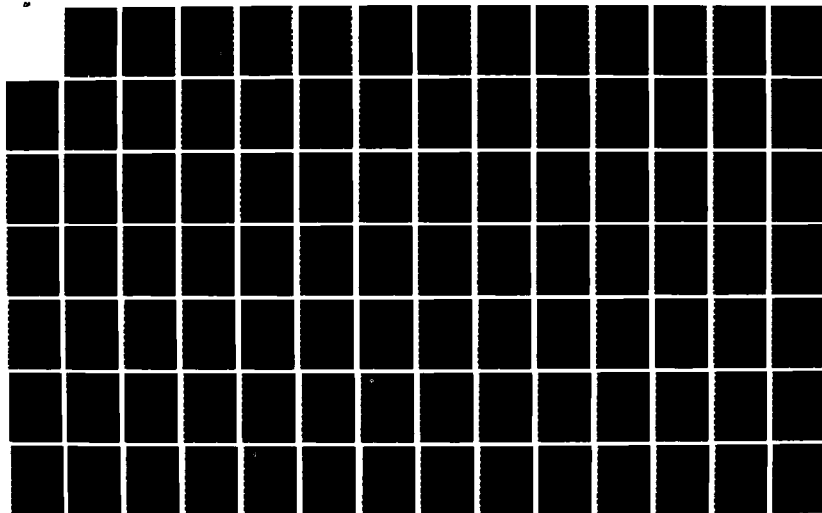
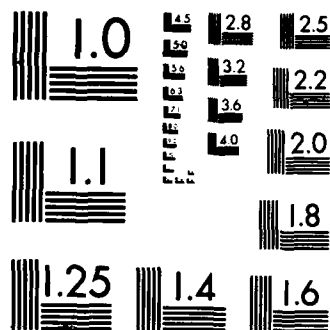


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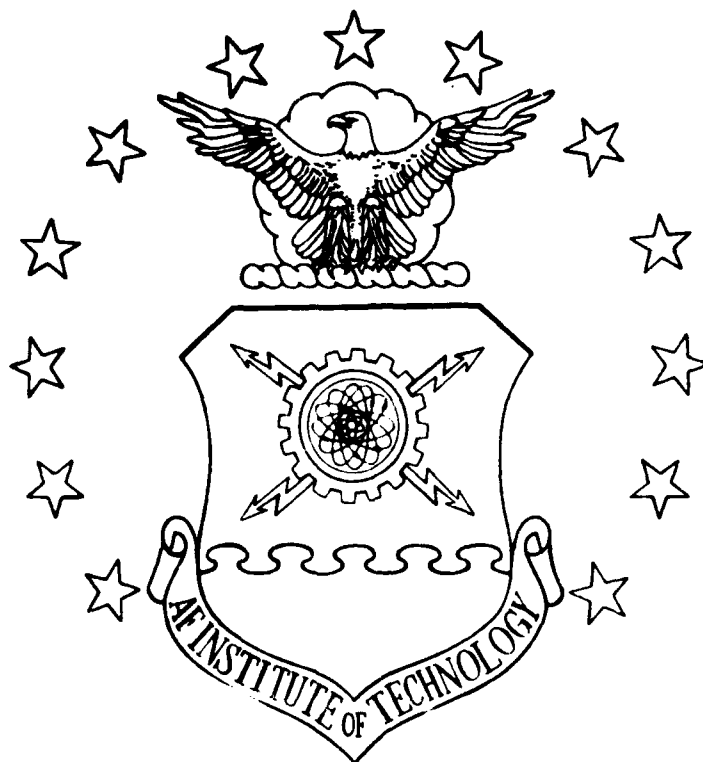




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AN ANALYSIS OF THE USEFULNESS OF THE
GRADUATE LOGISTICS MANAGEMENT PROGRAM
LOGISTICS MANAGEMENT OPTION AS PERCEIVED
BY GRADUATES AND THEIR SUPERVISORS

Thesis

Melbourne L. Smith
Major, USAF

AFIT/CLM/LSM/86S-70

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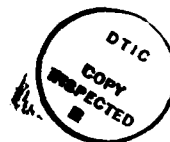
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AN ANALYSIS OF THE USEFULNESS OF THE GRADUATE
LOGISTICS MANAGEMENT PROGRAM LOGISTICS MANAGEMENT OPTION
AS PERCEIVED BY GRADUATES AND THEIR SUPERVISORS

THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Logistics Management

Melbourne L. Smith, B.S.

Major, USAF

September 1986

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Acknowledgements

I wish to express my appreciation to the Graduate Logistics Management (GLM) Program graduates and their supervisors who took time from their busy duty schedules to participate in this survey. Their time, effort, and sincere comments provided the needed information that will ensure the GLM Program continues to meet the professional and technical needs of its future graduates.

Special thanks go to Lt Colonel Richard Peschke and Dr. Charles R. Fenno for providing their guidance and support during this research study.

I am also grateful to my wife, Dolores, and my daughter, Shelley, for their enduring patience and support throughout the project.

Melbourne L. Smith

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Abstract

^{4.2.1.1}
This ~~study~~ assessed the usefulness of the GLM Program Logistics Management Option as perceived by graduates and their supervisors. Objectives included determining which subject areas the graduates perceived most and least useful to them in their jobs, their perceptions of the GLM Thesis Program, and the appropriateness of their postgraduate assignments. A field survey was conducted. Questionnaires were sent to 169 alumni graduating between 1979 through 1985, as well as to their supervisors. Analysis was accomplished by interpretation of median responses. The most useful subject areas perceived by the graduates and their supervisors were communication, organizational management and behavior, problem solving, computer science, and financial management. The least useful subject areas were computer programming, simulation, managerial accounting, economics, and international logistics. Graduates perceived their AFIT logistics education useful to them and to the Air Force. They also felt that the Thesis Program was worthwhile. However, the graduates believed that AFMPC could do more to assign them to jobs that make better use of their advanced education. Various recommendations were made to improve the usefulness of the Logistics Management Option curriculum.

AN ANALYSIS OF THE USEFULNESS OF THE GRADUATE
LOGISTICS MANAGEMENT PROGRAM LOGISTICS MANAGEMENT OPTION
AS PERCEIVED BY GRADUATES AND THEIR SUPERVISORS

I. Introduction

Overview

This chapter provides an overview of this study effort. It begins with a background discussion of the problem and the justification for undertaking the study. A literature review follows to highlight the findings and conclusions of related, previously conducted studies. Finally, the specific research questions guiding this study are presented along with some of the factors that limit the scope of the study.

Background

In 1955, the School of Logistics, later designated the School of Systems and Logistics, was established as an integral part of the Air Force Institute of Technology. It is now the Air Force's center for education and research programs in the management of defense (4:2). The school develops and conducts graduate and professional continuing education programs to meet the needs of logistics, systems, and civil engineering managers in the Air Force and other elements of the Department of Defense (DOD) (5:I-31A). The philosophy of the school has remained essentially unchanged since its founding and is based on the recognition of the

professional requirements for the modern manager and leader in the technologically complex, dynamic DOD organizational environment (5:I-31A).

The School of Systems and Logistics offers Masters degree graduate programs in logistics management, engineering management, systems management and information resource systems management. The Graduate Logistics Management (GLM) Program offers students, coming from different backgrounds, a 15 month curriculum designed to improve the students' competence and effectiveness in managing logistics systems and related programs. The GLM Program is divided into six program options: Acquisition Logistics Management; Contracting and Manufacturing Management; Logistics Management; Maintenance Management; Transportation Management; and Supply Management (4:3).

The Logistics Management Option within the GLM Program provides the student with a "systems" perspective of how the different logistics disciplines interact within the total logistics environment. In order to give the student this "big picture" perspective, the curriculum provides a strong foundation in management concepts and quantitative methods. The focus is on improving the graduates' ability to handle specific decision problems in logistics planning, acquisition, distribution and maintenance, while always considering impacts of decisions on the other functional areas (1:185).

Table 1.1 presents the Logistics Management Option curriculum as it was structured for the 1979-1981 academic

Table 1.1

1979-1981 Logistics Management Option Curriculum

<u>Short Term</u>	<u>Qtr Hrs</u>
Introduction to Computers	*
Quantitative Methods for Logistics Managers	*
Introduction to Logistics Studies	*
<u>Quarter I</u>	
Statistics for Logistics Managers - I	3
Quantitative Decision Making	3
Contracting and Acquisition Management	3
International Logistics Overview	3
Organization and Management	3
	<u>15</u>
<u>Quarter II</u>	
Statistics for Logistics Managers - II	3
Concepts and Techniques of Research	3
Organizational Behavior	3
Maintenance and Production Management	3
	<u>12</u>
<u>Quarter III</u>	
Financial Management in the Federal Govt	3
Distribution Management	3
Economic Analysis	3
Logistics Systems Analysis and Design	3
	<u>12</u>
<u>Quarter IV</u>	
Logistics Decision Support Systems	3
Logistics Systems Policy	3
Elective	3
Thesis	5
	<u>14</u>
Graduate Program Total:	53
* Undergraduate Course	

school years. It was a one year, 53 quarter hour program consisting of a short review term followed by four quarters of academic instruction. The curriculum offered students one three quarter hour elective. Five quarter hours were allotted to thesis research (3:113).

The GLM Program was extended to 15 months beginning with the 1982 academic year, adding a fifth quarter of academic instruction to each of the GLM Program Options. As shown in Table 1.2, the Logistics Management Option curriculum increased from 53 to 62 quarter hours (2:186). Compared with the 1979-1981 curriculum, the 1982 curriculum increased thesis independent study from five to twelve quarter hours, increased the number of elective courses a student could take from one to three, and included nine quarter hours of undergraduate courses (2:186). The 1982-1984 Logistics Management Option curriculum is shown in Table 1.2.

The 1985 Logistics Management Option curriculum is also shown in Table 1.2 (4:43). A review of the curriculum shows that it expanded from 62 quarter hours in 1982-1984 to 66 quarter hours in 1985. An undergraduate technical writing course replaced an undergraduate cost accounting course in the review term. The cost accounting course was incorporated with material taught in a federal financial management course. Students were given some flexibility in the economics and simulation courses they were required to take. The undergraduate courses were reduced from nine to six quarter hours. Required courses in Life Cycle Costs, Decision Support Systems

Table 1.2

Logistics Management Option Curriculum:
Comparison of 1982-84 and 1985-87 Schedule

	1982-84	1985-87
<u>Review Term:</u>	Elements of Fin and Cost Actg * Intro to Computers * Quant Methods for Log Managers * Research Orientation *	Professional Writing for Managers * Intro to AFIT Computer Systems * Quant Methods for Managers * Research Orientation *
<u>Quarter I:</u>	Research and Technical Writing Logistics Management Applied Stats for Managers - I Quant Decision Making	Log Systems Overview Economics Course Applied Stats for Managers - I Quant Decision Making
<u>Quarter II:</u>	Log Systems and Design - I * Applied Stats for Managers - II Distribution Mgt Mgt and Behavior in Organizations	Computer Programming for Mgrs Applied Stats for Managers - II Contracting and Acquisition Mgt Fed Financial Mgt and Actg
<u>Quarter III:</u>	Contracting and Acquisition Mgt Maint and Prod Mgt International Log Overview Log Systems Analysis and Design - II Thesis Proposal	Research Methods Maint and Prod Mgt Elective Simulation Course Thesis (Independent Study)
<u>Quarter IV:</u>	Economic Analysis and Policy Federal Financial Management Elective Thesis (Independent Study)	Logistics Decision Support Sys Distribution Management Elective Mgt and Behavior in Organizations Thesis (Independent Study)
<u>Short Term:</u>	Thesis (Independent Study)	Thesis (Independent Study)
<u>Quarter V:</u>	Thesis (Independent Study) Elective Elective	Thesis (Independent Study) Elective Life Cycle Cost and Reliability
	Graduate Option Total Qtr Hrs: 62 and 9*	Graduate Option Total Qtr Hrs: 66 and 6*

* Undergraduate Credit

(Adapted from 1:43; 2:185-186)

and Computer Programming were added to the curriculum (4:43).

As shown above, adjustments are continually made to ensure the curriculum is providing the education necessary to satisfy Air Force requirements and to enable the graduate to perform effectively in a diverse and dynamic field environment. Continuous curriculum monitoring is accomplished through a variety of means such as student course critiques, end-of-program evaluations, external agency curriculum reviews, and graduate as well as supervisor periodic surveys. The feedback received from these efforts provides the basis for decisions to change, strengthen, eliminate or add courses (17:80).

Justification

In light of today's Gramm-Rudman budget restrictions and ever-present Congressional scrutiny of the need for military graduate educational programs, it is more important than ever to ensure the AFIT GLM Program provides an education that the graduate can apply in managing the DOD's varied logistics systems.

To the author's best knowledge, no research study has focused specific attention on the usefulness of the GLM Program Logistics Management Option to its graduates. The last thesis study of the usefulness of the overall GLM Program to its graduates was conducted in 1979 by Brown and Hollingsworth (7). Seven years have elapsed since this study, and considering how the logistics environment has changed, the

author considered it appropriate to initiate a study of the Logistics Management Option's usefulness to its graduates. This research effort will benefit the GLM Program Logistics Management Option Manager by providing him/her with information to assess and modify the curriculum as required to ensure it continues to support the needs of its "customers"--the graduates and using agencies.

Literature Review

Several previous studies have analyzed the degree to which the School of Systems and Logistics, as a whole, successfully meets its graduates' professional needs. Other studies have evaluated selected degree program options within the School of Systems and Logistics. A review of these studies gives a useful insight into the approaches used and conclusions reached in continuing efforts to keep AFIT graduate programs useful and relevant to meet both the needs of the graduate and the Air Force.

Lieutenant Colonel Allan C. Hart conducted a study in 1968 concerned with the utilization of education received in the School of Systems and Logistics, the degree to which the course objectives were met, and the evaluation of the curriculum (14:7). A hypothesis test approach was employed to analyze data collected from questionnaires distributed to 1963 and 1964 graduates. Hart concluded that the "Graduate Logistics Program fulfilled the role, mission, and objectives for which it was designed" (14:57).

In 1968, Second Lieutenants Robert Cook and John E. Greene examined the value of the existing School of Systems and Logistics curriculum relative to the needs of practitioners in the field (8:4). A survey was used to collect data from graduates of the 1965-1967 year groups. Cook and Greene concluded that the School of Systems and Logistics taught subjects which graduates both need and use in the field (8:95).

In a 1971 study, Captains Jerry W. Hale and Basil E. Rooney conducted a related study which measured the importance of education in management performance (12:1). A questionnaire was developed to test the hypothesis that "graduates of the Graduate Logistics Management Program perform their managerial responsibilities better than comparable officers without a graduate education" (12:12). Hale and Rooney found that the graduates' performance was superior to non-graduates in five of nine areas, which included decision making, performance, planning, communications, and overall education (12:40-41). There was no statistical evidence to show that the graduates outperformed the non-graduates in the other four areas of organizing, creativity, actuating and controlling (12:32).

A 1972 research effort by Captains Joseph E. Latt and Rick Harrelson examined the image of the School of Systems and Logistics from the perceptions of senior logistics managers (18.1). From data collected by a survey questionnaire, Latt and Harrelson concluded that the School and its graduates

were highly regarded by logistics managers in the field (18:41).

In 1978, Captains William N. Crowder and James A. Davidson conducted research on the utility of the School of Systems and Logistics graduate education program as perceived by graduates and their supervisors (9:9). A questionnaire was mailed to graduates of classes 1971-1975 who were instructed to deliver a similar questionnaire to their respective supervisors. From the study, Crowder and Davidson concluded that graduates perceived the School of Systems and Logistics Graduate Management Program to be useful. Supervisors sampled believed the program was more useful than did graduates (9:57-58). Moreover, Crowder and Davidson concluded that graduates believed they could be better utilized in positions other than those they currently held (9:58).

The following year, Captains Kenneth R. Brown and David M. Hollingsworth conducted a study "to determine the extent to which graduates of the AFIT School of Systems and Logistics have used the knowledge obtained from their graduate education in follow-on assignments" (7:10). Brown and Hollingsworth determined an AFIT Graduate Management Program education useful if it was perceived by the graduates as having practical value in their jobs (7:18). Graduates of classes 1963-1978 were surveyed by questionnaire. Several conclusions were reached (7:57-59):

1. Graduates perceived their promotion potential increased as a result of attending AFIT.

2. Graduates believed the AFIT Graduate Management Program education was useful both to them as well as the Air Force.

3. Graduates felt their supervisors viewed AFIT programs favorably.

4. Graduates felt their assignments were inappropriate in light of their education.

Major Grantland W. Johns and Captain Philip M. Ray compared the usefulness of the AFIT Facilities Management Program in the School of Systems and Logistics with similar programs in civilian institutions in a 1980 study. The civilian institutions involved in their study included the University of Alaska, University of Missouri, University of Southern California, Rensselaer Polytechnic Institute, University of Arizona, University of Texas, University of Dayton and Vanderbilt University. Perceptions of program usefulness were obtained by surveying 83 officers from the AFIT Facilities Management Program and 50 officers from similar programs at the civilian institutions mentioned above. Johns and Ray concluded, that although both programs were perceived as useful, the AFIT graduate Facilities Management residence program was more advantageous to its graduates because of its service orientation (15:52-58).

In 1982, Captains Robert B. Gillette and John H. Wayne, Jr. conducted a study to measure the usefulness of the AFIT Contracting and Acquisition Management (CAM) Option as perceived by graduates and their supervisors. They surveyed the

CAM classes of 1974-1981 and their supervisors. They concluded that both graduates and their supervisors perceived the CAM Program as useful. They also concluded that graduate respondent perceptions of the usefulness of the program did not change over time (11:108).

The most recent study was conducted in 1983 by Captains William R. Halsey and Jeffrey G. Hooper to determine the perceived utility of the AFIT Graduate Engineering Management (GEM) Option. The main research objective was to determine which subject areas were perceived as most useful by the graduate and their supervisors (13:4). They conducted a census of 154 graduates and their supervisors using two separate surveys. They concluded that the GEM Option is appropriate and was meeting the needs of its graduates. They also found that GEM graduates felt that their AFIT education had a favorable impact on their careers (13:76).

These studies have concluded that AFIT is meeting the professional needs of its graduates. Nearly all studies recommend that periodic research be conducted to ensure that these programs remain useful.

Research Questions

1. What subject areas, taught in the AFIT GLM Program Logistics Management Option, are perceived by the graduate and supervisor to be most/least useful in helping the graduate do his or her job?

2. Do AFIT GLM Logistics Management Option graduates perceive their AFIT education to be useful to them?

3. Do AFIT graduates believe that their postgraduate assignments are appropriate in light of the advanced logistics education they receive?

4. Do AFIT GLM Logistics Management Option graduates perceive thesis research to be a worthwhile part of the curriculum?

5. What recommendations do GLM Logistics Management Option graduates and their supervisors have to improve the Logistics Management Option curriculum?

Operational Definition

Because this research study is directed toward determining the usefulness of the GLM Program Logistics Management Option, it is necessary to define a working definition of "usefulness". Usefulness, as defined by the Random House American College Dictionary, is ". . . of practical use, as for doing work; producing material results; supplying common needs" (6:1338). In the context of this study, a graduate's GLM education is "useful" if the graduate perceives it to be of practical utility, value or benefit in helping to perform his or her job.

Scope and Limitations

1. The conclusions of this research study apply only to the respondent population. No inferences should be made to the overall population of AFIT GLM graduates since certain elements of the overall population, such as DOD civilians, officers of other U.S. military services, and foreign

officers, have been excluded from this study.

2. The operational definition of usefulness is reasonable as defined for the purpose of this study.

II. Methodology

Overview

Attention is focused in this chapter on how the research questions were answered. A methodology or "plan of action" was established to specifically identify the type of data required, the appropriate method(s) to collect it, and the techniques and criteria used to analyze the data.

This study follows similar methodologies used in previous studies of AFIT graduate educational programs since 1978. These similarities include:

1. Use of both primary and secondary data. Primary data comes from original studies of material and are collected for the task at hand (10:135). Secondary data is obtained from studies by others for other purposes (10:135).
2. Use of the mailed survey to collect the data.
3. Use of both specific survey questions or statements and open-ended questions soliciting the respondents' narrative comments on various issues related to the study.
4. Analysis of data by median responses, parametric and nonparametric statistics as appropriate.

The following sections describe the methodology used in this study. First, the population will be defined. Next, the survey instrument and the measurement scale will be identified and discussed. Finally, the procedures used to answer each research question will be outlined.

The Population

The population in this study is defined as "AFIT Air Force officer GLM Program Logistics Management Option graduates, and their immediate supervisors, presently serving on Air Force active duty". This population is further limited to those GLM graduates of classes 1979A through GLM 85S serving on active duty in the CONUS. An incomplete census of 169 graduates was conducted. The census total was based on the results of an ATLAS data base search of active duty, CONUS based Air Force officers who graduated from the AFIT Graduate Logistics Program Option between 1979 and 1985 with an academic degree code of PLAMY. The population excluded foreign student graduates, other DOD military service graduates, and civilian graduates. These graduates were not included due to time and cost constraints in contacting them and because this study was concerned primarily with measuring the usefulness of the GLM Option curriculum as pertains to Air Force logistics jobs.

Data Collection Procedures

Two mail surveys (questionnaires) were used to collect the data required to answer the research questions listed in Chapter I. One was designed for the graduates and the other for supervisors of graduates. The researcher believed this to be the most practical data gathering method since the respondents to be surveyed were geographically dispersed. Mail surveys are more cost effective than personal or telephone interviews. Another advantage of using the mail survey

is that it gives the respondent more time to consider and evaluate his or her response as well as offering the respondent anonymity (10:172).

Emory (10:172) states that the mail survey has two significant drawbacks that must be considered before its use. First, nonresponse must be considered. Depending on the respondent's interest in the area being surveyed, the response rate can vary significantly. Anonymity and the impersonal nature of the mail survey make it possible for the respondent to give false or misleading answers, which complicate the researcher's analysis and can bias the results of the study. Second, the type and amount of information that can be collected from a mail survey is limited, particularly if the questionnaire is complex or too long for the respondent (10:172). However, the response rate may be improved if the survey instrument is well-planned and includes clear, concise instructions, a motivational cover letter, return envelope with prepaid postage affixed, and careful consideration to questionnaire length.

The Survey Instruments

General. The questionnaires used in this mail survey were tailored to this research effort from several previous questionnaires used by AFIT students in their thesis research. Similar questionnaires were designed for the AFIT GLM Logistics Management Option graduates and their immediate supervisors. The graduates' and supervisors' surveys are shown in Appendix B.

Survey packages were mailed to 169 graduates on 13 June 1986. The survey package sent to each graduate included a survey cover letter, instructions, both the graduate and supervisor's individual questionnaires, and pre-addressed return envelopes. To insure anonymity, the graduates were instructed to give the sealed supervisor's survey package to his/her immediate reporting official. Based on a review of previous surveys of this type, the author expected the supervisor survey return rate to be 10 to 20 percent lower than the graduate survey response rate due to surveys misplaced, never delivered, or not completed.

The number of graduate surveys returned was 124, for a response rate of 73%. The supervisors returned 109 surveys for a response rate of 64%. However, three of the supervisor surveys were excluded from analysis because these supervisors gave a negative response to question 7 on their survey indicating they were not thoroughly familiar with their subordinate's job requirements and duty performance. The cutoff date for receiving returned surveys for analysis was 25 July 1986.

Questionnaire Structure. Each survey was divided into three parts. Part I requested basic demographic information. Part II comprised the main section of the questionnaire, and the questions used in this section were taken largely from the graduate survey instrument developed by Crowder and Davidson in their 1978 study of the usefulness of the GLM Program. This section covered questions that were related to:

1. Usefulness of those subject areas taught in the GLM Logistics Management Option curriculum to the graduate's job as perceived by the graduate and supervisor.

2. Usefulness of the graduate's education as perceived by the graduate.

3. Perceptions of the graduates on whether they are being assigned to jobs that require the advanced logistics education they received from AFIT.

4. Perceptions of graduates on the value of the AFIT Thesis Program.

Part III consisted of several open-ended questions giving the graduates and supervisors an opportunity to comment on suggestions for curriculum improvements, the Thesis Program, and the contributions that AFIT graduates are making to the Air Force.

Instrument Validity and Reliability. Validity, according to Emory, refers to the extent to which a test measures what we actually wish to measure (10:94). There are two major forms of validity: external validity and internal validity. External validity refers to the ability of research findings to be generalized across persons, settings, and times (10:94). Because this study is limited to a census of the GLM Logistics Management Option graduates in the classes 1979 through 1985 and does not include all elements of the population, its external validity to infer research findings in this manner is suspect. Internal validity, on the other hand, is the ability of a research instrument to measure what it is intended to measure (10:94).

Internal validity is particularly difficult to establish when dealing with perceptions and attitudes because the instrument may not be measuring the true responses of the participants. Content validity, an aspect of internal validity, of a measuring instrument is the extent to which it provides adequate coverage of the topic under study. This questionnaire had been used in two previous research studies and was validated by Crowder and Davidson using factor analysis, a logical content validity tool for attitude measuring instruments (9:23). As a result, further attempts to validate the survey were not conducted.

Emory states that reliability of a measure is the degree that it produces consistent results (10:98). Reliable instruments are robust; they work well at different times under different conditions (10:98). To the extent that portions of this survey were used in previous research with different populations and yielded similar responses, it is considered a reliable measurement tool.

Selection of Measurement Scale

In order to quantify the data provided by the respondents, a measurement scale appropriate for use in opinion surveys had to be selected. The seven point Likert summated scale was used to measure the respondents' perceptions in Part II statements in both surveys.

The seven point Likert scale, an ordinal level measurement scale, is frequently used in opinion and preference surveys.

Ordinal scales possess the characteristic of order, but not unique origin or equality of interval (10:87). The Likert scale is ordinal only: "We can report respondents are more or less favorable to a topic, but we cannot tell how much more or less favorable they are" (10:258).

The Likert scale used in this research consists of seven possible responses ranging from "strongly disagree" to "strongly agree". The seven point scale, rather than the five point scale, was used because it offers the respondents a wider range of choices to indicate the extent of their agreement with a particular statement. The following values were assigned to the Likert scale:

Strongly Disagree	Disagree	Slightly Disagree	Undecided/ Don't Know	Slightly Agree	Agree	Strongly Agree
1	2	3	4	5	6	7

The Likert scale has several advantages which account for its popularity over other types of scales. It is convenient to use because of its discriminating ability and ease and speed of construction (10:258) and, because the scale is ordinal only, only use of nonparametric statistical analysis is considered "technically" appropriate (10:89).

After weighing its advantages and disadvantages, the author considered the seven point Likert scale appropriate for measuring the data required to answer the research questions. Moreover, the seven point Likert scale has been extensively employed

in previous thesis research studies of the usefulness of the GLM and other AFIT educational programs.

Descriptive Statistics

Descriptive statistics represent some of the more commonly used methods for analyzing data. This study makes use of frequency counts, percentages, and medians to present and analyze the data in this study. Frequency counts, the actual number of times each response was selected, present an overall picture of the pattern of responses. The median, a measure of central tendency appropriate for ordinal data, is used extensively in Part II to measure the respondents' level of agreement to statements concerning their perceptions of the usefulness of graduate logistics program. To compute the median of a particular question, the ranks of all the responses are ordered from smallest to largest, and the middle number is the median. If there are an even number of responses, the two middle ranks are averaged for the median.

The author also used the mean, usually only appropriate for measuring interval or ratio data, in a limited portion of the analysis of research question 1. The mean was used as a method to help rank-order subject areas by usefulness when subject areas had the same median.

Statistical Tests

This study uses ordinal level data and employs nonparametric statistics for analysis. A nonparametric test is one that does not specify conditions about the parameters of the

population from which the sample is drawn (19:31). Certain assumptions are associated with most nonparametric tests, i.e., that the observations are independent and the variable under study has underlying continuity, but these assumptions are weaker than those associated with parametric tests (19:31).

According to Siegel, nonparametric tests have the following advantages (19:31-2):

1. They can test nominal and ordinal data.
2. They are typically much easier to learn and apply than are parametric tests.
3. They can test samples comprised of observations from several different populations. None of the parametric tests can handle such data without requiring seemingly unrealistic assumptions.

Siegel further states that one disadvantage of nonparametric tests is that if all assumptions of the parametric statistical model are in fact met by the data, then nonparametric statistics are wasteful of data (19:33).

Having established that nonparametric tests are appropriate for analyzing ordinal data, attention is turned to a discussion of the nonparametric test used in this study, the Mann-Whitney U Test.

The Mann-Whitney U Test. The Mann-Whitney U Test is a nonparametric statistical test that is used with ordinal data to test whether two independent groups have been drawn from the same population. It is one of the most powerful of the nonparametric tests, and is a most useful alternative to its para-

metric counterpart, the two sample t-test (19:116). While the t-test requires the assumption that both populations are normally distributed and have equal variances, the Mann-Whitney test requires only that the populations have similarly shaped distributions.

This test is used in a part of the analysis of research question 1 which is discussed in detail later in this chapter. Part of the research question attempts to determine if there are perceptual differences in the way the graduates and their supervisors view the usefulness of the 24 subject areas related to the graduates' job. The Mann-Whitney U Test is used to identify these differences, if any.

The null hypothesis that the graduates' and supervisors' perceptions are the same concerning the usefulness of a certain subject area can be tested. If the null hypothesis is rejected, it is concluded that the graduates' and supervisors' perceptions differ (are statistically significant) over the usefulness of the subject area in question. A comparison of the medians will show which population considers the subject area more important to job performance.

Application of the Mann-Whitney U test treats the graduates and supervisors as two separate independent groups. The scores on a particular survey question from both groups (n_1 = supervisors; n_2 = graduates) are combined and then ranked in order of increasing size. The value of U, the test statistic, is given by the number of times that a score in the group with n_2 cases precedes a score in the group of n_1 cases in the rank-

ing (19:116). When large samples are involved (n_2 exceeds 20), the significance of an observed value of U can be determined by calculating a z-score and finding its probability of occurrence (p-value) in any statistical z-table (19:121).

To make a decision to accept or reject the null hypothesis, a level of significance must be selected. This researcher selected a significance level of $\alpha = 0.05$ as used in previous thesis studies. If the reported p-value associated with the observed z-score is less than or equal to the selected significance level of .05, the null hypothesis is rejected. If the reported p-value is greater than the selected significance level, then there is insufficient evidence in the sample to reject the null hypothesis. The U statistic, observed z-score and its corresponding p-value were presented in Table B.3 so readers could make their own statistical decision and interpretation. Further details on the Mann-Whitney U Test can be found by referring to Siegel's Nonparametric Statistics (19:116-125).

The Two Sample Median Test, a nonparametric alternative to the Mann-Whitney U Test, was considered but not selected for use because the Mann-Whitney U Test is more powerful than the Median Test by virtue of its consideration of the rank value of each observation rather than its location with respect to a combined median (20:824).

The Chi-square Test. Tables 3.11, 3.12, 3.13, 3.14 and 3.16 are presented in Chapter 3 to show the extent of the graduates' agreement with selected questions in the survey. These

tables present the number and percentage of graduates that agreed, disagreed, or were undecided on the issue in the question. For example, Table 3.11 was presented as part of the analysis of research question 3 to show the graduates' level of agreement with the statement, "Thesis research was a productive and worthwhile experience." The table shows that 86 graduates (69%) agreed with the statement, while 36 graduates (29%) disagreed. To determine whether this near 70%/30% split is significant, a Chi-square test, discussed by Kerlinger, was employed (16:167). The Chi-square test measures the departure of obtained frequencies (actual counts of graduates agreeing and disagreeing) from the frequencies expected by chance alone (16:168). For the purposes of this test, the counts of the graduates who answered "Undecided or Don't Know" to the statement were omitted so that only the significance of the graduates' agreement and disagreement could be measured. To illustrate using the example above, the total number of graduate responses, excluding the "Undecided/Don't Know" responses, is 122. On chance alone, one would expect a 50/50 split between those graduates who agree and those who disagree with the statement. In other words, 61 of the graduates could be expected to agree, while the remaining 61 graduates could be expected to disagree, based purely on chance.

To determine if a difference as large as the one obtained could have occurred strictly by chance, the researcher used the following formula to compute the observed Chi-square statistic (16:168):

$$X^2 = \frac{[(f_o - f_e)^2]}{f_e}$$

where

X^2 is the observed Chi-square statistic

f_o is the obtained frequency

f_e is the expected frequency

Once the observed Chi-square statistic is calculated, a Chi-square table is referenced to determine the table Chi-square value at the chosen significance level and the appropriate degrees of freedom. Again, as in the Mann-Whitney U Test, the researcher chose a significance level of 0.05. The degrees of freedom represents the latitude of variation a statistical problem has (16:168). This analysis used one degree of freedom to determine the table Chi-square value.

To determine if the graduates' agreement on the issues presented in the tables cited above have statistical significance, the observed Chi-square statistic is compared to the Chi-square table value at the 0.05 significance level. If the observed Chi-square statistic is greater than the Chi-square table value, then the graduates' level of agreement is considered significant. Table B.5 contains the key Chi-square results for the graduates' position in Tables 3.11, 3.12, 3.13, 3.14, and 3.16. As each of these tables are presented in Chapter 3, their statistical significance will be discussed.

Applied Analysis

This section describes the manner in which the research questions were analyzed. Each research question is presented, followed by the analytical approach used to answer the research question.

1. What subject areas, taught in the GLM Logistics Management Option, are perceived by the graduate and supervisor to be most/least useful in helping the graduate do his or her job?

Twenty-four (24) statements (questions 10-33 and questions 8-31 on the graduate's and supervisor's surveys, respectively) were used to address this research question. Each statement asked the respondent to indicate the extent to which he or she agreed that the subject area associated with the statement was required to perform his or her current job. For example, question 12 on the graduate survey (question 10 on the supervisor survey) asked the graduate (and his or her supervisor) to indicate agreement with the statement, "My job requires an understanding of DOD financial methods and systems."

The researcher makes an assumption that a relationship exists between a respondent's agreement with a statement and the usefulness he or she attaches to knowledge of the subject area in relation to the individual's job. For example, if the respondent indicates strong agreement that a certain subject area is required to perform his or her job, then the respondent also considers knowledge of that subject area useful to his or her performance of that job. Conversely, if a respondent

disagrees that a certain subject area is required in order to perform his or her job, then he or she will consider knowledge in that subject area less useful in helping to perform the job.

The usefulness of the 24 subject areas in relation to the graduate's current job was analyzed from three different perspectives: first, from the perceptions of the graduates; second, from the supervisors' perceptions; third, from the perceptions of both the graduates and supervisors.

The median response for each of the 24 subject area statements was calculated using the Statistical Package for the Social Sciences (SPSS), Release 2.1. A list of the 24 subject areas was then made by ranking the median response for each subject area from highest to lowest. In cases where subject areas had the same median response, their means were used to "break the ties" among the medians so that all subject areas could be rank ordered. This list gave the researcher a view of the relative usefulness that the respondents place on these subject areas in relation to their job requirements. The subject areas at the top of the list (defined by the researcher as those with a median response of 6 or 7) were considered the most useful to the graduates in performing their jobs. Similarly, those subject areas ranked near the bottom of the list (defined by the researcher as those with a median response of 2 or lower) were considered as the least useful to the graduates in the accomplishment of their jobs.

The same approach was used to determine the usefulness that the supervisors of the graduates placed on the subject

areas. The Mann-Whitney Test was used to determine if there were any statistically significant differences in the perceptions of the graduates and supervisors in the way in which they ranked the usefulness of the 24 subject areas. The SPSS control program used to perform the Mann-Whitney Test can be found in Appendix D.

Finally, the data files of the graduates and supervisors were combined to form a rank ordered subject area list reflecting the joint evaluations of the graduates and supervisors on the relative usefulness placed on the subject areas.

As additional support in answering this research question, an open-ended question in Part III of each survey (question 58 and question 46 on the graduate and supervisor surveys, respectively) asked the respondents to provide comments on the areas in the GLM Logistics Management Option that they felt require additional emphasis. These comments were used to subjectively confirm the usefulness of the subject areas in the analysis mentioned above.

2. Do AFIT GLM Option graduates perceive their AFIT education useful to them?

This research question was analyzed on several levels. First, the usefulness of the graduates AFIT logistics education was analyzed in the context of preparing them to do their jobs and improving their on-the-job performance. Questions 35, 37, and 41 were used to analyze this aspect of usefulness.

Next, the researcher looked at the usefulness of the AFIT logistics education to the graduates in a broader context, --

for example, the degree to which the graduates perceive their logistics education is useful to the Air Force, how strongly they endorse the AFIT GLM Program, and the extent to which they feel their AFIT education has enhanced their professional careers and has enabled them to make contributions to the Air Force mission. Question 34, 36, 54, and 56 were used in this analysis.

For both analyses, each respondent's total score for the set of questions being evaluated was determined and then rank ordered to determine the overall median score for the entire group of graduates. The median for the set of questions analyzed was then compared to a neutral score on the seven point Likert scale to test whether the graduates believe an AFIT education is useful.

Open-ended question 60 on the graduate survey (48 on the supervisor survey) requested the respondents to comment on whether they felt the graduate's involvement in any major Air Force program or project could be attributed, directly or indirectly, to the graduate's advanced logistics education. This question was used to give an indication of the usefulness of the graduates' education by soliciting from GLM Logistics Management Option graduates and their supervisors concrete examples of the graduates' contributions to Air Force readiness and other programs.

3. Do AFIT graduates believe that their postgraduate assignments are appropriate in light of the advanced logistics education they receive?

Five statements (questions 46-50 on the graduate survey), as well as some graduate comments to the open-ended questions, were used to answer the research question. Questions 46, 47, and 50 were designed to obtain the graduates' perceptions of how effective a job they thought the Air Force (i.e., Air Force Manpower Personnel Center) was doing in assigning them to positions that required their advanced logistics education. Questions 48 and 49 were used to determine the degree to which the graduates felt that their advanced logistics education was required to perform their current job or could be better utilized in another assignment.

Descriptive statistics (frequency counts and percentages), median responses for each of the five statements, and comments made by the graduates in the open-ended questions were used to determine the answer to the research question.

4. Do AFIT graduates perceive thesis research to be a worthwhile part of the GLM Option curriculum?

This question was analyzed using a combination of descriptive statistics (frequency counts and percentages), median calculations, and subjective review of open-ended question 58 on the graduate survey. A median response was computed for questions 42 through 45 on the graduate survey.

Question 42 was developed to determine the graduates' response to the statement, "AFIT thesis research was a productive and worthwhile experience." A median response of 3.5 or less on the Likert scale was interpreted to mean that graduates did not perceive thesis research as worthwhile. A med-

ian response between 3.5 and 4.5 was interpreted as meaning that graduates could not decide if thesis work was worthwhile; a response of 4.5 to 5.5 was interpreted to mean that graduates found thesis research worthwhile; and a response above 5.5 was interpreted to mean that graduates considered thesis research as very worthwhile.

Questions 43 and 45 were used to determine the extent to which the graduates felt their thesis research was or could be of use to them in their jobs. The medians were calculated for each question and were compared against the Likert scale. A median response of 3.5 or below was considered to mean that the graduates felt that thesis research at AFIT was not useful to them in performing their jobs; a median response between 3.5 and 4.5 was interpreted to mean that thesis research was of limited use to them in their jobs; a median response of 4.5 to 5.5 was interpreted to mean that graduates perceived their AFIT thesis work as being useful to them on their jobs; and a median response above 5.5 suggested that thesis research was considered very useful on the job.

Question 44 was designed to determine the extent that graduates might favor taking additional coursework in lieu of thesis work. A median response was calculated for the question. A median response of 3.5 or less was interpreted to indicate that the graduates did not favor the proposal; a median response of 4.5 to 5.5 was considered to mean that there was some support for the proposal; and a median response above 5.5 indicated graduates favored taking additional coursework in lieu of the thesis.

Question 58, an open-ended question, was developed to solicit the graduates' thoughts and recommendations on the value of the AFIT GLM Thesis Program. This question was analyzed subjectively to provide supplemental support for the preceeding analysis.

5. What recommendations do GLM Logistics Management Option graduates and their supervisors have to improve the curriculum?

An open-ended question encouraging the respondent's comments was evaluated subjectively, and used in conjunction with research question 1 to provide the GLM Logistics Management Option Manager with feedback on the curriculum.

Assumptions

General Assumptions. The following general assumptions are made:

1. The respondents will provide honest responses in completing the survey questionnaire.
2. The respondents will take a reasonable amount of time to complete the survey questionnaire.
3. The survey instruments are reasonably valid and reliable.

Statistical Assumptions. The following statistical assumptions are made:

1. The Likert scale selected for the questionnaire will result in ordinal level data.
2. The population distributions from which the samples are drawn are not known. Therefore, use of nonparametric statis-

tical tests are appropriate.

3. Both samples are representative of the population.

Limitations. The following limitations exist:

1. Measurements of perceptions are qualitative.

2. Inferences should be strictly limited to the population defined. Because certain elements of the total population were excluded (e.g., foreign, DOD civilian, and other military service graduates), generalizations cannot be made beyond the population defined in this study.

III. Analysis and Results

This chapter consists of two sections. The first section presents the demographic information that describes the sample. The second section provides the results of the analyses described in the previous chapter.

Demographic Information

This section describes the demographic characteristics of the respondents. The information is provided in a table format. It serves as background information for the analysis that follows.

Graduates' Composition by Rank. Table 3.1 shows both the absolute numbers and relative percentage of the ranks of the graduates that participated in this survey.

Table 3.1

Ranks of the Graduate Respondents

Rank	N	%
1Lt	2	1.6
Captain	68	54.8
Major	46	37.1
Lt Col	8	6.5
	124	100.0

Graduates' Organizational Level. Table 3.2 shows the organizational level at which they work.

Table 3.2
Graduates' Job Organizational Level

Organ Level	N	%
Squadron or Below	37	30.1
Group	4	3.3
Wing	16	13.0
Air Division	2	1.6
NAF & MAJCOM	31	25.2
HQ USAF	7	5.7
SOA	11	8.9
DOD	1	0.8
Other	14	11.4

Graduation Year. Table 3.3 shows the graduate respondents and the year in which they graduated from the AFIT GLM Program Logistics Management Option.

Table 3.3
Graduates by Graduation Year

Grad Yr	N	%
1985	24	19.8
1984	25	20.7
1983	16	13.2
1982	8	6.6
1981	17	14.0
1980	25	20.7
1979	6	5.0

Degree Code Information. Table 3.4 shows the graduates' response to the question, "My current job requires an advanced academic degree code."

Table 3.4
Degree Code Information

Response	N	%
Yes	36	29.3
No	58	47.2
Don't Know	29	23.5

Supervisors' Organizational Level. Table 3.5 shows the organizational levels where the supervisors work.

Table 3.5
Supervisors' Job Organizational Level

Organ Level	N	%
Squadron or Below	29	27.6
Group	3	2.9
Wing	13	12.4
Air Division	4	3.8
NAF & MAJCOM	27	25.7
HQ USAF	6	5.7
SOA	6	5.7
DOD	1	1.0
Other	16	15.2

Analyses Results

This section presents the results of the analyses described in Chapter 2. The tables presented in this section

are abbreviated for ease in reading. Complete tables are provided in Appendix B.

Usefulness of Subject Areas. Both the graduates and the supervisors were asked separately to evaluate the usefulness of 24 subject areas offered in the Logistics Management Option curriculum in relation to the requirements of the graduates' job. Those subject areas with a median response of 6.0 or 7.0 are shown in Table 3.6, indicating that the respondents agree or strongly agree that these subject areas were the most useful to the graduates in their jobs.

Table 3.6
The Most Useful Subject Areas as Perceived by
Graduates and Supervisors

Rank	Graduates	Supervisors
1	Verbal Communication	Verbal Communication
2	Written Communication	Written Communication
3	Organizational Behavior	Organizational Behavior
4	Problem Solving	Problem Solving
5	Computer Science	Organizational Management
6	Organizational Management	Computer Science
7	Federal Financial Management	Combat Logistics Planning
8	-	Federal Financial Management

Table 3.6 shows that managerial related subject areas were perceived by both graduates and the supervisors as the most useful areas to the graduate on the job. These subject areas include both verbal and written communication, organizational behavior/organizational management, logical problem solving, computer science, and federal financial management. Table B.1 in Appendix B shows the complete list of the 24

subject areas as ranked in order of usefulness by the graduates and supervisors separately. Additional tables presenting descriptive statistics, e.g., median, mean, and standard deviation, for each of the 24 subject areas evaluated by the two groups, can be reviewed in Appendix B.

The least useful subject areas as perceived by the graduates and supervisors in separate rank-ordered lists are shown in Table 3.7. Each of these subject areas had a median response of 2.0 on the Likert Scale. The graduates assigned a median response of 2.0 to seven subject areas, while the supervisors assigned four subject areas a median response of 2.0. Microeconomics, macroeconomics, managerial accounting, computer programming, and international logistics were subject areas perceived least useful by both groups.

Table 3.7
Least Useful Subject Areas as Perceived by
Graduates and Supervisors

Rank	Graduates	Supervisors
•		
•		
18	Statistics	
19	Computer Programming	
20	Managerial Accounting	Microeconomics
21	Microeconomics	Computer Programming
22	Macroeconomics	Managerial Accounting
23	Simulation	Macroeconomics
24	International Logistics	International Logistics

The Mann-Whitney test was used to determine if there were any differences between the graduates and supervisors in their

perceptions of the usefulness of the subject areas. At the established significance level of 0.05, four of the 24 subject areas were perceived to be more useful by the supervisors than by the graduates. The subject areas that the supervisors perceived more useful than did the graduates were all quantitatively oriented. They were simulation, quantitative decision making, statistics and quantitative methods. Table B.3 in Appendix B shows the test results. The table ranks the subject areas from the greatest to the least perceptual differences.

The overall usefulness of the 24 subject areas as perceived by both the graduates and the supervisors combined was also determined.

Table 3.8
Most to Least Useful Subject Areas:
Combined Graduate and Supervisor Evaluation

Rank	Subject Area
1	Verbal Communication
2	Written Communication
3	Organizational Behavior
4	Problem Solving
5	Organizational Management
6	Computer Science
7	Federal Financial Management
8	Combat Logistics Planning
9	Contracting and Acquisition Management
10	Distribution Management
11	Quality Control
12	Reliability and Maintainability
13	Production and Operations Management
14	Quantitative Methods
15	Quantitative Decision Making
16	Applied Research
17	Life Cycle Costs
18	Statistics
19	Computer Programming
20	Simulation
21	Managerial Accounting
22	Microeconomics
23	Macroeconomics
24	International Logistics

Table 3.8 shows the complete ranking of all 24 subject areas. There was a slight reordering of the usefulness of the subject areas as a result of the combined graduate and supervisor responses. Table B.4 in Appendix B contains the descriptive statistics, e.g., median, mean, and standard deviation for each of the subject areas in the joint graduate-supervisor evaluation.

An open-ended question on each survey was used to obtain graduate and supervisor comments on what subject areas they felt required more emphasis in the GLM curriculum. Table 3.9 lists the subject areas receiving six or more graduate recommendations for increased emphasis.

Table 3.9
Subject Areas Recommended by Graduates Six or More
Times for Increased Emphasis in the GLM Program

Subject Area	N
Contracting & Acquisition Management	23
Organizational Management & Behavior	22
Verbal Communication	19
Federal Financial Management	17
Written Communication	16
Statistics & Statistical Analysis	14
Micro-computer/Software Applications	11
Reliability & Maintainability	9
Air Force Supply System	9
Quantitative Decision Making	7
Maintenance/Production & Operations Management	7
Problem Solving	6

Table 3.10 lists the subject areas receiving five or more supervisor recommendations for increased emphasis.

Table 3.10

Subject Areas Recommended By Supervisors Five or More
Times for Increased Emphasis in the GLM Curriculum

Subject Area	N
Written Communications	15
Organizational Management & Behavior	11
Verbal Communication	9
Federal Financial Management	9
Acquisition Logistics Management	9
Reliability and Maintainability	6
Problem Solving/Decision Making	5
Computer Science	5

A review of Tables 3.9 and 3.10 reveal that the graduate and supervisor recommendations of the subject areas requiring more emphasis in the AFIT GLM curriculum include all of the subject areas they perceive to be most useful to the graduates' job. Appendix C contains a wide cross section of typical, more detailed narrative comments and recommendations made by both the graduates and supervisors on subject areas they believe need more emphasis in the GLM Logistics Management Option curriculum.

Overall Usefulness. The graduates' response to the set of 3 statements (questions 35, 37, and 41) indicated that they believe their GLM education is useful to them in the performance of their duties. As Figure 3.1 shows, a median response of 5.7 for the set of statements confirmed this. A neutral response for this set of questions is 4, and would indicate that the graduates would be undecided over the usefulness of their graduate logistics education.

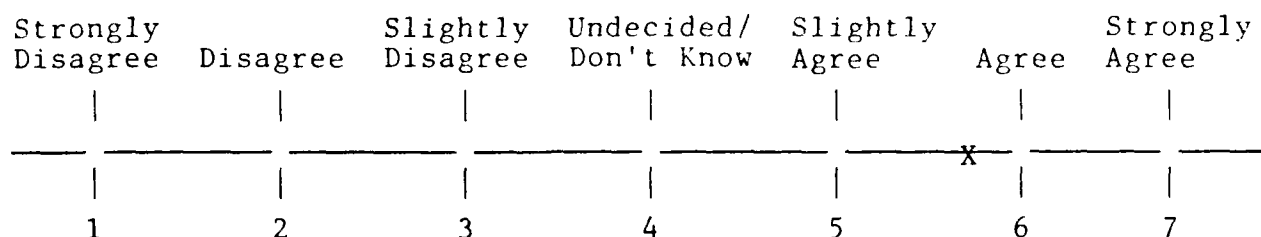


Figure 3.1. GLM Program Usefulness: Graduates'
Median Score for Set of Statements
(Questions 35, 37, and 39)

In response to question 38, "My AFIT GLM education is of little use to me in my on-the-job performance," the graduates' median score was 2, which indicated they disagreed with this statement and perceived their education was, in fact, of use to them in their job performance.

The graduates were also asked to respond to a set of 4 additional usefulness-related statements (questions 34, 36, 54, and 55). As shown in Figure 3.2, their median response was 5.75, an indication that they thought their AFIT GLM education was useful both to their careers and the Air Force.

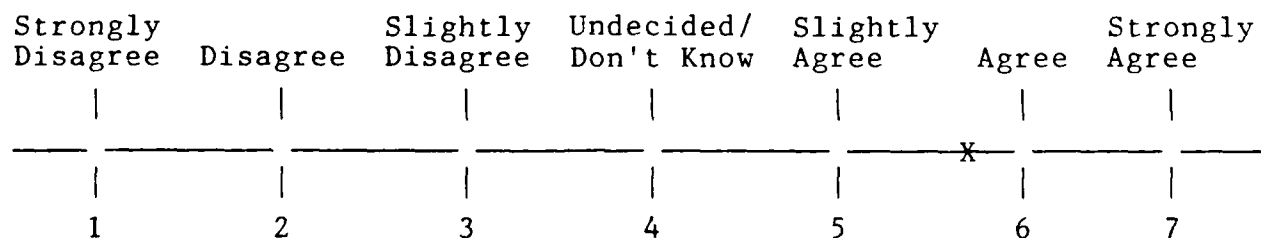


Figure 3.2. GLM Program Usefulness: Graduates'
Median Score for Set of Statements
(Questions 34, 36, 54, 55)

Questions 60 and 48 on the graduates and supervisors survey, respectively, attempted to determine to what extent the graduates and supervisors felt that the graduates' AFIT GLM education enabled them to make a significant contribution to some "major Air Force program or project" in terms of readiness improvements, cost savings, or other means. The terms "significant" and "major Air Force project or program" were not defined and were left to the respondents own subjective interpretations. Of the 82 graduates responding to this question, 61% replied "no", while 39% replied "yes", giving an indication that these graduates felt their AFIT GLM education was responsible, to some extent, for their contributions. Because graduates' organizational level varied, 50% of those graduates who replied "no" to this question were working in Wing level positions and below, and may not have had the opportunity to work on major Air Force programs. However, four graduates who answered "no" to the question stated that their logistics education did help give them a broader perspective and greater understanding of logistics functions which had been beneficial to them. Examples of comments regarding the major contributions that AFIT GLM graduates feel they are making are contained in Appendix C.

Assignment Appropriateness. An observation made in previous thesis research studies by Crowder and Davidson (9:58) and Brown and Hollingsworth (7:57) of the AFIT GLM Program was that graduates felt their field assignments after AFIT were not appropriate for the education they received. After

graduation, AFIT graduates are usually assigned to positions designated by an advanced academic degree (AAD) code requiring their special educational skills (13:70). Table 3.4, Degree Code Information, indicates how the graduates responded to the question, "Does your current assignment have an Advanced Academic Degree Code requiring your Graduate Logistics Management Degree?" As the table shows, 29.3% of the graduates stated "Yes", 47.2% answered "No", while 23.5% replied they were uncertain. According to the graduates, close to one-half were not assigned to AAD positions.

GLM graduates were asked in question 47 if they felt that their GLM education had been considered (by AFMPC) in their assignments since graduation. The median response was 5, indicating slight agreement with this statement. However, in response to question 46, "The Air Force has done a good job of matching my educational skills to those jobs requiring an AAD," the graduates' median response of 4 showed that they were undecided. When asked to respond to question 50, "I feel the Air Force has not taken full advantage of my graduate logistics education," the graduates indicated a median score of 5, or slight agreement with the statement.

Questions 48 and 49 were used to further determine if the graduates felt that they were being placed in assignments that made appropriate use of their advanced logistics education. The graduates responded with a median score of 5 to the statement, "My job does not require the advanced education that I received from AFIT," an indication of slight agreement. The

graduates' responses to question 48 on the seven point Likert Scale expressed as percentages are shown in Table 3.11.

Table 3.11

Graduates' Response to Question 48: My Job
Does Not Require My Advanced AFIT Logistics Education

Likert Scale Response	N	%
Strongly Disagree to Slightly Disagree (1, 2, and 3)	48	39.7
Undecided/Don't Know (4)	8	6.6
Slightly Agree to Strongly Agree (5, 6, and 7)	65	53.7

As Table 3.11 shows, nearly 54% of the graduates agree to varying degrees that their assignment does not require their AFIT Graduate Logistics education. When the Chi-square test was applied to Table 3.11, the percentage of the graduates' agreement was not statistically significant. Asked if "My AFIT Graduate Logistics education could be better utilized in another assignment," the graduates again indicated slight agreement with a median response of 5. The graduates' responses to question 49 on the seven point Likert Scale expressed as percentages are shown in Table 3.12. The Chi-square test found the graduates' agreement with this statement significant.

Table 3.12

Graduates' Response to Question 49: My AFIT GLM
Education Could Be Better Utilized In Another Assignment

Likert Scale Response	N	%
Strongly Disagree to Slightly Disagree (1, 2, and 3)	35	28.9
Undecided/Don't Know (4)	14	11.6
Slightly Agree to Strongly Agree (5, 6, and 7)	72	59.5

A review of graduate comments on the assignment selection process from the open-ended questions shows that some graduates feel their assignments are not matched well with their graduate logistics education because they have been assigned to positions below the MAJCOM level. Ten graduates specifically commented on this subject, and their comments have been provided in Appendix C. Lack of the opportunity to apply their AFIT logistics education in base level assignments was the predominant reason given by these graduates for their dissatisfaction over the assignment process. Of the 65 graduates that answered either "slightly agree", "agree", or "strongly agree" to question 48, "My job does not require the advanced logistics education I received from AFIT", 40 or 61.5% were working in jobs below the MAJCOM level.

Thesis Program. The graduates were asked in question 42 if they thought that thesis research was a productive and

worthwhile experience. The median response was 5, an indication that the graduates felt thesis research was productive and worthwhile. Their response to this question revealed that 69.4% of them felt thesis research was worthwhile, 29.0% felt it was not worthwhile, and 1.6% were undecided. Table 3.13 shows the graduates' response to question 42.

Table 3.13
Graduates' Response to Question 42: AFIT Thesis
Research Was A Productive and Worthwhile Experience

Likert Scale Response	N	%
Strongly Disagree to Slightly Disagree (1, 2, and 3)	36	29.0
Undecided/Don't Know (4)	2	1.6
Slightly Agree to Strongly Agree (5, 6, and 7)	86	69.4

The graduates' agreement that they perceived the thesis program as worthwhile was significant when the Chi-square test was used. Question 43, with a median response of 5, showed that graduates slightly agreed that the research skills learned while working on the AFIT thesis had proven useful to them in performing their jobs. The graduates' responses to question 43 on the seven point Likert Scale expressed as percentages are shown in Table 3.14.

Table 3.14

Graduates' Response to Question 43: AFIT Thesis
Research Has Proven Useful To Me In Performing My Job

Likert Scale Response	N	%
Strongly Disagree to Slightly Disagree (1, 2, and 3)	51	41.5
Undecided/Don't Know (4)	7	5.7
Slightly Agree to Strongly Agree (5, 6, and 7)	65	52.8

As Table 3.14 shows, nearly 53% of the graduates felt that their thesis research had application to their job, while almost 42% believed thesis research had not been useful to them in their job. The Chi-square test showed this not to be significant. So while the graduates believe the program was worthwhile, they didn't feel as strongly about the applicability of thesis research to their jobs.

The graduates were asked in question 44 if they believed that more management and/or technical courses should be offered in the curriculum in substitution of the thesis requirement. Twelve quarter hours are allotted to the thesis program in the 1985-87 GLM Course Catalog (1:185-186). The graduates' median response of 4 showed that they were undecided whether they would favor dropping the thesis program for additional coursework.

Question 45 was eliminated from the analysis because it appeared to have caused confusion by asking the graduates to

evaluate their thesis research in terms of the past and future at the same time.

The graduates were asked to comment on the value of thesis work and to provide their recommendations, if any, to modify this part of the GLM curriculum. Eighty-three percent of the 124 graduates provided comments. Of the 103 graduates that provided remarks, 55% responded favorably to the AFIT GLM Thesis Program, 25% provided unfavorable comments, and 20% replied with neutral comments. A review of the comments showed general graduate support of the thesis program. Many graduates stated that thesis work was a rewarding and worthwhile part of their AFIT educational experience. Frequent favorable comments cited include satisfaction and confidence gained from organizing and completing a large scale project; learning "mental discipline" and how to better manage time; exercising logical problem solving and analytical techniques; develop writing skills; opportunity to become familiar with a particular subject area; opportunity to apply knowledge learned from classroom; and developing attention to detail and doing thorough work. A representative cross section of graduate comments on the GLM Thesis Program is included in Appendix C.

Graduates offered a number of comments for improving the thesis program. Table 3.15 presents a summary of the graduates' remarks on the thesis program and the number of times the comment was made. Graduates felt the program could be improved by structuring it better, particularly where thesis topic selection is concerned.

Table 3.15
Summary of Graduates' Thesis Comments

Comment	N
Leave program as is	40
Make thesis requirement optional and allow more coursework as an alternative	13
AFIT provides more assistance in topic selection	12
Delete thesis requirement	8
Need more program structure (on topic selection, required completion dates, etc.)	8
Make thesis an "individual" effort	7
Allow team (2 person) thesis efforts	5
Allow students to select topics related to their own AFSC	5
Thesis should address "real world" problems	4

Curriculum Improvement. Graduates slightly agreed (median response 5) with question 53 that logistics courses were presented in sufficient depth to help them do their jobs. The graduates agreed (median response 6) that including logistics related "practical, how to do it" courses such as those taught in AFIT's Professional Continuing Education Program would improve the usefulness of the Logistics Management Option curriculum. This response suggests that graduates want a better mix of theory and practical application in the logistics courses.

The graduates were asked, in question 51, if they felt that a speech course, offered now as an elective, should be

made a required course. The graduates slightly agreed (median response 5). The graduates' responses to question 51 on the seven point Likert Scale expressed as percentages are shown in Table 3.16.

Table 3.16

Graduates' Response to Question 51: Speech For
Military Managers Should Be Made A Core Course

Likert Scale Response	N	%
Strongly Disagree to Slightly Disagree (1, 2, and 3)	34	27.4
Undecided/Don't Know (4)	12	8.7
Slightly Agree to Strongly Agree (5, 6, and 7)	78	63.9

Table 3.16 shows that almost 64% of the graduates agree (median response 5, 6, and 7) that a speech course should be made a core requirement of the GLM Logistics Management Option curriculum. When the Chi-square test was applied, the graduates' agreement was found to be significant.

Graduates also offered their comments for improving the GLM Logistics Management Option curriculum in Question 59. Sixty-three percent of the graduates provided comments, 33% did not provide a reply, and 4% said they wouldn't make any changes to the curriculum. A wide number of suggestions were made on how to make the curriculum more responsive to the needs of the graduates in the field. Eleven graduates

thought the courses should emphasize more practical applications of theory (e.g., relate theory to how logistics is actually done in the field). They suggested using/reviewing actual Air Force documents in class, using case studies to study "real life" logistics problems, etc. Two graduates thought the option should be tailored more to the base level logistician instead of relating primarily to the AFLC and AFSC environments. Three graduates recommended that more electives be offered. Specific graduate comments on curriculum improvements are provided in Appendix C.

IV. Conclusions and Recommendations

This chapter provides a brief summary of the research study, presents the conclusions based on the research results, and offers several recommendations to the Faculty as well as suggestions for further research.

Project Overview

This study was initiated to provide the AFIT GLM Logistics Management Option Manager with information that can be used to assess the usefulness of the GLM Program Logistics Management Option to the graduate, and information on which to base future decisions for revising the curriculum. The primary objective of the research was to determine which subject areas in the GLM Logistics Management Option curriculum are perceived to be most/least useful to the graduates. Secondary objectives were to determine the graduates' perceptions of the value of the Thesis Program and whether the graduates felt their AFIT logistics education was being appropriately used by the Air Force in postgraduate assignments.

Surveys were used to gather this information from both the graduates and their supervisors. The surveys were collected and analyzed, and the results were presented in Chapter 3. The conclusions of the study are presented in the next section.

Conclusions

The following conclusions are presented in relation to the research questions that organized the study.

Question 1. What subject areas, taught in the AFIT GLM Logistics Management Option, are perceived by the graduate and supervisor to be the most/least useful in helping the graduate do his or her job?

Conclusion. The combined evaluation of the graduates and supervisors subject area usefulness rankings are repeated in Table 4.1.

Table 4.1
Most to Least Useful Subject Areas:
Combined Graduate and Supervisor Evaluation

Rank	Subject Area
1	Verbal Communication
2	Written Communication
3	Organizational Behavior
4	Problem Solving
5	Organizational Management
6	Computer Science
7	Federal Financial Management
8	Combat Logistics Planning
9	Contracting and Acquisition Management
10	Distribution Management
11	Quality Control
12	Reliability and Maintainability
13	Production and Operations Management
14	Quantitative Methods
15	Quantitative Decision Making
16	Applied Research
17	Life Cycle Costs
18	Statistics
19	Computer Programming
20	Simulation
21	Managerial Accounting
22	Microeconomics
23	Macroeconomics
24	International Logistics

The first seven subject areas in Table 4.1 were determined by a joint evaluation of graduates and supervisors to be the most useful subject areas to the graduate on the job. These subject areas, Verbal Communication through Federal Financial Management, had a median response of 6 or higher. Subject areas 19 through 24, Computer Programming through International Logistics, were the least useful subject areas to the graduate on the job as perceived by the graduates and supervisors. These six subject areas received a median response of 2. While not every subject area is used by the graduate in a particular job, the subject area rankings do give an overall indication of the relative usefulness that the graduates and supervisors attach to them.

As noted previously, the subject areas ranked most useful are those relating to managerial functions, e.g., speaking and writing, organizational management, problem solving, knowledge of computer capabilities and applications, and logical problem solving. In their 1979 study of the GLM Program curriculum, Brown and Hollingsworth also concluded that speaking, writing, organizational management and behavior, and financial management were among the top five subject areas most useful to graduates (7:34). As in 1979, these subject areas continue to be the most useful to the GLM Program graduates.

Six of eight of the least useful subject areas as determined by Brown and Hollingsworth (7:34) are included in Table 4.1. Computer Programming, Simulation, Managerial Accounting, Microeconomics, Macroeconomics, and International

Logistics continue to be the subject areas considered the least useful to the graduates in the field. While these subject areas do contribute to a graduate's overall education, for the most part, they are not required by most graduates in the conduct of their day-to-day jobs.

Question 2. Do AFIT GLM graduates perceive their AFIT logistics education useful to them?

Conclusion. Graduates perceive their education as useful to them in their jobs and to the Air Force. Their median responses to the two sets of usefulness statements indicate that they feel their GLM education is useful in their jobs and has helped them to better solve on-the-job problems. The graduates also felt that their AFIT GLM education has enhanced their career and would recommend the program to others.

Question 3. Do AFIT GLM Logistics Management Option graduates believe that their postgraduate assignments are appropriate in light of the advanced education they receive?

Conclusion. Overall, the graduates felt that AFMPC needs to do a better job of placing graduates into jobs that take better advantage of their advanced logistics education and allow them to contribute more. According to the graduates, 47.2% of them were working in designated AAD positions. This is an improvement over the 16.7% figure reported by Brown and Hollingsworth in their 1979 study (7:58). Moreover, approximately 48% of the graduates responding to this survey are assigned to duty positions at or below the Air Division level. The graduates slightly agreed that their current assignment

did not require their advanced logistics education and felt it could be better utilized in other assignments. So, while the graduates feel their GLM education is useful, they believe AFMPC is placing them in assignments that fail to maximize their potential contributions. AFIT graduates may be entering the school with unrealistic expectations as to the level of command they will be assigned upon graduation.

Question 4. Do AFIT GLM Logistics Management Option graduates perceive thesis work to be a worthwhile part of the curriculum?

Conclusion. The research showed that the graduates do perceive the AFIT Thesis Program to be a worthwhile part of the GLM Program. On the whole, they felt that thesis research had some application to their jobs, but its value to the graduate came more from "intangible" benefits, e.g., project management, time management, decision making, and writing. Nearly 70% of the graduates perceived the program as productive and worthwhile. The researcher believes support of the thesis program would have been even stronger if certain aspects of the program administration, such as topic selection guidance, were more structured.

Although the graduates were undecided on whether additional management and/or technical courses should be offered in lieu of the thesis, there is, nevertheless, a significant portion of the graduates that would favor additional coursework as an alternative option to thesis work. Approximately 40% of those graduates responding to question 44 indicated

support for an option of this nature.

Question 5. What recommendations do GLM Logistics Management Option graduates and their supervisors have to improve the GLM Logistics Management Option curriculum?

Conclusion. Graduates and their supervisors recommended continued emphasis on management, communications, computer science, financial management, and other courses they ranked highly as useful to the graduates' job. Graduates and supervisors included supervision, leadership, and personnel relations as part of the organization management subject area. Graduates and supervisors want to see instruction in the computer courses tailored more to use of minicomputers, e.g., Z-100, and their application programs. Both graduates and supervisors want to see the federal budget, e.g., Planning, Programming and Budgeting System (PPBS) covered in much more detail.

Graduates also want to see more practical applications of the subject areas they study in class to the logistics field environments.

Recommendations

The following sections outline recommendations to improve the GLM Program Logistics Management Option as well as provide suggestions for further research.

Program Recommendations. Based upon the results of this study, the following recommendations are made to improve the usefulness of the GLM Program Logistics Management Option.

Recommendation 1. Continue to place emphasis on speaking

and writing in the program. Consider making COMM 687, Theory and Practice of Professional Communication, a core course in the Logistics Management Option.

Recommendation 2. Continue to place emphasis on organizational management, human relations, and supervision courses. Design these courses so that the graduate can practically apply the concepts taught to the field environment.

Recommendation 3. Delete the Managerial Accounting portion of AMGT 612, Federal Financial Management and Accounting. Use the extra time provided to go fully into depth on the budget formulation process, Program Objective Memorandum (POM) development, etc. Those graduates interested in Managerial Accounting could take it as an elective.

Recommendation 4. Make the simulation courses, OPER 525 and OPER 626, and the economics courses, AMGT 520 and AMGT 528, optional as electives. These courses have been considered among the least useful to the graduates in the field because the large majority of graduates are assigned to positions that don't require or infrequently make use of these subject areas. This would allow the graduates more freedom in selecting other technical or management electives of greater use and interest to them.

Recommendation 5. Work more closely with AFMPC and the MAJCOMS to insure that the graduates are being assigned to positions that require their advanced logistics education. If all authorized AAD positions are continually being filled and a surplus of graduates exist, perhaps the class quotas should

be reduced accordingly or new AAD positions be designated. If AFIT GLM graduates continue to be assigned to non-AAD positions and at the lower organizational levels where their education will not be utilized immediately, then insure the graduates are made aware of these realities early. Perhaps AFIT could arrange for AFMPC to brief assignment selection procedures annually during the orientation week.

Recommendation 6. Continue efforts to assist students in thesis topic selection by having current topic selection books available, increasing advisor involvement in topic selection and screening, and establishing points of contact for agencies willing to sponsor AFIT research efforts.

Recommendation 7. If possible, give consideration to making the thesis program optional. As an alternative, allow students to take three or four courses instead of doing thesis research. This would give the graduates an opportunity to take courses relating to their follow-on assignments.

Recommendations for Further Research. Continue periodic surveys. To increase both the number and quality of graduate and supervisor responses to narrative questions specifically addressing the curriculum, enclose with each survey instrument a list of course numbers and course descriptions. Some supervisors were unfamiliar with the curriculum and some graduates had forgotten what courses were offered.

Because AFIT GLM graduates have for some time felt that their assignments were inappropriate in view of the expenditure of time and money the Air Force has invested in them,

further research in this area might be useful to discover why this problem persists. AFMPC, the MAJCOMS, AFIT, and the graduates could be interviewed/surveyed to determine the possible causes and remedies for this.

Appendix A: The Survey Instruments

1986 GRADUATE SURVEY
AFIT GRADUATE LOGISTICS MANAGEMENT PROGRAM

USAF SCN 86-47
EXPIRES: 31 DEC 1986



DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY
WRIGHT-PATTERSON AIR FORCE BASE OH 45433-6663

5 JUN 1986

REPLY TO
ATTN OF: LS (Major Smith, AV 785-4437)
SUBJECT: AFIT Graduate Logistics Management (GLM) Program Survey

TO: AFIT Logistics Management Program Graduates

1. The AFIT School of Systems and Logistics continually strives to offer its logistics management graduates with a top quality education that is useful to both the Air Force and their job needs. The GLM Program, as well as all other AFIT programs, requires periodic assessment to insure that it remains responsive, relevant, and useful in helping prepare you to do your job. The attached Graduate Logistics Management Program Usefulness survey is designed to gather the information needed to evaluate the GLM Program, and make changes where necessary.

2. As an AFIT Logistics Management Program graduate, you have first-hand knowledge of how useful the GLM Program has been to you. Your feelings are extremely important. Your participation, although strictly voluntary, is vital to the success of this study. Please take the 15-20 minutes necessary to complete and return the survey. Individual responses will be treated as confidential and you need not place your name on the questionnaire.

3. Also enclosed is a supervisor survey which should be given to your immediate supervisor for his or her completion. Your perceptions, along with those of your supervisor, will be used collectively to assess the usefulness of the GLM program.

4. While taking the survey, please consider the questions carefully before you answer. Most importantly, please be candid in your responses!

5. Please return the completed survey in the enclosed pre-addressed envelope no later than 11 July 1986. Once again, thanks for your participation.


LARRY J. SMITH, Colonel, USAF
Dean
School of Systems and Logistics

2 Atch
1. Graduate Survey
2. Supervisor Survey

STRENGTH THROUGH KNOWLEDGE

GENERAL INSTRUCTIONS

1. This packet contains two surveys. Please give the sealed supervisor's survey packet to your immediate supervisor. Your supervisor will complete and return his/her survey separately.
2. As this survey is intended to obtain your perceptions, please do not confer with your supervisor before or while completing the survey.
3. Participation in this survey is entirely voluntary. Do not place your name or social security number on either the answer sheet or the questionnaire. No attempt will be made to attribute responses to individuals.
4. This questionnaire has three parts to complete. Use a No. 2 pencil to mark your responses on the machine scoreable answer sheet (AFIT Data Collection Form) provided for PARTS I and II. For PART III, write your responses to the open-ended questions directly on the questionnaire in the space provided. Feel free to make additional comments on a separate piece of paper.
5. PART II, Perceptions, uses a scale for responses. Use the corresponding letters on this scale (A, B, C, D, E, F, or G) to mark your response on the answer sheet. This scale appears at the top of each page for your easy reference.
6. Answer all questions. Read each question carefully before marking your answer. Mark your answer within the circle on the answer sheet. If you change your answer, erase the mark completely and mark the new answer.
7. Please do not staple, fold or tear the answer sheet.
8. After completing the survey, enclose both the questionnaire and machine scoreable answer sheet in the pre-addressed return envelope provided and return by official mail NLT 11 Jul 1986.

1986 Graduate Survey

AFIT Graduate Logistics Management Program

PART 1--BACKGROUND INFORMATION

INSTRUCTIONS: Please mark your responses to the following questions on the answer sheet provided.

1. At what organizational level are you currently assigned?

- a. Squadron or below
- b. Group
- c. Wing
- d. Air Division
- e. Numbered Air Force
- f. Major Command (MAJCOM)
- g. HQ Air Force
- h. Department of Defense
- i. Separate Operating Agency
- j. Other (please describe) _____

2. To which MAJCOM are you presently assigned?

- | | |
|------------|----------------------------------|
| a. AAC | h. MAC |
| b. AFCC | i. PACAF |
| c. AFLC | j. Space Command |
| d. AFSC | k. SAC |
| e. ATC | l. TAC |
| f. ESC | m. USAFE |
| g. HQ USAF | n. Other (please describe) _____ |

3. What is your current duty AFSC?

- | | | |
|---------|---------|-----------------|
| a. 27XX | i. 60XX | q. Other: _____ |
| b. 28XX | j. 62XX | |
| c. 29XX | k. 63XX | |
| d. 31XX | l. 64XX | |
| e. 40XX | m. 65XX | |
| f. 46XX | n. 66XX | |
| g. 51XX | o. 67XX | |
| h. 55XX | p. 004X | |

4. How long have you held your present assignment?
- a. 1 year or less
 - b. Over 1 year but less than 2 years
 - c. 2 years but less than 3 years
 - d. 3 years or more
5. What is your current grade?
- a. 0-1
 - b. 0-2
 - c. 0-3
 - d. 0-4
 - e. 0-5
 - f. 0-6
6. When did you complete your full-time resident studies at AFIT?
- a. 1985
 - b. 1984
 - c. 1983
 - d. 1982
 - e. 1981
 - f. 1980
7. How many assignments have you had since graduating from AFIT?
- a. One -- This is my initial assignment since graduation
 - b. Two
 - c. Three
 - d. More than three
8. Does your current duty assignment have an Advanced Academic Degree Code requiring your Graduate Logistics Management Degree?
- a. Yes
 - b. No
 - c. I don't know
9. Since graduation, approximately what percentage of time have you served in logistics related jobs?
- a. 0-10%
 - b. 11-25%
 - c. 25-50%
 - d. 51-75%
 - e. 76-100%

PART II -- PERCEPTIONS

INSTRUCTIONS: The questions in this section are concerned with your job requirements, your perceptions of the usefulness of your AFIT graduate logistics education as pertains to your job, and your post-graduate assignments.

Read each statement, then mark the answer sheet to indicate how much you agree or disagree with the statement. Use the following scale for each question in this section:

Strongly Disagree	Disagree	Slightly Disagree	Undecided/ Don't Know	Slightly Agree	Agree	Strongly Agree
A	B	C	D	E	F	G

10. My job requires the ability to understand and/or apply mathematical techniques beyond basic arithmetic operations.
11. My job requires the understanding and/or application of statistical analysis concepts (such as descriptive statistics, probability theory and distributions, sampling, hypothesis testing, linear regression, etc.).
12. My job requires an understanding of DOD financial methods and systems (such as the Resource Management System, Planning, Programming, and Budgeting System, industrial and stock funds).
13. My job requires the ability to manage and/or integrate the various elements of distribution systems such as base supply systems, transportation methods, order processing, inventory control, etc.
14. My job requires the ability to manage or control maintenance and/or production processes (such as scheduling, forecasting, component assembly, repair).
15. My job requires a knowledge of DOD involvement in international military systems programs such as the Grant Aid Program, Foreign Military Sales Program, international supply support arrangements, foreign military training, etc.
16. My job requires the ability to analyze and/or develop simulation models as an aid to decision making.

Strongly Disagree	Disagree	Slightly Disagree	Undecided/ Don't Know	Slightly Agree	Agree	Strongly Agree
_____	_____	_____	_____	_____	_____	_____
A	B	C	D	E	F	G

17. My job requires the ability to understand the capabilities and limitations of the computer as an aid in the solution of management problems.

18. My job requires the ability to program a computer.

19. My job requires the ability to understand and/or analyze organizational climate and behavior of individuals within an organization.

20. My job requires the ability to verbally inform, convince, and/or persuade individuals relative to ideas, concepts, and decisions.

21. My job requires the ability to communicate in writing in order to inform, convince, and/or persuade individuals relative to ideas, concepts, and decisions (such as preparation of staff studies, technical reports, research studies, etc.).

22. My job requires an understanding of micro-economic concepts relating to individual organizations such as marginal costs, time value of money, market structures.

23. My job requires an understanding of societal macro-economic concepts such as inflation, gross national product, balance of payments, etc.

24. My job requires the ability to use and/or understand quantitative decision-making techniques such as decision trees, queuing theory, linear programming, transportation routes with the lowest cost, most efficient use of available personnel, etc.

25. My job requires the ability to understand and analyze such things as the DOD major systems acquisition process, market environments, logistics considerations, role of contracting, financial arrangements, and manufacturing.

26. My job requires the ability to determine and/or evaluate the impact of reliability and maintainability on the acquisition and support of weapons systems and their components.

Strongly Disagree	Disagree	Slightly Disagree	Undecided/ Don't Know	Slightly Agree	Agree	Strongly Agree
_____	_____	_____	_____	_____	_____	_____
A	B	C	D	E	F	G

27. My job requires an understanding of quality control concepts such as specification compliance, standardization and compliance programs, inspection routines, etc.

28. My job requires the ability to understand and/or apply research methodologies in the conduct of logistics related research efforts.

29. My job requires the ability to understand managerial accounting concepts such as cost-volume-profit relationships, types of costs, overhead allocation methods, cost variance analysis, etc.

30. My job requires the ability to logically think through problems using analytical techniques such as the scientific method, etc.

31. My job requires an understanding of concepts and methodologies used in the development of Life Cycle Cost models to aid decision-makers in minimizing total life cycle costs of weapons system/subsystems.

32. My job requires an understanding of wartime/contingency logistics planning and policies such as war and mobilization plans, material prepositioning, wartime resupply, strategic and tactical transportation, equipment and facilities maintenance, etc.

33. My job requires the ability to analyze existing organizational structure (such as work flow patterns, interpersonal communications, etc.).

34. My AFIT Graduate Logistics Management education is useful to the Air Force.

35. I feel that my Graduate Logistics management degree is useful to my on-the-job duty performance.

36. I would encourage other qualified officers/civilians to attend the AFIT Graduate Logistics Management Program.

Strongly Disagree	Disagree	Slightly Disagree	Undecided/ Don't Know	Slightly Agree	Agree	Strongly Agree
A	B	C	D	E	F	G

37. I feel I am better able to solve on-the-job problems because of my AFIT Graduate Logistics education.

38. My AFIT Graduate Logistics Management education is of little use to me in my on-the-job performance.

39. I was/am able to use a significant portion of my AFIT education on my first assignment following graduation.

40. My AFIT Graduate Logistics Management degree will be more useful to me in future assignments than in my current assignment.

41. My AFIT Graduate Logistics education prepared me to effectively perform my on-the-job duties.

42. AFIT thesis research was a productive and worthwhile experience.

43. The research skills I learned while working on my AFIT thesis have proven useful to me in performing my job.

44. More management and/or technical courses should be offered in lieu of the thesis requirement.

45. AFIT thesis research has been/will be of practical use to me in conducting or supervising Air Force related research efforts.

46. The Air Force has done a good job of matching my educational skills to those jobs requiring an advanced academic degree.

47. My AFIT Graduate Logistics education has been considered in my assignment(s) since graduation.

48. My job does not require the advanced logistics education that I received from AFIT.

49. My AFIT Graduate Logistics education could be better utilized in another assignment.

Strongly Disagree	Disagree	Slightly Disagree	Undecided/ Don't Know	Slightly Agree	Agree	Strongly Agree
-----	-----	-----	-----	-----	-----	-----
A	B	C	D	E	F	G

50. I feel the Air Force has not taken full advantage of my graduate logistics education.

51. Speech for Military Managers, current offered as an elective course, should be made a required "core" course.

52. Logistics courses were taught at too general a level to be of any practical use to me in performing my job.

53. Logisitics courses were presented in sufficient depth to enable me to use them in performing my job.

54. My AFIT Graduate Logistics education has helped me to make one or more contributions toward significantly improving Air Force readiness and/or cost savings.

55. I feel my Graduate Logistics Management degree has enhanced my career.

56. The incorporation of logistics related Professional Continuing Education Courses (i.e. specific "how to do it" courses) into the AFIT Graduate Logistics Management Program would improve the overall usefulness of this program.

PART III --- OPEN-ENDED QUESTIONS

This section is intended to solicit your opinion on the AFIT Graduate Logistics Management curriculum/program. Please write your responses in the space provided after each question.

57. Based on your field experience, what subject areas do you feel are most important and require more emphasis in the graduate logistics management curriculum?

58. What are your thoughts concerning the value of AFIT thesis research? Would you recommend any changes to the thesis research program?

59. What recommendations do you have to make the AFIT Graduate Logistics Management Program more responsive/useful to you in performing your job? (e.g. courses that should be added, deleted, or modified). Please explain.

60. Can you attribute your AFIT Graduate Logistics education as being responsible, either directly or indirectly, for enabling you to make a significant contribution to some major Air Force program or project? If so, please explain in what way your education helped you, identify the program or project, and state, if possible, the results of your contribution (e.g. in terms of funds/manpower/time saved, improved readiness capability, etc.).

THANK YOU FOR YOUR COOPERATION IN COMPLETING THIS QUESTIONNAIRE.

PLEASE ENCLOSED THE QUESTIONNAIRE AND ANSWER SHEET IN THE RETURN ENVELOPE PROVIDED AND PLACE THE ENVELOPE IN OUTGOING OFFICIAL DISTRIBUTION.

1986 SUPERVISOR SURVEY
AFIT GRADUATE LOGISTICS MANAGEMENT PROGRAM

USAF SCN 86-47
EXPIRES: 31 DEC 1986



DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AFIT)
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433-8683

5 JUN 1986

REPLY TO: LS (Major Smith, AV 785-4437)
ATTN OF:
SUBJECT: AFIT Graduate Logistics Management (GLM) Program Survey

TO: Supervisor of an AFIT Logistics Management Program Graduate

1. The AFIT School of Systems and Logistics continually strives to offer its logistics management graduates with a top quality education that is useful to both the Air Force and their job needs. The GLM program, as well as all other AFIT programs, requires periodic assessment to insure that it remains responsive, relevant, and useful in helping prepare the graduate to effectively perform his or her job. The attached Graduate Logistics Management Program Usefulness Survey is designed to gather the information needed to evaluate the GLM Program, and make changes where necessary. A similar survey is also being completed by an AFIT graduate you supervise.

2. Your management experience, familiarity with your graduate's duty performance, and knowledge of his or her job requirements, make you a key participant in this study. Your participation, although strictly voluntary, is vital to the success of this study. Please take the 15-20 minutes necessary to complete and return the survey. Individual responses will be treated as confidential and you need not place your name on the questionnaire.

3. The data collected from the supervisor and graduate surveys will be used to collectively evaluate the need for changes in the GLM Program. While completing the survey, please consider the questions carefully before you answer. Most importantly, please be candid in your responses!

4. Please return the completed survey in the enclosed envelope no later than 11 July 1986. Once again, thanks for your participation.

Larry L. Smith
LARRY L. SMITH, Colonel, USAF
Dean
School of Systems and Logistics

1 Atch
Supervisor Survey

AIR FORCE—A GREAT WAY OF LIFE

GENERAL INSTRUCTIONS

1. Participation in this survey is entirely voluntary. Do not place your name or social security number on either the answer sheet or the questionnaire. No attempt will be made to attribute responses to individuals.
2. As this survey is intended to obtain your perceptions, please do not confer with the AFIT graduate you supervise before or while completing this questionnaire.
3. This questionnaire has three parts to complete. Use a No. 2 pencil to mark your responses on the machine scoreable answer sheet (AFIT Data Collection Form) provided for PARTS I and II. For PART III, write your responses to the open-ended questions directly on the questionnaire in the space provided. Feel free to make additional comments on a separate piece of paper.
4. PART II, Perceptions, uses a scale for responses. Use the corresponding letters on this scale (A, B, C, D, E, F, or G) to mark your response on the answer sheet. This scale appears at the top of each page for your easy reference.
5. Answer all questions. Read each question carefully before marking your answer. Mark your answer within the circle on the answer sheet. If you change your answer, erase the mark completely and mark the new answer.
6. Please do not staple, fold or tear the answer sheet.
7. After completing the survey, enclose both the questionnaire and machine scoreable answer sheet in the pre-addressed return envelope provided and return by official mail NLT 11 Jul 1986.

USAF SCN 86-47
EXPIRES: 31 Dec 86

1986 Graduate Supervisor's Survey
AFIT Graduate Logistics Management Program

PART 1 -- BACKGROUND INFORMATION

• INSTRUCTIONS: Please mark your responses to the following questions on the answer sheet provided.

1. At what organizational level are you currently assigned?

- a. Squadron or below
- b. Group
- c. Wing
- d. Air Division
- e. Numbered Air Force
- f. Major Command (MAJCOM)
- g. HQ Air Force
- h. Department of Defense
- i. Separate Operating Agency
- j. Other (please describe) _____

2. To which MAJCOM are you presently assigned?

- | | |
|------------|----------------------------------|
| a. AAC | h. MAC |
| b. AFCC | i. PACAF |
| c. AFLC | j. Space Command |
| d. AFSC | k. SAC |
| e. ATC | l. TAC |
| f. ESC | m. USAFE |
| g. HQ USAF | n. Other (please describe) _____ |

3. What is your current duty AFSC?

- | | | |
|---------|---------|-----------------|
| a. 27XX | i. 60XX | q. Other: _____ |
| b. 28XX | j. 62XX | |
| c. 29XX | k. 63XX | |
| d. 31XX | l. 64XX | |
| e. 40XX | m. 65XX | |
| f. 46XX | n. 66XX | |
| g. 51XX | o. 67XX | |
| h. 55XX | p. 004X | |

4. How long have you held your present assignment?

- a. 1 year or less
- b. Over 1 year but less than 2 years
- c. 2 years but less than 3 years
- d. 3 years or more

5. What is your current grade?

- a. O-1
- b. O-2
- c. O-3
- d. O-4
- e. O-5
- f. O-6
- g. Civilian

6. Have you ever attended the Air Force Institute of Technology's School of Systems and Logistics Graduate Logistics Management Program?

- a. Yes
- b. No

7. I am well acquainted with the requirements of my subordinate's job as well as his duty performance.

- a. Yes
- b. No

PART II -- PERCEPTIONS

INSTRUCTIONS: The questions in this section are concerned with your subordinate's job requirements, and your perceptions of the usefulness of your subordinate's AFIT Graduate Logistics education as pertains to his job.

Read each statement, then mark the answer sheet to indicate how much you agree or disagree with the statement. Use the following scale for each question in this section:

Strongly Disagree	Disagree	Slightly Disagree	Undecided/ Don't Know	Slightly Agree	Agree	Strongly Agree
A	B	C	D	E	F	G

8. My subordinate's job requires the ability to understand and/or apply mathematical techniques beyond basic arithmetic operations.

9. My subordinate's job requires the understanding and/or application of statistical analysis concepts (such as descriptive statistics, probability theory and distributions, sampling, hypothesis testing, linear regression, etc.).

10. My subordinate's job requires an understanding of DOD financial methods and systems (such as the Resource Management System, Planning, Programming, and Budgeting System, industrial and stock funds).

11. My subordinate's job requires the ability to manage and/or integrate the various elements of distribution systems such as base supply systems, transportation methods, order processing, inventory control, etc.

12. My subordinate's job requires the ability to manage or control maintenance and/or production processes (such as scheduling, forecasting, component assembly, repair).

13. My subordinate's job requires a knowledge of DOD involvement in international military systems programs such as the Grant Aid Program, Foreign Military Sales Program, international supply support arrangements, foreign military training, etc.

Strongly Disagree	Disagree	Slightly Disagree	Undecided/ Don't Know	Slightly Agree	Agree	Strongly Agree
A	B	C	D	E	F	G

14. My subordinate's job requires the ability to analyze and/or develop simulation models as an aid to decision making.

15. My subordinate's job requires the ability to understand the capabilities and limitations of the computer as an aid in the solution of management problems.

16. My subordinate's job requires the ability to program a computer.

17. My subordinate's job requires the ability to understand and/or analyze organizational climate and behavior of individuals within an organization.

18. My subordinate's job requires the ability to verbally inform, convince, and/or persuade individuals relative to ideas, concepts, and decisions.

19. My subordinate's job requires the ability to communicate in writing in order to inform, convince, and/or persuade individuals relative to ideas, concepts, and decisions (such as preparation of staff studies, technical reports, research studies, etc.).

20. My subordinate's job requires an understanding of micro-economic concepts relating to individual organizations such as marginal costs, time value of money, market structures.

21. My subordinate's job requires an understanding of societal micro-economic concepts such as inflation, gross national product, balance of payments, etc..

22. My subordinate's job requires the ability to use and/or understanding quantitative decision-making techniques such as decision trees, queuing theory, linear programming, transportation routes with the lowest cost, most efficient use of available personnel, etc.

23. My subordinate's job requires the ability to understand and analyze such things as the DOD major systems acquisition process, market environments, logistics considerations, role of contracting, financial arrangements, and manufacturing.

Strongly Disagree	Disagree	Slightly Disagree	Undecided/ Don't Know	Slightly Agree	Agree	Strongly Agree
-----	-----	-----	-----	-----	-----	-----
A	B	C	D	E	F	G

24. My subordinate's job requires the ability to determine and/or evaluate the impact of reliability and maintainability on the acquisition and support of weapons systems and their components.

25. My subordinate's job requires an understanding of quality control concepts such as specification compliance, standardization and compliance programs, inspection routines, etc.

26. My subordinate's job requires the ability to understand and/or apply research methodologies in the conduct of logistics related research efforts.

27. My subordinate's job requires the ability to understand managerial accounting concepts such as cost-volume-profit relationships, types of costs, overhead allocation methods, cost variance analysis, etc.

28. My subordinate's job requires the ability to logically think through problems using analytical techniques such as the scientific method, etc.

29. My subordinate's job requires an understanding of concepts and methodologies used in the development of Life Cycle Cost models to aid decisionmakers in minimizing total life cycle costs of weapons system/subsystems.

30. My subordinate's job requires an understanding of wartime/contingency logistics planning and policies such as war and mobilization plans, material prepositioning, wartime resupply, strategic and tactical transportation, equipment and facilities maintenance, etc.

31. My subordinate's job requires the ability to analyze existing organizational structure (such as work flow patterns, interpersonal communications, etc.).

32. My subordinate's AFIT Graduate Logistics Management education is useful to the Air Force.

33. My subordinate's Graduate Logistics Management education is useful to his on-the-job duty performance.

Strongly Disagree	Disagree	Slightly Disagree	Undecided/ Don't Know	Slightly Agree	Agree	Strongly Agree
-----	-----	-----	-----	-----	-----	-----
A	B	C	D	E	F	G

34. I would encourage other people who work for me to attend the AFIT Graduate Logistics management Program.

35. I feel my subordinate is better able to solve on-the-job problems because of his AFIT Graduate Logistics education.

36. My subordinate's AFIT Graduate Logistics management education is of little use in his on-the-job performance.

37. My subordinate's AFIT Graduate Logistics education has prepared him to effectively perform his on-the-job duties.

38. I feel that my subordinate's AFIT education has enhanced his Air Force career.

39. The research skills my subordinate learned while working on his AFIT thesis have proven useful in performing his job.

40. More management and/or technical courses should be offered in lieu of the thesis requirement.

41. AFIT thesis research has been/will be of practical use to my subordinate in conducting or supervising Air Force related research efforts.

42. My subordinate's job does not require the advanced logistics education that he received from AFIT.

43. My subordinate's AFIT Graduate Logistics education could be better utilized in another assignment.

44. Speech for Military Managers, currently offered as an elective course, should be made a required "core" course.

45. My subordinate's AFIT Graduate Logistics education has helped him to make one or more contributions toward significantly improving Air Force readiness and/or cost savings in his current job.

PART III -- OPEN-ENDED QUESTIONS

This section is intended to solicit your opinion on the AFIT Graduate Logistics Management curriculum/program. Please write your responses in the space provided after each question.

46. Based on your field experience and observation of your subordinate's job performance, what subject areas do you feel are the most important or require additional emphasis in the AFIT Graduate Logistics Management curriculum?

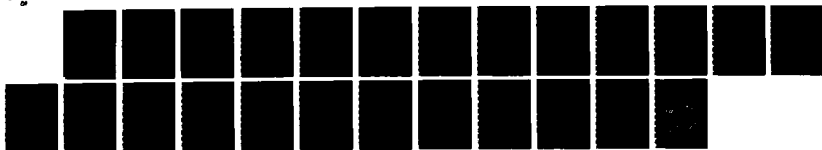
47. What recommendations would you propose to make the AFIT Graduate Logistics Program more responsible/useful to your subordinate in performing his job?

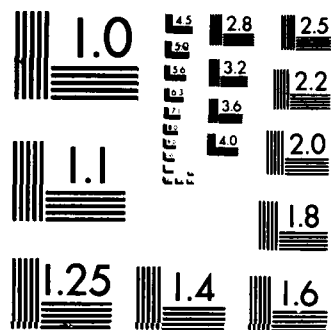
48. Can you attribute your subordinate's AFIT Graduate Logistics education as being responsible, either directly or indirectly, for enabling him to make a significant contribution to some major Air Force program or project? If so, please explain and state, if possible, the results of his contribution (e.g. in terms of funds/manpower/time saved, improved readiness capability, etc.).

THANK YOU FOR YOUR COOPERATION IN COMPLETING THIS QUESTIONNAIRE.

PLEASE ENCLOSE THE QUESTIONNAIRE AND ANSWER SHEET IN THE RETURN ENVELOPE PROVIDED AND PLACE THE ENVELOPE IN OUTGOING OFFICIAL DISTRIBUTION.

AD-A174 342 AN ANALYSIS OF THE USEFULNESS OF THE GRADUATE LOGISTICS 2/2
MANAGEMENT PROGRA (U) AIR FORCE INST OF TECH
WRIGHT-PATTERSON AFB OH SCHOOL OF SVST M L SMITH
UNCLASSIFIED SEP 86 AFIT/GLM/LSM/865-79 F/G 15/5 NL





XEROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Appendix B: Statistics and Tables

Table B.1

Descriptive Statistics: Usefulness of Subject Areas:
Graduates' Responses

<u>Subject Area</u>	<u>Median</u>	<u>Mean</u>	<u>Std Dev</u>
Verbal Communication	7	6.597	0.649
Written Communication	7	6.298	1.097
Organizational Behavior	6	5.871	1.104
Problem Solving	6	5.226	1.710
Computer Science	6	5.202	1.762
Organizational Management	6	5.129	1.785
Federal Financial Management	6	4.831	2.003
Contracting & Acquisition Management	5	4.685	2.236
Combat Logistics Planning	5	4.605	2.083
Distribution Management	5	4.484	1.940
Quality Control	5	4.387	1.962
Reliability & Maintainability	5	4.315	2.289
Production & Operations Management	4.5	3.968	2.133
Quantitative Decision Making	4	3.613	1.937
Applied Research	3	3.685	2.188
Quantitative Methods	3	3.605	2.141
Life Cycle Costs	3	3.411	2.056
Statistics	2	3.161	2.006
Computer Programming	2	3.008	1.902
Managerial Accounting	2	2.927	1.763
Microeconomics	2	2.758	1.630
Macroeconomics	2	2.707	1.717
Simulation	2	2.540	1.893
International Logistics	2	2.435	1.763

Table B.2

Descriptive Statistics: Usefulness of Subject Areas:
Supervisors' Responses

<u>Subject Area</u>	<u>Median</u>	<u>Mean</u>	<u>Std Dev</u>
Verbal Communication	7	6.632	0.637
Written Communication	7	6.453	1.025
Organizational Behavior	6	5.943	1.446
Problem Solving	6	5.377	1.594
Organizational Management	6	5.368	1.605
Computer Science	6	5.151	1.814
Combat Logistics Planning	6	4.953	1.949
Federal Financial Management	6	4.849	2.065
Contracting & Acquisition Management	5	4.575	2.268
Quality Control	5	4.528	1.888
Distribution Management	5	4.462	2.125
Quantitative Methods	5	4.292	2.065
Reliability & Maintainability	5	4.245	2.242
Quantitative Decision Making	5	4.236	1.865
Production & Operations Management	5	4.151	2.292
Statistics	3	3.849	2.159
Life Cycle Costs	3	3.708	2.212
Applied Research	3	3.679	2.050
Simulation	3	3.462	1.953
Microeconomics	2	2.953	1.812
Computer Programming	2	2.934	1.889
Managerial Accounting	2	2.877	1.777
Macroeconomics	2	2.774	1.709
International Logistics	2	2.519	1.816

Table B.3

Differences in Graduate and Supervisor Perceptions:
Subject Area Usefulness

<u>Subject Area</u>	<u>Mann-Whitney</u>		<u>Observed</u>	
	<u>U</u>	<u>Test Stat</u>	<u>Z-score</u>	<u>Significance Level(p-value)</u>
Simulation	4530.0	-4.1874	.0000	*
Quantitative Decision Making	5263.0	-2.6608	.0078	*
Statistics	5278.5	-2.6332	.0085	*
Quantitative Methods	5355.0	-2.4686	.0136	*
Organizational Behavior	5739.5	-1.7552	.0792	
Written Communication	5982.0	-1.3483	.1776	
Combat Logistics Planning	5956.5	-1.2521	.2105	
Life Cycle Costs	6080.0	-0.9954	.3196	
Organizational Management	6186.0	-0.7948	.4267	
Microeconomics	6211.0	-0.7423	.4579	
Production & Operations	6226.5	-0.6999	.4840	
Management				
Problem Solving	6237.0	-0.6859	.4928	
Macroeconomics	6279.0	-0.4954	.6203	
Verbal Communication	6375.5	-0.4824	.6295	
Quality Control	6359.0	-0.4317	.6660	
International Logistics	6368.5	-0.4247	.6711	
Reliability & Maintainability	6445.5	-0.2556	.7983	
Distribution Management	6480.0	-0.1864	.8521	
Applied Research	6484.0	-0.1774	.8592	
Federal Financial Management	6496.5	-0.1536	.8779	
Contracting & Acquisition	6497.5	-0.1513	.8797	
Management				
Managerial Accounting	6542.0	-0.0612	.9512	
Computer Science	6545.5	-0.0543	.9567	
Computer Programming	6547.5	-0.0500	.9601	

$n_1 = 106$ (supervisors)

$n_2 = 124$ (graduates)

Significance Level (α) = 0.05

* Significant at $p \leq 0.05$

Table B.4

Descriptive Statistics: Usefulness of Subject Areas:
 Graduates' and Supervisors' Responses

<u>Subject Area</u>	<u>Median</u>	<u>Mean</u>	<u>Std Dev</u>
Verbal Communication	7	6.613	0.643
Written Communication	7	6.370	1.065
Organizational Behavior	6	5.940	1.271
Problem Solving	6	5.296	1.656
Organizational Management	6	5.239	1.705
Computer Science	6	5.178	1.783
Federal Financial Management	6	4.839	2.027
Combat Logistics Planning	5.5	4.765	2.025
Contracting & Acquisition Management	5	4.635	2.246
Distribution Management	5	4.474	2.023
Quality Control	5	4.452	1.925
Reliability & Maintainability	5	4.283	2.263
Production & Operations Management	5	4.052	2.205
Quantitative Methods	5	3.922	2.130
Quantitative Decision Making	5	3.900	1.925
Applied Research	3	3.683	2.121
Life Cycle Costs	3	3.548	2.130
Statistics	2.5	3.478	2.120
Computer Programming	2	2.974	1.892
Simulation	2	2.965	1.971
Managerial Accounting	2	2.904	1.766
Microeconomics	2	2.848	1.715
Macroeconomics	2	2.738	1.709
International Logistics	2	2.474	1.785

Table B.5

Chi-square Test Results:
Tables 3.11-3.14; 3.16

Table	N	Observed Chi-square Statistic	Table Chi-square Value	Significant at 0.05 Lvl?
3.11	113	2.56	3.81	No
3.12	107	12.79	3.81	Yes
3.13	122	20.48	3.81	Yes
3.14	116	1.68	3.81	No
3.16	112	17.28	3.81	Yes

Formula used to compute observed Chi-square statistic:

$$X^2 = \frac{[(f_o - f_e)^2]}{f_e}$$

where

X^2 is the observed Chi-square
statistic

f_o is the obtained frequency

f_e is the expected frequency

significance level = 0.05

degrees of freedom = 1

Significant when observed $X^2 > X^2, .05, 1$

Appendix C: Respondents' Narrative Comments

Graduate Comments On GLM Curriculum

More instruction on the Standard Base Supply System (SBSS); SBSS inventory models; MICAP system and the response to satisfy them; Depot level inventory models; Mobility logistics to include load planning and operations plan development.

Acquisitions--look at the Air Force regulations and other publications affecting this. Explain them and show actual samples of documents such as source selection plans, Computer Resources Integrated Support Plans, economic analyses, etc.

Statistics and computer modeling are useful tools at the macro-level, where large scale computers and complex software are available. All logisticians should have an understanding of these tools. However, the AFIT program I endured in 1979 was short of providing tools useful to the base level logistics/maintenance officer. Give some thought to helping them manage day-to-day operations.

Add a course on the source selection process; provide information concerning program management, especially those dealing with commonality between services as well as unique acquisition programs.

Offer more practical "how to do it," e.g., case study types of courses would have been more useful to me.

I believe each of the courses could allow one week of the quarter for how the subject material is practically applied in the everyday Air Force environment. This is already being done in some courses; i.e., Life Cycle Cost and Inventory Management.

Add something like a current issues course to deal with the current hot topics in DOD, e.g., reliability, built-in tests, software.

Develop a course on Air Force logistics history--An across-the-logistics spectrum look at what has been done in the past, both successful and unsuccessful. This would be useful to add perspective to the entire curriculum. The motivation is the same as for Project Warrior - most of the officers on active duty now (greater than 65% are company grade) do not have any wartime experience to draw upon. Next to realistic exercises, a good knowledge of history is the only way to put our piece-meal training and education into perspective.

Very few graduates will do major research on a main-frame

computer, but most will work with mini-computers like the Z-100. Instead of teaching FORTRAN & Q-GERT, teach things we will probably use, e.g., BASIC, WORDSTAR, LOTUS 1-2-3, and DBASE. These programs are used by offices all over the base.

Get copies of SOW's, CDRL's from current programs to use in classes discussing contracts. Forget about AFSC vs AFLC problems and discuss both areas; offer more electives.

Delete economics and accounting. Focus the logistics courses on the real world Air Force and on less theory; give the students something they can relate with.

Need to devote more to retail logistics; both day-to-day and in war planning. More wholesale war planning also.

Recommend coordination with AFMPC so individuals beginning the program generally know their follow on assignment. This would allow better tailoring of courses. The program is too general. The graduate has a basic understanding of logistics but is unprepared to work any specific logistics function.

In today's world of "tight money", I feel more emphasis should be placed upon financial management and fiscal programming procedures.

Of particular value to me was coursework in organizational behavior, DOD financial management, maintenance control and management, and speech for military managers.

Emphasize the DOD acquisition process and the PPBS. Need more on the lower level activities such as development of PDP's, SON's, and MAJCOM POM activities.

Graduates Response to Open-end Question 60

Question 60 "Can you attribute your AFIT graduate logistics education as being responsible, either directly or indirectly, for enabling you to make a significant contribution to some major Air Force program or project?"

Yes. As a member of the Air Force Logistics Long Range Planning Team, I helped write the planning guide for the Air Force. Many of the concepts incorporated came from AFIT classes, to include effectiveness, efficiency, productivity, etc. The systems "big picture" thinking was also used to help formulate plans for General Marquez's and Randolph's Combat Support Research and Development (R & D) "tiger team" that has set a plan for incorporating logistics requirements into \$6.6 billion of R & D.

Yes. I was the HQ MAC project manager for the HQ USAF Automated Maintenance Systems (AMS) test program. My AFIT educa-

tion helped me understand computer capabilities and long range planning efforts, as well as learn effective writing.

Yes. The job I currently hold, Chief, Aerospace Systems Management Training at HQ USAF, requires extensive acquisition management knowledge, which AFIT provided me. My involvement in acquiring training systems for current and future weapons such as the B-1B, C-17, MC-130 has been aided immensely by what I learned at AFIT. In fact, I got this job because of my AFIT background.

My education at AFIT was responsible for my assignment to the International Logistics Center. I cannot identify any specific skills or methodologies which were useful, but the general education in contracting and systems acquisition proved to be invaluable and were largely responsible for my success with the Saudi Arabian AWACS program.

Yes. AFIT made my job as reliability item manager for the C-17 program source selection much easier.

I can say the study methodologies acquired at AFIT have helped me in numerous staff studies at HQ SAC and HQ USAF.

As a Foreign Military Sales (FMS) F-16 program manager, the AFIT course on international logistics was invaluable. It allowed me to step into a position and have a basic understanding of how FMS works.

Indirectly, I have used many of the general items I learned on budgeting, contracting, alternative formulation and analysis in decision making, simulation, and computer research.

AFIT has made me more well-rounded. It's opened me to a larger sort of thinking/logic process. The demands of an AFIT program are unique unto itself and the value of this alone has enhanced me personally and professionally.

Absolutely no. I am still waiting to use my education before I forget what I learned.

No. Just better informed on broad logistics areas.

No, I haven't made any significant contributions to an Air Force program, but AFIT did help me prepare for acquisition logistics. I feel my understanding of the acquisition process is better than those who have gotten into the business without the education. I believe that my on-the-job experience coupled with my education will pay big dividends over the long run.

No, not as of yet. However, I still believe the quantitative, computer, and research methods subjects I studied at AFIT will pay off in the future.

No, not at this point. However, I still believe the comprehension of various management techniques, particularly quantitative courses such as QDM and LCC, have allowed me to more rapidly understand the everyday work environment of acquisition.

Yes. I applied my AFIT statistics education to establish improved logistics requirements in MAC acquisition documents.

Yes. My understanding/knowledge of the USAF transportation and supply systems enabled me to develop an essentially cost-free program to utilize \$2.5 million worth of Minuteman launch facility emergency storage batteries displaced by the Minuteman Extended Survivability Program and Peacekeeper deployment.

I work with War Reserve Material. Much of my job evolves around developing the requirements for our units to sustain combat capability in a conventional role. I have gained an understanding of the USAF supply system and its inner workings. I am able to draw upon many of the logistics concepts to make effective decisions in regard to weapons systems support. A large part of that is attributable to my AFIT education.

Graduate Comments on Assignment Selection

More attention by AFMPC when making assignments after AFIT. I'm not using what I learned effectively for the Air Force.

Some more thought needs to go into the follow-on assignment selection process. I can't speak for all graduates, but I feel the last year and a half as an aircraft maintenance officer at wing level has been a waste of my time and has made no use of my graduate education. I have been forced to spend the better part of each day on the flightline chasing down lost tools, supervising crew chiefs to ensure on-time take-offs, and enforcing safety standards. This is important work, no doubt, but there are technical sergeants here who can do it as well. I have been given no opportunity to affect the way we do our jobs or to make any kind of innovative, systemic changes in the way we do business. In my view, the way in which wing level maintenance officers are employed violates the principle of comparative advantage. I am proud to be a graduate of AFIT and look forward to the day when I am in a position to make better use of my education and make a more significant contribution to the Air Force.

Current and past jobs have not yet been in areas that needed the AFIT Gradlog experience. I heartily feel the Air Force wastes a very valuable asset when Gradlog students graduate and are sent to assignments either out of logistics totally or in 66XX slots such as mobility officers. If the Air Force would give Gradlog people jobs in related areas, they could

tap this talent pool much better. We're underutilized!

Since my graduation, I have been involved in logistics at the base level. I would welcome the opportunity to actually apply what I have learned.

I do recommend the Air Force make a more concerted effort to place graduates in a job to use their new knowledge in their first assignment, rather than the first two assignments. I feel like I have forgotten, through lack of use, much of what I learned.

I believe AFIT trains its students to handle challenging jobs but AFMPC simply fails to place the students where their education can be used. The education is good and the grads want jobs where they can use what they learned. MPC simply has failed to take advantage of an extremely valuable Air Force resource--the AFIT graduates.

Emphasize job placement after graduation, e.g., career development, resumes, interviewing, speech--all aimed at doing what MPC can't--that is finding a position that utilizes your training.

I don't believe the Air Force has a cogent, comprehensive plan for maximizing the AFIT resource. AFIT Gradlog officers are prepared to make significant contributions. The Air Force simply doesn't seem to know how to manage this potential. Bodies, no matter how qualified, will continue to fill slots based on AFSC and rank, not on academic credentials or requirements.

Graduate Comments on the GLM Thesis Program

Thesis research made me realize that I was capable of taking on a rather large problem and handling it well. I also learned many new analytical techniques.

Good program. It helped me improve critical analysis techniques and organization of information. Super tool to improve writing ability.

The thesis should be an elective. If a student has a valid research topic and the interest to pursue the topic, I feel he or she should be given that opportunity. Otherwise, time would be better spent studying other material.

Thesis research was not that beneficial in the entire scope of the graduate program. I recommend dropping it in lieu of adding more optional courses to provide a broader base of education.

My particular research was not especially valuable. Sound

counseling and more involvement by my advisor in topic selection would have helped.

Thesis research is of great value. It serves as a data bank for research on important issues throughout the Air Force and DOD. It gives the researcher an opportunity to use vast AFIT resources in pursuit of an objective that will possibly improve the way we go about doing things. It calls for self discipline, time management, and sharpening of communicative skills. Thesis research is invaluable and should be continued.

I feel the thesis is a valid requirement for award of a masters degree. However, I had a few reservations on the selection of topics. Many of the students were new to logistic fields and were unaware of what topics required research. This resulted in many theses on uninteresting, valueless topics. Possibly, providing a list of topics that are of interest to the Air Force would result in producing a better end product.

I personally enjoyed the AFIT thesis program. I feel it gave a central concentrated goal to work for during the year long program. Whether each individual student's project or topic is pertinent to an Air Force sponsored subject is irrelevant, because the process of learning structured research is more important. I sincerely hope this facet of AFIT is permanently retained.

The thesis program provides mental discipline. I submit the achievement of that goal is enough.

I think that a sound understanding of research methods is extremely useful. Ability to distinguish meaningful statistics from garbage is essential. Ability to understand the validity of a problem solving approach is also critical.

The greatest value of the thesis research was the education it provided on organizing and conducting a study. The methodology of staff problem solving has paid repeated dividends in tackling a wide range of job related issues.

I believe too much is left up to the student. Thesis topics should be chosen ahead of time by the staff, and then students would choose from among those acceptable topics. Many of us have no idea what we are doing and would benefit more from a more structured program. I personally felt that my thesis project was a waste of time, effort, and paper - another square filler.

I found it to be very useful and a learning tool and an exercise in self-discipline. However, I was disappointed in its usefulness and/or applicability to real world, day-to-day

management in my career field. The situation may be different in other career fields, but I suspect 90% of the benefit of AFIT research is achieved through 10% of thesis projects completed. Perhaps, an option between a thesis project or additional courses would be more beneficial. That way, people with worthwhile or potentially valuable research ideas could accomplish a thesis. Other people who might not benefit as much from such a project could then learn skills, techniques, and theories which would be more useful to them on a day-to-day basis.

More emphasis should be placed on selecting topics which are important to successful completion of Air Force mission. Some/many topics are so unrelated to "real world" needs that the research will not be used--the books just stay on the shelf, only proving the writers were capable of passing the "thesis test".

I found the overall program to be disorganized and incoherent. I think you should tell incoming students on day one that (a) these are your thesis deadlines, (b) you are totally on your own in finding a subject and advisor, (c) you can choose any topic. We all kept waiting for some controlled, top down emphasis on the thesis which never came. You're on your own, which is fine, but you should know it from the start. I think the thesis requirement is the most valuable single aspect of the entire curriculum.

I think the thesis program is very important. I don't believe it solves the problems of the world, but it is an invaluable experience to the individual. Taking on a major project like that forces the person or group to work independently. There is a great deal of experience and confidence gained that way. I think I could head a research team in the right direction now, where before AFIT, I wouldn't have known where to start.

I believe the thesis should be optional, i.e., do a thesis or take 3 or 4 more courses. So much of the program is core, you have little opportunity to take many of the other excellent courses offered by the school. I personally got very little out of the "thesis experience".

Thesis research was an exercise in performing a requirement for graduation. I received no real value out of doing a thesis. It did not bring the whole logistics curriculum into focus as I had hoped.

Excellent if done in conjunction with support from a command or agency. The amount of time involved may not justify results. Shorter efforts may teach the research methods as effectively.

Supervisor Comments on the GLM Curriculum

Stick with what you are doing. Just remember that at the Wing/Squadron level (in the trenches), all the sophisticated models and analysis will not replace sound, logical, down-to-earth common sense.

A capstone course "What Is Logistics".

Organizational Management and Behavior. Courses designed to specifically aid the student in relating to very young airmen as well as senior NCO's.

The interfacing of "theory" of Acquisition Logistics to the actual practice of "how to" in the real world. Book answers don't get the job done. The career field needs practical approaches to deal with the realities of the business.

Effective and efficient use of personnel. Also, effective writing courses are a must.

More emphasis on the relation between contractors, AFLC, AFSC, and the future using command in the acquisition of weapons systems.

Personnel management, especially management of a civilian work force. A significant number of graduates will eventually work in AFLC with its predominant civilian employee work force.

Develop practical managerial skills to include more emphasis on oral communications.

Air Force Writing, e.g., staff summaries, etc.

Communicative ability. Although my subordinate speaks and writes well, he is in the minority. Keep all the courses that require the ability to write and speak clearly and concisely.

More emphasis on what computers and computer systems can do; less emphasis on the actual programming.

More emphasis is required on writing. My subordinate writes papers and briefings that contain too much detail and lead the reader to miss the main, important points. Teach the basics, i.e., good grammar, spelling, sentence structure. Need to emphasize how to organize material, convince the reader, etc.

Responsibilities of AFLC and how they can (should) help the field more. A bureaucratic nightmare now !

Logical problem solving, communication, practical computer

skills, and application oriented quantitative decision tools.

Develop inter-discipline case studies, e.g., logical structuring of a problem, organize available data, analyze data, prepare a report (keep it concise), and brief results, observations. Grade for each aspect, i.e., outstanding analysis with poor communication is still a "F". Here is where you can get real world and warfighting into play.

Reduce quantitative courses and increase specialty courses in logistics. If we all have one failing, it is our lack of understanding of how the budget works. I don't mean the typical PPBS rubbish they teach at AU. I mean how the POM gets obligated and spent, the financial plan, etc. That knowledge can make or break you.

Communications, problem solving, and computer applications.

In general, the curriculum should put emphasis in personnel management, writing, and reading.

Logistics Support Analysis, R & M, and Life Cycle Costs Management.

Definitely more practice and applications of good human relations techniques. Knowing the numbers doesn't help motivate people to perform, re-enlist, pull weekend duty, etc. Most of the theory learned at AFIT is not readily used at Wing level--so I have to spend extra time teaching these "number crunchers" how to handle people!

Quantitative Analysis, e.g., statistics, simulation, sensitivity tradeoff.

Tailor occasional classes to fit the base level logistician. The curriculum now is very broad and is keyed to an individual in the AFLC structure.

Use of computers in Logistics Management and familiarity with micro computers.

More applied research with the thesis, not so much literature review nonsense, but solving real life logistics problems using scientific analysis tools.

Reliability and Maintainability courses must receive vastly increased emphasis. Operational command logistics staffs need this as soon as possible. It is vital for improving logistical support to present systems and reducing the "logistics tail" for future systems.

Drastically reduce the quantitative courses and place emphasis on Air Force systems/logistics management.

Effective writing, decision making, and interpersonal relations.

Emphasize study of small computer technology and applications. With the proliferation of small computers such as the Z100, the manager should be skillful in its use and application. I would suggest training in software like DBASE 111, LOTUS, etc.

Appendix D: Computer Program

```

title          'GLM Option Usefulness Survey'
file handle    thesis/name='data 3'
data list      file=thesis fixed records=1/ id, q1 to
               q3, q4 to q56 (f1.0,4x,3f2.0,53f1.0)
               q1 to q56 'Survey Response'/
variable labels id 1 grads 2 supv/q10 to q56 1 'Strongly
value labels   Disagree' 2 'Disagree' 3 'Slightly
               Disagree' 4 'Undecided or Don't Know'
               5 'Slightly Agree' 6 'Agree' 7 'Strongly
               Agree'/
if (id eq 1) pop=1
if (id eq 2) pop=2
do if pop=1
compute c1=q10
compute c2=q11
compute c3=q12
compute c4=q13
compute c5=q14
compute c6=q15
compute c7=q16
compute c8=q17
compute c9=q18
compute c10=q19
compute c11=q20
compute c12=q21
compute c13=q22
compute c14=q23
compute c15=q24
compute c16=q25
compute c17=q26
compute c18=q27
compute c19=q28
compute c20=q29
compute c21=q30
compute c22=q31
compute c23=q32
compute c24=q33
compute c25=q34
compute c26=q35
compute c27=q36
compute c28=q37
compute c29=q38
compute c30=q41
compute c31=q43
compute c32=q44
compute c33=q45
compute c34=q48

```

compute	c35=q49
compute	c36=q51
compute	c37=q54
compute	c38=q55
else if	pop=2
compute	c1=q8
compute	c2=q9
compute	c3=q10
compute	c4=q11
compute	c5=q12
compute	c6=q13
compute	c7=q14
compute	c8=q15
compute	c9=q16
compute	c10=q17
compute	c11=q18
compute	c12=q19
compute	c13=q20
compute	c14=q21
compute	c15=q22
compute	c16=q23
compute	c17=q24
compute	c18=q25
compute	c19=q26
compute	c20=q27
compute	c21=q28
compute	c22=q29
compute	c23=q30
compute	c24=q31
compute	c25=q32
compute	c26=q33
compute	c27=q34
compute	c28=q35
compute	c29=q36
compute	c30=q37
compute	c31=q39
compute	c32=q40
compute	c33=q41
compute	c34=q42
compute	c35=q43
compute	c36=q44
compute	c37=q45
compute	c38=q38
end if	
missing values	all(0)
npar tests	m-w=c1 to c38 by id(1,2)
finish	

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UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED			1b. RESTRICTIVE MARKINGS A174342	
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE				
4. PERFORMING ORGANIZATION REPORT NUMBER(S) AFIT/GLM/LSM/86S-79			5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION School of Systems and Logistics		6b. OFFICE SYMBOL (If applicable) AFIT/LSM	7a. NAME OF MONITORING ORGANIZATION	
6c. ADDRESS (City, State and ZIP Code) Air Force Institute of Technology Wright-Patterson AFB, Ohio 45433-6583			7b. ADDRESS (City, State and ZIP Code)	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State and ZIP Code)			10. SOURCE OF FUNDING NOS.	
			PROGRAM ELEMENT NO.	PROJECT NO.
11. TITLE (Include Security Classification) See Box 19				
12. PERSONAL AUTHOR(S) Melbourne L. Smith, B.S., Major, USAF				
13a. TYPE OF REPORT MS Thesis		13b. TIME COVERED FROM _____ TO _____	14. DATE OF REPORT (Yr., Mo., Day) 1986 September	
15. PAGE COUNT 118				
16. SUPPLEMENTARY NOTATION				
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB. GR.	Education, Perception (Psychology), Curriculum, Schools, Logistics	
05	09			
19. ABSTRACT (Continue on reverse if necessary and identify by block number)				
Title: AN ANALYSIS OF THE USEFULNESS OF THE GRADUATE LOGISTICS MANAGEMENT PROGRAM LOGISTICS MANAGEMENT OPTION AS PERCEIVED BY GRADUATES AND THEIR SUPERVISORS Thesis Chairman: Richard E. Peschke, Lt Colonel, USAF Assistant Professor of Logistics Management Approved for public release IAW AFR 180-1. L. E. WOLVER 29 Sept 86 Dated for Research and Professional Development Air Force Institute of Technology (AFIT) Wright-Patterson AFB OH 45433				
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT. ☐ DTIC USERS ☐			21. ABSTRACT SECURITY CLASSIFICATION Unclassified	
22a. NAME OF RESPONSIBLE INDIVIDUAL Richard E. Peschke, Lt Colonel, USAF			22b. TELEPHONE NUMBER (Include Area Code) 513-255-4149	22c. OFFICE SYMBOL AFIT/LSM

This study assessed the usefulness of the GLM Program Logistics Management Option as perceived by graduates and their supervisors. Objectives included determining which subject areas the graduates perceived most and least useful to them in their jobs, their perceptions of the GLM Thesis Program, and the appropriateness of their postgraduate assignments. A field survey was conducted. Questionnaires were sent to 169 alumni graduating from AFIT between 1979 and 1985, as well as to their supervisors. Analysis was accomplished by interpretation of median responses. The most useful subject areas perceived by the graduates and their supervisors were communication, organizational management and behavior, problem solving, computer science, and financial management. The least useful subject areas were computer programming, simulation, managerial accounting, economics, and international logistics. Graduates perceived their AFIT logistics education useful to them and to the Air Force. They also felt that the AFIT Thesis Program was worthwhile. However, the graduates believed that Air Force Manpower and Personnel Center could do more to assign them to jobs that make better use of their advanced education. Various recommendations were made to improve the usefulness of the Logistics Management Option curriculum.

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