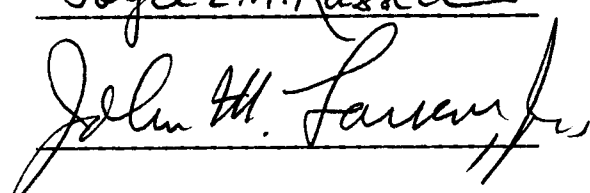


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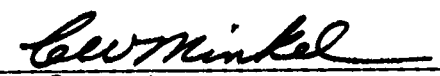
I am submitting herewith a thesis written by Philip A. Cerasoli, Jr. entitled "A Comparison of Worker-Oriented and Task-Oriented Job Analysis Methods: Analyzing the Job of MBA Student." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Industrial/Organizational Psychology.


Robert T. Ladd, Major Professor

We have read this thesis
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A COMPARISON OF WORKER-ORIENTED AND TASK-ORIENTED
JOB ANALYSIS METHODS: ANALYZING THE
JOB OF MBA STUDENT

A Thesis
Presented for the
Master of Science
Degree
The University of Tennessee, Knoxville

Philip A. Cerasoli, Jr.

August 1985

DEDICATION

I wish to dedicate this thesis to my parents, whose lifelong, unselfish support has made possible all of my accomplishments. They have encouraged and supported me in all of my endeavours, through good times and bad, and I will never forget their contributions to my life.

ACKNOWLEDGMENTS

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ABSTRACT

Most of the research that has compared task-oriented job analysis methods with worker-oriented job analysis methods has involved comparing the results when both methods are used to classify a group of jobs into families. In this study, both approaches were used to analyze one specific job, the job of MBA student, and the results were compared by translating the task-oriented data into worker-oriented form. The results showed that, although both methods rated Information Processing as the most important performance dimension, the methods produced significantly different overall job profiles. The task-oriented approach placed relatively more emphasis on formal job qualifications that an incumbent brings to a job, rather than general abilities or skills related to the performance of job duties.

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INTRODUCTION

Job analysis is extremely important to an organization, since the information it produces is used for many critical functions, such as selection, classification, job evaluation and manpower planning. It is also a legal requirement when tests are used for selection purposes.

Some of the methods of job analysis have been categorized into two general approaches: task-oriented and worker-oriented. The task-oriented approach involves breaking a job down into its component tasks and rating these tasks in terms of frequency and importance. The worker-oriented approach typically involves completing a structured job analysis questionnaire, using as a reference a general knowledge of the job.

There are many arguments regarding the relative merits of the two approaches, but relatively few studies have been done which directly compare them. Most of these studies have compared the approaches by classifying jobs using both methods and then comparing the resultant clusters. This has provided some information regarding the differences between the two approaches in terms of job classification and in the development of selection procedures for groups of similar jobs. However, in the management of an organization it is frequently necessary to devise selection procedures for a particular unique job, and this is especially common when professional positions are involved.

However, little, if any, research has examined the differences between task- and worker-oriented approaches when applied to the same job.

The purpose of this study was to compare the approaches by using both to analyze one particular job and to identify any differences and similarities in the information produced by each. This was done by translating the data from a task-oriented method into worker-oriented form.

It was hoped that the results of this comparison would provide some insight into the potential consequences of choosing a particular job analysis approach when analyzing one individual position.

CHAPTER I

LITERATURE REVIEW

Job analysis is an important process in the management of human resources in an organization. The function of job analysis is to define a job in terms of the objectives that must be accomplished and what employee behaviors are required to achieve those objectives (Cascio, 1978). The uses of job analysis information include personnel selection and placement, recruiting, job evaluation and classification, job design, assessment of training needs, manpower planning, career development, safety programs, job satisfaction, operations research, writing job descriptions, compensation administration, performance appraisal, labor relations and establishing job qualifications (Ash & Levine, 1979; Christal, 1974; Dunnette & Borman, 1979; McCormick, 1976; Prien & Ronan, 1971; Rouleau & Krain, 1975; Wilson, 1974; Zerga, 1943).

Job analysis plays an especially important role in selection, since the courts have consistently held that some form of job analysis must be performed before tests can be used in the selection process (Thompson & Thompson, 1982). The importance of job analysis in selection was first indicated in Griggs v. Duke Power (1971), in which the court held that any test used for selection purposes must be related to the functions performed in the job in question. This implied the necessity of a job analysis, since the functions of a job, and hence the job-relatedness of a test, cannot be determined unless some form of job analysis is performed.

Several court decisions after Griggs indicated the beginnings of a movement toward the requirement of some form of job analysis (Rowe v. General Motors, 1972; Brito v. Zito, 1972; Fowler v. Schwartzwalder, 1972; Western Community Organization v. Alioto, 1972, 1973). Finally the decision of the Supreme Court in Albemarle v. Moody (1975) firmly established the necessity of a relevant job analysis in the validation of selection procedures.

This decision was supported in subsequent cases, including Rogers v. International Paper (1975), and Wade v. Mississippi Cooperative Extension Service (1976). In these two cases, the use of selection tests was disallowed because no job analysis was performed, but the courts did not specify what would have constituted a sufficient analysis.

In FIRE v. City of St. Louis (1977) the court ruled that an adequate job analysis had been conducted, but rejected the test that had been used because the results of the analysis had not been used in the test's development. This decision established the principle that any selection test must thoroughly reflect the job analysis, and any part of a job shown to be significant in the job analysis must be included in the test (Perticone & Weisen, 1979).

The decisions of the courts in the above cases were strengthened by the Uniform Guidelines on Employee Selection Procedures (1978), which specifically state that data from a formal job analysis must be used in the validation of selection devices. The type of job analysis to be used depends on the specific validation strategy (content, construct, or criterion-related) to be employed.

The major methods of job analysis in use at the present time include:

1. Job elements method (Primoff, 1975);
2. Functional Job Analysis (FJA) (Fine & Wiley, 1971);
3. Task analysis (U. S. Department of Labor, 1972);
4. Critical incidents (Flanagan, 1954);
5. Position Analysis Questionnaire (PAQ) (McCormick, Jeanneret & Mecham, 1969);
6. Professional and Managerial Position Questionnaire (PMPQ) (Mitchell & McCormick, 1979);
7. Job Diagnostic Survey (JDS) (Hackman & Oldham, 1975);
8. Guidelines-oriented job analysis (GOJA) (Biddle, 1977);
9. Executive Position Description Questionnaire (EPDQ) (Hemphill, 1960);
10. Clerical Task Inventory (Lawshe, 1955);
11. Narrative job descriptions;
12. Ability requirements (Fleishman, 1972);
13. Job analysis brainstorming sessions (JABS) (McDermott, 1982);
14. Managerial and Professional Description Questionnaire (Tornow & Pinto, 1976).

Generally, the effectiveness of each method depends on the purpose for which it is used (Prien, 1977; Wilson, 1974) and it has generally been accepted that the use of multiple methods is superior to employing one alone (Levine, Ash & Bennett, 1980).

Pearlman (1980) has described four general approaches underlying the above job analysis methods:

1. Task-oriented, in which the nature of the work itself (i. e. the actual tasks to be accomplished) is emphasized. Task-oriented methods typically involve the use of task checklists, and the tasks are rated in terms of frequency and importance. Examples of task-oriented methods are task analysis, guidelines-oriented job analysis, the Clerical Task Inventory and the Executive Position Description Questionnaire.

2. Worker-oriented, which is concerned with the human behaviors and efforts required to perform the job. The assumption behind this approach is that all jobs can be defined in terms of several dimensions related to job performance. This type of analysis generally involves the use of structured job analysis questionnaires, such as the PAQ and PMPQ, in which ratings of job elements are combined to form profile scores on the critical job-related dimensions.

3. Attribute-oriented, which describes the job in terms of general human traits, such as abilities, education, experience, training and physical characteristics. Examples of this approach are the ability requirements method and the MPDQ.

4. Overall nature of the job, which analyzes jobs in terms of job titles or general descriptions of the type of work performed. This type of job analysis is generally used in government job classification systems, such as the one used by the federal government (U. S. Department of Labor, 1977).

The two most significant of the above approaches are the worker-oriented and the task-oriented. Of these, the worker-oriented methods, the PAQ in particular, have been studied much more comprehensively than have the task-oriented methods.

Reliability, in terms of interrater agreement, of the worker-oriented methods has been firmly established (Prien, 1977), with reliabilities ranging from .49 to .96 (Brumback, Romashko, Hahn & Fleishman, 1974; McCormick et al., 1972; Smith & Hakel, 1979; Taylor, 1978; Taylor & Colbert, 1978). The validity of worker-oriented methods is generally estimated by using regression techniques to predict salary or job level from the results of the job analysis. Validity coefficients have typically been relatively high, ranging from .38 to .67 (McCormick et al., 1972; Smith & Hakel, 1979).

The reliability of task-oriented analysis, usually estimated by the use of incumbent and supervisor descriptions of the job along with selected items from the task checklist, has not been clearly determined (Prien, 1977). However, McCormick (1976) reported that rating scales such as relative amount of time spent are reliable indicators of the importance of the task to job performance. The validity of task-oriented methods refers to the relationship between the generated task inventory and the "real" position. Evidence of this is indirect and scarce, usually consisting of comparisons of job profiles produced by different analysts describing the same job (Prien, 1977). Moderate to high relationships have been found between estimated and actual time spent on tasks (Carrol & Taylor, 1969; Hinrichs, 1964; Stogdill & Shartle, 1955).

In terms of practical utility, many arguments have been proposed regarding the merits and usefulness of each type of method, and the arguments tend to be made primarily in terms of personnel selection and classification. McCormick et al. (1972) identified worker-oriented methods as having utility for the establishment of synthetic validity

(Lawshe, 1952) and for job evaluation purposes. They argue that if a particular type of job activity is common to several different jobs, then the aptitudes required for those jobs would be similar, at least as regards the common activity. Thus worker-oriented methods, which are designed to measure these aptitudes, are useful for establishing validity across jobs and situations. This is, in essence, the concept of validity generalization (Schmidt & Hunter, 1977), which refers to the idea that test validity can be generalized to many different jobs in different settings without the need for separate validity studies. This approach presupposes the existence of human aptitudes that underly most jobs, and worker-oriented methods have been useful in identifying these attributes (Pearlman, 1980; Schmidt, Hunter, Pearlman & Shane, 1979).

Smith and Hakel (1979) found that worker-oriented methods could be employed to produce accurate job analysis data using analysts with very little familiarity with the work. Also, it has been shown that structured job analysis questionnaires can be effective in quantifying data from narrative job descriptions (Jones, Main, Butler & Johnson, 1982).

The advantages of worker-oriented methods are that they are less expensive (Levine et al., 1980), take less time (Mecham, 1983), and require a minimal number of incumbents to analyze a particular job (Brumback et al., 1974).

Task-oriented methods are useful for establishing content validity (Levine et al., 1980; Perticone & Weisen, 1979; Prien, 1977), for developing job descriptions (Primoff, 1975), and have been recommended as the preferred analysis for the purposes of selection

(Biddle, 1977; Prien, 1977, Rouleau & Krain, 1975). Thompson and Thompson (1982) report that task-oriented methods have been indicated by the courts and by the Equal Employment Opportunity Commission (EEOC) as the preferred type of job analysis for establishing validity for selection tests, stating: "...it should be noted that the courts stress the identification of tasks as prerequisite to an acceptable job analysis."

The major advantage of task-oriented approaches is that they are more easily defensible in court (Cornelius, Carron & Collins, 1979; Thompson & Thompson, 1982). However, they are costly and time-consuming (McCormick, 1976; Sackett, Cornelius & Carron, 1981), and cannot easily be used to compare different jobs (Priem & Ronan, 1971). Furthermore, when developing attribute requirements for jobs, an "inferential leap" is required to link specific tasks to worker attributes (Brumback, 1976; Mussio & Smith, 1973; Prien, 1977; Prien & Ronan, 1971).

Thus the job analyst is faced with a difficult problem, since a different method may be needed for each specific purpose for which the job analysis data is to be used. Since most organizations use job analysis information for many different functions, this can result in a very costly and confusing collection of job information.

Fleishman (1975) and Dunnette (1976) have espoused the need to establish a link between the two approaches, but very little research has been done in this regard. Fleishman (1975) looked at the effects of systematic variations in task characteristics on the ability requirements developed through worker-oriented analyses, but the results were inconclusive.

Cornelius et al. (1979) analyzed seven foreman jobs using task-oriented, worker-oriented and abilities-oriented methods in an attempt to form job clusters and found that the task-oriented technique resulted in three separate clusters while the worker-oriented method did not distinguish between any of the jobs. This evidence supports the notion that worker-oriented methods are better suited to providing information about groups of similar jobs rather than differentiating between specific individual jobs. Another study found that job groupings based on task analysis did not differ from job groupings based on simple global judgements of job similarities (Sackett et al., 1981). This casts doubt on the precision of the information obtained from task analysis.

Levine et al. (1980) compared four methods of job analysis and concluded that the worker-oriented method, in this case the PAQ, was not as effective in highlighting general job characteristics or for establishing content validity. However, a flaw in this study was that the participating job analysts differed in their familiarity with the job analysis methods used, and it is possible that this contributed to the variance between methods. Also, it was found that selection exam plans which were developed from the different methods were very similar, thus indicating that the outcomes of the approaches may not differ.

Pearlman (1980), in his review of the literature, also states that jobs judged to be different when grouped using one approach may be judged to be similar when another type of method is used. However, it is possible that the variance due to the differing organizational perspectives of the subjects could contribute significantly to these grouping differences, maybe more than method variance.

A few studies have investigated rater differences, but the results have been mixed. O'Reilly (1973) examined job ratings of 57 pairs of supervisors and subordinates and found only one case in which there was full agreement between the supervisor and subordinate on skill and knowledge requirements. It was suggested that the supervisors may have exaggerated their ratings in order to make the jobs appear more skilled and demanding.

Smith and Hake1 (1979) compared the PAQ ratings of job incumbents, supervisors, job analysts and students, and found little difference between them in terms of reliability. However, they found that the types of analysts differed in the relative leniency of their ratings, with supervisors and incumbents rating all items higher than the other rater types. This led the authors to recommend caution when constructing selection tests from aptitude requirements when different analyst sources are utilized for different jobs.

Arvey, Davis, McGowen and Dipboye (1982) investigated the possibility that level of incumbent interest in the job and amount of job information available systematically affect the ratings of job analysts, but found no supporting evidence.

It seems intuitively obvious that job ratings obtained from more than one analyst are confounded by differences which result from differing organizational perspective, since no two people in an organization will see a job in exactly the same way. Perhaps this is the cause of differences in job clustering when different methods are used by the same analysts to rate several different jobs. The analysts more than likely have differential knowledge and familiarity with both the jobs under study and the job analysis methods used.

Most of the studies which have compared the job analysis approaches have involved the classification of several jobs into families or clusters and the subsequent comparison of the clusters identified by each method. This assesses the utility of the methods in the development of selection tests for entire families of jobs. However, in practice, especially in the case of managerial and professional jobs, it is often necessary to devise selection procedures for only one particular position. No study was found that compared the results of worker-oriented and task-oriented methods using only one specific job as the unit of analysis.

Prien (1977), in his review of the literature, states:

In situations where I have used both task and worker-oriented approaches, I have attempted to reconcile the data obtained using a task-oriented method with the data obtained using a worker-oriented method. In performing the comparisons, I've used both thematic analysis categories and individual items to construct a matrix. Uniformly I have difficulty reconciling the two approaches because the worker-oriented data contains items without parallel in the task-oriented items or the reverse.

This study was an attempt to do exactly what Prien has tried to do; that is, to analyze one particular job using a worker-oriented method and a task-oriented method and compare the information obtained from each. At the same time the effect of rater differences was examined by using two types of raters.

CHAPTER II

METHOD

Design

The design of the study was multivariate, the independent variable was method of job analysis, and the dependent variables were scores on nine job performance dimensions. Three methods of job analysis were compared: (1) a worker-oriented analysis conducted by subject matter experts (SMEs), (2) a worker-oriented analysis done by non-SMEs, and (3) a task-oriented analysis. The job performance dimensions were: (1) Planning/Scheduling, (2) Information Processing, (3) Relevant Job Experience, (4) Technical Activities, (5) Special Training, (6) Communicating, (7) Interpersonal Activities, (8) Formal Education, and (9) Personal Characteristics. These dimensions were used because they were the ones measured by the worker-oriented instrument used in the study.

Participants

Participants were graduate students in the Master of Business Administration (MBA) program and the Industrial/Organizational (I/O) Psychology program at the University of Tennessee, Knoxville. These students completed and returned mailed job analysis instruments. One faculty member in the Department of Management also participated after being contacted by telephone.

The following job analysis instruments were mailed to three separate groups of MBA students: A task analysis questionnaire (20 mailed, 5 returned, 25% response rate), a task frequency and importance

questionnaire (45 mailed, 26 returned, 58% response rate) and a worker-oriented questionnaire (45 mailed, 10 returned, 22% response rate). The following instruments were mailed to two different groups of I/O Psychology students: A translation matrix (20 mailed, 10 returned, 50% response rate) and a worker-oriented questionnaire (20 mailed, 10 returned, 50% response rate). Follow-up telephone contact was made with four of the I/O Psychology students and this somewhat improved the response rate. The above mailing procedure was performed so that each participant completed only one particular job analysis instrument.

Procedure

The job analyzed was the "job" of MBA student at the University of Tennessee, Knoxville. This job was chosen because it has never before been analyzed, and, more importantly, the results of the analysis will be used to develop an assessment center for the MBA program. However, that project is beyond the scope of this paper and will not be discussed further. The purpose of this paper is to discuss only the similarities and differences in dimension structure as identified by the job analysis methods chosen for study.

The MBA students who participated in the study were designated as SMEs and the participating I/O students were designated as non-SMEs, and hereafter in this paper will be referred to as such.

In the context of this study, the differentiation between SMEs and non-SMEs in terms of knowledge of the job was considered to be analogous to the difference in job knowledge between job incumbents and job analysts in the same organization. Thus, since the non-SMEs were

I/O Psychology students in the same university and had some contact with the MBA program, they were not assumed to be totally ignorant of the MBA job before their participation in this study. They were considered to have a similar level of job knowledge, as well as familiarity with job analysis, as would a job analyst in a typical organization.

The job of MBA student can be considered a preprofessional position, according to the definition of professional jobs proposed by Mitchell (1978):

...[professional positions] tend to be at the higher end of the wage scale, are typically subject to more stringent selection of the persons to be employed, frequently require that applicants be highly trained or educated, and commonly require more of an incumbent than a "normal" workday or work week.

Though the MBA student job falls slightly short of being a truly professional position, most of the activities performed are very similar in nature to the duties involved in most professional jobs. Thus, for the purposes of this paper, the MBA job was considered to be a preprofessional position.

Since the job of MBA student is a preprofessional position, the Professional and Managerial Position Questionnaire (PMPQ) (Mitchell & McCormick, 1979) was used as the worker-oriented method. The PMPQ was designed specifically to analyze professional and managerial jobs, and is closely related to the PAQ (McCormick et al., 1969). It was developed because the PAQ, which seems to be the standard for worker-oriented methods, may not be as accurate in analyzing higher-level jobs (Harris & McCormick, 1973; Mecham & McCormick, 1969; McCormick, DeNisi & Marquardt, 1974; Mitchell & McCormick, 1979).

The PMPQ measures 10 job dimensions: (1) Planning/Scheduling, (2) Information Processing, (3) Relevant Job Experience, (4) Technical Activities, (5) Special Training, (6) Communicating, (7) Interpersonal Activities, (8) Formal Education, (9) Personal Characteristics, and (10) Second Language Usage. However, the tenth dimension, Second Language Usage, was inapplicable to the job of MBA student and was not used in this study. Definitions of these dimensions, except for Second Language Usage, can be found in Appendix F.

Although the PMPQ was developed in the tradition of the PAQ, little is known about the interrater reliability of the instrument. Mitchell and McCormick (1979) reported reliabilities ranging from .46 to .78, but these estimates were based on an extremely small sample ($n=3$) and thus do not provide a realistic estimate.

More substantial evidence is available concerning the PMPQ's validity. The instrument has been found to correlate .80 with salary (Mitchell & McCormick, 1979) and has been shown to have convergent validity with other job analysis instruments in measuring administrative jobs (Dunham, 1979).

The PMPQ contains 94 items, however, items 87 through 94 are used strictly for job evaluation purposes and pertain to factors such as actual salary and number of employees supervised, which are inappropriate for the purposes of this study. Thus the instrument was shortened to include only the first 86 items.

The shortened PMPQ was completed by 10 SMEs who were instructed to fill out the instrument based on what they did as a student, and not what they expected to do in any future job.

The 10 non-SMEs were given a description of the MBA program and were told to fill out the PMPQ based on the information contained in the description. The instructions given to the participants are presented in Appendix A, and the shortened PMPQ is contained in Appendix B.

Raw scores on each PMPQ item were converted to z-scores based on the item means and standard deviations obtained from a normative sample developed by Mitchell (1979). These means and standard deviations are presented in Table 1. Using the principal component loadings in Table 2 (Mitchell, 1979), the z-scores were then combined to produce dimension scores on the 10 job dimensions (principal components) measured by the PMPQ. As mentioned previously, one of these job dimensions, Second Language Usage, had a dimension score of zero in every case and was dropped from the analysis, resulting in a total of 9 dimensions.

The job dimension scores of the SMEs and non-SMEs were then arrayed in two 10 X 9 matrices, with the participants constituting the rows and the dimensions making up the columns.

The task-oriented analysis consisted of a straightforward analysis of tasks, following the guidelines outlined by Perticone and Weisen (1979). Five SMEs generated a list of tasks, which were then reviewed by a supervisor, in this case a faculty member in the Department of Management. This procedure resulted in a list of 23 tasks. The instructions given to these participants are presented in Appendix E.

Each task on the list was then rated in terms of frequency and importance by 26 SMEs, using a 5-point Likert-type scale. Appendix D contains the instrument used to obtain these ratings. The frequency and

Table 1
Normative Means and Standard Deviations of PMPQ Items

Item Number	Item Name	Mean	Standard Deviation
1	Work Scheduling	5.92	2.09
2	Complexity of Work Scheduling	4.69	1.76
3	Budgeting	3.80	2.72
4	Complexity of Budgeting	3.63	2.44
5	Operations Planning	5.73	2.01
6	Complexity of Operations Planning	4.67	1.88
7	Planning Future Development	5.36	2.22
8	Complexity of Future Planning	4.52	1.93
9	Transcribing/Coding/Compiling Info.	4.22	2.58
10	Complexity of T/C/C Information	4.23	2.32
11	Quantitative Processing	4.47	2.27
12	Complexity of Quantitative Processing	4.18	1.86
13	Analyzing/Synthesizing Information	5.94	2.03
14	Complexity of Analyzing/Synthesizing	5.29	1.68
15	Judgements Involving People	6.49	2.29
16	Complexity of Judgements Inv. People	5.33	1.71
17	Judgements Involving Operations	5.51	2.20
18	Complexity of Operations Judgements	4.92	1.72
19	Judgements Involving Fiscal Resources	3.92	2.61
20	Complexity of Fiscal Judgements	3.74	2.36
21	Oral Communications	7.40	1.50
22	Complexity of Oral Communications	5.55	1.33
23	Written Communications	6.21	1.78
24	Complexity of Written Communications	5.63	1.53
25	Using Other Languages	0.35	1.10
26	Complexity of Using Other Languages	0.43	1.30
27	Supervising/Directing	6.05	2.69
28	Complexity of Supervising/Directing	4.53	2.05
29	Instructing	4.57	2.32
30	Complexity of Instructing	4.64	1.86
31	Coordinating	5.88	2.15
32	Complexity of Coordinating	4.45	1.58
33	Interviewing	5.03	2.42
34	Complexity of Interviewing	4.88	2.04
35	Advising	5.23	2.46
36	Complexity of Advising	4.89	1.93
37	Representing/Negotiating	4.32	2.72
38	Complexity of Representing/Negotiating	4.31	2.12
39	Using Equipment and Devices	3.50	2.59
40	Complexity of Equipment Use	4.46	2.19
41	Using Procedures, Technical Devices	4.61	2.44
42	Complexity of Using Proc., Tech. Dev.	4.92	2.11
43	Summary-Planning	5.60	1.99
44	Summary-Processing Info. and Ideas	5.66	1.96
45	Summary-Exercising Judgement	7.04	1.51
46	Summary-Communicating	6.64	1.68

Table 1 (Continued)

Item Number	Item Name	Mean	Standard Deviation
47	Summary-Interpersonal Activities	6.10	2.16
48	Summary-Technical Activities	4.42	2.44
49	Summary-Complexity of Planning	4.68	1.59
50	Summary-Complexity of Proc. Info/Ideas	5.03	1.78
51	Summary-Complexity of Exer. Judgement	6.01	1.58
52	Summary-Complexity of Communicating	5.39	1.52
53	Summary-Complexity of Interper. Act.	5.13	1.81
54	Summary-Complexity of Technical Act.	4.36	2.17
55	Summary-Impact of Planning	5.12	2.06
56	Summary-Impact of Proc. Info/Ideas	5.08	1.83
57	Summary-Impact of Exercising Judgement	6.20	1.68
58	Summary-Impact of Communicating	5.49	1.78
59	Summary-Impact of Interper. Activities	5.19	2.06
60	Summary-Impact of Technical Activities	3.93	2.43
61	Summary-Responsibility for Planning	5.59	2.13
62	Summary-Resp. for Proc. Info/Ideas	5.72	1.95
63	Summary-Resp. for Exer. Judgement	6.80	1.60
64	Summary-Resp. for Communicating	6.24	1.68
65	Summary-Resp. for Interper. Activities	5.96	1.89
66	Summary-Resp. for Technical Activities	4.22	2.44
67	Formal Education Required	5.27	1.96
68	Use of Education	5.86	1.64
69	Complexity of Education	5.13	1.66
70	Impact of Education	5.56	1.98
71	Special Training Required	5.74	2.22
72	Use of Training	6.43	2.10
73	Complexity of Training	5.18	1.71
74	Impact of Training	6.12	2.10
75	Required Relevant Experience	4.86	1.74
76	Use of Experience	6.52	2.06
77	Complexity of Experience	5.34	1.78
78	Impact of Experience	6.12	2.11
79	Required Personal Characteristics	5.70	2.09
80	Use of Personal Characteristics	6.00	1.78
81	Complexity of Personal Characteristics	5.20	1.65
82	Impact of Personal Characteristics	5.93	1.85
83	Adaptability	6.45	1.60
84	Use of Adaptability	6.00	1.69
85	Complexity of Adaptability	5.10	1.53
86	Impact of Adaptability	6.10	1.63

Table 2
Item Loadings on PMPQ Job Dimensions

Item No.	Item Content	Loading
Planning/Scheduling		
43	Planning/Scheduling	.726
61	Planning/Scheduling	.718
6	Complexity of Operations Planning	.717
4	Complexity of Budgeting	.698
49	Planning/Scheduling	.684
3	Budgeting	.676
2	Complexity of Work Scheduling	.647
5	Operations Planning	.645
55	Planning/Scheduling	.640
8	Complexity of Planning for Future Development	.610
1	Work Scheduling	.536
7	Planning Future Development	.513
Information Processing		
11	Quantitative Processing of Information/Data	.673
9	Transcribing/Compiling/Coding of Information	.666
10	Complexity of Transcribing/Compiling/Coding	.631
44	Processing of Information/Ideas	.597
12	Complexity of Quantitative Methods Used	.541
50	Processing of Information/Ideas	.533
56	Processing of Information/Ideas	.527
62	Processing of Information/Ideas	.492
Relevant Job Experience		
76	Use of Experience	.802
75	Required Relevant Experience	.778
78	Impact of Experience	.757
77	Complexity of Experience	.719
Technical Activities		
40	Complexity of Using Equipment or Devices	.887
54	Technical Activities	.842
66	Technical Activities	.835
48	Technical Activities	.832
60	Technical Activities	.777
39	Using Equipment/Devices	.696
41	Using Procedures/Techniques/Processes	.604
42	Complexity of Using Procedures/Techniques/Proc.	.579

Table 2 (Continued)

Item No.	Item Content	Loading
Special Training		
72	Use of Training	.761
71	Special Training Required	.739
74	Impact of Training	.712
73	Complexity of Training	.697
Communicating		
46	Communicating	.587
21	Oral Communications	.578
23	Written Communications	.566
Interpersonal Activities		
59	Interpersonal Activities	.558
53	Interpersonal Activities	.537
65	Interpersonal Activities	.451
47	Interpersonal Activities	.432
Formal Education		
67	Required Education	.710
69	Complexity of Education	.654
70	Impact of Education	.521
68	Use of Education	.437
Personal Characteristics		
79	Required Personal Characteristics	.713
80	Use of Personal Characteristics	.712
82	Impact of Personal Characteristics	.688
83	Adaptability Required	.656
81	Complexity of Personal Characteristics	.634
57	Impact of Exercising Judgement	.629
84	Use of Adaptability	.620
86	Impact of Adaptability	.610
45	Exercising Judgement	.604
85	Complexity of Adaptability	.575
63	Exercising Judgement	.565
15	Judgements Involving People	.478
51	Complexity of Exercising Judgements	.466
16	Complexity of Judgements Involving People	.443

importance ratings were standardized into distributions with a mean of 10 and a standard deviation of 1, which were arbitrary parameters chosen in order to ensure that all scores were positive. This was essential to produce logical linear combinations with the translation matrix data, which will be described below. The choice of these particular parameters did not distort the results of the study, since other parameters were tested in the analysis and did not affect the results.

The standardized frequency and importance ratings were then combined by summation, using unit weighting, into one score representing the overall importance of the task. This combination of ratings was performed because there was only a moderate correlation between them. The mean correlation of the individual ratings of frequency and importance across all tasks was .51, while the correlation between the mean ratings was .77, as computed using Fisher's r to z transformation.

The overall importance scores were arranged in a 26 X 23 matrix, where 26 equals the number of raters and 23 represents the number of tasks. This matrix constituted the results of the task analysis.

In order to convert the task analysis data into the same form as the results of the PMPQ, a 23 X 9 translation matrix was developed, in which the rows were the tasks generated in the task analysis and the columns were the PMPQ dimensions. The elements of this matrix were mean estimates of the strength of the relationship between each task and PMPQ dimension. These estimates were produced by 10 non-SMEs using a 3-point Likert-type scale. The instrument used to obtain these ratings is presented in Appendix F, and the resultant matrix containing the mean estimates can be found in Table 3.

TABLE 3

Mean Translation Matrix Estimates

Task	Planning/ Scheduling	Info. Processing	Communi- cating	Interperson. Activities	Technical Activities	Formal Education	Special Training	Job Experience	Personal Character.
Organizing & planning daily tasks.	2.0	1.3	1.0	1.1	0.5	0.3	0.7	1.2	1.3
Applying algebra and differential calculus to business problem-solving.	0.3	1.7	0.1	0.0	1.1	1.9	1.2	1.1	0.7
Oral communications with coworkers and supervisors.	0.3	0.9	2.0	1.9	0.5	0.3	0.2	0.6	1.4
Use of statistical analysis in business problem-solving.	0.5	1.7	0.3	0.1	1.1	1.7	1.0	1.3	0.8
Memorization of information for later recall.	0.5	1.4	0.3	0.0	0.2	0.5	0.5	0.3	0.6
Analysis of prepared cases.	0.8	1.8	0.7	0.1	0.3	1.3	1.0	1.1	1.0
Oral presentations.	0.8	0.9	2.0	1.7	0.3	0.8	0.6	0.7	1.4
Writing reports.	1.0	1.6	1.7	0.3	0.5	1.6	1.0	1.0	0.8
Preparation of tables, charts and graphs.	0.9	1.7	1.2	0.2	1.2	1.2	1.2	0.9	0.6
Participation in group projects.	0.9	1.2	1.9	2.0	0.4	0.1	0.5	0.8	1.6

Table 3 (continued)

Task	Planning/ Scheduling	Info. Processing	Communi- cating	Interperson. Activities	Technical Activities	Formal Education	Special Training	Job Experience	Personal Character.
Computer data entry using a video display terminal.	0.2	1.6	0.2	0.1	1.7	0.8	1.5	0.7	0.4
Use of keypunch machine for data entry purposes.	0.2	1.3	0.1	0.1	1.7	0.6	1.4	0.7	0.3
Computer analysis of data using prepro- grammed statistical packages.	0.5	1.9	0.5	0.1	1.9	1.4	1.5	1.3	0.9
Critical reading of college-level material to ascertain relevancy of information.	0.7	1.8	0.3	0.1	0.3	2.0	0.8	0.7	1.1
Reading and assessing financial statements.	0.9	1.8	0.2	0.1	0.7	1.8	1.3	1.2	0.9
Library research, in- cluding use of micro- fiche readers.	1.1	1.8	0.3	0.3	1.4	1.4	1.1	0.7	0.7
Attending courses and taking relevant notes for future use.	1.1	1.8	0.9	0.4	0.4	1.4	1.0	0.4	0.8
Taking extensive written examinations.	1.1	1.8	1.6	0.2	0.5	2.0	1.0	0.8	1.2
Understanding and inter- preting key ratios such as liquidity, profit- ability & leverage.	0.4	1.9	0.4	0.1	0.8	1.5	1.1	1.2	0.7

Table 3 (continued)

Task	Planning/ Scheduling	Info. Processing	Communi- cating	Interperson. Activities	Technical Activities	Formal Education	Special Training	Job Experience	Personal Character.
Providing adequate business forecasts using economic "natural laws."	0.8	1.9	1.0	0.3	1.0	1.9	1.1	1.3	1.0
Careful budgeting of time.	2.0	0.9	0.4	0.5	0.2	0.5	0.6	0.8	1.6
Reading of business journals and periodi- cals.	0.7	1.7	0.4	0.0	0.5	1.5	0.6	0.7	0.6

The task analysis data was converted by multiplying the 26 X 23 matrix of overall task importance ratings by the 23 X 9 translation matrix to produce a 26 X 9 matrix of PMPQ job dimension scores (see Appendix G). In simple terms, these PMPQ job dimension scores represent a linear combination of the overall importance ratings of each task, using as weights the estimates of the relationship between the task and each PMPQ dimension. This translation procedure is diagrammed in Figure 1.

Thus the three methods of job analysis resulted in three sets, or matrices, of raw PMPQ job dimension scores. The dimension scores were then converted to z-scores, such that the overall mean and standard deviation for each method were equivalent. The matrices of standardized dimension scores are presented in Appendixes C, D and G. These standard scores were then analyzed to determine if any method differences existed.

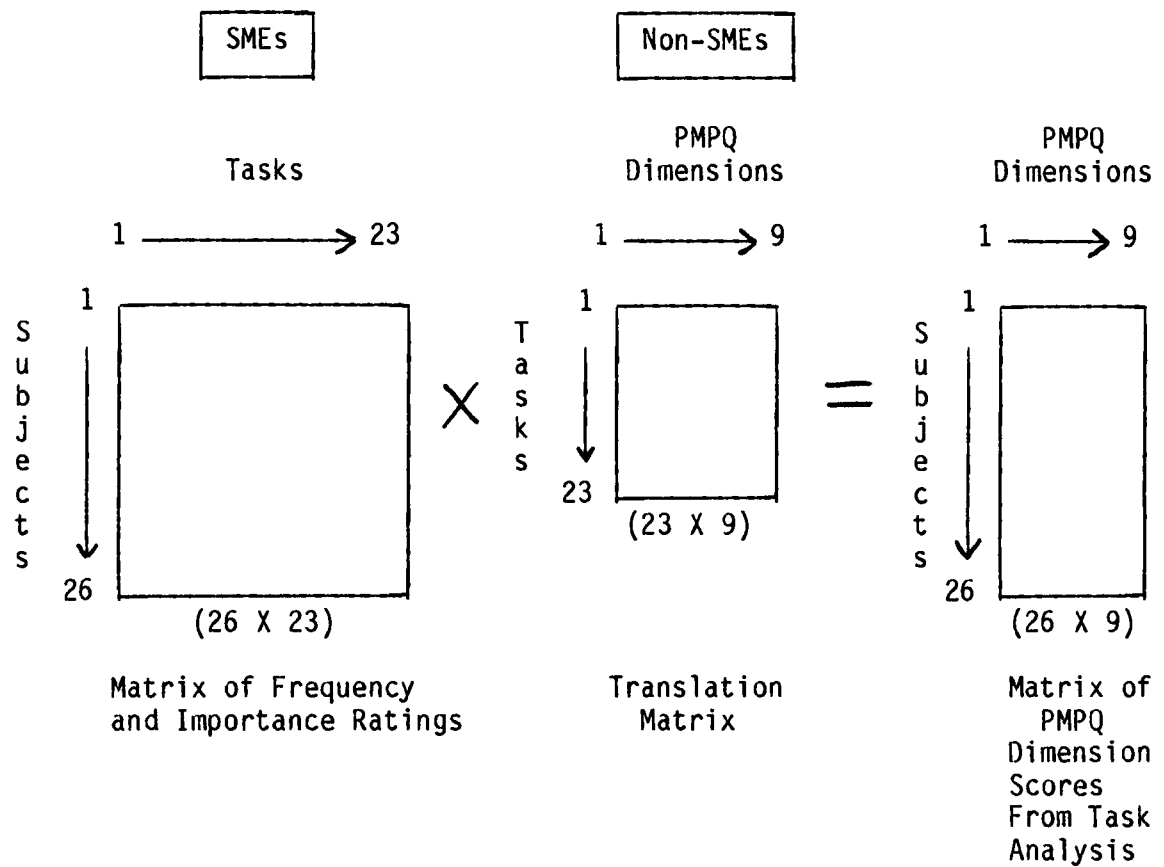


Figure 1
Translation of Task Analysis Data

CHAPTER III

RESULTS

Reliability of Ratings

Interrater reliabilities of all ratings were quite high, as estimated using the analysis of variance approach suggested by Winer (1971). Reliability estimates are presented in Table 4.

Table 4
Estimated Reliabilities of Ratings

Instrument/Rating	Type of Subject	n	Reliability
Task Frequency Ratings	SMEs	26	.93
Task Importance Ratings	SMEs	26	.92
Translation Matrix Estimates	Non-SMEs	10	.88
PMPQ	SMEs	10	.86
PMPQ	Non-SMEs	10	.89

Task Analysis

The task analysis produced a list of 23 tasks that comprise the job of MBA student. The combined frequency and importance ratings indicated that the three most important tasks were (1) attending courses and taking relevant notes, (2) careful budgeting of time, and (3) oral communications. The three least important tasks, beginning with the least important, were (1) computer data entry using a keypunch machine, (2) applying algebra and differential calculus to business problem-solving, and (3) typing reports. The complete list of tasks and standardized frequency and importance ratings are presented in Table 5.

Table 5

Tasks in Order of Mean Combined Frequency and Importance Ratings

Rank	Task	Mean Standardized Frequency Rating* (n=26)	Mean Standardized Importance Rating* (n=26)	Mean Combined Rating
1	Attending courses and taking relevant notes.	10.99	10.64	21.63
2	Careful budgeting of time.	10.69	10.80	21.49
3	Oral communications.	10.78	10.64	21.42
4	Writing reports.	10.45	10.64	21.09
5	Organizing and planning daily tasks.	10.42	10.55	20.97
6	Critical reading of college-level material.	10.42	10.36	20.78
7	Participation in group projects.	10.42	10.29	20.71
8	Library research, including use of microfilm and microfiche readers.	10.36	10.14	20.50
9	Reading of business journals and periodicals.	10.06	10.29	20.35
9	Reading and assessing financial statements.	10.09	10.26	20.35
11	Taking extensive written exams.	10.54	9.79	20.33
12	Understanding and interpreting key ratios such as liquidity, profitability and leverage.	10.24	10.08	20.32
13	Oral presentations.	9.59	10.36	19.95
14	Analysis of prepared cases.	9.86	9.95	19.81

* Mean = 10; Standard deviation = 1.

Table 5 (Continued)

Rank	Task	Mean Standardized Frequency Rating* (n=26)	Mean Standardized Importance Rating* (n=26)	Mean Combined Rating
15	Memorization of information for later recall.	10.21	9.57	19.78
16	Use of statistical analysis in business problem-solving.	9.65	9.89	19.54
17	Computer analysis of data using preprogrammed statistical packages.	9.44	9.95	19.39
18	Computer data entry using a video display terminal.	9.35	9.98	19.33
19	Preparation of tables, charts and graphs.	9.44	9.67	19.11
20	Providing adequate business forecasts using economic "natural laws."	9.41	9.51	18.92
21	Typing reports.	9.83	9.01	18.84
22	Applying algebra and differential calculus to business problem-solving.	9.17	9.38	18.55
23	Computer data entry using a keypunch machine.	8.57	8.26	16.83

* Mean = 10; Standard deviation = 1.

Analysis of the Method Effect

The overall effect of method on the job dimension scores was assessed using the one-way MANOVA approach described by Lissitz, Mendoza, Huberty and Markos (1979). Using this approach, the overall method effect was tested using Wilks' maximum likelihood criterion (see Figure 2), and the strength of the relationship was assessed using the multivariate extension of ω^2 .

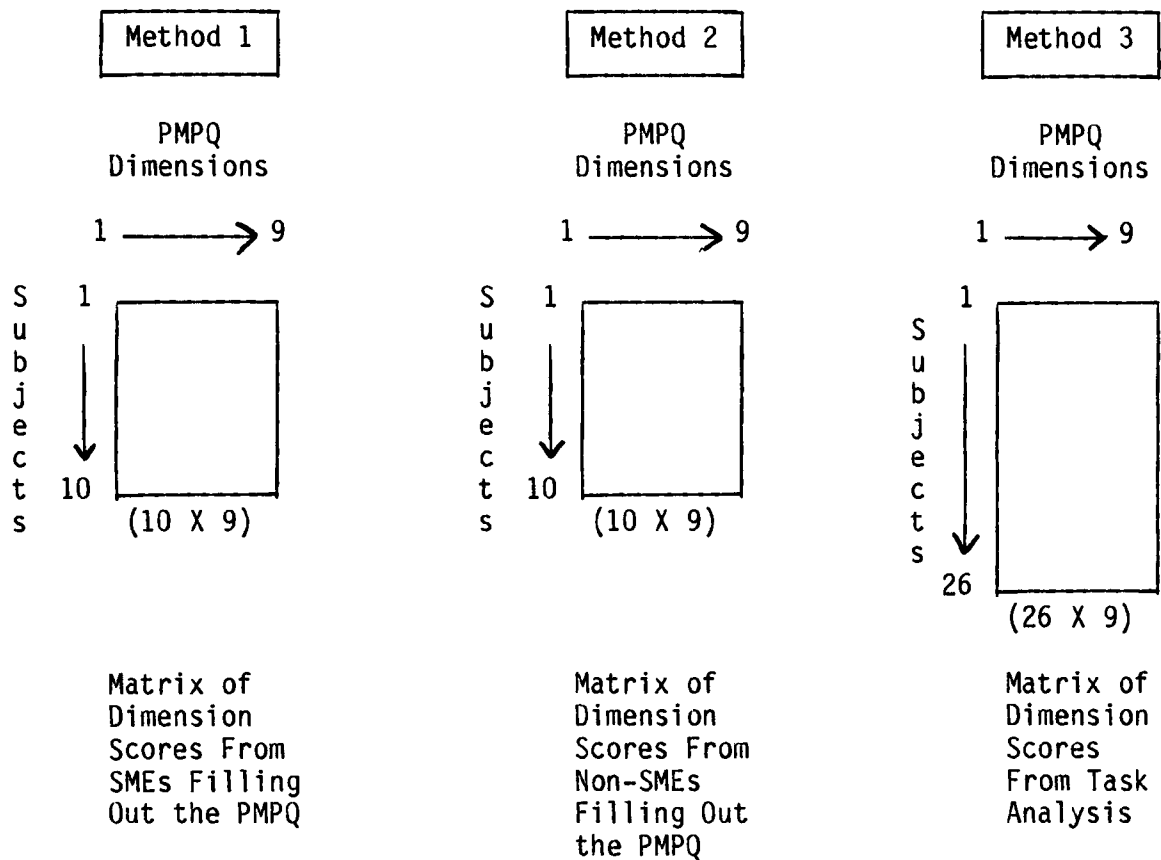
The MANOVA revealed a significant overall method effect (Wilks' $\lambda = .021$; $F(18,70) = 22.99$, $p < .0001$). The multivariate estimate of ω^2 was computed using the formula suggested by Tatsuoaka (1970):

$$\omega_m^2 = 1 - \frac{N \Delta}{(N-K) + \Delta}$$

where N = total sample size, K = number of methods and Δ represents Wilks' likelihood ratio statistic. Applying this formula resulted in an ω^2 of .98, indicating an extremely strong relationship between job analysis method and the set of job dimension scores.

In order to examine the method effect in more detail, a series of univariate ANOVAs was performed which assessed the effect of method on each of the job dimensions. All but one of the ANOVAs showed significant method effects, with the strongest effect being on the Interpersonal Activities dimension ($\omega^2 = .92$). The only dimension in which the methods did not differ significantly was Planning/Scheduling. Table 6 presents the complete results of the univariate analyses.

Having determined the existence of an overall method effect, Scheffé post hoc comparisons were performed using the data from the univariate ANOVAs, in order to identify significant differences in mean dimension scores among the three methods.



Analysis: unbalanced MANOVA using Wilks' criterion.

Model: Dimension 1 to Dimension 9 = Method.

Figure 2
Primary Analysis

Table 6
Univariate ANOVA Results

Dimension	N	F	2
Planning/Scheduling	46	0.76	.00
Information Processing	46	37.12*	.61
Communicating	46	57.14*	.71
Interpersonal Activities	46	256.10*	.92
Technical Activities	46	34.52*	.59
Formal Education	46	15.76*	.39
Special Training	46	18.62*	.43
Relevant Job Experience	46	21.59*	.47
Personal Characteristics	46	9.30*	.27
* $p < .0001$			

The pair-wise comparisons on each dimension revealed that the mean scores of the SMEs and non-SMEs who used the worker-oriented method differed significantly only on the Special Training dimension. On that dimension, the non-SME mean was significantly higher than the SME mean. On most of the other dimensions in which there was a significant overall method effect, the task-oriented mean differed significantly from both worker-oriented means. The two exceptions to this were Special Training, in which the task-oriented mean differed significantly only from the SME mean, and Personal Characteristics, in which the task-oriented mean was significantly higher than the non-SME mean, but did not differ from the SME mean. The complete results of the post hoc analyses can be found in Table 7.

Table 7

Differences Between Means - Scheffé Post Hoc Comparisons
(Overall $\alpha = .05$)

Dimension	Task-Oriented (n=26)	Worker-Oriented (SMEs) (n=10)	Worker-Oriented (Non-SMEs) (n=10)
Planning/ Scheduling	-0.39	-0.28	-0.15
Information Processing	2.13	1.30	1.13
Communicating	-0.34	0.46	0.29
Interpersonal Activities	-1.75	0.01	-0.04
Technical Activities	-0.46	0.83	0.85
Formal Education	0.88	0.28	0.33
Special Training	0.09	-0.91	-0.16
Relevant Job Experience	-0.14	-1.01	-1.10
Personal Characteristics	-0.03	-0.68	-1.17

The job profiles produced by the three methods were all somewhat different (see Table 8). Even though there were few significant differences between the mean scores produced from the worker-oriented methods, the rank orders of the dimensions were not the same. Also, there was a large difference between the dimension rankings produced by the task-oriented and worker-oriented methods.

Information Processing had the highest ranking in all three profiles, but in the profile based on task analysis was more than one standard deviation above the second-ranked dimension. The two worker-oriented profiles had much smaller gaps between the first and second-ranked dimensions.

The task-oriented rankings identified Information Processing, Formal Education, Special Training and Personal Characteristics as the four most important factors related to success in the MBA student job. Both worker-oriented profiles agreed on Information Processing, Technical Activities, Formal Education and Communicating as the four most important dimensions. Thus the task- and worker-oriented methods had Information Processing and Formal Education in common as important factors, but differed on the other two dimensions comprising the top four.

In general, the task-oriented analysis resulted in significantly higher ratings on Information Processing, Formal Education, Special Training, Relevant Job Experience and Personal Characteristics. The worker-oriented methods produced higher ratings on Planning/Scheduling, Communications, Interpersonal Activities and Technical Activities.

Table 8

Job Dimensions Ranked by Mean Standardized Dimension Scores

Rank	Dimension	Mean Standardized Dimension Score
Task-Oriented (n=26)		
1	Information Processing	2.13
2	Formal Education	0.88
3	Special Training	0.09
4	Personal Characteristics	-0.03
5	Relevant Job Experience	-0.14
6	Communicating	-0.34
7	Planning/Scheduling	-0.39
8	Technical Activities	-0.46
9	Interpersonal Activities	-1.75
Worker-Oriented (SMEs) (n=10)		
1	Information Processing	1.30
2	Technical Activities	0.83
3	Communicating	0.46
4	Formal Education	0.28
5	Interpersonal Activities	0.01
6	Planning/Scheduling	-0.28
7	Personal Characteristics	-0.68
8	Special Training	-0.91
9	Relevant Job Experience	-1.01
Worker-Oriented (Non-SMEs) (n=10)		
1	Information Processing	1.13
2	Technical Activities	0.85
3	Formal Education	0.33
4	Communicating	0.29
5	Interpersonal Activities	-0.04
6	Planning/Scheduling	-0.15
7	Special Training	-0.16
8	Relevant Job Experience	-1.10
9	Personal Characteristics	-1.17

CHAPTER IV

DISCUSSION

The purpose of this study was to analyze one particular job using both a task-oriented and a worker-oriented job analysis approach and compare the data produced by each. In evaluating the study, several statistical and methodological issues must be discussed. First, the study was constrained by a small sample size ($N=46$), utilizing groups with as few as 10 participants. This indicates a possible lack of adequate statistical power to detect small differences in method.

This, in fact, may have been the case, although power was enhanced by the large effect size, as indicated by the relatively high ω^2 values, and by the high interrater agreement on all the instruments, which served to reduce the size of the error component. Thus it is likely that lack of power was not a very significant factor.

Also, though the sample was relatively small, it approximated the number of participants, and hence the lack of precision, that one might expect in the field. Thus, while small for the purposes of significance testing, the sample was of a realistic size.

It should also be noted that no demographic information, such as age and sex, was collected to describe the sample. Also, no information was obtained regarding the year of study and major concentration area (finance, marketing, management, etc.) of the MBA students who participated. However, this information would not generally be collected in a job analysis and the high interrater agreement on all the ratings indicated that these factors had little effect.

Another concern was the fact that the instructions given to the

SMEs who provided the task frequency and importance ratings did not specify the level of job performance to be achieved. Thus the participants used their own conception of performance as a guide in determining the importance of each task. However, this more than likely did not confound the results, since the importance ratings showed high interrater agreement. Furthermore, the PMPQ instructions also did not specify a specific performance level. Since a required level of performance was not specified in either approach, it is safe to assume that this did not play a role in determining the results.

Lastly, the use of the PMPQ dimensions required the assumption that they were the "real" dimensions underlying the MBA student job. This assumption is not unique to this study, but is the entire basis of the worker-oriented approach, which presupposes that all jobs can be defined in terms of a finite set of common dimensions. Task analysis requires an "inferential leap" to link tasks to performance dimensions. In this study, the tasks were linked to the set of dimensions measured by the PMPQ, in order to provide a common basis for comparing the two methods. It was necessary to assume that these dimensions were adequate to describe the job, and the validity of the results was dependent on the accuracy of this assumption.

The results of the study indicated a significant difference in the information obtained from the two methods when applied to the job of MBA student. That is, the dimension structure of the job as described through task analysis was significantly different than the structure obtained using the worker-oriented approach.

Specifically, although both approaches listed Information Processing as the most important factor, the task analysis resulted in significantly higher ratings on Information Processing, Formal Education, Special Training, Relevant Job Experience and Personal Characteristics. All of these factors, with the exception of Information Processing, describe qualifications that incumbents generally bring to a job. On the other hand, the dimensions rated higher as a result of the worker-oriented analysis, namely, Planning/Scheduling, Communicating, Interpersonal Activities and Technical Activities, refer to abilities related to the performance of job duties after hire.

This suggests that task-oriented methods may put more weight on formal job qualifications than on general human skills or abilities. However, this result could have been caused by the technique used to translate the task-oriented data into worker-oriented form. As described previously, raters were used to estimate the relationship of each task to each PMPQ dimension. These estimates were then combined with the combined frequency and importance ratings to produce an overall score on each dimension.

However, when the dimensions are ranked only on the basis of the mean estimates from the translation matrix, the rank order of the top five dimensions is exactly the same as when ranked according to the standardized dimension scores presented in Table 8. This indicates that the results of the task analysis, when translated into worker-oriented form, were primarily influenced by the translation matrix ratings.

Therefore the use of the task frequency and importance ratings in producing the raw dimension scores did not affect the job profile to any great extent.

Thus the validity of the task-oriented information depends on the accuracy of the translation matrix ratings and on the extent to which the list of tasks adequately covers the content of the job. The reliability of the translation matrix ratings was acceptable (.88) and there was no evidence to indicate that the tasks did not sufficiently embrace job content. This, coupled with the fact that both methods were used to analyze an identical job, indicates that the differences in the profiles were most likely caused by inherent differences between the two approaches.

In the task-oriented approach, the job was analyzed by viewing each job duty individually, and each individual job task was weighted on each dimension. Thus, the overall score on a particular dimension was dependent almost solely on the number of tasks that were given high ratings on that dimension, since the relative importance of the tasks only minimally affected the resultant profile.

While the task-oriented results were based on a task-by-task point of view, the scores from the worker-oriented method were based on the analysts' general knowledge of the job as a whole. Therefore it is possible that the differences in relative ratings may have been caused by these differing perspectives, although Sackett et al. (1981) found no differences between job groupings based on task analysis and those based on global judgements of job similarity.

The results also revealed that the job profiles produced by SMEs and non-SMEs who used the worker-oriented method were not significantly different. This is evidenced by the fact that the mean scores of the two groups differed significantly on only one dimension (Special Training). This is in contrast to the results found by Smith and Hakel (1979), which indicated that analyst sources differed in the leniency of ratings, but the study described herein was not designed to measure leniency.

However, the lack of difference between the SMEs and non-SMEs in this case may have been due to the use of I/O Psychology students as non-SMEs. At the University of Tennessee, many I/O Psychology students have close contact with the MBA program and its students, and thus have a very good knowledge of the job of MBA student. In this sense it is not surprising that there was agreement between the two types of raters, although this did not overly confound the results since, as mentioned previously, the I/O Psychology students were considered to have job knowledge similar to a job analyst in an organization. Job analysts would be expected to have some prior knowledge of a job they are analyzing, mainly because it is part of their job and because they are in the same organization. Thus the situation in this study was a somewhat realistic one, and was not very different from a genuine field situation.

It is also possible that the failure to detect significant differences between the mean dimension scores of the SMEs and non-SMEs was the result of low statistical power due to small sample size (10 in each group).

It is clear that the task- and worker-oriented job analysis methods, when applied to the same job, produced different information. The task-oriented data emphasized formal job qualifications, such as job experience and formal education, while the worker-oriented data put more weight on skills and abilities like communicating and interpersonal skills. Although the specific dimension differences are not generalizable to other jobs, the fact that different profiles were produced supports the use of caution when choosing a method of job analysis. While other research has shown that task-oriented and worker-oriented methods tend to group jobs differently when used to classify jobs, this study has shown that in at least one case, when the two approaches were applied to the same job, they produced different job dimension structures. Thus it is clear that deciding which method to use is an important consideration.

Traditional theory, professional practice and legal guidelines have indicated that the choice of method should be based on the purpose for which the job analysis information is to be used. Generally, it has been accepted that task-oriented approaches are more appropriate for determining content validity, while worker-oriented methods are preferred for estimating criterion-related and construct validity.

However, since the data obtained from the two approaches in this study was not comparable, it can be surmised that neither of the approaches fully described the job. This suggests that the most effective analysis of any job should incorporate elements of both types of methods.

In conclusion, although this research would have been more significant had no difference been found between the methods, the primary contribution of this study is not its results per se. What is important is the ipsative nature of the methodology, in that it is the first study to compare task- and worker-oriented approaches within the context of one specific job. Although the results have little generalizability, they have implications for selection in that, since the approaches produced different dimension profiles, it is likely that somewhat different selection criteria would have been developed as well.

Since this study gave no clear idea as to which method provided more valid information, it is suggested that this study be repeated using other jobs, in an effort to accumulate more information regarding the nature of the differences between task-oriented and worker-oriented approaches.

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APPENDIXES

APPENDIX A
PMPQ INSTRUCTIONS

INSTRUCTIONS TO SMEs

Emphasis Area (Management, Marketing, Finance, etc.)

INSTRUCTIONS

You are being asked to analyze your "job" of MBA student. Attached is a version of the Professional and Managerial Position Questionnaire (PMPQ), which is an instrument designed to collect job analysis information. Please read the instructions for the questionnaire and fill it out, basing your answers to the questions on the duties and tasks you perform as an MBA student. Do not predict what type of job you may have in the future. Focus only on the activities you perform as a student in the MBA program.

The PMPQ requires the use of five different rating scales, descriptions of which are on a separate page clipped to the last page of the questionnaire. Refer to these scales when answering the questionnaire items.

Please answer all the items to the best of your ability. If an item does not apply, simply put a zero as your answer.

Thank you very much for your participation.

INSTRUCTIONS TO NON-SMEs

INSTRUCTIONS

Attached is a description of the MBA program at UT, which in a sense can be considered a job description of the "job" of MBA student. Also attached is a modified version of the Professional and Managerial Position Questionnaire (PMPQ). Carefully read and familiarize yourself with the description. Then using the information contained in the description, along with what knowledge you already have about the MBA program, fill out the PMPQ.

The PMPQ requires the use of five different rating scales, descriptions of which are on a separate page clipped to the last page of the PMPQ. Refer back to these scale descriptions when answering the questionnaire items.

Please answer all the items to the best of your ability, and remember to mark a zero if an item does not apply. Thank you very much for your participation.

The MBA Program

The MBA program is designed for students with undergraduate degrees in the social and natural sciences, the humanities, and professional fields such as engineering, business, agriculture, and architecture. A full-time student can complete the program in six academic quarters. Those with degrees in business earned at an institution accredited by the American Assembly of Collegiate Schools of Business (AACSB) should be able to complete the program in five quarters.

Full-time students are expected to successfully complete 12 hours per quarter and part-time students 6 hours per quarter. Scheduling and sequencing of courses are done with this assumption in mind.

The program consists of the MBA core (twelve to nineteen courses depending upon exemptions based on prior studies and/or proficiency examinations) and a concentration electives block of eight courses. Each course is 3 quarter hours of graduate credit. Thus, the total program may consist of from 60 to 81 quarter hours.

Prerequisites. Upon matriculation, the student must have received a bachelor's degree from a regionally accredited institution. College level mathematics through at least one course in calculus is the only prerequisite requirement for entry into the program. Those electing the management science or statistics concentration must have completed two years of college level calculus. Those admitted to the accounting concentration should plan on up to two additional quarters for undergraduate prerequisite courses that are taken during the first year of the program.

MBA Core. The following courses are required in each student's program unless an exemption from one or more courses is granted as provided below under the heading "Exemption from Core Courses." All courses are 3 credit hours. The core courses are:

5010 Financial Accounting (3) Introduction to accounting model of firm and accounting information system. Not available to students with credit for 2110-20 or equivalent. F, Su.

5020 Corporate Reporting Problems (3) Analysis of uses and limitations of accounting model of firm. Emphasis on internal and external uses of general purpose financial reports. Prereq: 5010 or equivalent. F, W.

5030 Managerial Accounting (3) Analysis of accounting model of firm as vehicle for planning and controlling activities. Attention to development of cost data appropriate to managerial decision models. Prereq: 5020, Economics 5010. W, Sp.

5310 Business Policy (3) Case studies covering policy formulation and administration, point of departure—top and middle management, where company-wide objectives are set and departmental policies and activities coordinated, sizing up company's situation, determining objectives, developing sound policies, organizing and administering personnel to reach company objectives, continuous administrative reappraisals. Enrollment priority given MBA students in last quarter of their program. Prereq: All MBA core courses. E.

5010 Legal and Social Environment of Business (3) Survey of legal and quasi-legal institutions with emphasis on those which have particular significance to business, basic legal notions and principles that pertain to business management. Not available to students with credit for 4110-20 or equivalent. F,

5010 Introduction to Economic Analysis (3) Analytical tools of macro- and microeconomics for students without prior training in economics. Price determination, national income measurement and determination, and banking system. Not available to students with credit for 2510-20 or equivalent. F, Su.

5020 Managerial Economics (3) Application of economic concepts to business decision making. Analysis and forecasting of demand, cost analysis, pricing behavior, and optimizing techniques. Prereq: 5010 or equivalent. Prereq or coreq: Statistics 5020 or equivalent. F, W.

5030 Economic Fluctuations, Forecasting, and Stabilization (3) Macroeconomic environment of the firm. Determination of level of output, employment and prices for economy as a whole. Implications of aggregate fluctuations for individual firm. Role of forecasting techniques and stabilization policies. Prereq: 5010 or equivalent. F, Sp, Su.

5010 Financial Management I (3) Analysis of decision making in financial management. Process of valuation of firm, roles of investors, financial markets and instruments. Short-run management of working capital. Long-run considerations of capital budgeting. Prereq: Economics 5010, Statistics 5010. Prereq or coreq: Accounting 5020.

5020 Financial Management II (3) Development of theories of capital budgeting, capital structure, and dividend policy under conditions of uncertainty. Various tools and techniques used to incorporate risk analysis into financial decision making process. Prereq: 5010, Economics 5020. Prereq or coreq: Statistics 5020.

5010 Organization Theory and Behavior (3) Basic concepts of organization theory, organizational behavior and management processes.

5020 Operations Management (3) Management processes of planning, operating and control of production systems. Management concepts and quantitative techniques with systems framework to operating problems. Prereq: 5010, Management Science 5010. Statistics 5020. F, Sp, Su.

5010 Quantitative Analysis for Management Decisions (3) Assignment, transportation and general linear programming problems; decision theory, Markov chains and queuing. Prereq or coreq: Statistics 5010. May not be taken for credit by students who receive credit for 5310. W, Sp.

5010 Marketing and Distribution Management (3) Analysis of current marketing and distribution structure: institutions, functions, and marketing problems. Systems concepts and analytical decision process. Prereq: Accounting 5010, Economics 5010. Prereq or coreq: Statistics 5010. W, Sp.

5020 Marketing Strategy and Decision Making (3) Management of basic marketing functions. Integration of functional decisional areas into development of marketing strategy, both domestic and international. Prereq: 5010. Prereq or coreq: Economics 5020, Statistics 5020. Sp, Su, W.

5052 Mathematics for Business Decisions (3) Exponential function, applications to growth and decay models, antiderivatives, integration as area. Fundamental theorem of calculus, method of substitution, integral tables, integration by parts, Simpson's rule, improper integrals, applications, functions of two variables, partial derivatives, integration over simple regions, applications, introductory matrix algebra, application to solution of simultaneous equations. Credit available only to satisfy MBA core requirement. Prereq: Math 5051 or equivalent.

5010 Probability and Statistical Inference (3) Fundamentals of probability discrete and continuous probability models, mathematical expectation, and inference concerning means. Prereq: Mathematics 5052 or equivalent and a computer programming course. May not be taken for credit by students who receive credit for 5110. F, W, Sp.

5020 Statistical Methods (3) Regression and correlation models, basic time series analysis and forecasting, inferences about one or more proportions, and tests for independence. Prereq: 5010. W, Sp, Su.

Concentration and Electives. A

concentration area(s) may be indicated on the MBA Program Application or this declaration may be deferred until after matriculation. In any event, selection must be made no later than completion of 27 hours of MBA program course work. In some cases selection of an area(s) early in the program is encouraged to facilitate proper course sequencing. Requests for changes in concentration area(s) must be submitted to the Office of Graduate Business Programs.

Among the 8 courses in the concentration electives block, at least 4 but not more than 6 must be in one of the following concentration areas (for specific courses required in some concentration areas, see departmental sections on following pages):

Accounting¹
Economics
Finance
Forest Industries Management
Management
Management Science
Marketing
Statistics
Transportation and Logistics²

The remaining elective courses (2 to 4) must be in fields outside the concentration area, normally selected from MBA courses offered in other departments of the College, and may comprise a second concentration area of 4 courses. Up to 2 courses (6 hours) in this block may be taken outside the College of Business Administration. No more than 3 courses numbered below 5000 may be included in this 8-course block. Courses numbered below 4000 normally are not approved for the MBA program. Before beginning the concentration electives part of the curriculum the student must have his/her program approved by the Office of Graduate Business Programs.

To qualify for the degree, the student must achieve a B average (3.0) or above in MBA core courses required in his/her program, a B average or higher in courses comprising the concentration area(s) and a B average or higher in the overall program. In lieu of passing a written comprehensive examination the student must satisfactorily demonstrate his/her ability to analyze and solve multi-functional problems of the administrative processes and policy determination and to integrate the concepts of the various disciplines embodied in the curriculum of the program. The student is tested in these areas in the courses of the MBA core, particularly in the capstone course, Business Administration 5310—Business Policy, as well as in work required in the concentration areas.

MBA Concentration: Accounting

Minimum Course Requirements

5110 Seminar in Accounting Theory (3) Evolution of accounting theory, concepts underlying financial reporting models and authoritative accounting literature as each relates to measurement of periodic performance and financial position. Prereq: Consent of department head. May not be taken by students with credit for 4990.

5120 Seminar in Advanced Auditing (3) Theory and concepts underlying the philosophy of auditing as related to current auditing issues. Prereq: 4120 or equivalent.

5210 Seminar in Advanced Managerial Cost Accounting (3) Analysis of conceptual and current issues impacting on development and practice of managerial cost accounting. Cost allocation, planning and control under conditions of uncertainty, and responsibility accounting concepts. Prereq: 4230 or consent of instructor.

5420 Tax Research (3) Development of expertise in tax research utilizing tax service, tax periodicals, legal cases and other available sources. Includes individual research projects. Prereq: 4430 or equivalent

and two of the following:

5320 Advanced Auditing (3) Case-oriented, including audit of specific asset, liability, revenue and expense accounts. Emphasis on reporting, data processing, statistical sampling, and internal auditing. Prereq: 4110 with C or better. (Available only to MBA students who do not have credit for 4120.)

5330 Advanced Income Tax (3) Federal income taxation with emphasis on tax planning and research. Prereq: 3120 with C or higher; 3430 with C or higher. (Available only to MBA students who do not have credit for 4430.)

5340 Consolidations and Business Combinations (3) Theory and practice of accounting for interrelated business entities—domestic and foreign. Not intended for persons who have credit for a course with a similar content. Prereq: 3130

Accounting Electives

5130 Selected Topics—Current Accounting Practice (3) Critical in-depth consideration of selected financial reporting topics of particular relevance to current accounting practice. Prereq: 5110.

5140 Selected Topics—Current Accounting Theory (3) Critical in-depth consideration of current issues in the financial accounting literature. Prereq: 5110.

5160 Graduate Internship in Accounting (3) Full-time resident professional employment for one academic quarter involving qualified job experience, written report of responsibilities, and evaluation of student performance. Prereq: Consent of instructor.

5220 Budgetary Planning and Control Systems (3) Alternative approaches to organizing of planning and control systems to meet organization's needs and objectives. Control systems and corporate structure, discretionary expense centers, profit centers, investment centers, transfer pricing, and control in not-for-profit organizations. Prereq: 3220 or 5030

5310 Auditing Concepts (3) Concepts and theory of auditing, environment of internal and external auditing, nature of evidence, internal control evaluation, and reporting. Not intended for persons who have credit for auditing course. Prereq: 3130. Prereq or coreq: Statistics 4415 or equivalent.

5430 Tax Planning (3) Advanced study of income tax problems emphasizing alternatives available to minimize tax liability compatible with achieving taxpayer objectives. Prereq: 5420.

5440 Taxation of Estates and Gifts (3) Transfers at death, inter vivos transfers, life insurance, annuities and employee death benefits, marital and other deductions and exemptions, and estate and gift tax returns. Prereq: 4430. (Not available to students with credit for 4440.)

5450 Taxation of Partnerships and Partners (3) Formation, operation, termination, and liquidation and other special problems of partnerships. Prereq: 5420.

5460 Taxation of Corporations and Shareholders (3) Organization and structure, distributions, liquidations, reorganizations and special problems including Subchapter S Corporations and Personal Holding Companies. Prereq: 5420.

5490 Tax Policy (3) Current policies explored through historical development and current status of various types of taxes and American taxing jurisdictions. Directed research in selected topics within field of taxation. Prereq: 5430, 5450, 5460.

5510 Not-for-Profit Accounting (3) Theory and practice of budgetary and fund accounting, financial reporting, measures of output and accomplishment, and financial and performance auditing for nonprofit entities. Prereq: 9 hrs of accounting and consent of instructor.

5540 Seminar in Accounting Information Systems (3) Literature on accounting information systems and advanced systems analysis and design concepts. Informational needs of other functional areas of business and interfacing of these areas. Prereq: 4630 or equivalent.

5610-20-30 Accounting Seminar (1, 1, 1) Research and discussion of contemporary issues in practice of accountancy. May be repeated. Admission by consent of department head. S, NC only.

5650 Seminar in Accounting Research (3) Integration of areas of financial, managerial, tax, and auditing, including directed problem-oriented research in selected topics. Prereq: 5110, 5120, 5210, 5420. (Not available to MBA students.)

5990 Individual Research in Accounting (3) Directed research in a topic of mutual interest to student and faculty member. Prereq: Consent of department head in quarter prior to anticipated enrollment. May be repeated. Maximum 6 hrs.

MBA Concentration: Economics

Minimum Course Requirements for MBA

Concentration: As approved by the area MBA faculty advisor.

5090 Workshop in Economics (3-9) Special topics in economic education. Not available for credit in any College of Business Administration degree program. Prereq: Consent of instructor. May be repeated. Maximum 9 hrs.

5910-20-30 Economics Seminar (1, 1, 1) Research in progress and discussion of selected topics. May be repeated. S, NC only. E.

6000 Doctoral Research and Dissertation (3-15) P, NP only. E.

ECONOMIC THEORY

4110 Managerial Economics (3) Application of economic theory to business decision making, emphasis on profit objectives, measurement and forecasting demand and costs, and capital budgeting. Prereq: 2510-20 or equivalent.

4130 Business Cycles (3) Fluctuations in income, employment, prices, and output in the economic system; subjects discussed are the historical facts concerning booms and depressions, statistical methods for analyzing business fluctuations, theoretical explanations of cycles, and policies that have been proposed to combat them. Prereq: 3120 or consent of instructor. Sp.

4150 History of Economic Thought (3) Development of economic thought, tools of analysis, and economics as a social science, together with an analysis of socioeconomic conditions which influenced this development. Period covered: 1776 through 1936. Prereq: 1 yr of principles of economics and consent of instructor. F.

4170-80 Introduction to Mathematical Economics (3, 3) Application of mathematical methods in theoretical study of micro- and macroeconomic phenomena. Designed for beginning graduate students who have limited training in analytic geometry and calculus. Must be taken in sequence. Prereq: 3110 and college algebra, calculus, and analytic geometry or their equivalent. F, W.

5110 Fundamentals of Microeconomics (3) Verbal arguments and geometric and algebraic techniques. Theory of consumer behavior and demand; theory of production and cost; long and short run theories of profit maximizing firm in both perfectly competitive and monopolistic environments; theory of derived demand. For students whose major is other than economics. Not available for students with credit for 5111. Prereq: 3110 or equivalent. F.

5111-12 Microeconomic Theory I, II (3, 3) Theory of consumer choice and demand; theory of the firm; theory of production and costs; market structures; derived demand and factor pricing; introduction to welfare economics; capital theory. Should be taken in consecutive quarters. Prereq: 3110 or equivalent. F, W.

5120 Fundamentals of Macroeconomics (3) Determination of levels of employment and prices for economy as a whole; relationships between interest rates, price expectations, productivity, and quantity of money; and aggregate saving, investment, and liquidity preference. For students whose major is other than economics. Not available for students with credit for 5121. Prereq: 3120 or equivalent. W.

5121-22 Macroeconomic Theory I, II (3, 3) Monetarist and income-expenditure approaches to questions of income and price level determination; applications to contemporary macroeconomic problems. Should be taken in consecutive quarters. Prereq: 3120 or equivalent. W, Sp.

5150 History of Economic Thought (3) Development of economic ideas from mercantilists through Alfred Marshall; emphasis given to classical and neoclassical tradition.

5180-90 Mathematical Methods in Economics (3, 3) Applications of basic concepts in differential and integral calculus; difference and differential equations; linear algebra; and stochastic models to topics in theory of firm, growth models, game theory, linear programming, and decision making under uncertainty. Prereq: 1 yr of calculus. Sp, F.

5510 Quantitative Methods in Economic Research (3) Methods of estimation and testing of economic relationships with use of time series and cross section data, with applications to current economic problems. Prereq: Introductory statistics or Statistics 5211 or equivalent. W.

5520 Introduction to Econometrics (3) Statistical demand analysis; production and cost analysis; distribution of income and wealth; models of growth and cycles; macroeconomic applications. Should not be taken by students who contemplate taking Economics 6170-80-90. Sp.

5810 Financial Markets and Intermediaries (3) (Same as Finance 5810.) W.

5830 Commercial Banking (3) (Same as Finance 5830.) F, Sp.

5911 Advanced Microeconomic Theory (3) Consumer behavior, production, and exchange in partial and general equilibrium settings. Prereq: 4170, 4180, 5112, or equivalent. F.

6121 Advanced Macroeconomic Theory (3) Topics in macroeconomic theory and policy. Prereq: 5122 or equivalent. W.

6150-60 History of Economic Doctrines (3, 3) Important ideas of economic thinkers from Middle Ages to present. W, Sp.

6170-80-90 Econometric Methods (3, 3, 3) Theory and techniques of statistical testing of economic hypotheses and construction and estimation of econometric models. Review of classical least squares regression model; extensions of least squares regression model; and approaches to simultaneous equation models with application to current econometric research. Prereq: 5180-90 and 5510 or equivalent. F, W, Sp.

ECONOMICS OF CENTRALLY PLANNED ECONOMIES

6310 Economic Systems (3) Study and appraisal of underlying theories and operation of capitalism, socialism, communism, and other economic systems. W.

6331 Theory and Practice of Economic Planning (3) Leading issues in imperative and indicative planning. Prereq: Consent of instructor. May be repeated with consent of department. F.

ECONOMICS OF LABOR AND HUMAN RESOURCES

4430 Economics of Human Resources (3) Analysis of current problems in human resource development and examination of policies aimed at their solution. Problems include unemployment, education and training, poverty and income redistribution, discrimination based on sex or ethnicity, or others. Prereq: 2520

4430-40 Labor Legislation (3, 3) 4430—Economic background and effects of governmental regulation of labor relations, detailed examination of National Labor Relations Act as amended. Prereq: 3420. 4440—Social insurance, welfare and government regulation as remedies for problem of economic insecurity. Economics of the Social Security Act, unemployment insurance, worker's compensation and related legislation. Prereq: 2520.

4470 Collective Bargaining (3) Legal framework of bargaining, structure of bargaining, strategy and tactics, subject matter of bargaining, industrial conflict, dispute settlement and public sector bargaining. Simulated bargaining exercise. Prereq: 2510 and 3420

6450 Seminar in Industrial Relations (4) Historical development of American system of industrial relations and roots of contemporary labor problems. Nature of labor unions and collective bargaining process. Resolution of industrial conflict. Prereq: 6 hrs of labor relations or consent of instructor.

6480 Seminar in Labor Economics (4) Theory of labor markets and human capital. Analysis of wage determination, employment and unemployment. Wage differentials, economic discrimination, and impact of unionism. Prereq: 3110 and 3120, or equivalent

6470 Public Policy in the Labor Field (4) Governmental regulation of wages, hours, and other aspects of industrial relations. Public policy in areas of income, human resource development, equal employment opportunity, occupational health and safety, social insurance, and immigration policy. Prereq: 6450 and 6460

INTERNATIONAL TRADE AND ECONOMIC DEVELOPMENT

4230 Problems in International Trade and Economic Development (3) Problems or problem areas of current importance in fields both of international economics and economic development. Prereq: 3210 or 3220 W

4231 The Political Economy of Latin America (3) Description, analysis, and comparison of major economic problems and policies of various Latin American countries. Sp

4232 The Political Economy of Asian Development (3) Description, analysis, and comparison of major economic problems and policies of India, China, and Southeast Asian countries. W

4260 Economics of Resources and Environmental Policy (3) Economic analysis of environmental policy and allocation of resources. Benefits and costs of development of natural resources and impacts of growth on environment. Prereq: 2510 W

5250 Economic History of Europe (3) Nature and functioning of economic systems and policies in history of western civilization, examination of some major issues of method and interpretation. F

5290 Economic History of the U.S. (3) Interpretation of American economic structure and policies from colonial times W

5810 Location and Regional Development Theory (3) Theory of industrial, agricultural and residential location, economic basis for land use patterns and central places; examination of regional inequalities and national assistance for regional economic development. F

6620 Methods of Regional Analysis (3) Theory of regional structure and growth. Examination of regional models for impact analysis and economic forecasting. Methods of analysis include regional descriptive statistics, gravity and potential concepts, regional income and product accounts, shift and share analysis, economic base studies, and regional input-output, linear programming, and econometric models W

6211 International Economics: Trade (4) Pure theory of classical, neoclassical, and modern international trade. Comparative advantage, free trade and welfare, and technological change, growth and migration, tariffs and subsidies, and customs unions. Prereq: 5112 or consent of instructor.

6212 International Economics: Commercial Policy (4) Determinants of commodity composition of trade, protection arguments, economic costs and consequences of protectionist devices, adjustment to trade liberalization, U.S. trade policy. Prereq: 6211

6213 International Monetary Economics (4) Theories of exchange rate determination, approaches to balance of payments theory, balance of payments adjustment under alternative exchange rate regimes, economic policy in open economy, international capital movements. Prereq: 5121, 5030, 5120 or consent of instructor

6231 Economic Development: Theories (4) Study of principal theories explaining economic behavior in less developed countries. Prereq: 21 hrs of undergraduate economics or consent of instructor

6232 Economic Development: Policies (4) Policies, strategies, and planning techniques used to promote modernization in less developed countries. Prereq: 6231 or consent of instructor

6241 Economic Development: Western Impact on Asia and Africa (4) Studies of consequences of contact between developed world and third world countries of Asia and Africa. Prereq: 21 hrs of upper division undergraduate social science or consent of instructor

6242 Seminar in Economic Development (4) Topics vary with interests of students. Prereq: 6241 or consent of instructor.

6250 Seminar in European Economic History (3) Selected topics in European economic history. Prereq: Consent of instructor. May be repeated with consent of department. W

6260 Seminar in American Economic History (3) Selected topics in American economic history. Prereq: Consent of instructor. May be repeated with consent of department. Sp

6270 Seminar in Economic History of the Third World (3) Selected topics in economic history of societies other than those of Western Europe and English-speaking North America. Prereq: Consent of instructor. May be repeated with consent of department. F, A

6610 Seminar in Regional Analysis (3) Selected topics in regional economic theory and analysis. May be repeated. Maximum 6 hrs. Sp, A

6620 Regional Economics Workshop (3) Selected topics in applied regional research. Emphasis on student participation in model design and estimation, forecasting, simulation, and mathematical and computer programming. May be repeated. Maximum 6 hrs. Sp, A

6650 Seminar in Environment and Resource Economics (3) Topics in environmental quality, natural resource allocation by private markets, and issues in formulating public policy towards environmental problems. Prereq: Consent of instructor. May be repeated. Maximum 9 hrs. Sp, A

INDUSTRIAL ORGANIZATION

4350 Industrial Organization Analysis (3) Monopoly and competition in the United States economy, market structure, business behavior, and economic performance and interrelationships. Prereq: 2510 W

6351-62-53 Seminar in Industrial Organization and Public Policy (4, 4, 4) Organization of industry in modern mixed enterprise economy. Problems of monopoly and competition and their social control and regulation. Prereq: Consent of instructor. Sp, A

MONETARY ECONOMICS

5020 Monetary Theory and Policy (3) Relationship of money, credit and liquidity to income, interest rates, employment and prices as well as examination of effect of monetary policy on economic activity. Prereq: 5020 or equivalent.

6510-20 Seminar: Monetary Theory (3,3) Study of money, credit and liquidity as related to income, interest rates, employment, output, and prices. Prereq: 5112 and 5122.

PUBLIC FINANCE

6710 Public Finance: Revenues (3) Allocative, distributive, and stabilization effects of alternative revenue systems. Prereq or coreq: 5020 or equivalent.

6720 Public Finance: Expenditures (3) Functions and growth of public sector, public goods, and benefit-cost analysis. Prereq or coreq: 5020 or equivalent.

6730 Finance Administration of Government (3) Budgeting and cash management in public sector. Prereq: 5020 or consent of instructor. Sp

6740 Seminar in Public Finance (3) Selected topics, public choice, pricing government services, fiscal policy, and fiscal dynamics. Prereq: 5710 or consent of instructor

6710-20 Seminar: Fiscal Theory and Public Finance (3, 3) Advanced topics in fiscal theory and policy

MBA Concentration: Finance

Minimum Course Requirements for MBA

Concentration: At least four and not more than six courses from the following.

4700 Business and Public Risk Management (3) Identification and measurement of pure risks facing business or governmental unit associated with property, liability and personal exposures. Implementation of most economical methods of dealing with risks at lowest cost consistent with good financial management practices

5130 Problems in Financial Management (3) Application of decision making procedures to problems in financial management, emphasizing case approach. Financial statement analysis short-term sources of funds, long-term capital structure and capital budgeting, and multi-national finance. Prereq: 5020

5140 Financial Strategy (3) Effects of financial strategy on shareholder wealth. Integration and interaction of financing and investment decisions. Implications of corporate life cycle for financial decisions. Prereq: 5020

5420 Investment Analysis (3) Principles and techniques for evaluation of investment desirability of marketable securities, with emphasis on common stocks and corporate bonds. Financial statement analysis, of price-earnings ratios, and recent mathematical valuation models. Prereq: 5020 or consent of instructor.

5430 Portfolio Analysis and Management (3) Development of basic concepts and varied methodologies in selection, management, evaluation and revision of asset portfolios. Modern analytical and statistical techniques. Prereq: 5420 or consent of instructor.

5810 International Financial Management (3) Analysis of international finance aspects of the financial management of multi-national firm. Integration of relevant topics from corporate finance, international financial markets, international monetary theory and management of foreign exchange risk. Prereq: 5020

5610 Real Estate Finance (3) Valuation, financial analysis, and investment in income-producing property. Tax aspects of acquisition, operation and sale. Syndication and financing methods. Prereq: 5010 or consent of instructor.

5620 Economic Analysis of Housing and Urban Land Markets (3) Intrametropolitan mobility, neighborhood transition and federal housing policy. Difficulties in obtaining efficient and equitable solutions to variety of urban problems. Relevance of empirical and theoretical economics literature to policy makers and entrepreneurs. Prereq: Economics 5020 or consent of instructor.

5630 Real Estate Investment Analysis (3) Application of contemporary appraisal and feasibility analysis to real estate case studies. Use of computer models for discounted cash flow and mortgage equity analysis. Prereq: 5010 or consent of instructor.

5610 Financial Markets and Intermediaries (3) Capital formation and allocation in the economy. Role of financial intermediaries and markets. Theory and structure of interest rates. Analysis of money and bond markets; study of international financial markets. Prereq or coreq: 5010. (Same as Economics 5810.)

5630 Commercial Banking (3) Analysis of management policies of financial institutions, including assets, liabilities and capital management. Description of legal, economic, and regulatory environment, and implications for management. Examination of bank structure and competition, and changing trends in the U.S. financial system. Prereq: 5010. Prereq or coreq: Economics 5030. (Same as Economics 5830.)

5990 Research in Finance (3) Directed research on topic of mutual interest to the student and staff member. Prereq: 5020. May be repeated. Maximum 6 hrs.

MBA Concentrations: Management, Forest Industries Management.

Minimum Course Requirements for MBA Concentrations: Management—As approved by the area faculty advisor. Forest Industries Management—5110, 5130; Forestry 5260, 5270.

5110 Organization Theory I (3) Analysis and design of organization structure. F.

5130 Managerial Planning and Control (3) Processes of management planning and controlling with emphasis on corporate strategic planning. Sp.

5140 Corporate Management Simulation (3) Application of functional areas and strategic concepts in complex business simulation. Prereq: 5020, Accounting 5030, Finance 5020, Marketing 5020.

5210 Personnel Management (3) Analysis and appraisal of the personnel function. F.

5220 Wage and Salary Administration (3) Analysis of problems, programs, and practices. W.

5230 Human Problems in Administration (3) Review and critique of research in industrial human relations. (Same as Psychology 5450.)

5250-60 Industrial and Organizational Psychology (1-3, 1-3) Readings in industrial and organizational psychology. Available only by prearrangement with supervising faculty member. May be repeated. Maximum 6 hrs. S, NC or letter grade. E.

5280 Independent Study, Project or Research in Management (1-3) Topic of mutual interest to student and faculty member. Available only by prearrangement with supervising faculty member. May be repeated. Maximum 6 hrs. S, NC or letter grade.

5320 Management Problems in Industrial Research (3) Basic administrative problems encountered in management of industrial technological research and engineering programs, and comparable programs in which professional personnel predominate. F, A.

5410-20-30 Production Management (3, 3, 3) Quantitative approach to solution of production management problems. Prereq: 5020 or consent of instructor.

5610-20 Organizational Behavior (3, 3) Behavioral methodology and perspective, including review of empirical behavioral research in organizations. Must be taken in sequence. F, W.

5630 Research Methods in Management (3) Methodological issues in management research. Review of experimental design, measurement problems, data sources and collection, and application of statistical methods, followed by critique of student research proposals. Prereq: DBA student status or consent of instructor. S, NC only. Sp.

5710 International Business Management (3) Analysis of environment of international business firms and impact of internal and external factors on managerial decisions. Sp.

5810 Energy Management: Theory and Practice (3) Management of energy resources in operating systems; decision criteria, trade-offs, system analysis, energy audits, technical parameters, conservation methods, worldwide energy supply and demand, new energy technologies.

MBA Concentration: Marketing.

Minimum Course Requirements for MBA Concentration:

5300 Marketing Research (3) Investigation and solution of problems; application of research methods to functional areas of marketing. Research concepts, methods, and techniques. Prereq: 5020, Statistics 5010. F.

5350 Buyer Behavior Analysis for Marketing (3) Buyer behavior patterns with emphasis on implications for marketing analysis and executive action. Marketing and behavioral sciences. Prereq: 5020. F.

5400 Analyzing Market Opportunity for Marketing Decisions (3) Basic determinants of opportunity within markets; framework for identifying and organizing information required to assess market opportunity. Approaches to analyzing buyers in markets, forecasting extent of demand, analyzing industry channel competitor service. Emphasis on applying market opportunity analysis results to marketing decisions. Prereq: 5020. W.

5410 Advanced Marketing Strategy (3) Components of marketing strategy including development of marketing mix. Consideration of alternative strategies. Coordination and control of marketing activities. Prereq: 5300 and 5350. W.

MBA Concentration: Transportation and Logistics.

Minimum Course Requirements for MBA Concentration: 18 credit hours required including 5010, 5110, 5130, 5220.

5010 Survey of Transportation and Logistics (3) Intensive survey of logistical demands made by society and specific users on nation's transportation system; problems facing carriers and government. Sp.

5110 Theory and Functions of Economic Regulation (3) Development of economic and philosophic basis of regulation. Critical analysis of impact of regulatory decisions on managerial options. F.

5120 Management and the Pricing Problem (3) Critical analysis of application of economic theory and regulatory restraints to pricing of carrier services. Sp.

5130 Carrier Transportation Management (3) Analysis of major transportation modes and their managerial strategies. Consideration of how social, technical, legal, and financial environment affects top level decision making. Application of general business, marketing, finance, and statistical decision processes to transportation decision making in uncertain environment. F.

5220 Logistics Systems Management (3) Development of strategy for management of logistical systems. Emphasis on executive level integration of logistics operations with marketing, production, and other decision areas. Practical applications through a case approach and simulation game. Prereq: Management 5020. W.

5510 Urban Transportation Policy (3) Movement of people, goods and information in urbanized areas with special emphasis on formulation of national, state and local policy. Emphasis on evolving new urban transportation concepts. W.

5610 International Transportation Policy (3) Comparative analysis of transport systems in other countries. Analysis of U.S. policy relative to international transportation. Sp.

5910 Advanced Law and Regulation (3) Legal rights and responsibilities of shippers and carriers. Analysis of decisions of regulatory commissions, courts, and principles of law arising from these decisions. Sp.

5990 Independent Study in Transportation-Logistics (3) Directed study in surface and air transportation, national transportation policy, transportation logistics research developments, or subject of particular interest to student and faculty. May be repeated. Maximum 6 hrs. E.

APPENDIX B

PMPQ

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APPENDIX C

MATRIX OF STANDARDIZED JOB DIMENSION SCORES (SMEs)

MATRIX OF STANDARDIZED PMPQ DIMENSION SCORES

METHOD OF JOB ANALYSIS=WORKER-ORIENTED (SME)									
SUBJECT	PLANNING SCHEDULING	INFO PROCESSING	COMMUNI- CATING	INTER PERSONAL ACTIVITIES	TECHNICAL ACTIVITIES	FORMAL EDUCATION	SPECIAL TRAINING	JOB EXPER	PERSONAL CHAR
11	-0.8322	1.10251	0.70589	-0.20997	0.50070	0.7454	-0.6759	-0.8354	-0.2691
12	-0.3714	0.98634	0.08682	0.60142	-0.01277	-1.3934	-1.0929	0.1673	-1.2012
13	-1.0573	2.22735	1.00874	0.46416	0.67455	0.5219	-0.9273	-0.1754	1.1877
14	0.0156	0.11193	0.50941	0.77547	1.43651	0.4484	-1.9080	-2.0846	-0.3213
15	-0.0251	1.17598	0.60338	-0.17251	0.25827	0.2312	-1.5999	-1.5042	-2.8090
16	-0.5335	2.42497	0.31291	-0.06198	1.84466	-0.1015	0.0978	-1.4748	0.3820
17	0.1605	0.62134	-0.07858	-0.64603	0.76307	0.9649	0.6046	-2.0846	-1.1984
18	0.1487	0.78729	0.40304	0.13757	0.68542	0.0428	-1.2010	-0.4014	-1.2749
19	-0.1124	1.69168	0.29366	-0.82813	0.92137	0.4474	-1.9080	-0.8746	-1.4304
20	-0.1863	1.25067	0.53014	0.07109	1.23229	0.9201	-0.4675	-0.8471	0.1173

APPENDIX D

MATRIX OF STANDARDIZED JOB DIMENSION SCORES (NON-SMEs)

MATRIX OF STANDARDIZED PMQ DIMENSION SCORES									
METHOD OF JOB ANALYSIS=WORKER-ORIENTED (NON-SME)									
SUBJECT	PLANNING SCHEDULING	INFO PROCESSING	COMMUNI CATING	INTER PERSONAL ACTIVITIES	TECHNICAL ACTIVITIES	FORMAL EDUCATION	SPECIAL TRAINING	JOB EXPER	PERSONAL CHAR
1	-1.4312	0.46451	0.36746	-0.02511	0.2216	0.18445	0.40568	-1.4829	-2.6311
2	2.2951	1.37108	0.33884	-0.02601	1.1614	0.34694	0.51428	-1.4829	1.2145
3	0.7560	1.94087	0.74025	0.18827	2.2997	0.53877	-0.37023	-1.4829	-0.4522
4	-0.9298	0.81210	-0.09108	-0.44441	1.0573	-0.17021	0.47759	-1.4829	-2.3927
5	-0.5968	1.12678	0.56424	-0.04509	0.8812	0.32008	-0.63802	0.1150	-1.7102
6	-0.5292	1.29902	0.65225	0.10773	1.2700	0.45015	-0.33813	0.0221	-1.2719
7	-1.2206	1.13085	-0.30328	-0.20301	0.5445	0.45705	-0.76077	-0.7446	-2.0022
8	-0.0379	1.25139	0.43343	-0.23426	1.4749	0.54029	-0.26237	-1.4829	-0.1078
9	-0.0334	0.95170	0.15636	-0.23270	-1.5361	0.44383	-0.36852	-1.4829	-0.9660
10	0.2658	0.98661	0.07609	0.02347	0.7295	0.18293	-0.28570	-1.4829	-1.3430

APPENDIX E

INSTRUCTIONS FOR FREQUENCY AND IMPORTANCE RATINGS

INSTRUCTIONS: Your "job" of MBA student has been broken down into the tasks listed below. For each task, use the following scales to indicate the frequency and importance of each task.

Scale 1 - Frequency

- 1 - Rarely, or never
- 2 -
- 3 - Often
- 4 -
- 5 - Continually/Very frequently

Scale 2 - Importance

- 1 - Not important
- 2 -
- 3 - Moderately important
- 4 -
- 5 - Very important

<u>TASK</u>	<u>FREQUENCY</u>	<u>IMPORTANCE</u>
1. Organizing and planning daily tasks.	☐	☐
2. Applying algebra and differential calculus to business problem-solving.	☐	☐
3. Oral communications with coworkers and supervisors.	☐	☐
4. Use of statistical analysis in business problem-solving.	☐	☐
5. Memorization of information for later recall.	☐	☐
6. Analysis of prepared cases.	☐	☐
7. Oral presentations.	☐	☐
8. Writing reports.	☐	☐
9. Preparation of tables, charts and graphs.	☐	☐

Scale 1 - Frequency

- 1 - Rarely, or never
- 2 -
- 3 - Often
- 4 -
- 5 - Continually/Very frequently

Scale 2 - Importance

- 1 - Not important
- 2 -
- 3 - Moderately important
- 4 -
- 5 - Very important

<u>TASK</u>	<u>FREQUENCY</u>	<u>IMPORTANCE</u>
10. Participation in group projects.	☐	☐
11. Computer data entry using a video display terminal.	☐	☐
12. Use of keypunch machine for data entry purposes.	☐	☐
13. Computer analysis of data using preprogrammed statistical packages.	☐	☐
14. Critical reading of college-level material to ascertain relevancy of information.	☐	☐
15. Reading and assessing financial statements.	☐	☐
16. Library research, including use of microfilm and microfiche readers.	☐	☐
17. Attending courses and taking relevant notes for future use.	☐	☐
18. Taking extensive written examinations.	☐	☐

Scale 1 - Frequency

- 1 - Rarely, or never
- 2 -
- 3 - Often
- 4 -
- 5 - Continually/Very frequently

Scale 2 - Importance

- 1 - Not important
- 2 -
- 3 - Moderately important
- 4 -
- 5 - Very important

<u>TASK</u>	<u>FREQUENCY</u>	<u>IMPORTANCE</u>
19. Understanding and interpreting key ratios such as liquidity, profitability and leverage.	☐	☐
20. Providing adequate business forecasts using economic "natural laws".	☐	☐
21. Careful budgeting of time.	☐	☐
22. Reading of business journals and periodicals.	☐	☐
23. Typing reports.	☐	☐

APPENDIX F
TRANSLATION MATRIX INSTRUCTIONS

INSTRUCTIONS

The following pages contain a matrix of tasks and job performance factors. A description of the job performance factors is attached. Carefully read the description of each factor. Then, referring to the factor descriptions as often as necessary, use the following scale to indicate your estimate of the nature of the relationship between each job task and each factor. Place the appropriate number in the corresponding cell in the matrix.

2 - Major relationship.

1 - Moderate relationship,
but not a major one.

0 - Trivial or no relationship.

If you're not sure about a particular cell, just use your best judgement. Make sure each cell in the matrix contains an entry. Thank you very much for your cooperation.

JOB PERFORMANCE FACTORS

Planning/Scheduling: A major job function in some jobs is the planning and scheduling of work activities. This involves the planning, programming, budgeting, and organizing of one's own activities or those of others, of a unit, company, organization, or enterprise.

Processing of Information and Ideas: A second job function is the processing of information and ideas. Such activities include a wide range of processes including basic counting, compiling, computing, classifying or categorizing, coding, interpreting, and the analyzing or synthesizing of information. All of these processes are related to the achievement of job objectives.

Communicating: This function involves the role of the incumbent in the dissemination of information and ideas, judgements and decisions to the various other people who are involved in the work activities; such communications are typically either through talking with others or through the use of written materials.

Interpersonal Activities and Relationships: Another factor is the establishment and sustaining of relationships with other people. These are purposeful, job-related interactions with others which involve the interaction of information as well as the directing, supervising, coordinating, etc. of work activities.

Technical Activities: This is the use of some type of technology, that is, the use of equipment or devices, or the use of some procedure, technique or process, in pursuit of the specific objectives of the job. Examples of the use of technology would range from a clerk operating an accounting machine to an airline pilot operating a multiengine, multimillion dollar aircraft.

Formal Education: Some type of formal education, from less than high school to a doctoral degree.

Special Training: Other special training not included in formal education above; includes classroom and on-the-job training.

Relevant Job Experience: In addition to formal education and training, some positions also require relevant previous job experience; this may be supervised experience (such as an internship) or may be experience in related, lower-level jobs.

Personal Characteristics: Some jobs require that an individual have some particular trait or characteristic (for example, a pediatrician is expected to be gentle and compassionate with children; and an insurance salesman is thought to need to be very aggressive and at the same time very sociable, etc.).

TASKS	JOB PERFORMANCE FACTORS								
	Planning/ Scheduling	Info Processing	Communi- cating	Interperson Activities	Technical Activities	Formal Education	Special Training	Job Experience	Personal Character.
Organizing and planning daily tasks.									
Applying algebra and differential calculus to business problem-solving.									
Oral communications with coworkers and supervisors.									
Use of statistical analysis in business problem-solving.									
Memorization of information for later recall.									
Analysis of prepared cases.									
Oral presentations.									
Writing reports.									
Preparation of tables, charts and graphs.									
Participation in group projects.									

JOB PERFORMANCE FACTORS

TASKS	Planning/ Scheduling	Info Processing	Commun- cating	Interper- sonal Activities	Technical Activities	Formal Education	Special Training	Job Experience	Personal Character.
Computer data entry using a video display terminal.									
Use of keypunch machine for data entry purposes.									
Computer analysis of data using preprogrammed statistical packages.									
Critical reading of college-level material to ascertain relevancy of information.									
Reading and assessing financial statements.									
Library research, including use of microfilm and microfiche readers.									
Attending courses and taking relevant notes for future use.									
Taking extensive written examinations.									
Understanding and interpreting key ratios such as liquidity, profitability & leverage.									
Providing adequate business forecasts using economic "natural laws".									

TASKS	JOB PERFORMANCE FACTORS								
	Planning/ Scheduling	Info Processing	Communi- cating	Interperson Activities	Technical Activities	Formal Education	Special Training	Job Experience	Personal Character.
Careful budgeting of time.									
Reading of business journals and periodicals.									
Typing reports.									

APPENDIX G

MATRIX OF STANDARDIZED JOB DIMENSION SCORES (TASK ANALYSIS)

MATRIX OF STANDARDIZED PMPQ DIMENSION SCORES

METHOD OF JOB ANALYSIS=TASK-ORIENTED									
SUBJECT	PLANNING SCHEDULING	INFO PROCESSING	COMMUNI CATING	INTER PERSONAL ACTIVITIES	TECHNICAL ACTIVITIES	FORMAL EDUCATION	SPECIAL TRAINING	JOB EXPER	PERSONAL CHAR
21	-0.35968	2.06984	-0.30028	-1.7029	-0.51625	0.79558	0.04199	-0.19096	-0.01331
22	-0.39954	2.08594	-0.38395	-1.7584	-0.46684	0.84200	0.07469	-0.15348	-0.04705
23	-0.29518	2.27886	-0.21839	-1.7185	-0.39726	1.01192	0.19427	-0.06317	0.06768
24	-0.33179	2.28855	-0.21054	-1.6939	-0.41293	1.01817	0.17722	-0.04813	0.06086
25	-0.35305	2.12424	-0.30877	-1.6774	-0.47761	0.83436	0.07111	-0.14964	0.00316
26	-0.28769	2.28107	-0.23381	-1.6482	-0.39847	0.98920	0.17048	-0.05088	0.09880
27	-0.42171	2.06584	-0.36768	-1.7330	-0.46713	0.81183	0.05618	-0.17251	-0.06148
28	-0.31964	2.34947	-0.24971	-1.7212	-0.29047	1.08199	0.25117	-0.00873	0.07432
29	-0.52977	1.97792	-0.46969	-1.8411	-0.50150	0.79432	0.02125	-0.22004	-0.16293
30	-0.35962	2.14373	-0.34396	-1.7820	-0.47672	0.92183	0.10082	-0.14390	-0.02548
31	-0.38283	2.12152	-0.27528	-1.7359	-0.43054	0.89259	0.11434	-0.11854	-0.01388
32	-0.59514	1.71531	-0.60839	-1.8966	-0.68104	0.53476	-0.15723	-0.36531	-0.02821
33	-0.37880	2.10102	-0.35196	-1.7217	-0.49050	0.86082	0.06908	-0.14149	-0.00674
34	-0.46068	2.05172	-0.40105	-1.7987	-0.50940	0.83156	0.03456	-0.19768	-0.08762
35	-0.30806	2.29612	-0.31944	-1.7628	-0.34582	1.00610	0.21637	-0.02328	0.04277
36	-0.36030	2.16492	-0.30766	-1.6905	-0.47020	0.92155	0.09160	-0.12565	0.02967
37	-0.23830	2.35855	-0.18032	-1.6919	-0.34414	1.06811	0.23353	-0.00918	0.12183
38	-0.43239	2.07201	-0.37883	-1.8004	-0.49585	0.83597	0.06634	-0.19517	-0.09416
39	-0.32574	2.23149	-0.30202	-1.7052	-0.39914	0.94873	0.15182	-0.09939	0.04982
40	-0.40091	2.10262	-0.39123	-1.7839	-0.50890	0.87228	0.07208	-0.16934	-0.05210
41	-0.53136	1.83377	-0.47185	-1.8162	-0.65543	0.65562	-0.11225	-0.33643	-0.20312
42	-0.37528	2.07209	-0.33828	-1.7114	-0.54528	0.81691	0.02261	-0.16672	-0.02138
43	-0.42925	2.11565	-0.36869	-1.7690	-0.40760	0.83918	0.11353	-0.15797	-0.04554
44	-0.40963	2.04499	-0.29518	-1.6970	-0.49902	0.80467	0.03596	-0.18026	-0.03367
45	-0.52886	1.93129	-0.46817	-1.8077	-0.58190	0.73280	-0.03264	-0.26681	-0.16194
46	-0.29828	2.46756	-0.20627	-1.7225	-0.22768	1.15855	0.32216	0.04612	0.10182

APPENDIX H
TASK ANALYSIS INSTRUMENT

TASK ANALYSIS

Please list on the attached page the tasks that comprise your "job" as an MBA student. List as many of the tasks as you can, not just the important ones. Any task, no matter how simple, that you must perform as an MBA student should be included so that the list is as comprehensive as possible. Please be as specific as you can in your description of the tasks; general terms for "generic" activities are not sufficient. For example, "studying" is too general a term to be a task, since it can encompass many different tasks, such as "reading and learning college-level written material for later recall" or "reading and solving narrative problems involving the use of integral calculus". These activities are very different and require different kinds of skills, so it is important that they be listed separately.

Another example of a task description that is too general is: "working on the computer". Computer work involves many different tasks, such as "data entry using a video display terminal", "writing and debugging programs", etc. Each of these individual tasks should be described specifically, since they involve different skills and levels of knowledge.

One way to avoid task descriptions that are too general is to try to break down each task you think of into smaller or more specific tasks and list them. If you can't break down a task into more specific activities then describe it as is. Just try to be as specific as you can.

Thank you very much for your cooperation.

NAME _____

EMPHASIS AREA (MANAGEMENT,
FINANCE, OR MARKETING)

QUARTER OF STUDY (FIRST, SECOND,
THIRD, ETC.)

LIST OF TASKS

Please list below the tasks that comprise your "job" as an
MBA student. Please be specific.

VITA

Philip Anthony Cerasoli, Jr. was born in Norristown, Pennsylvania on July 3, 1955. He attended high school in Cornwall, Ontario, Canada and graduated in June, 1974. After studying journalism for two years at Carleton University in Ottawa, Canada, he enrolled at Syracuse University. He received a Bachelor of Arts degree in Psychology in May, 1979, graduating Magna Cum Laude.

Mr. Cerasoli entered the University of Tennessee, Knoxville in September, 1979. While working toward a graduate degree, he held summer internships in compensation administration at Domtar, Inc., Montreal, Canada, and accepted a teaching assistantship for one academic year. He also served one term as Secretary/Treasurer/Social Director for the Industrial/Organizational Psychology Students Association.

In October, 1981, he was hired as a Graduate Assistant in the system-wide Office of Personnel Services, The University of Tennessee. He continued to serve in this capacity until March, 1983 when he was promoted to his current full time position as a Data Analyst in the Office of Personnel Services.

The author will continue his current employment with the University of Tennessee after graduation, and plans to pursue a career in personnel management.