to discover potential for increased productivity.

Transportation Duties

Today, transportation officers can expect to be assigned duties in areas that vary widely in task requirements. The following explanations of transportation officers' duty assignments are provided in an effort to address and clarify the extreme diversification in task assignments.

Air Transportation. Transportation officers involved in full-time air transportation duties are primarily assigned to MAC aerial port squadrons in either the Air Terminal Operations Center (ATOC), the Passenger Service Terminal, or the Air Freight Terminal. An officer assigned to the ATOC monitors, coordinates, and controls the flightline activities of all other aerial port functional areas. The Passenger Service Officer must ensure that all passengers are met with prompt, courteous, and professional service. He is responsible for the movement of duty, emergency leave, and space available passengers. The Air Freight Officer is responsible for activities associated with the handling of diversified types of originating and terminating cargo. He must be knowledgeable in all aspects of the cargo area to ensure that all freight is handled safely and efficiently (1:101).

Traffic Management. The Traffic Management Officer is commonly referred to throughout the base as the TMO.

This individual is concerned with duties involving personal property shipments, passenger movement, freight shipments, packing and crating, and mobility. In most transportation squadrons, the TMO will hold an important additional duty position as a mobility augmentee in charge of a primary mobility center. The TMO may be tasked to direct operations of the transportation control unit (TCU), the air passenger terminal (APT), or the air cargo terminal (ACT) (1:13).

Vehicle Management. The Vehicle Management Officer is also known as the Vehicle Operations Officer (VOO). The VOO is responsible for providing timely, adequate, cost-effective, efficient, and reliable Air Force motor vehicle transportation (5:1-9). The VOO receipts for all command-owned, base-registered vehicles, and is responsible for reporting instances of vehicle abuse, misuse, or detected damage to using activity commanders. The VOO reviews vehicle age, mileage, and utilization data to determine when a vehicle must be reassigned or replaced. Additionally, the VOO conducts a vehicle management meeting with vehicle control officers at least every six months, and maintains a vehicle priority list to support maintenance replacement, emergency recall, and inventory shortages. The VOO also performs mobility duties in one of the primary mobility centers (1:42).

Vehicle Maintenance. The Vehicle Maintenance Officer (VMO) is responsible for maintaining government vehicles in safe and serviceable condition. This involves both mechanical and cosmetic maintenance of all government-owned and operated vehicles. To accomplish this he must monitor the functions of all repair shops within the branch, assuring that customers are satisfied with repairs performed. He also closely monitors the vehicle-in-commission rate to ensure that major command (MAJCOM) standards are maintained at all times. The VMO must ensure proper control of tools and parts to prevent theft. On bases that support a flying mission, wing commanders require a daily briefing on the maintenance status of all flightline vehicles which support the flying mission. The VMO also performs duties in one of the primary mobility centers (6:1-9).

Plans and Programs. The Plans and Programs Officer is responsible for processing special authorization airlift mission (SAAM) requests for all base organizations that will use MAC assets for their unit deployment. He is also responsible for base mobility functions. The Joint Chiefs' of Staff Unit Report (UnitRep) must be monitored, updated, and coordinated through the wing staff on a monthly basis by the Plans Officer. He is also responsible for the squadron self-inspection program, the squadron

security program, the squadron budget, disaster preparedness, history, and other programs (1:6).

Unit Executive/Administrative Officer. The Executive Officer develops, monitors, improves, and sometimes redesigns squadron administrative activities in an effort to improve and control the different programs generic to a squadron orderly room. In a squadron that does not have a plans and programs branch (many do not), the Executive/Administrative Officer would also be responsible for most of the duties of the plans and programs branch (1:48).

Others. In addition, many transportation officers perform duties as staff officers at major command, military traffic management command (MTMC), or air staff level. Still, others work as water port liaison officers (WAPLO), airlift clearance authorities (ACA), and instructors at the Transportation Technical School and the Air Force Institute of Technology.

In an aerial port squadron, just as in a base transportation squadron, the duties of a transportation officer vary widely from section to section. During a typical three-year assignment, an officer can expect to spend approximately one year or less in each of the major branches of the squadron. This time does not permit the officer to gain practical knowledge about the duties of one branch before being transferred to the next.

As this explanation of transportation duty assignments indicates, the transportation career field involves a multitude of diverse tasks. Prior to 1975, the transportation function was divided into two separate career fields. There was one field for vehicle duties, such as Vehicle Management and Vehicle Maintenance (AFSC 602X) and a second encompassing other duties, such as Traffic Management Officer, Air Terminal Operations Officer, or Passenger Service Officer (AFSC 604X) (14).

Some transportation officers perceive that by combining these career fields, management may have created a career field (605X) which is too diverse and where jobs change too frequently for the junior officer during early years in the field. This leaves the transportation officer struggling during the crucial developmental years of a career. Transportation officers find that, in many cases, they are unable to use previous job experiences when reassigned to a new job. Often, in fact, officers are moved around within a base transportation activity, from section to section, forced to redevelop and reorganize work habits and priorities.

Satisfaction/Dissatisfaction

The underlying theory that this thesis will address is that the Air Force requires the most productive transportation officers that it can possibly develop in order to hold transportation costs to a minimum. If

dissatisfaction exists within the career field, then the Air Force does not have the most productive transportation officers possible (21:719). The diversity in duty assignments is so vast that it may be a source of apprehension for transportation officers who are subject to assignments in so many different task areas. This diversification and apprehension may adversely affect job satisfaction, the end result being a less productive individual. The potential for job dissatisfaction outlined in the transportation duties section, coupled with the immense Department of Defense budgetary expenditures for transportation, lend credence to the need for this study of job characteristics and job satisfaction levels within the Air Force transportation officer career field. The Job Diagnostic Survey (JDS) used in this project, allows for a study of the job satisfaction and job enrichment potential of the individuals and tasks being accomplished. The intent of this study is to identify by job assignment, grade, and MAJCOM those individuals who, as a group, are:

1. Satisfied, productive individuals.
2. Dissatisfied, less-productive individuals.
3. In specific duty assignments, grades, and commands which have an identifiable proportion of dissatisfied individuals.

Results of this analysis will have implications for multiple management initiatives such as job enrichment

and career field reorganization. Job enrichment can be the key to increased productivity among transportation officers (21:719).

Applying the JDS to the transportation officer career field was the first step in developing a data base which would permit the analysis of satisfaction/dissatisfaction levels of transportation officers throughout the USAF. This analysis will provide management personnel at all levels within the career field with information delineating areas where work redesign (job enrichment) consideration might be warranted.

Job Enrichment

Job enrichment is the process of changing an individual's work environment in an effort to increase that individual's job challenges and utilization within the organization. The ultimate goals of this change are increased job satisfaction and increased productivity. The realm of possible changes includes:

> 1. Changing the people who do the work through improved selection, placement, and training procedures.
> 2. Changing other people, specifically supervisors, by improving supervisor selection and training practices.
> 3. Changing the context in which the work is performed by adding work-place amenities and improving the scheduling of working time.
> 4. Changing the consequences of work by altering the contingencies that determine the benefits (and costs) to employees of hard and effective work. (12:23)

Each of these approaches is critical to competent management of people on the job and must be considered in the spectrum of job enrichment. If implemented, job enrichment has the potential to increase individual productivity. Research by Petty et al. (1984) concluded that productivity is increased when individuals are given new incentives (job enrichment) to perform on the job (21:719). A more detailed explanation of job enrichment and related concepts is provided in a subsequent section.

Problem Statement

This research is concerned with discovering if, in fact, job dissatisfaction exists within the transportation officer career field and if there are individuals in the career field who are more satisfied with their jobs than others. In the broad sense, this research will take a look at what things are really like in the transportation career field from the perspective of the individuals performing the job.

Investigative Questions

This research addressed the following questions:

1. What are the job characteristics, job satisfaction, and growth potential levels within the transportation career field as indicated by the Job Diagnostic Survey and the Job Characteristics Model (JCM)? How do these

measures compare with national norms established by Hackman, Oldham, and Stepina?

2. Based on analysis of the survey data, using measures of the JCM, what is the potential for job enrichment within the field?

3. How do job satisfaction levels compare for members within different job assignment groups, grades, and MAJCOMs in the transportation officer career field?

Scope

A survey of Air Force transportation officers in the grades of Second Lieutenant through Lieutenant Colonel was accomplished using the Job Diagnostic Survey (JDS). Table 1 illustrates the number of officers surveyed in each grade along with the number of respondents. Survey responses were analyzed using the Condescriptive, Oneway analysis of variance, and the Tukey Scheffe statistical test. The Statistical Package for the Social Sciences version x (SPSSx) software was used to perform these tests within the parameters outlined in the Job Characteristics Model (JCM) which will be discussed in Chapter III. It was not the intent of this research to formulate or develop a redesign program for the transportation career field. Rather, the scope of this project is limited to that of identifying, measuring, analyzing, and comparing job characteristics of transportation officers.

TABLE 1

SURVEY RESPONSES

Grade	Number Surveyed	Number of Responses	Percentage Responding
Lt Colonel	152	96	63 %
Major	164	106	64 %
Captain	422	299	71 %
1st Lieutenant	121	81	66 %
2nd Lieutenant	119	69	58 %
Totals	978	651	67 %

Assumptions

This study assumes validity of the theory that satisfied workers are more productive individuals than those who are less satisfied or dissatisfied with some aspect(s) of the work situation. Research by Petty et al., (1984) indicates that job satisfaction and job performance are positively correlated (21:719). Although, at an intuitive level, the causal relationship between job satisfaction and job performance seems obvious, this direct relationship was often refuted by studies accomplished prior to the Petty study (17:1334). In a 1976 research article, Edwin Locke concluded that there was no causal relationship between job satisfaction and job performance; yet in the same paragraph, he was quick to point out that his research had revealed a causal relationship between

job satisfaction and absenteeism (17:1334). For the purpose of this research study, the assumption is made that a causal relationship exists between job satisfaction and job performance. It is further assumed that the managerial norms developed by Hackman, Oldham, and Stepina are suitable for comparison with transportation means developed in this project since transportation officers function primarily in a managerial capacity.

Summary

This chapter explained that the orientation of this research project is to examine the job satisfaction and job enrichment potential of the Air Force transportation officer career field. The transportation duties section outlined the extensive diversification in transportation officers' assignments. A section on satisfaction explained the underlying theory of this study. Job enrichment was briefly explained, investigative questions presented, and the scope and assumptions of the research identified. The literature review in the next chapter explores applicable human behavior theory and provides a closer look at Hackman and Oldham's Job Characteristics Model and Job Diagnostic Survey.

II. Literature Review

> Behind every attempt to influence others lies a theory concerning cause and effect in human behavior. The effectiveness of any attempt to influence or control behavior of others is a function of the adequacy of the theory behind it.
>
> — Douglas McGregor (1966)

Since the beginning of time, man has been preoccupied with a desire to influence and, where possible, control the behavior of others. This interest eventually evolved into the study of human behavior. Abraham Maslow and Frederick Herzberg were pioneers of major content theories of job satisfaction in the field of human behavior. They developed time valued theories and concepts which have become the basis for much of the human behavior research that has been accomplished to date. Shumate et al. (1983) in their book Performance-Based Monetary Rewards Can Boost Individual Productivity explain that

> . . . advances in technology and methods improvements hold tremendous potential for producing a given product at less cost, however, maximum efficiency cannot be achieved without a highly motivated work force. (22:35)

A motivated work force is the key to enhanced mission readiness in the Air Force as well.

Early Theories

Abraham Maslow developed the hierarchy of needs which has long since become a classic theory of human

behavior. The hierarchy of needs theory explains how human needs progress from those that are strictly physiological through safety, love, and esteem, to self-actualization. Individuals progress from one level to the next in the hierarchy only after all needs at the previous level have been satisfied (3:90). Maslow's theory played an important part in the development of later theories such as Herzberg's two-factor theory.

Frederick Herzberg formalized the concept of employee motivation in his now famous two-factor theory, also known as the motivation-hygiene theory. In expressing his theory, Herzberg referred to Maslow's Hierarchy of Needs, explaining that "the factors which lead to positive job attitudes do so because they satisfy the individual's need for self-actualization in his work" (15:114). The motivation-hygiene theory proposes that factors inherent in the work itself (motivators) and environmental factors (hygiene) combine to affect job attitudes. Motivators come from factors intrinsic to the work, such as achievement, recognition, the work itself, responsibility, advancement, and growth. Hygiene factors result mainly from extrinsic non-job-related factors, such as organizational policy, salary, co-worker relations, and supervisory style. Herzberg felt that eliminating the causes of dissatisfaction (via hygiene factors) would not necessarily result in job satisfaction, but instead would result in a

neutral state. Herzberg further explained that satisfaction and motivation would occur only as a result of the use of motivators (23:393-394). Herzberg's theory has made significant contributions to the theory of motivation and has had a significant impact on the work of many behavioral scientists among them Hackman and Oldham.

In contrast to the content theories of Maslow and Herzberg, process theories of Expectancy and Reinforcement were developed by other behavioral pioneers. In 1964, Victor Vroom initially presented his Expectancy Theory, while Reinforcement Theory is based on the earlier works of psychologists B. F. Skinner and E. L. Thorndike.

Expectancy Theory is a process theory that concentrates on how motivation occurs. Psychologist Victor Vroom's theory views motivation as a process governing choices (7:321). The logic of Expectancy Theory is that "Individuals will exert effort to achieve performance which will result in preferred rewards" (7:320). When an individual knows that different choices will have different results, that individual will make the choice which will net the desired results. The primary variables in the expectancy theory of motivation are choice, expectancy, and preference (7:323). Another issue addressed in the expectancy model is the probability that a person assigns to the relationship between performance and outcome. Expectancy Theory adds insight into the role that

perception plays in choices, expectancy, and preferences and illustrates the impact of these perceptions on motivation.

Reinforcement Theory is another process theory based on the work of B. F. Skinner and E. L. Thorndike. This theory considers the use of positive and negative reinforcers to motivate or create an environment of motivation (7:324). Reinforcement Theory is best explained by Thorndike's "law of effect," which says: "Behavior which results in a pleasing outcome will be likely to be repeated; behavior which results in an unpleasant outcome is not likely to be repeated" (7:325).

Motivation theories are presented in this review because of their value in explaining human motivation and their influence on the work of Hackman and Oldham, as acknowledged in their book Work Redesign.

Job Enrichment

Throughout this paper, and in other Organizational Behavior literature, the term "job enrichment" is used synonymously with "work redesign" to convey an attempt by organizations to improve the nature of a worker's tasks. The job enrichment approach of redesigning work developed from studies accomplished in the early 1960s is closely related to the motivational theory of Frederick Herzberg (12:57).

A productive work environment is one in which workers and managers cooperate to direct meaningful effort toward achievement of the organization's goals. For organizational objectives to be successful, each worker should have a complete piece of work, identifiable from beginning to end by the person performing the task; each worker should have as much decision-making control over the accomplishment of that piece of work as possible; and each worker should receive feedback on performance in a direct and frequent manner (4:31). In other words, after doing the job, the worker should be able to see or feel (perceive) a real change in the product or service for which he is responsible. The worker should have control over how the details of the task are accomplished, and receive frequent and direct information on how well he is doing the job (26:8-9).

Job Characteristics Theory

Job characteristics theory is another of the many theories of job design. It considers the objective characteristics of the task to be performed. The theory explains that in order to improve on motivation, satisfaction, and productivity, the job should be designed with certain attributes (characteristics). In 1965, Arthur Turner and Paul Lawrence studied the relationship between job attributes and workers' feelings about their jobs (9:201). Their study was the foundation for job characteristics

theory. The attributes they studied included variety, autonomy, interaction, knowledge and skill, and responsibility. Turner and Lawrence felt that the degree to which these attributes were present in a job would determine the level of employee satisfaction (9:201).

In 1971, Hackman and Lawler employed job characteristics theory to study telephone company jobs. Their research measured job attributes, such as variety, task-identity, autonomy, and job-based feedback. They wished to determine if the presence of these attributes might contribute to a worker's realizing internal motivation which would result in good performance (8:201). As with motivation-hygiene theory, job characteristics theory is concerned only with those job attributes that can be restructured to increase motivation. It also focuses only on independent jobs, without offering guidance on how work might be enriched for groups of employees who are required to interact with each other in the performance of their jobs (8:202).

Several studies have made valuable contributions toward the development of the job enrichment concept as a motivational tool for managers. The most prominent contributor, early on, was Frederick Herzberg. More recently, the works of J. Richard Hackman and Greg Oldham have made major contributions to both the theory and the application of job enrichment.

The Job Characteristics Model

Hackman and Oldham used the job characteristics theory, research by Turner and Lawrence (1965), and research by Hackman and Lawler (1971), as the basis for their Job Characteristics Model (JCM). The model has become popular for job design research because of its unique ability to explain the effects of job design on the behavior of employees. A major feature of the model is its adaptability for use in pre-change diagnoses of an organization (12:97)

The model explains the interaction of the five core job dimensions which create, according to the model, three critical psychological states. The psychological states are: (1) experienced meaningfulness of the work, (2) experienced responsibility for the outcomes of the work, and (3) knowledge of the results. These critical psychological states are the "causal core of the model" (12:70). The Job Characteristics Model in Figure 1 illustrates how these states determine personal outcomes such as motivation, performance, satisfaction, absenteeism, and turnover. These critical psychological states also determine work outcomes such as job performance and job satisfaction. All three of these psychological states must be present for positive outcomes to occur, hence they are called critical states. The "individual's need for personal growth and development at work" is a moderating

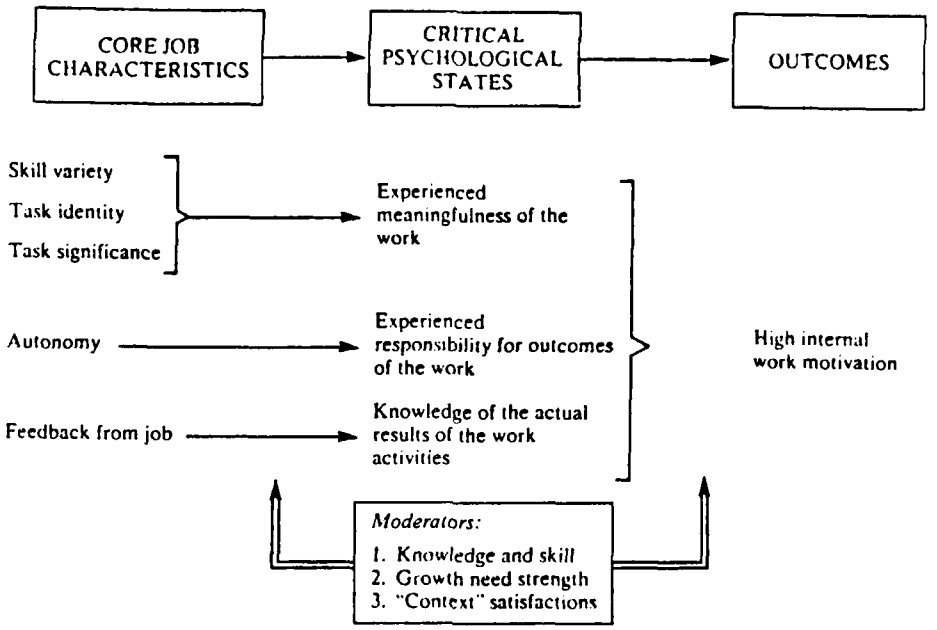


Fig. 1. Job Characteristics Model (12:83)

variable that influences the model in varying degrees at different stages in the model (12:73).

The critical psychological states depend on the degree to which the five core job characteristics are present in the structure of the tasks an employee is required to perform. The five core dimensions of the model are defined as follows:

1. SKILL VARIETY: The degree to which a job requires a variety of different activities in carrying out the work, involving the use of a number of different skills and talents of a person.
2. TASK IDENTITY: The degree to which a job requires completion of a whole and identifiable piece of work; that is, doing a job from beginning to end with a visible outcome.

3. TASK SIGNIFICANCE: The degree to which the task has a substantial impact on the lives of other people, whether those people are in the immediate organization or in the world at large.

4. AUTONOMY: The degree to which the job provides substantial freedom, independence, and some discretion to the individual in scheduling the work and in determining the procedure to be used in carrying it out.

5. JOB FEEDBACK: The degree to which carrying out the work activities required by the job provides the individual with direct and clear information about the effectiveness of his or her performance. (12:73)

Hackman and Oldham explained how these core job characteristics affect three critical psychological states which ultimately impact on job performance. These three psychological states are explained by Hackman and Oldham as follows:

1. Experienced meaningfulness of the work, which is related to the core dimensions of Skill Variety, Task Identity, and Task Significance.

2. Experienced responsibility for outcomes of the work, which is related to the Autonomy dimension.

3. Knowledge of the actual results of the work activities, the Feedback dimension. (12:83)

These three psychological states develop our psychological motivation to work, which equates to how we perform on the job. The combined effects of the first three core dimensions (skill variety, task identity, and task significance) determine the first critical psychological state (experienced job/work meaningfulness). The amount of autonomy present on the job determines how much responsibility the worker actually has for ensuring the appropriate outcomes. This autonomy is the second psychological state; experienced responsibility for work outcomes. The amount of immediate or relatively quick feedback determines the

third psychological state; knowledge of the actual results of the work activities. Good feedback is a source of immediate, inexpensive motivation advocated by most behavioral scientists today (2:81).

The five core dimensions and the three critical psychological states interact to determine the personal and work outcomes specified in the model as motivation, satisfaction, performance, absenteeism, and turnover. A basic principle of work design/redesign is the idea that the structure or design of the job will create conditions conducive to increasing job satisfaction.

As stated earlier, the actual causal relationship between job satisfaction and job performance is still being debated. However, many behavioral scientists believe that a correlation does exist (21:712). According to Mitchell, job performance is believed to be directly related to job motivation. Increases in motivation should result in employees exerting greater effort and thus increasing performance (19:82).

The Job Characteristics Model predicts an overall motivating potential index of a job and recognizes that "a given job can be very high on one or more of the five characteristics and simultaneously quite low on others" (12:80). Numerical scores for each of the five core dimensions are combined to determine an overall motivation potential score (MPS). The equation for MPS is:

$$MPS = \frac{\text{Skill Variety} + \text{Task Identity} + \text{Task Significance}}{3} \times \text{Autonomy} \times \text{Job Feedback}$$

As the MPS equation illustrates, a very low score on either autonomy or feedback will result in a low MPS. This supports the basic premise of the model that all three psychological states must be present in order for the outcome of high internal work motivation to be present. Equally important, a low score on one of the three characteristics that influence "experienced meaningfulness of work" will not, by itself, jeopardize the overall motivating potential of the job (12:81).

Hackman and Oldham pointed out that it is also important to understand that the motivating potential of a job, as determined with their model, does not cause workers to be internally motivated, to perform well, or to experience job satisfaction. Rather, a job which is high in motivating potential merely creates conditions where, if the worker performs well, that worker will likely experience a reinforcing situation as a consequence (12:82). Job attributes influence internal motivation and the behavior of individuals who work on the job determines the degree of freedom the individual worker perceives.

The model acknowledges that some individuals are in a much better position to take advantage of opportunities offered by job enrichment than are others (12:82).

Hackman and Oldham identified three moderating variables which acknowledge these differences: knowledge and skill, growth need strength, and satisfaction with the work context. An individual who has enough knowledge and skill to perform well is more likely to feel good about the job compared with a worker who lacks these attributes. Growth need strength addresses the need that each of us has for personal accomplishment. Some of us have a strong need to grow and learn more demanding tasks, while others may respond negatively to this type of job enrichment. Satisfaction with the work context is how a worker feels about pay, job security, co-workers, and supervisors. A worker who is not happy with these aspects of a job is unlikely to be positively motivated by redesign efforts (12:86).

Hackman and Oldham explained that when a job is redesigned, a change is brought about in the relationship between the individual and the work itself. Improvements in this relationship should increase the overall satisfaction of individuals toward their jobs. However, there is no reason to believe that this improvement should lead to specific improvements in satisfaction with other moderating variables such as job security, pay, supervision, or co-worker relationships (12:89).

In the mid-1970s, the U.S. Air Force became aware of the potential of the job enrichment concept and used a version of Hackman and Oldham's model (modified to include

goal clarity as a core dimension) as a test project in a number of combat support units. Under the direction of Frederick Herzberg, the Air Logistics Center at Ogden, Utah experienced sufficient success to prompt expansion of the job enrichment programs to all five Air Logistics Centers (16).

Limitations of the Model

While the Job Characteristics Model has prompted extensive empirical research by others (Evans, Kiggundu, and House, 1979; Arnold and House, 1980; Champoux, 1980), Hackman and Oldham were forthright in acknowledging potential problems with their model. They explained how evidence for the proposed moderating variables is scattered since the moderating effects of knowledge and skill have not been tested, and only a few studies have addressed context satisfaction as a moderator of job characteristics-outcome relationships (12:95).

A large number of studies have examined the moderating effect of growth need strength, however, with mixed results. Some studies found the predicted moderating effects while others did not. Individual difference variables such as need for achievement, alienation from middle class work norms, and intrinsic versus extrinsic work values have been suggested as alternatives to growth need strength for determining how individuals react to their work. The question here is how best to construe and

measure the important differences among individuals in their motivational readiness for enriched jobs (25:613).

A number of problems have been addressed concerning affects of the psychological states on outcomes as described by the model. The characteristic autonomy has, in some studies, appeared to influence psychological states other than those specified in the model. Similarly, some psychological states can be influenced by characteristics other than those specified in the model. Hackman and Oldham concluded that the relationship between job characteristics and psychological states is probably not as clear and simple as suggested in the JCM (12:96).

Hackman and Oldham explained that it is not always true that job characteristics of the model are not correlated and independent as depicted by the model. Rather, jobs that are high on one job characteristic, such as skill variety are often high on others, such as autonomy. Intercorrelation among the job characteristics can diffuse their effect on the psychological states. This problem brings into question the appropriateness of the formula for computing MPS. The formula is compromised when there is a high intercorrelation among job characteristics. In cases where the intercorrelation is high, the MPS can be estimated by simply summing the scores of the job characteristics (25:615).

The concept of feedback on the model may be flawed, as it is sometimes difficult to determine what job-based feedback is. Even supervisors, workers, and outside observers disagree on how much feedback a given job should provide to the employee. The model does not address feedback from sources, such as co-workers and one's self. This feedback may also affect the employee's knowledge of results of the work activity. The effects of job-based feedback may be altered by information about performance from non-job sources.

It is not clear how the objective properties of the jobs relate to people's perceptions of those properties. Some individuals redefine their tasks to be consistent with their personal needs, attitudes, and values, and in response to cues or direct influence from others (Weiss and Shaw, 1979). The JCM does not differentiate between objective or perceived properties of tasks. It is not known whether the motivational benefits of enriched work come mainly from task characteristics or other variables (12:97).

Hackman and Oldham concluded in their critique of the JCM that "it would be inappropriate to conclude that the model provides a correct and complete picture of motivational effects of job characteristics" (12:97). They explained that the model can be a guide for further research and might be used as an aid in planning for

changes in work systems. In the pre-change diagnosis phase of the planning process for changes in a work system, it is essential to use some type of conceptual model. The JDS is especially suited for this task (12:97).

Schawb and Cummings (1976), O'Reilly (1977), and others have criticized the method used in collecting and analyzing the data. And Gaster (1980) pointed out that no studies had been accomplished where one or more of the core dimensions were manipulated from a new point of reference (orthogonal manipulation) (9:206). Hackman and Oldham do not agree with the criticisms brought against the JCM. They feel that, considering available evidence, "it is fair to say that the model is probably more right than wrong, but it is surely inaccurate and incomplete in many specifics" (12:95).

The Job Diagnostic Survey

In 1975, Hackman and Oldham developed the Job Diagnostic Survey (JDS) to quantitatively measure and assess the five core dimensions of their Job Characteristics Model. The survey complements their work on the model and encourages systematic diagnosis of jobs. They strongly emphasized the importance of job diagnosis before any effort is made to enrich the nature of the task. The Job Diagnostic Survey (JDS) is designed so that it might be used for both pre- and post-job enrichment assessments. In this way, the survey provides assistance in the

pre-change planning stage and may also be used to evaluate the results of enrichment attempts. However, the survey does not measure employee knowledge and skill (moderators), or the employee's desire to perform the tasks involved in the job.

The Job Diagnostic Survey (short form) was used in this research project because of its unique ability to measure existing job characteristics and job satisfaction for use in work redesign pre-change analysis and planning. Use of this survey also allows for a comparative analysis of pre-change variables using previously established norms.

The JDS has been the subject of several extensive, empirical tests and reviews addressing limitations, cautions, internal and external validity, reliability, and practicality (Cathcart, Goodard, and Youngblood, 1978; Dunham, 1976; Pierce and Dunham, 1978; Stone and Porter, 1977). These tests and reviews pointed out the following cautions:

1. Characteristics measured by the JDS are not independent of each other and researchers should be careful not to over-interpret scores from a single characteristic (12:313).

2. Multiplying job characteristics together to gain an overall motivation potential index can provide false data since the measures are less than reliable and often intercorrelated (12:313).

3. More validity studies are needed to determine that the JDS measures what it was designed to measure (12:314).

4. The JDS is not a good measure of a single individual's job. The reliability of the measures increase when the scores of five or more individuals who work on the same job are averaged (12:315).

5. The concepts of knowledge, skill level, and employee work effectiveness, from the Job Characteristics Model, are not addressed by the JDS (12:103).

6. Validity of the JDS relies on truthful responses from the population sampled. Researchers must also ensure the literacy of subjects to properly complete the survey (12:105).

These cautions certainly do not invalidate the use of the JDS for job redeign research. Rather, they support and extend an understanding of valid applications for the survey.

Summary

This literature review addressed applicable human behavior motivation theories. Hackman and Oldham's Job Characteristics Model (the conceptual framework basis for the analysis in this research) and their Job Diagnostic Survey (used to gather data for the research) were reviewed for content and applicability. Limitations of the JCM and

cautions for using the JDS were presented. In Chapter III, the methods used to acquire and analyze data are explained in a step-by-step process.

III. Methodology

Introduction

This chapter explains how data was obtained and analyzed. The method of data collection and analysis are explained in detail. The statistical method of analysis is described in a process format so that other interested researchers might easily duplicate this process if desired. There are also sections devoted to the assumptions and the perceived limitations of the methodology.

General Research Method

The research process began with a review of literature concerning job satisfaction and job performance relationships, applicable surveys on the subject, and variable measurement and analysis. Specific variables to be measured were identified as job characteristics and job satisfaction (the independent variables), and duty assignment, grade, and MAJCOM (the dependent variables).

Sample survey questions were written to allow for the comparison of desired variable measurement characteristics with existing surveys. The Job Diagnostic Survey (JDS) was selected as the measurement instrument based on the independent variables to be measured and the literature review of existing instruments.

The JDS was developed by Hackman and Oldham to specifically address the variables contained in the Job Characteristics Model (JCM). The JCM addresses all job characteristics and variables of interest in this research and was a logical choice for use in this project.

A census application of the JDS to Air Force transportation officers was administered because it was the most cost-effective and time-efficient method of gathering the desired information. The JDS was adapted by adding demographic variables (questions) of concern in this research (12:275). Over 975 surveys were mailed to the population of transportation officers identified by the Atlas data base.

A FORTRAN-based SPSSx program was developed using the condescriptive command to compute means and standard deviations of the job characteristics in the JCM for subsequent comparison with national norms. This command does not consider missing values when computing the means, consequently non-responses were automatically excluded from the computations. This provides a more realistic mean for comparison as the norms computed by Hackman et al. were also computed without missing values. An additional program was developed to perform the oneway analysis of variance statistical analysis for comparison of the independent variable job satisfaction with the dependent variables job type, grade, and MAJCOM. The program was run to

compare transportation job satisfaction means across selected dependent variables.

Methodology Assumptions

Several assumptions were required in order to use the methodology described in this chapter. The following is a list of those assumptions:

1. No systematic bias was assumed for members of the transportation career field who did not respond to the survey. The assumption was that dissatisfied nonrespondents would balance out with satisfied nonrespondents.

2. Responses from the census were assumed to be unbiased because the cover letter of the survey package guaranteed anonymity for respondents.

3. The JDS is a valid and useful survey instrument for this research project.

4. While the national norms, generated by Hackman et al., are based on civilian responses to the JDS, those norms can be applied to military members. Managerial norms were used because transportation officers primarily function in a managerial role.

5. Regardless of the cautions and limitations addressed in using the JDS and the JCM, valid and helpful information about the job characteristics and potential for job redesign of the transportation career field can be gained from this research effort.

Investigative Questions

Investigative Question No. 1. What are the job characteristics, job satisfaction, and growth potential levels within the transportation career field as indicated by respondents to the Job Diagnostic Survey Model? How do these measures compare with national norms?

As noted in Chapter II, the JCM is an excellent framework for examining job characteristics, job satisfaction, and growth potential levels of a career field. In addition to measuring the five core dimensions of the JCM (discussed in the literature review), the JDS also measures two other dimensions: feedback from agents and dealing with others. These additional variables are defined below.

> Feedback from agents: The degree to which the employee receives clear information about his or her performance from supervisors or from co-workers.
> Dealing with others: The degree to which the job requires employees to work closely with other people in carrying out the work activities (including dealing with other organizational members and with external organizational "clients"). (12:103-104)

These additional characteristics, combined with the five core dimensions, produce an excellent measure of an employee's reaction to the job (11:160). Three of the four outcomes of the JCM are measured by the JDS. A measure of the fourth, work effectiveness, cannot be measured by the JDS. Additionally, the JDS does not measure the effects of an employee's knowledge and skill.

Oldham and Hackman developed two versions of the JDS, a short form that takes about fifteen minutes to complete and a long one that requires about twenty-five minutes to complete. The core dimensions of the JCM are

measured by both forms of the survey. However, the short form does not measure the psychological states of the JCM. The core dimensions are measured identically by both forms of the survey. The short form is widely used in job characteristics research. Format, content, and scale reliability are well developed, and the JDS (short form) has been proven a valid and reliable measure of the level of enrichment potential present in a job (11:165). The short form of the JDS was used for this research because it measured all of the variables needed for the analysis outlined in this research project and required less time for respondents to complete. The scoring key in Appendix A was used to develop the SPSSx program that produced the mean and standard deviation of the pertinent variables. These results were then compared with the national norms produced by Hackman, Oldham, and Stepina (13:12).

Table 2 summarizes those job aspects that can be quantitatively measured by the JDS and that were used in the process of comparing characteristics of transportation officers to national norms.

Investigative Question No. 2. Based on analysis of the survey data, and using measures of the JCM, what is the potential for job enrichment within the transportation career field?

To answer this question two issues must be considered:

1. Is there a need for job redesign?

TABLE 2

JDS MEASURED JOB ASPECTS

Job Characteristics (core dimensions)

1. skill variety
2. task identity
3. task significance
4. autonomy
5. feedback from job
6. feedback from agents
7. dealing with others

Affective Outcomes

1. general satisfaction
2. internal work motivation
3. growth satisfaction

Context Satisfaction

1. satisfaction with job security
2. satisfaction with pay
3. satisfaction with co-workers
4. satisfaction with supervision

Individual Growth Needs Strength (IGNS)

Motivating Potential Score (MPS)

2. How feasible is job redeign within the transportation career field, given the organizational structure, job characteristics, and officer (worker) characteristics?

In their book Work Redesign, Hackman and Oldham provided a process for using the JDS data to examine these two issues. The process deals with five questions, three of which address need for redesign while two deal with the feasibility of redesign (12:109).

Issue No. 1. The need for redesign.

Question No. 1. Are the affective outcomes, internal work motivation, general satisfaction, and growth satisfaction levels within the career field near or below the national averages for these variables (12:111)?

The mean of each of these variables was computed and compared with the norms (hypothesis testing of means) at a 90 percent confidence level. When analyzing the JDS measures of the transportation career field, the national managerial norms were used for the comparison. Norms compiled by Hackman, Oldham, and Stepina were based on the responses of 6930 employees from 876 different jobs in 56 organizations (13:12). When scores on "affective outcomes" are significantly higher than the norms, the researcher may conclude that observed problems within the career field are probably not related to the fit between workers and the task, and job enrichment may not be appropriate (12:111). Scores on this question alone were inconclusive at this point. Regardless of the results of this comparison, the diagnosis should continue to question two.

Question No. 2. What is the motivating potential of the job?

Because there are a lot of possible reasons for poor performance, motivation, or satisfaction, work redesign is an appropriate change strategy only if there is reason to believe that observed problems may have their roots in the motivational properties of the work itself (12:111). The motivation potential score (MPS) determined from JDS

data can assess how employees see their jobs. A low MPS shows that the job itself could contribute to low effectiveness (performance), motivation, and satisfaction levels. A high MPS shows that Context Satisfactions of the work situation could be possible causes of observed problems (12:111). Using the MPS formula (Chapter II), the average MPS was determined for the transportation career field and compared to the national norms (hypothesis testing of means).

Question No. 3. What aspects of the job most need improvement?

Two specific steps were required to answer question no. 3.

1. A job profile was plotted for the transportation career field and national managerial norms were plotted on the same graph to allow for analysis. A sample of the graph appears in Figure 2.

2. Based on the job profile, those dimensions that seemed low were compared with the national norms using hypothesis testing of means.

This two-step process identified those job dimensions that were low in value and, thus, should possibly be considered for enrichment. It also prioritized the job dimensions' effects. This prioritization could be useful in developing a redesign program for the career field that places the

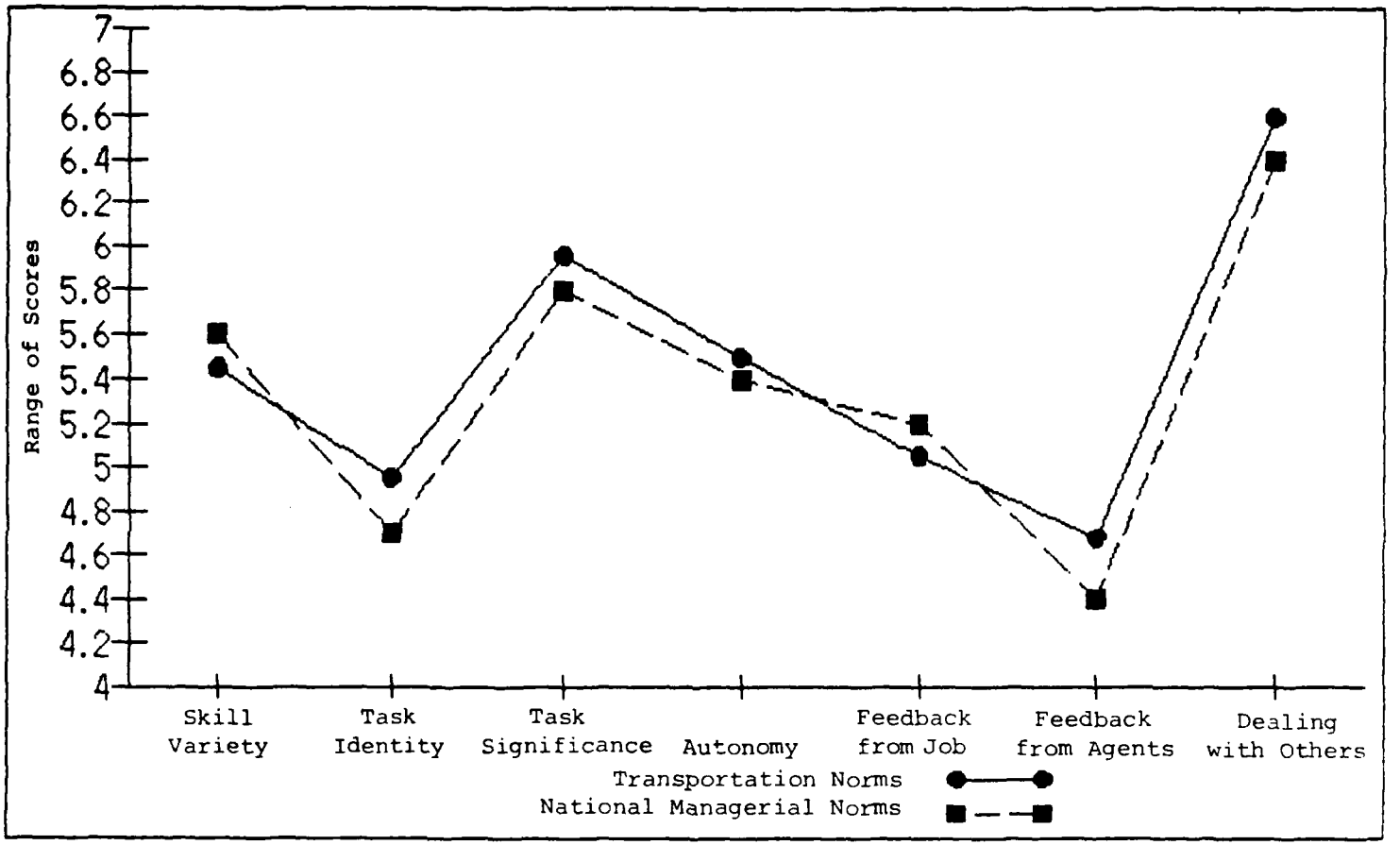


Fig. 2. Sample Job Characteristics Profile

more important characteristics earlier in the enrichment program (12:115).

With the first issue of need for redesign addressed, the research continued by looking at feasibility of job enrichment.

Issue No. 2. Feasibility of job redesign.

Two questions were answered in addressing this issue.

Question No. 1. How ready are the employees for change (12:117)?

The Individual Growth Need Strength (IGNS) score from the JDS is useful in determining whether or not individuals will respond favorably to an enriched work situation. It is important to understand that a low IGNS score does not indicate that a worker will disfavor job redesign. A person may be accustomed to a work situation that provides few occasions for personal responsibility and growth (3:118). As a result of this situation, this individual might express a low need for growth. The mean IGNS was computed for the transportation career field and compared with the national norms (hypothesis testing of means).

Readiness for change also involves context satisfaction. These measures are useful indicators of how employees may be concerned with pay, job security, co-worker relationships, and supervision, and as a result are not psychologically able to take advantage of opportunities for growth and personal development that an enriched

job can provide (12:118). The four context satisfactions were computed and compared to the national norms (hypothesis testing of means). An integrated framework must be used to consider JDS scores for IGNS, affective outcomes, job dimensions, and the MPS in order to properly answer question no. 1 of this issue.

Question No. 2. How hospitable is the organization to needed changes?

This question considers three properties: the technological system, the personnel system, and the control system. These properties are not addressed in the JDS; however, any job redesign pre-change plan must consider these factors. Technological aspects of the work environment can be a significant constraining factor on the feasibility of work redesign by limiting the number of jobs where design/redesign is possible (12:121). In some technological work environments, it is impossible to induce meaningful amounts of autonomy, variety, and feedback (12:122).

If the personnel system of an organization specifies fixed job descriptions which detail who, what, where, and how a job must be performed, this can also limit redesign efforts. When the specific permissible actions, tools, and work procedures are enforced in the work environment and must continue to be enforced for safety or other reasons, it may be impossible to meaningfully alter the design of the tasks being accomplished (12:123).

Control systems, likewise, can affect the feasibility of work redesign in an organization. Hackman and Oldham defined a control system as "any method designed to control and influence employee behavior in an impersonal, impractical, and automatic fashion" (budget, quality control reports, performance reports, etc.) (12:124). Control systems limit the complexity and challenge of the job. They often specify tasks which do not allow for autonomy in the job. Job enrichment may lead to the original control system ceasing to function as intended. Consequently, job enrichment often requires a change in or development of a new control system. Attempts to change the control system may be met by resistance from those who have interest in maintaining and refining the existing control procedures in their present form (12:126).

Up to this point in the research process, all results of the JDS were compared with national norms. With the next investigative question, the emphasis shifts to comparing characteristics of different jobs, grades, and MAJCOMs within the career field.

Investigative Question No. 3. How do job satisfaction levels compare for members within different job assignment groups, grades, and MAJCOMs in the transportation officer career field?

A oneway analysis of variance statistical test was used with the SPSSx software package to test for statistically significant differences between and within the

different assignment groups, grades, and MAJCOMs based on job satisfaction. Job satisfaction was computed by taking the mean of questions 22 through 42 from the JDS responses of transportation officers.

Methodology Cautions

When using job profiles to look at aspects of a job that need enrichment the most, the researcher should never rely solely on the results of the JDS. The opinions of supervisors should also be collected and used in the pre-change planning process. A Job Rating Form is available to collect this data (12:114).

The JDS does not provide measures for employee knowledge and skill, nor for work effectiveness (affective outcomes) of the JCM. Work effectiveness judgements must be made by managers who are familiar with the work environment and technologies involved in the work place. In the area of knowledge and skill, no general test has been developed that can be given to determine if workers are competent enough to handle more challenging tasks (12:117). However, consideration of employee knowledge and skill, and work effectiveness are important in determining potential for enrichment of a particular job. Attempts to measure these variables were outside the scope of this research, but should be considered in the pre-change enrichment planning process.

A major caution concerns using only the JCM and the JDS in evaluating redesign potential of a job. Hackman and Oldham were quick to point out repeatedly in their work that, JDS scores should be supplemented with other data, such as interviews and other surveys (12:118). They also addressed the importance of considering other models and theories before developing a job enrichment plan.

Finally, the data and scores in this study should not be taken as infallible. Diagnostic data can be over-interpreted and can lead to wrong conclusions about redesign potential and needs. Survey data must be integrated with other information about the individuals and the organization, and this data must be tested against management values. Assessment of job redesign involves complex managerial decision making that makes good use of diagnostic research (12:129).

Statistical Tests

Throughout this chapter on Methodology, statistical tests were used to analyze the data. Large-sample hypothesis testing of means was used in the comparison aspect of the investigative questions. This statistical test was used to compare the JDS scores for transportation officers with the national norms.

1. The sample mean and standard deviation of scores from Appendix A were computed using the Condescriptive command of the SPSSx software package.

2. Hypotheses were stated in the following form:

Null hypothesis: sample mean = normative mean;

Alternate hypothesis: sample mean < normative mean; or

sample mean > normative mean

3. The oneway analysis of variance statistical test was used to compute investigative question no. 3. The ONEWAY command of the SPSSx software package was used to compare variance within and between assignment groups, grades, and MAJCOMs against job satisfaction.

4. Both Hypothesis Tests of Means and oneway analysis of variance were computed at a 90 percent confidence interval.

Summary

This chapter on Methodology has provided a detailed step-by-step process of how data was collected and analyzed. Assumptions made for the methodology used are listed. A discussion of each investigative question was provided and the objectives and mechanics of the software package briefly outlined. Finally, cautions to consider when using this methodology were addressed. In Chapter IV this methodology is used to analyze the data and present findings about the transportation career field.

IV. Data Analysis and Findings

Introduction

This chapter uses a format similar to Chapter III in that the investigative questions are addressed and findings presented in the same order as the previous chapter. A summary of significant findings and results concludes this chapter.

Analysis and Findings

Investigative Question No. 1. What are the job characteristics, job satisfaction, and growth potential levels within the transportation career field as indicated by respondents to the Job Diagnostic Survey? How do these measures compare with national norms?

The Job Diagnostic Survey (JDS) was used to obtain the data used in this analysis. Nine hundred and seventy-eight surveys were mailed to transportation officers worldwide. Six hundred and fifty-one usable responses were received, resulting in an overall response rate of 67 percent. Survey responses were scored using the key from Appendix A and two SPSSx software programs. The results of the Condescriptive program are presented in Table 3. The national norms for managerial types of jobs developed by Hackman, Oldham, and Stepina are presented in Table 4.

TABLE 3

JOB DIAGNOSTIC SURVEY SCORES FOR TRANSPORTATION OFFICERS

Variables	Mean	Std Dev
Job Characteristics		
Skill Variety	5.45	1.18
Task Identity	4.95	1.24
Task Significance	5.96	1.11
Autonomy	5.50	1.16
Feedback from Job Itself	5.05	1.20
Feedback from Agents	4.68	1.41
Dealing with Others	6.60	.64
Affective Outcomes		
General Satisfaction	5.47	1.22
Internal Work Motivation	5.94	.85
Growth Satisfaction	5.41	1.26
Context Satisfaction		
Satisfaction with Job Security	5.27	1.36
Satisfaction with Pay	5.00	1.42
Satisfaction with Co-workers	5.73	.91
Satisfaction with Supervision	5.16	1.58
Individual Growth Need Strength	6.07	1.20
Motivating Potential Score (MPS)	160.00	74.00

NOTE: These scores were compiled from an application of the JDS to the transportation officer career field.

TABLE 4

JOB DIAGNOSTIC SURVEY NATIONAL NORMS
MANAGERIAL WORKERS

Variables	Mean	Std Dev
Job Characteristics		
Skill Variety	5.60	0.94
Task Identity	4.70	1.10
Task Significance	5.80	0.85
Autonomy	5.40	0.92
Feedback from Job Itself	5.20	1.00
Feedback from Agents	4.40	1.20
Dealing with Others	6.40	0.58
Affective Outcomes		
General Satisfaction	4.90	1.00
Internal Work Motivation	5.80	0.64
Growth Satisfaction	5.30	0.97
Context Satisfaction		
Satisfaction with Job Security	5.20	1.00
Satisfaction with Pay	4.60	1.20
Satisfaction with Co-workers	5.60	0.68
Satisfaction with Supervision	5.20	1.10
Individual Growth Need Strength	5.30	0.54
Motivating Potential Score (MPS)	156.00	55.00

NOTE: These are the norms compiled by Hackman, Oldham, and Stepina (18:12).

Investigative Question No. 2. Based on analysis of the survey data, and using measures of the JCM, what is the potential for job enrichment within the transportation career field?

Issue No. 1. The need for job redesign.

Question No. 1. Are the affective outcomes, internal work motivation, general satisfaction, and growth satisfaction levels within the career field near or below the national averages for these variables (12:111)?

Table 5 compares the transportation career field means to the national norms for affective outcomes. All three affective outcomes are significantly above the national norms. Hypothesis testing of the means yielded the results illustrated in Table 5. The two-tail test of hypothesis (used throughout the analysis) was used to look for differences both above and below the national norms. A value of 1.64 (based on a .10 alpha level) was used as the critical Z for comparison with computed Z scores.

TABLE 5

AFFECTIVE OUTCOME, MEAN TEST OF HYPOTHESIS
NATIONAL NORMS VERSUS TRANSPORTATION OFFICER MEANS

Affective Outcome	Nat. Norms	Trans. Means	Z-stat.	Significant Difference
General Satisfaction	4.90	5.47	11.56	Above
Internal Work Motivation	5.80	5.94	4.09	Above
Growth Satisfaction	5.30	5.41	6.11	Above

Hackman and Oldham explained that high scores on all three of these outcomes may indicate that job redesign may not be appropriate in this career field (12:112). However, these scores alone do not rule out a need for job enrichment within the transportation career field. It is important not to formulate any conclusions at this point. Rather, the analysis must incorporate an integrated approach considering all three questions in issue no. 1.

Question No. 2. What is the motivating potential of the job?

The motivating potential score (MPS) for the transportation career field was computed using the equation in Appendix A. The result of this computation is compared with the national norms in Table 6.

TABLE 6

MOTIVATION POTENTIAL SCORES, MEAN TEST OF HYPOTHESIS NATIONAL NORMS VERSUS TRANSPORTATION OFFICER MEANS

Trans. MPS	Nat. MPS	Z-statistic	Significant Difference
160	156	1.34	None

The MPS for the national norm of managerial type workers is 156. A hypothesis test of means comparing the transportation career field MPS of 160 resulted in a Z-statistic of 1.34.

This Z-statistic of 1.34 revealed that no statistically significant difference exists between the two means based on a critical Z of 1.64. According to Hackman and Oldham, a high MPS indicates that the context satisfactions of the job environment (supervisor, pay, security, and social) are probable causes of any motivation or performance problems rather than the structure of the job itself. However, these transportation statistics revealed a normal level of MPS which would indicate that context satisfaction is not a problem in the transportation career field as a whole. Satisfaction levels are addressed further in conjunction with Investigative Question No. 3 later in the chapter.

Question No. 3. What aspects of the job most need improvement?

A job profile of the transportation respondents is shown in Figure 3. The transportation means are plotted as a solid line. The national norms for the managerial category are also plotted on this same graph as a broken line to allow for easy comparison. The graph clearly shows that the aspects of the transportation career field most in need of redesign are skill variety and feedback from the job itself. Results of hypothesis testing of the means are presented in Table 7, and confirm the graphical representation of Figure 3.

As Table 7 illustrates, hypothesis testing of the other five core dimensions showed that the transportation

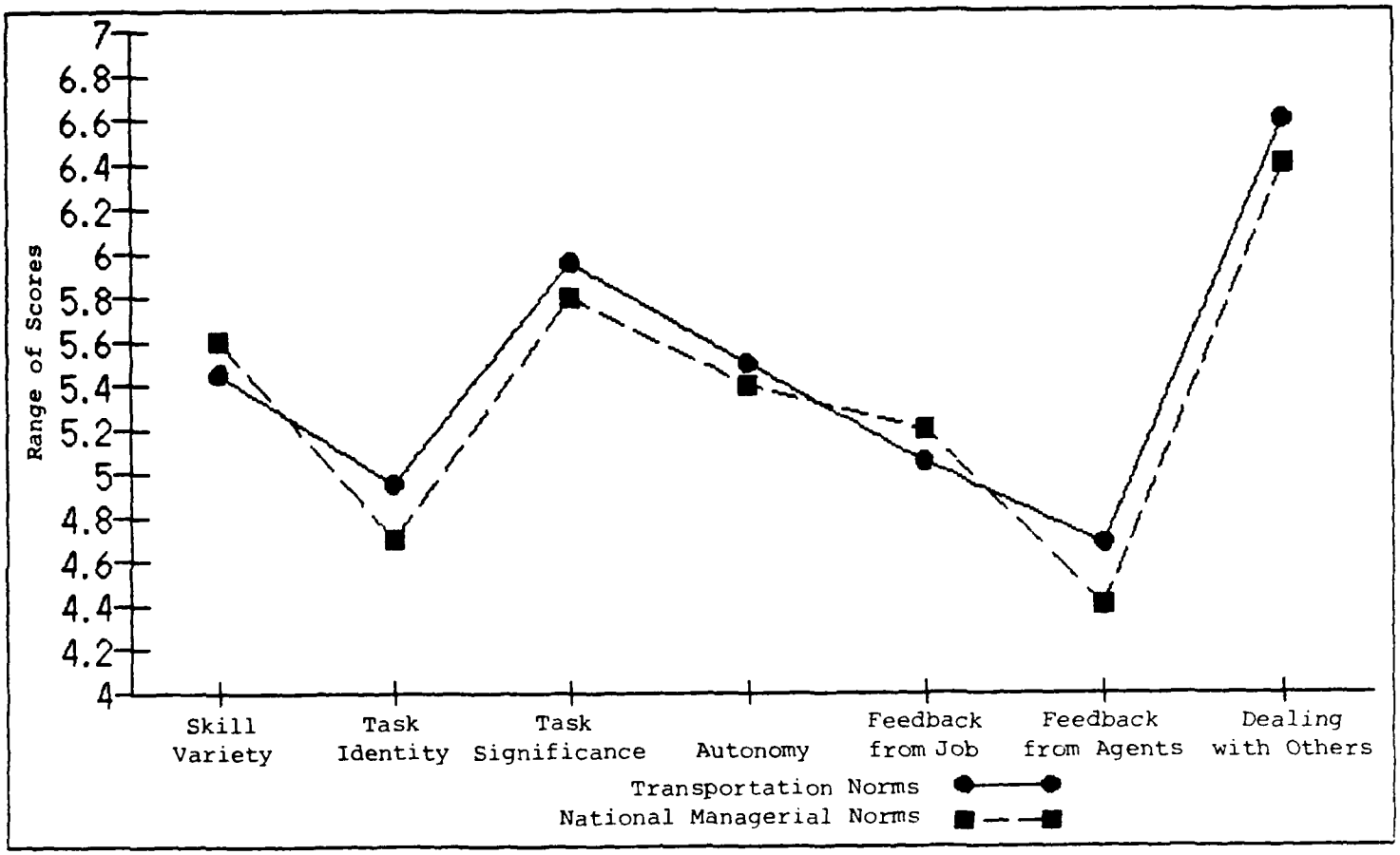


Fig. 3. Comparison of Transportation Means and Managerial Norms

TABLE 7

CORE DIMENSIONS, MEAN TEST HYPOTHESIS
NATIONAL NORMS VERSUS TRANSPORTATION OFFICER MEANS

Core Dimension	Nat. Norm	Trans. Mean	Z-stat.	Significant Difference
Skill Variety	5.60	5.45	-3.15	Below
Task Identity	4.70	4.95	4.96	Above
Task Significance	5.80	5.96	3.58	Above
Autonomy	5.40	5.50	2.14	Above
Feedback, Job Itself	5.20	5.05	-3.09	Below
Feedback, Agents	4.40	4.68	4.90	Above
Dealing with Others	6.40	6.60	7.68	Above

means were all greater than the national averages. For the transportation career field, the dissatisfiers of the job include skill variety and feedback from the job itself. The greatest satisfier is dealing with others; however, all additional dimensions also rated significantly higher than the national norms. These values indicate a high degree of satisfaction in all dimensions except skill variety and feedback.

Issue No. 2. Feasibility of job redesign.

Question No. 1. How ready are employees for change?

The Individual Growth Need Strength (IGNS) value was calculated using the scoring key from Appendix A as one way of addressing the question of how ready employees are for change.

Table 8 presents the comparison of IGNS for transportation officers and national norms. For transportation officers, the IGNS was 6.07 with a standard deviation of 1.20. This mean was compared to the national norm of 5.30 and standard deviation of .54, and resulted in a Z-statistic of 15.19. This test revealed that the IGNS for transportation officers is significantly greater than the national norm. This high score indicates a significant desire for growth or change within the transportation career field (12:118).

TABLE 8

INDIVIDUAL GROWTH NEED STRENGTH SCORES,
MEAN TEST OF HYPOTHESIS
NATIONAL NORMS VERSUS TRANSPORTATION OFFICER MEANS

Trans. MPS	Nat. MPS	Z-statistic	Significant Difference
6.07	5.30	15.19	Above

As explained in the methodology, feasibility also addresses the four context satisfaction levels. Table 9 compares the calculated Z-statistics for each of the context satisfaction levels and illustrates resulting statistically significant differences. The statistical analysis tabulated in Table 9 revealed a statistically significant difference in context satisfaction levels of pay and co-workers (social). No statistically significant

TABLE 9

CONTEXT SATISFACTION, MEAN TEST OF HYPOTHESIS
NATIONAL NORMS VERSUS TRANSPORTATION OFFICER MEANS

Context Satisfaction	Nat. Norms	Trans. Means	Z-statistics	Significant Difference
Job Security	5.20	5.27	1.27	None
Pay	4.60	5.00	6.88	Above
Co-workers (social)	5.60	5.73	3.48	Above
Supervision	5.20	5.16	- .62	None

difference exists in the means of job security and supervision. This indicates that transportation officers are not necessarily preoccupied with these aspects of the job (12:118). A low value may have indicated a possible preoccupation with the context satisfaction variables. According to the results of this comparison, transportation officers should respond well to positive job redesign. Table 10 provides a concise summary and comparison between the JDS measures of transportation officer means and the national norms for managerial workers.

To analyze how ready the employees are for change (question no. 1 of issue no. 2), scores of all sixteen measures were considered together. Table 10 is a summary of the comparison of the JDS measures for transportation officers and the national norms for managerial workers.

TABLE 10

SUMMARY OF TRANSPORTATION MEANS VERSUS NATIONAL NORMS

Variables	Results
Job Characteristics (dimensions)	
Skill Variety	Scored below
Feedback from the Job Itself	Scored below
All remaining Dimensions	Scored above
Affective Outcomes	
All Three Outcomes	Scored above
Context Satisfaction	
Pay and Co-worker (social)	Scored above
Job Security and Supervision	Scored equally
IGNS	Scored above
MPS	Scored equally

Considering the summary in an integrated framework, two findings are evident.

First, redesign of the entire transportation officer career field is inappropriate as a method of improving performance, satisfaction, and motivation. Actually, the values of the three affective outcomes for transportation officers are all above the national norms and these results form the basis for ruling out job redesign in the transportation career field as a whole. Additionally, the MPS for transportation officers is equal to the national norms indicating that any observed performance or motivation problems within the career field are most likely not due

to the design of the job. Consequently, job redesign would be largely ineffective in solving problems of performance or motivation throughout the entire transportation career field.

The second finding is that while transportation officers as a whole are generally satisfied with their profession, they do not desire increased skill variety, but do desire more feedback from the job itself.

Question No. 2. How hospitable is the organization to needed changes?

Three aspects of the organization were considered in addressing this question: the technological system, the personnel system, and the control system. Personnel in the transportation career field have no desire for increased skill variety; however, improved feedback from the job itself is essential to improved satisfaction and performance. There are no significant constraints within the technological, personnel, or control systems of the transportation officer career field that would preclude instituting these changes. It is well within the job descriptions and control mechanisms of upper-echelon transportation officers to maintain skill variety and institute more job feedback to lower and middle management transportation officers.

Investigative Question No. 3. How do job satisfaction levels compare for members within the different job assignment groups, grades, and MAJCOMs in the transportation career field?

Up to this point, the research process compared transportation means to national norms while considering the transportation career field as one group. Table 11 presents the results of the oneway analysis of variance where different assignment groups (jobs) were compared with each other based on the mean satisfaction level for each job.

TABLE 11

MEAN COMPARISONS OF JOB SATISFACTION LEVELS BETWEEN ASSIGNMENT GROUPS WITHIN THE TRANSPORTATION CAREER FIELD

Assignment Group	No. of Respon-dents	Job Sat. Means
1. Squadron Commander/Chief of Trans.	117	5.77*
2. Air Terminal Operations Officer	28	5.15
3. Traffic Management Officer	20	5.74
4. Vehicle Operations Officer	50	5.38
5. Vehicle Maintenance Officer	36	5.55
6. Plans & Programs Officer	78	5.36
7. Transportation Staff Officer	183	5.45
8. Squadron Operations Officer	13	5.70
9. Combat Mobility Officer	12	5.36
10. Duty Officer	26	4.78*
11. Chief ATOC	14	5.52
12. Passenger Service Officer/Chief	7	5.41
13. Air Freight Officer/Chief	9	5.69
14. Executive Officer	4	6.02
15. All Others	37	5.64

* Indicates a significant difference between these groups.

The results presented in Table 11 are quite interesting. When comparing job satisfaction means within the transportation career field, the analysis revealed that Executive Officers, Squadron Commanders, and Chiefs of Transportation (COT) are among the most satisfied transportation officers while Duty Officers working on the flightline are the least satisfied of all transportation officers. There is a range of 1.24 between the Executive Officer mean of 6.02 which was the highest and the Duty Officer mean of 4.78 which was the lowest. However, the analysis revealed that the only statistically significant difference in means was between the Squadron Commander/COT and the Duty Officer due to the varying number of respondents from each job (see Table 11). These are interesting and significant results. The Squadron Commander/COT is likely to receive extensive feedback concerning the squadron from the Wing/Base Commander or the Deputy Commander for Resources. The Duty Officer works rotating shifts on the flightline and rarely has contact with individuals other than flight crews and load crews. Neither of these groups is likely to provide the feedback which would significantly increase the Duty Officer's job satisfaction level. This analysis, coupled with the high IGNS for all transportation officers, indicates that job enrichment for Duty Officers could increase job satisfaction and productivity among this group of transportation officers.

TABLE 12

MEAN COMPARISON OF GRADE AND JOB SATISFACTION
WITHIN THE TRANSPORTATION CAREER FIELD

Grade	Number of Respondents	Means Job Sat.	Significant Difference
Lt Colonel	96	5.75	with 1/Lts
Major	106	5.54	
Captain	299	5.41	
1st Lieutenant	81	5.35	with Lt Cols
2nd Lieutenant	69	5.41	

Table 12 presents the results of the oneway analysis of variance where different grades were compared with each other based on mean job satisfaction scores. The results of the analysis of job satisfaction means by grade for transportation officers also provided some significant results. Lt Colonels scored the highest while First Lieutenants had the lowest mean satisfaction levels. The analysis of variance revealed that the only statistically significant difference in means was between Lt Colonels and First Lieutenants. Lt Colonels are likely to be serving as Squadron Commanders/COTs or Staff Officers while First Lieutenants are likely to be performing duties at the squadron level. Additionally, the First Lieutenant has spent a couple of years in the career field and is expected to be more knowledgeable and perform at a more productive level than the Second Lieutenant. Unfortunately, current

assignment practices may place the First Lieutenant in a position where he or she has less practical experience than his or her subordinates.

Table 13 presents the results of the oneway analysis of variance comparing the mean job satisfaction levels between major commands.

TABLE 13

MEAN COMPARISONS OF MAJCOMS AND JOB SATISFACTION WITHIN THE TRANSPORTATION CAREER FIELD

Major Command	Job Sat. Mean	Significant Difference
Tactical Air Command	5.50	None
Strategic Air Command	5.34	None
Military Airlift Command	5.44	None
Air Training Command	5.32	None
HQ USAF	5.36	None
Air Force Logistics Command	5.72	None
Air Force Systems Command	5.76	None
U.S. Air Force Europe	5.55	None
Mil. Traffic Mgt. Command	5.29	None
Pacific Air Command	5.08	None
Space Command	4.43	None
Air University	5.98	None
All Others	5.48	None
Mean of Means	5.40	

No two major commands in the survey were significantly different on job satisfaction levels. However, the table is provided to illustrate the number of major commands involved in the survey and to present the mean satisfaction levels based on major command analysis. The fact that there was no statistically significant difference

between major commands is a significant finding by itself. This indicates that members assigned to different major commands throughout the transportation career field are equally satisfied regardless of which command they work for.

Summary

This chapter presented the data analyses and findings of the research. Sixteen job measures from the Job Characteristics Model were scored using the Job Diagnostic Survey application to the transportation officer career field. The results were then compared to national norms for managerial workers established by Hackman et al. Hypothesis testing of means was accomplished to determine if significant differences existed. Finally, variance between job satisfaction means within the transportation career field was addressed. A oneway analysis of variance was performed on job satisfaction means for assignment groups, grades, and MAJCOMs to determine statistically significant differences within these groups. In the final chapter, conclusions are drawn and recommendations are made regarding the findings from the analysis.

V. Conclusions and Recommendations

The conclusions and recommendations presented in this chapter are based on the analyses and findings presented in Chapter IV. The author also drew on personal experience in the transportation officer career field in forming the results of this chapter. Conclusions are followed by recommendations.

Conclusions

The following conclusions regarding the transportation officer career field resulted from this research project:

1. Analysis of the sixteen measures of the Job Diagnostic Survey indicates that, compared to national norms, transportation officers are more satisfied with their job than the average managerial worker. Based on this finding, it can also be concluded that transportation officers are more motivated and more productive than the average managerial worker in our nation. This is good news for Congress and the American taxpayer, who want the most out of every tax-dollar spent.

2. Transportation officers scored lower on the skill variety dimension of the survey than national norms, underscoring the problem of job diversification in the career field. The results of this phase of the analysis

are interesting as a desire for less skill variety was anticipated. Since the onset, this research effort had proposed that the transportation field contained excess task diversification (skill variety). A positive change in these characteristics would certainly be well received as indicated by the high IGNS value. The IGNS indicates transportation officers seek challenges at work. Consequently, less skill variety and more effective feedback from the job itself could contribute to improved performance and increased motivation.

3. Transportation officers scored lower on the feedback from the job itself dimension of the survey indicating a strong need for greater job feedback.

4. Transportation officers scored higher on the IGNS aspect of the survey indicating their receptiveness to change, challenge, and job enrichment.

5. Transportation officers scored equally with the national norms on the MPS aspect of the JDS indicating a potential for increased motivation on the job.

6. Transportation officers scored significantly higher on the IGNS dimension of the survey which indicates a strong desire for growth or change within the career field.

7. The analysis of means within the job groups for transportation officers revealed a statistically significant difference between Squadron Commanders and Duty

Officers with Duty Officers scoring much lower. This indicates a strong need for some job enrichment for Duty Officers.

8. The analysis of means within the grade group revealed a statistically significant difference between Lt Colonels and First Lieutenants with the First Lieutenants scoring much lower. This indicates a significant need for job enrichment for First Lieutenants. Based on these results and the summary information in Table 10, increased feedback from the job itself could prove to be a productive job enrichment for First Lieutenants throughout the transportation career field. If implemented, this job enrichment could produce significant increases in satisfaction and productivity among Air Force transportation officers.

9. No statistically significant difference was found between means of members assigned to different major commands in the transportation career field. These results are significant in providing statistical evidence of the satisfaction levels shared by transportation officers in different commands. This should be good news for all transportation officers who have long desired to serve in a different command, because of a perceived difference in the work environment, but were unable to obtain the desired assignment and transition from their current command.

Recommendations

The following recommendations are based on the information gained from this research effort, analysis of data measured with the Job Diagnostic Survey, and the author's personal experience as a transportation officer.

1. Recommend that senior level Air Force transportation managers acknowledge the high level of job satisfaction, motivation, and productivity evident in the career field today.

2. This research identified two significant situations concerning core job characteristics of transportation officers. First, there is a problem with excess task diversification and second, there is a strong need by all transportation officers for increased feedback from the job itself. For the first situation, recommend that any future attempts to reorganize/redesign the career field take these findings into consideration. A problem exists in this area which is not easily remedied. To properly resolve this situation could require a major reorganization of the transportation career field. Assignment of AFSC shredouts identifying officers with vehicle, TMO, and air transportation experience, coupled with an attempt by MPC to reassign junior officers to similar duties might be one solution. Concerning the need for increased feedback from the job itself, recommend that supervisors at all levels

within the career field take heed of these findings and make every effort to increase feedback to their subordinates.

3. Recommend that supervisors at all levels take advantage of the transportation officers' receptiveness to change, challenge, and job enrichment by providing challenge and job enrichment wherever possible (see page 8).

4. Recommend that Commanders of Aerial Port Squadrons be conscious of the findings concerning low levels of job satisfaction for Duty Officers and make every effort to reduce job diversification and provide increased, positive job feedback as well as initiating other forms of job enrichment for these individuals (see page 8).

5. Recommend that Squadron Commanders throughout the transportation career field be conscious of the findings concerning the low level of job satisfaction of First Lieutenants as a group and make every effort to reduce skill variety, increase positive job feedback, and initiate other forms of job enrichment for these individuals (see page 8).

6. Recommend all major commands be informed of the results of this research concerning the lack of statistically significant difference between means of job satisfaction so they might be aware of the equality of job satisfaction among transportation officers in different commands.

7. Recommend further job satisfaction studies in the transportation career field. Findings and conclusions drawn in this research project should not be assumed correct without further research. Only one methodology and one survey instrument were used in this research project. Multiple methodologies and data-gathering techniques should be used to thoroughly assess job characteristics and the potential for job enrichment. As Hackman and Oldham explained,

> . . . only by using multiple methodologies, involving data from multiple observers, can diagnosticians protect themselves from systematic distortions in the conclusions they reach. (10:102)

If findings from other methodologies result in similar conclusions to those presented in this research, then one may conclude that these findings do accurately assess the work situation in the transportation career field. Furthermore, in order to verify the accuracy of the findings presented here, other gathering methods, such as interviews, observations, and other diagnostic surveys should be employed to the transportation career field. Additionally, multiple observers should be questioned, such as supervisors, staff members, peers from other jobs, and outside consultants. Hackman and Oldham designed a Job Rating Form as a comparison instrument to be used in conjunction with the JDS. It is to be completed by supervisors and disinterested outsiders. Like the JDS, the Job Rating Form collects data on the motivational strengths and

weaknesses of a job. Usually, job profiles provided by workers and by those outside the job are similar. However, if significant differences are found, then additional study would be required to determine the reason for the differences.

As a follow-on study, the Job Rating Form could be administered to supervisors of the individuals surveyed in this study. The results could then be compared with the results of this application of the JDS. An additional follow-on study might involve applying a different survey instrument, such as the Job Characteristics Inventory (JCI) to the same group of transportation officers and comparing these results with the results of this effort.

Summary

Recommendations from this research project indicate that there is room for a lot more research in the job satisfaction area of the transportation career field before any significant conclusions can be reached. However, this effort has established a framework and direction for research identifying job characteristics, job enrichment potential, and job satisfaction levels concerning the transportation officer career field. This research effort was limited by both time and resources and as such, the conclusions and recommendations presented herein are only introductory in nature and should not be considered as infallible. This work does, however, provide a base from

which other hypotheses may be explained and analyzed. The results of this study provide information which should prepare all transportation supervisors to better accomplish Air Force objectives.

Appendix A: Scoring Key for the Job Diagnosic Survey

The scoring manual for the Job Diagnostic Survey (JDS) is presented below. For each variable measured by the JDS, the questionnaire items that are averaged to yield a summary score for the variable are listed.

I. JOB CHARACTERISTICS

A. Skill variety. Average the following items:

Section One: #4
Section Two: #8
#12 (reversed scoring-i.e., subtract the number entered by the respondent from 8)

B. Task identity. Average the following items:

Section One: #3
Section Two: #18
#10 (reversed scoring)

C. Task significance. Average the following items:

Section One: #5
Section Two: #15
#21 (reversed scoring)

D. Autonomy. Average the following items:

Section One: #2
Section Two: #20
#16 (reversed scoring)

E. Feedback from the job itself. Average the following items:

Section One: #7
Section Two: #11
#19 (reversed scoring)

F. Feedback from agents. Average the following items:

Section One: #6
Section Two: #17
#14 (reversed scoring)

G. Dealing with others. Average the following items:

Section One: #1
Section Two: #9
#13 (reversed scoring)

II. AFFECTIVE OUTCOMES. The first two constructs (general satisfaction and internal work motivation) are measured directly (Section Three); growth satisfaction is measured directly (Section Four).

A. General satisfaction. Average the following items:

Section Three: #23, #27
#25 (reversed scoring)

B. Internal work motivation. Average the following items:

Section Three: #22, #24, #26
#28 (reversed scoring)

C. Growth satisfaction. Average the following items:

Section Four: #31, #34, #38, #41

III. CONTEXT SATISFACTIONS. Each of these short scales uses items from Section Four only.

A. Satisfaction with job security. Average items #29 and #39 of Section Four.

B. Satisfaction with compensation (pay). Average items #30 and #37 of Section Four.

C. Satisfaction with co-workers. Average items #32, #35, and #40 of Section Four.

D. Satisfaction with supervision. Average items #33, #36, and #42 of Section Four.

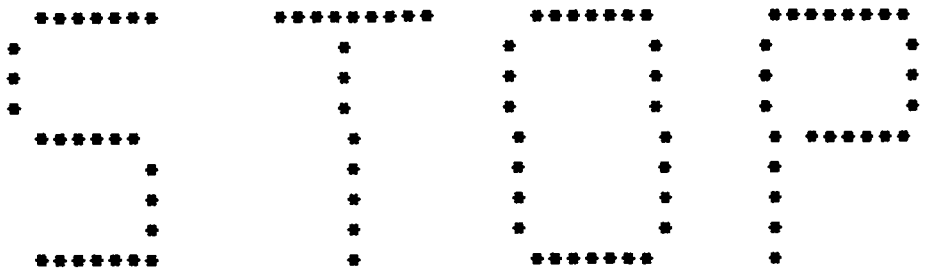
IV. INDIVIDUAL GROWTH NEED STRENGTH. The questionnaire yields the measure of growth need strength from Section Five (the "would like" format).

A. "Would like" format (Section Five). Average the six items from Section Five listed below. Before averaging, subtract 3 from each item score; this will result in a summary scale ranging from one to seven.
The items are: #44, #45, #48, #50, #52, #53

V. MOTIVATING POTENTIAL SCORE.

$$\text{Motivating Potential Score (MPS)} = \frac{\text{Skill variety} + \text{Task identity} + \text{Task significance}}{3} \times \text{Autonomy} \times \text{Feedback from the job}$$

Appendix B: Job Diagnostic Survey Amended for this Study (12:275-293)



PLEASE DO NOT THROW THIS PACKAGE AWAY.

IF YOU DO NOT HAVE TIME TO COMPLETE THIS SURVEY YOU ARE EXACTLY THE PERSON I NEED TO HELP ME COMPLETE THIS PROJECT.

ARE YOU UNHAPPY (?) WITH YOUR JOB ???
DO YOU REALLY LIKE THE JOB YOU HAVE NOW ???

THIS IS YOUR CHANCE TO TELL IT LIKE IT IS, ANONYMOUSLY, WHERE IT COULD MAKE A DIFFERENCE.
A LARGE RESPONSE TO THIS SURVEY COULD IMPACT FUTURE TRANSPORTATION ASSIGNMENTS AND GENERAL JOB DESIGN FOR ALL OF US.
A SMALL RESPONSE RATE WILL INVALIDATE THE VALUE OF THIS PROJECT.
YOUR WRITTEN COMMENTS ARE ENCOURAGED ON THE SURVEY WHEREVER YOU HAVE STRONG FEELILNGS ABOUT A QUESTION.

THANKS SO MUCH FOR YOUR EFFORT.

Randy Geiser

LT RANDY GEISER
TRANSPORTER

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433-6583

REPLY TO ATTN OF: LSG (Lt Geiser, AV 785-5435)

9 JAN 1986

SUBJECT: Job Diagnostic Survey Package (SCN 86-11)

TO: Transportation Officers (60XX)

1. Please take the time to complete the attached questionnaire and return it to us in the enclosed envelope by 30 June 1986.

2. The survey measures your perceptions and attitudes toward your job and job environment. The data we gather will become part of an AFIT research project and may influence job design if we find any significant problems. Your individual responses will be combined with others and will not be attributed to you personally.

3. Your participation is completely voluntary, but we would certainly appreciate your help.

WILLIAM A. MAUER
Acting Dean
School of Systems and Logistics

3 Atch
1. Questionnaire
2. Return Envelope
3. AFIT Data Collection Form

SECTION ONE

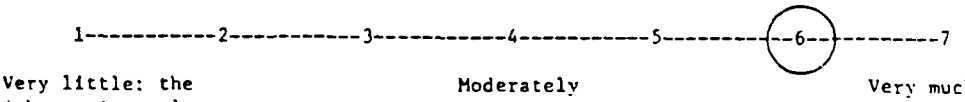
This part of the questionnaire asks you to describe your job, as objectively as you can.

Please do not use this part of the questionnaire to show how much you like or dislike your job. Questions about that will come later. Instead, try to make your descriptions as accurate and as objective as you possibly can.

This survey is being given to transportation officers throughout the Air Force. If you are not currently working as a transportation officer please answer the questions in this survey based on your prior expereince as a transportation officer.

A sample question is given below.

A. To what extent does your job require you to work with mechanical equipment?



Very little: the job requires almost no contact with mechanical equipment of any kind.

Moderately

Very much: the job requires almost constant work with mechanical equipment.

You are to circle the number which is the most accurate description of your job.

If, for example, your job requires you to work with mechanical equipment a good deal of the time--but also requires some paperwork—you might circle the number six, as was done in the example above.

Please use a number 2 lead pencil to code your answers to the survey onto the brown scan sheet (AFIT form 11C). After completing the survey and scan sheet please return both in the self-addressed envelope provided.
Go to the next page and begin.

1. To what extent does your job require you to work closely with other people (either clients, or people in related jobs in your own organization)?

1----------2----------3----------4----------5----------6----------7

Very little; dealing with other people is not at all necessary in doing the job.

Moderately; some dealing with others is necessary.

Very much; dealing with other people is an absolutely essential and crucial part of doing the job.

2. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work?

1----------2----------3----------4----------5----------6----------7

Very little; the job gives me almost no personal "say" about how and when the work is done.

Moderate autonomy; many things are standardized and not under my control, but I can make some decisions about the work.

Very much; the job gives me almost complete responsibility for deciding how and when the work is done.

3. To what extent does your job involve doing a "whole" and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other people or by automatic machines?

1----------2----------3----------4----------5----------6----------7

My job is only a tiny part of the overall piece of work; the results of my activities cannot be seen in the final product or service.

My job is a moderate-sized "chunk" of the overall piece of work; my own contribution can be seen in the final outcome.

My job involves doing the whole piece of work, from start to finish; the results of my activities are easily seen in the final product or service.

4. How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

1----------2----------3----------4----------5----------6----------7

Very little; the job requires me to do the same routine things over and over again.

Moderate variety.

Very much; the job requires me to do many different things, using a number of different skills and talents.

5. In general, how significant or important is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?

1----------2----------3----------4----------5----------6----------7

Not very significant: the outcomes of my work are not likely to have important effects on other people.	Moderately significant.	Highly significant; the outcomes of my work can affect other people in very important ways.

6. To what extent do managers or co-workers let you know how well you are doing on your job?

1----------2----------3----------4----------5----------6----------7

Very little; people almost never let me know how well I am doing.	Moderately; sometimes people may give me "feedback"; other times they may not.	Very much; managers or co-workers provide me with almost constant "feedback" about how well I am doing.

7. To what extent does doing the job itself provide you with information about your work performance? That is, does the actual work itself provide clues about how well you are doing--aside from any "feedback" co-workers or supervisors may provide?

1----------2----------3----------4----------5----------6----------7

Very little; the job itself is set up so I could work forever without finding out how well I am doing.	Moderately; sometimes doing the job provides "feedback" to me; sometimes it does not.	Very much; the job is set up so that I get almost constant "feedback" as I work about how well I am doing.

SECTION TWO

Listed below are a number of statements which could be used to describe a job.

You are to indicate whether each statement is an accurate or inaccurate description of your job.

Once again, please try to be as objective as you can in deciding how accurately each statement describes your job--regardless of whether you like or dislike your job.

Write a number in the blank beside each statement, based on the following scale:

How accurate is the statement in describing your job?

1	2	3	4	5	6	7
Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate

___8. The job requires me to use a number of complex or high-level skills.

___9. The job requires a lot of cooperative work with other people.

___10. The job is arranged so that I do not have the chance to do an entire piece of work from beginning to end.

___11. Just doing the work required by the job provides many chances for me to figure out how well I am doing.

___12. The job is quite simple and repetitive.

___13. The job can be done adequately by a person working alone--without talking or checking with other people.

___14. The supervisors and co-workers on this job almost never give me any "feedback" about how well I am doing in my work.

___15. This job is one where a lot of other people can be affected by how well the work gets done.

___16. The job denies me any chance to use my personal initiative or judgment in carrying out the work.

___17. Supervisors often let me know how well they think I am performing the job.

___18. The job provides me the chance to completely finish the pieces of work I begin.

___19. The job itself provides very few clues about whether or not I am performing well.

___20. The job gives me considerable opportunity for independence and freedom in how I do the work.

___21. The job itself is not very significant or important in the broader scheme of things.

SECTION THREE

Now please indicate how you personally feel about your job.

Each of the statements below is something that a person might say about his or her job. You are to indicate your own, personal feelings about your job by marking how much you agree with each of the statements.

Write a number in the blank for each statement, based on this scale:

How much do you agree with the statement?

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly

____22. My opinion of myself goes up when I do this job well.

____23. Generally speaking, I am very satisfied with this job.

____24. I feel a great sense of personal satisfaction when I do this job well.

____25. I frequently think of quitting this job.

____26. I feel bad and unhappy when I discover that I have performed poorly on this job.

____27. I am generally satisfied with the kind of work I do in this job.

____28. My own feelings generally are not affected much one way or the other by how well I do on this job.

SECTION FOUR

Now please indicate how satisfied you are with each aspect of your job listed below. Once again, write the appropriate number in the blank beside each statement.

How satisfied are you with this aspect of your job?

1	2	3	4	5	6	7
Extremely Dissatisfied	Dissatisfied	Slightly Dissatisfied	Neutral	Slightly Satisfied	Satisfied	Extremely Satisfied

___29. The amount of job security I have.

___30. The amount of pay and fringe benefits I receive.

___31. The amount of personal growth and development I get in doing my job.

___32. The people I talk to and work with on my job.

___33. The degree of respect and fair treatment I receive from my boss.

___34. The feeling of worthwhile accomplishment I get from doing my job.

___35. The chance to get to know other people while on the job.

___36. The amount of support and guidance I receive from my supervisor.

___37. The degree to which I am fairly paid for what I contribute to this organization.

___ 38. The amount of independent thought and action I can exercise in my job.

___ 39. How secure things look for me in the future in this organization.

___ 40. The chance to help other people while at work.

___ 41. The amount of challenge in my job.

___ 42. The overall quality of the supervision I receive in my work.

SECTION FIVE

Listed below are a number of characteristics which could be present on any job. People differ about how much they would like to have each one present in their own jobs. We are interested in learning <u>how much you personally would like</u> to have each one present in your job.

Using the scale below, please indicate the <u>degree</u> to which you <u>would like</u> to have each characteristic present in your job.

NOTE: The numbers on this scale are different from those used in previous scales.

4	5	6	7	8	9	10
Would like having this only a moderate amount (or less)			Would like having this very much			Would like having this <u>extremely</u> much

____ 43. High respect and fair treatment from my supervisor.

____ 44. Stimulating and challenging work.

____ 45. Chances to exercise independent thought and action in my job.

____ 46. Great job security.

____ 47. Very friendly co-workers.

____ 48. Opportunities to learn new things from my work.

____ 49. High salary and good fringe benefits.

____ 50. Opportunities to be creative and imaginative in my work.

____ 51. Quick promotions.

____ 52. Opportunities for personal growth and development in my job.

____ 53. A sense of worthwhile accomplishment in my work.

SECTION SIX
BIOGRAPHICAL DATA

All information in this section will be held in the strictest confidence; no one in your organization will have access to individual responses.

54. How much total active commissioned service have you completed? (Check one)

1.____ less than 4
2.____ less than 7
3.____ less than 10
4.____ less than 12
5.____ 15 *or more*

55. What is your age? (Check one)

1.____ 22-26
2.____ 27-31
3.____ 32-36
4.____ 37-41
5.____ Over 41

56. What is your highest education level? (Check one)

1.____ College graduate
2.____ Some Graduate Work
3.____ Graduate Degree

57. What is your sex? (Check one)

1.____ Male
2.____ Female

58. What is your marital status? (Check one)

1.____ Married
2.____ Not Married

59. Do you supervise others? (Check one)

1.____ Yes
2.____ No

60. If yes, how many personnel do you supervise? (Check one)

1.____ 5 or less
2.____ 6-10
3.____ 11-15
4.____ 16-20
5.____ 21-30
6.____ More than 30

61. Do you intend to stay in the Air Force beyond your present commitment?

1.____ No, I am separating
2.____ No, I am retiring
3.____ Undecided
4.____ Yes

62. Is your present job a major factor in your decision? (Check one)

1.____ Yes
2.____ No

Check one

63. Are you currently assigned duties as a ?

1.____Squadron Commander
2.____Air Terminal Operations Officer (specify)_____
3.____Traffic Management Officer
4.____Vehicle Management Officer
5.____Vehicle Maintenance Officer
6.____Plans & Programs Officer
7.____Transportation Staff Officer
8.____Other (specify)_____

64. In your last assignment you last performed duties as a ?

1.____Squadron Commander
2.____Air Terminal Operations Officer (specify)_____
3.____Traffic Management Officer
4.____Vehicle Management Officer
5.____Vehicle Maintenance Officer
6.____Plans & Programs Officer
7.____Transportation Staff Officer
8.____Other (specify)_____

65. If applicable, in your assignement prior to that of question 64, you performed duties as a ?

1.____Squadron Commander
2.____Air terminal Operations Officer (specify) _____
3.____Traffic Management Officer
4.____Vehicle Management Officer
5.____Vehicle Maintenance Officer
6.____Plans & Programs Officer
7.____Staff Transportation Officer
8.____Other (specify) _____

66. What is your present grade ?

1.____01 4.____04
2.____02 5.____05
3.____03 6.____06

67. What is the level of your current assignment ?

1.____HQUSAF 4.____MAJCOM
2.____JOINT 5.____SQUADRON
3.____NAF 6.____OTHER

68. What is your parent command ?

1.____TAC 5.____HQUSAF
2.____SAC 6.____AFLC
3.____MAC 7.____AFSC
4.____ATC 8.____USAFE
9.____MTMC
10.___OTHER

AD-A174 344 AN ANALYSIS AND COMPARATIVE STUDY OF JOB CHARACTERISTICS AND JOB SATISFAC..(U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL OF SYST.. 2/2

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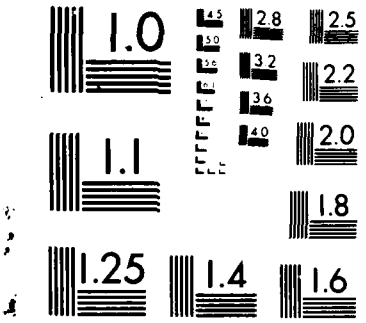

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Vita

Captain Randall K. Geiser was born on 3 November 1951 in Freeport, Illinois. He has over ten years prior service as a USAF noncommissioned officer in such varied fields as Radio Operations, Air Traffic Control, and Command and Control. He served as a Command Post Instructor at Keesler AFB just prior to entering the AFROTC Program at Southeast Missouri State University. He received his commission in the Air Force upon graduation from AFROTC in May 1982. After completing technical training for the transportation career field at Sheppard AFB TX, Captain Geiser was assigned to the 4th Transportation Squadron at Seymour-Johnson AFB NC. During a two and one-half year (December 1982-May 1985) tour at Seymour-Johnson, he served in the Vehicle Management, Vehicle Maintenance, and Traffic Management branches. Captain Geiser entered the School of Systems and Logistics, Air Force Institute of Technology, in May 1985.

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This research project looked at job characteristics, job enrichment potential, and job satisfaction levels in the Transportation Officer career field. The Job Diagnostic Survey was applied to a census of transportation officers. Survey results were analyzed and interpreted in the context of Hackman and Oldham's Job Characteristics Model. Additionally, job satisfaction questions from the survey were used to construct a job satisfaction variable for analyses of groups within the career field. A literature review addressed the evolutionary process in the field of human behavior which resulted in Hackman and Oldham's development of the Job Characteristics Model and the Job Diagnostic Survey. The literature review also explained how the Job Characteristics Model and the Job Diagnostic Survey can be applied to the study of job redesign potential. Survey results indicated that transportation officers are more satisfied with their job than the average managerial worker and as a group would not benefit significantly from job redesign. Analysis, within the career field, revealed that Duty Officers are the least satisfied transportation officers among all assignment groups and First Lieutenants are least satisfied among all grades. No significant difference was found in mean satisfaction levels among different Major Commands. The study made recommendations on how to improve specific aspects of the job which scored low in the survey. Conclusions addressed possible areas for follow-up research.

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