PERSONNEL INFORMATION REQUIREMENTS FOR THE SUPPORT OF AIR FORCE SQUADRON COMMANDERS' INFORMATION SYSTEMS

THESIS

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THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Information Resource Management

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Preface

The purpose of this research was to document the personnel information needs of Air Force squadron commanders. The objective was to identify what squadron commanders now receive in terms of personnel information, and what personnel information they perceive as necessary, or unnecessary.

Throughout the writing of this thesis, I have had a great deal of support and help from others. I am especially grateful to my husband for his unwavering patience in acting as my sounding board and unofficial psychiatrist. I also wish to thank my thesis advisor, Major John Stibravy, for his guidance and assistance. Last, but not least, I would like to thank my parents and my husband's parents for their patience and extraordinary support throughout the research process and writing of this thesis.

Cathy J. Romanczuk

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Abstract

The purpose of this study was to examine and determine the personnel information requirements of Air Force squadron commanders. This study had three basic objectives: (1) to identify the personnel information squadron commanders currently receive, (2) to identify what personnel information they would like to receive, but are not currently receiving, and (3) to identify the personnel information that squadron commanders use to do their everyday job.

The study found that the squadron commanders do have many common personnel information requirements and recommends development of common, shared databases at each base.

Analysis of interviewee responses found that there was some redundant personnel information received by squadron commanders. The majority of squadron commanders agreed that they receive the personnel information they need to carry out their duties. A few of the squadron commanders suggested changes to the format of the personnel information they currently receive. These squadron commanders believed that this format change would allow them to make more efficient use of the information they currently receive.

PERSONNEL INFORMATION REQUIREMENTS FOR THE SUPPORT OF AIR FORCE SQUADRON COMMANDERS' INFORMATION SYSTEMS

I. Introduction

Background

Most organizations and individuals suffer from acute information overload in which they receive and transmit so much data and information that they can't sort out the revelant from the irrevelant, the critical from the nice to have (11:129). This condition occurs because, to date, technology has been focused more on producing vast amounts of data rather than on the value and effectiveness of the information (23:15). John Naisbitt, in his book Megatrends, stated the problem well. He writes:

> With the coming of the information society we have for the first time an economy based on a key resource that is not only renewable, but self-generating. We are drowning in information, but starved for knowledge. (25:16-17)

Uncontrolled and unorganized information is not a resource in the information society (17:45). Instead, it causes management to be deprived of necessary information for decision making (17:46). Traditionally, data processing

provides managers of an organization information about where they have been, not where they are (26:74).

Air Force squadron commanders are following the trend of their civilian counterparts in relying more on computers to provide the information these commanders need with speed and efficiency. In a 1985 article, Administrator stated that two years earlier only about eight percent of Air Force executives (commanders) used personal computers, but in 1985, 35 percent of Air Force executives were using personal computers (10:4). The Air Force is in the process of developing and installing multiuser computer networks that will link commanders to the information they need. For example, Military Airlift Command (MAC) has already installed a command and control center that connects high level commanders in seven CONUS and overseas locations (15:55). MAC plans to computerize command and control down to wing level next (15:57). Other commands, such as Air Training Command, are in the process of installing multiuser computer networks which will support commanders as well as other functions (21).

Research Objective

The objective of this research was to document the personnel information needs of Air Force squadron commanders. The objective was to identify what personnel information these commanders currently receive, and what personnel information they would like to receive. This is

a type of needs assessment. According to Kaufman, a needs assessment must have at least three characteristics in order to meet users needs (16:26). The needs assessment must have three characteristics to ensure an unbiased coverage of the organization (16:26). In this study, these are

1. The data collected must represent the actual world of the current Air Force squadron commanders, both as it now exists and as it should exist in the future.
2. The needs assessment is not final. Recognizing this, the present study is a first step, and personnel information needs of these Air Force squadron commanders should be expected to change.
3. The discrepancies that the present study identifies should be described in terms of products or behaviors that are required to close the gap between what personnel information currently is received and what personnel information squadron commanders want.

The literature discusses the importance of assessing the information requirements of any system that is to be computerized; however, most of the literature does not discuss just how much information can be computerized. In his book, Managing Information, John Diebold discusses the importance of identifying items of strategic and tactic

importance to the company to be included in any common system (11:5). He, along with other leading Management Information Systems experts, states that the cost of including information used by a minority of middle managers in a shared information system is prohibitive (11:146).

Statement of the Problem

Since all the personnel information available could not be included on a network because of time and memory limitations, some subset of information that squadron-level commanders find useful and necessary needs to be identified.

Investigative Questions

To solve this problem, the following questions need to be answered:

1. What broad areas of personnel information do commanders use?
2. What types of personnel information do the commander currently receive? What are the current sources of this information?
3. What specific information from personnel records do commanders need most frequently?
   a. What information could legally be included on such a network?
   b. Who, in addition to the squadron commander, would have access to the network?

Assumptions

Three major assumptions have been made in this study concerning the applicability of information systems concepts to the Air Force. First, that, even though there is no empirical evidence relating to the variables to be explored, the consensus opinion is valid. Second, this study assumes that personnel information elements from the private sector are transferable to the Air Force working environment. Third, it is assumed that the reader of this thesis is military, and therefore is familiar with the reports mentioned in Chapter IV.

Limitations

The historical research method represents a secondary type of research. According to Emory, secondary sources can be found more quickly and cheaply than primary sources (13:136). Emory also noted that the most important limitation of secondary sources is that the information often does not meet one's specific needs (13:136). This limitation was the most significant hurdle in this research. However, the similarity between middle managers and squadron-level commanders allowed comparison of the two groups.

The limitations of telephone interviews that Emory mentions (13:170-171) were minimal in this study. The effect of obsolete numbers because people have moved were

inconsequential. Generally, people who had replaced the commanders who had moved held the same position and had the same telephone number. Unlisted numbers were irrelevant in the Air Force work environment. The most significant limitation, limited length of interview time, was overcome by scheduling interview times when the commanders could talk at length.

Definitions

The following terms, used frequently throughout this study, are defined as follows:

Air Force squadron commander. Officers who have AFSCs with an A prefix. This includes squadron section commanders, and flight commanders, as well as squadron commanders.

Information Systems / Office Automation (IS/OA). A class of information system that refers to electronic office equipment, which provides integrated, multifunctioned, office support (26:73).

Management Information Systems (MIS). This term refers to the wide variety of computer resources and manual systems that provide processing for a formal information and reporting system, and are used to accomplish managerial decision support responsibilities (9:4).

Organization of Thesis

This thesis is organized according to the model suggested in AFIT's Style Guide for Theses and Dissertations. Chapter I contains an introduction to the study including the general issue from which the specific research problem evolved, the investigative questions, the research objective, and the limitations of the study.

Chapter II contains a review of literature relevant to this study. Topics discused include management, definition of information needs, management support systems, and personnel management.

Chapter III discusses the methodology used to solve the specific problem and details the design used for data analysis.

Chapter IV contains the analyses of the interview information and answers the investigative questions of this study.

Chapter V summarizes the study and makes recommendations based on the study's findings.

II. Background

The information available on managers' information requirements comes almost exclusively from civilian literature because the civilian business organization must rely heavily on successfully defining and satisfying customer (user) requirements. The more prevalent methods of defining information requirements are discussed in this chapter.

AFR 4-1, Functions and Responsibilities of Information Management Activities, the Air Force publication that details the policy on handling information and information requirements in the Air Force, is currently under revision and was not available for review by the researcher.

Information is a costly resource. Many decisions are made without complete information due to the high cost of information (26:73). An obvious strategy to improve the quality of decisions is to lower the cost of the information. One approach to lowering cost is sharing mass produced and centrally controlled information (26:74).

Information, however, is an elusive commodity. What information a large complex organization needs to produce to meet its needs is not always obvious. The field of "requirements analysis" attempts to determine the future information needs of organizations (26:75). One of the complications of requirements analysis occurs because the information needs of organizations are not static (16:12).

They change in response to organizational and environmental pressures (23:44).

Management

In order to understand a manager's information requirements within an organization, it is first necessary to look at what a manager does. Traditionally, if asked what he does, a manager would say he plans, organizes, coordinates, and controls. Mintzberg states that the field of management has not addressed the basic question "What do Managers Do?" (22:64). In his study, Mintzberg studied a group of managers extensively, had another group document their activities, and analyzed the records of another group. He found that a manager's job can be described in terms of roles (22:73). It is these roles, from figurehead to negotiator, that must be understood in order to define what types of information a manager needs to carry out his job.

Model Of MIS Planning

In a 1983 article, Bowman, Davis, and Wetherbe discussed planning an information system that will meet the needs of an organization. They proposed a three-stage model for planning an organizational Management Information System. They suggested the stages of (1) Strategic MIS planning, (2) organizational information requirements analysis, and (3) resource allocation. In this article,

they also surveyed several methodologies that have been proposed for MIS planning and classified these methodologies according to the stage of the MIS planning model in which the methodologies are most useful. (4:11)

In this thesis, the focus is on the stage of organizational information requirements, with a short discussion of strategic planning. Figure 1 shows the model proposed by Bowman, Davis, and Wetherbe.

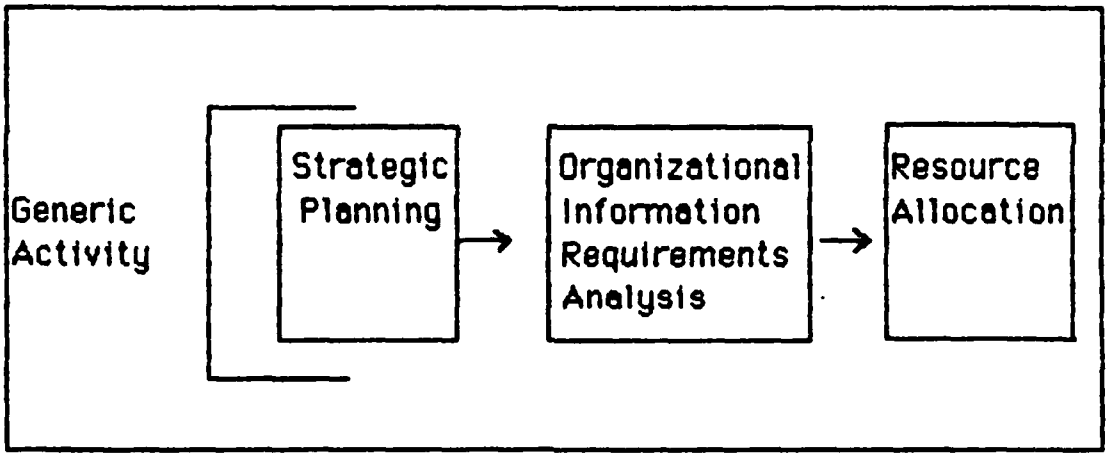


Figure 1. Basic Three-Stage Model of MIS Planning (4:14)

This article by Bowman and the others also states that this very general three-stage model presented in Figure 1 can be expanded to include major activities and outputs of the three stages shown in Figure 2. With the addition of

this detail, the model becomes a more concrete formulation of MIS planning activities. (4:15)

Strategic Planning. Several of the literature sources commented on the need for strategic planning by managers. This includes the need for strategic planning for IS/OA. Walters states that the manager should define his information needs based on the goals of the organization and the influence of the outside environment (34:6). Likewise, Ein-Dor and Segev state that the first step in developing a systems strategy is to consider or formulate strategic goals (12:1631).

In their article, Bowman, Davis, and Wetherbe state that it is critical to align MIS strategic planning with overall organizational planning. To accomplish this alignment, they say the organization must:

1. Assess organizational objectives and strategies
2. Set MIS mission
3. Assess environment
4. Set MIS policies, objectives, objectives, and strategies. (4:14)

Although the consensus of the literature was that strategic planning should be the basis for defining information needs, the bulk of the literature reviewed focused on tactical planning rather than strategic. Navathe and Kershberg stated the requirements definition must begin within the context of top-down business planning

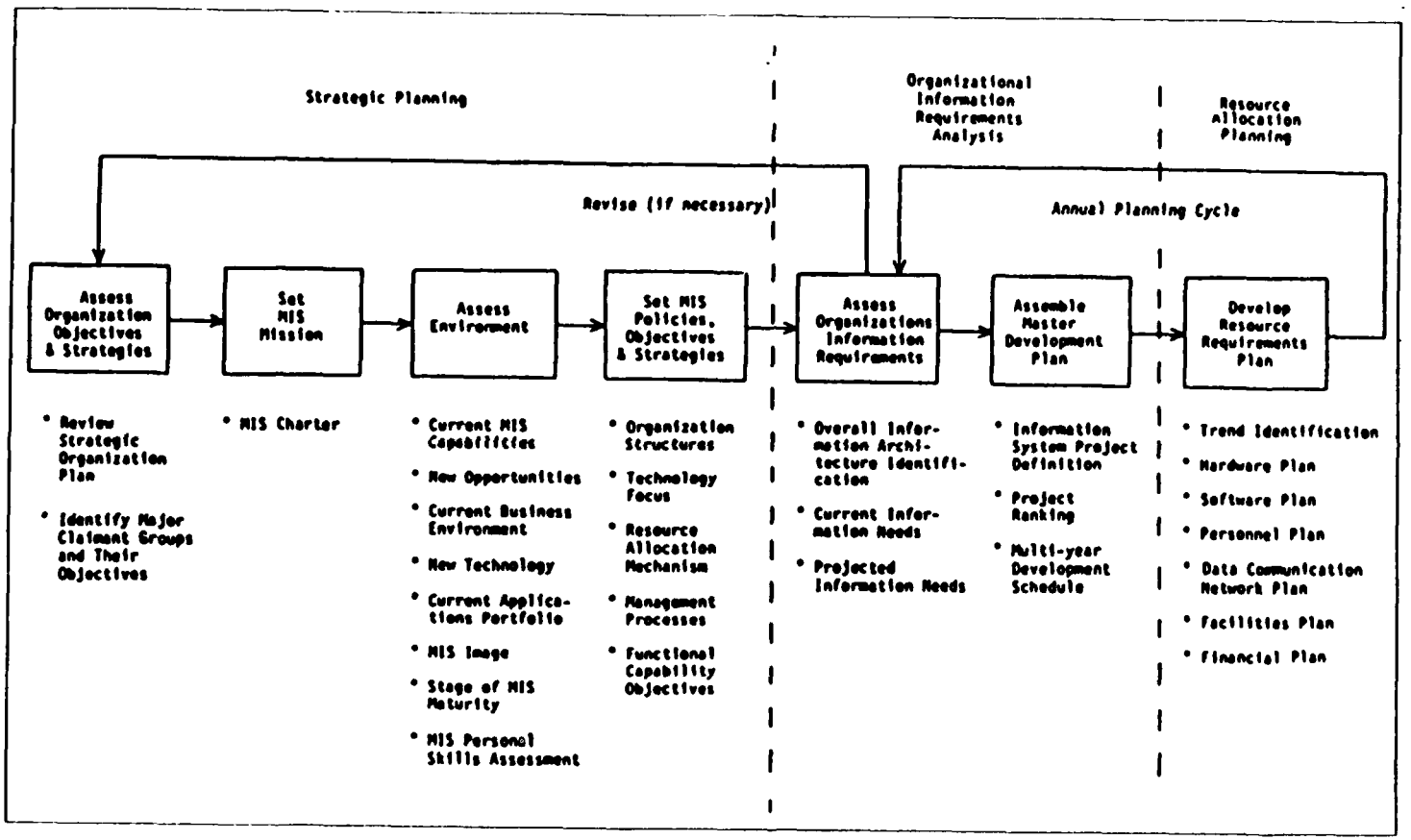


Figure 2. Major Activities and Outputs in Three Stages of MIS Planning (4:15)

process that relates information to objectives (24:23). They agreed that currently information is related to tactical business objectives rather than strategic objectives (24:23).

Information Requirements Analysis

According to Barros, the front end of all modern business information systems development methodologies includes an information requirement analysis step. He contends that this step should be expanded to specifically cover organizational components external to the computer as subject to change and thus design. He shows the design problem to be related to the alternative ways in which users' tasks may be performed and, hence, the alternative organizational schemes and structures a business may have. Additionally, the specification of information requirements for each way a task may be done should be considered. (1:125-135)

The first phase of Bowman, Davis, and Wetherbe's Organizational Information Requirements Analysis (OIRA) stage consists of assessing the current and projected information needs to support decision making and operations of the organization. The second phase of the OIRA consists of assembling a master development plan. This plan is derived from the information architecture discovered in the first phase. In this article, Bowman, Davis, and Wetherbe discussed several methodologies that can be used to

determine the information requirements of organizations or individual managers. (4:15-22)

There are several methodologies that are widely used to determine the information requirements of organizations or managers. Some of these are discussed in the literature. Specifically, the methodologies using Critical Success Factors, using the Communications Model, using Sociometry, using Ends/Means Analysis, and using Business Information Analysis and Integration were discussed extensively and are presented in this study.

Critical Success Factors. Rockart developed the idea that the information needs of managers are derived from critical success factors (CSFs), i.e., the key areas for any organization in which performance must be satisfactory if the business is to thrive and survive. The CSF approach involves a series of interviews conducted in two or three sessions. In the first session, the manager is queried as to his goals and the CSFs that underlie the goals. Considerable discussion may be required to determine that the analyst understands the interaction of the CSFs and the goals. Every effort is made to combine or eliminate similar CSFs and a set of performance measures is formed. The second session is a review of the first and focuses mainly on the identification of specific performance measures and methods for tracking them. This CSF method requires the analyst to become thoroughly

acquainted with the organization, and also requires a high degree of cooperation between the analyst and the managers in the organization. (29:81-93)

Communication Model. The communication model considers the series of information exchanges between the decision maker and other sources of information in the decision situation. Thus, while other models focus on events relevant to the focal decision maker, the communication model focuses on dyads consisting of an information source and sink (2:73). The communication model could prove to be important in the design of computer-based support systems, because it could decrease communication loads by filtering out unnecessary information and reporting only the exceptions (2:73).

Sociometry. Sociometry is the data-gathering techniques useful in the study of communication and interaction patterns (2:73). According to Benbasat, the following approaches can be used to gather data to monitor communication networks:

(1) The duty study: managers' records of their communication activities

(2) Use of observers

(3) The cross-sectional survey: interviews or questionnaires of sample managers to identify the persons they communicate with and the functions and importance of these communications

(4) Small-world techniques: tracking a message destined for a specified receiver and tracing of the steps the message follows to reach this person. (2:73-74)

Ends/Means Analysis. Ends/Means Analysis is a planning technique developed by Wetherbe and Davis at the MIS Research Center at the University of Minnesota. This technique can be used to determine information requirements at any level of the organization. Ends/Means analysis focuses first on the outputs (goods, services, or information) generated by an organizational process. Next, the technique is used to define the means (inputs and processes) used to accomplish the ends. Ends/Means analysis has been used in many diverse industrial settings with positive results. This technique is especially useful for a database planning effort. (35:1-10)

Figure 3 provides a model of Ends/Means analysis. The model shows two types of information efficiency and effectiveness. Effectiveness information is based upon what constitutes effectiveness for outputs and what information or feedback is needed to evaluate effectiveness. Efficiency information is based upon what constitutes efficiency in an input and transformation process and what information or feedback is needed to evaluate efficiency. (4:19)

Information requirements that are determined using Ends/Means analysis are usually more extensive than those generated using other techniques. Ends/Means analysis brings out effectiveness information requirements. Since these requirements typically cross departmental boundaries, Ends/Means analysis may be used in planning organizational databases. (4:19)

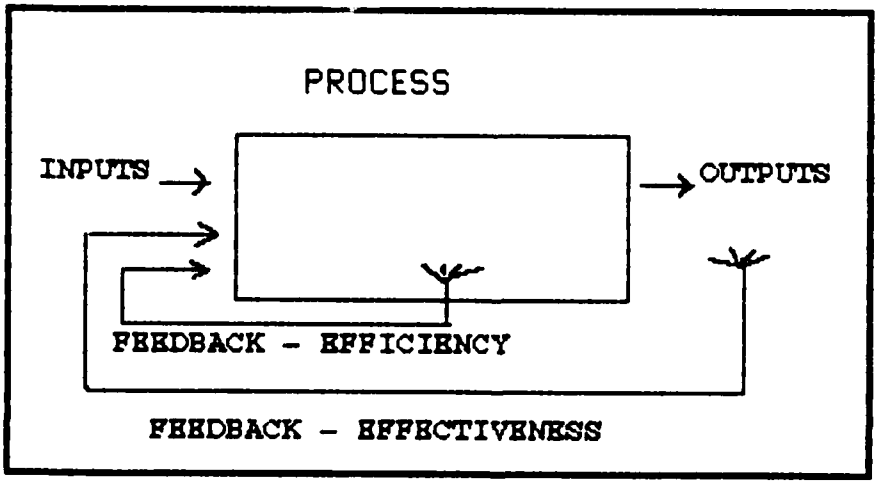


Figure 3. Model of Ends/Means Analysis. (4:19)

Business Information Analysis and Integration Technique (BIAIT). An interesting and innovative approach to information analysis has been developed by Burnstine. The technique, called Business Information Analysis and Integration Technique, is a distinct departing from other approaches. Most planning approaches tend to use open-ended questions that elicit information from managers about their information requirements and the properties of these requirements. Open-ended questions such as - what information do you need to support your decision making? - allow managers complete freedom to articulate their requirements. (6:6)

Burnstine, through extensive experimentation, has factored out seven close-ended questions that can be used to determine a normative set of information requirements (6:3). These question require only a yes-or-no answer from a manager (6:4). From the responses to these questions, overall information requirements can be theoretically defined (18:13). This capability is independent of the products or services provided and is independent of the overall organization or department size (18:13).

Management Support Systems

Some research has been conducted in the field of Management Support Systems (MSS) that also relates to defining the information needs for an information system. MSS consists of three separate categories: data support

systems, decision support systems, and executive support systems (20:15). These three categories focus on decisions and decision needs of managers. Two articles in the literature search in the general area of artificial intelligence apply to MSS. The most specific is by Ben-Bassat, who looked at a military application that has useful implications for business (3:76). However, Ben-Bassat concentrated on production rather than personnel requirements. Ben-Basat investigated the inventory control system at Lackland AFB, Texas in the 1950s (3:2). In the other article, Luconi and Scott Morton provide a framework that tries to position intelligent systems as a logical outgrowth of decision support systems (20:33). Drawing on experience in building and testing prototypes, they identify some ways to determine information requirements (20:33). These methods consist mainly of asking the opinions of the end user (20:33-35).

Human Resource Information Systems (HRIS)

A HRIS is an information system that handles the human resources, or personnel, information of an organization (7:51). Before such a system can be implemented, it is necessary that there be a definition of the problem it is meant to solve. The main problem definition concerns deciding on the information requirements of the organization to be computerized (19:39).

A systems analysis is a major part of any IS/OA design. Systems analysis is the separation of a system into its key components and the study of each component individually and in relation to other components (9:14). The result of the system analysis is the definition of a problem area for designing a more efficient system (19:53). Figure 4 shows the general steps in a systems analysis. This study focuses on the data collection phase of the system analysis.

According to Cascio and Awad, after the user defines the problem, the next step is to collect data through interviews with the user and staff, on-site observations, and/or analysis of existing forms and procedures (8:70). The main areas that Cascio and Awad found in the HRISs they studied were (1) basic personnel data, (2) skills inventory data, (3) work history data, (4) employee evaluation data, and (5) education data (8:86). They did not define what data each area covered or describe the kinds of data covered in each category.

Morrison found similar major categories of personnel information in his survey of computer-based personnel systems. He states that personnel information found on IS/OA is generally divided into the categories of (1) descriptive data, (2) skills inventories, (3) organizational status, and (4) work history. Descriptive data is data such as name, address, date of birth, military

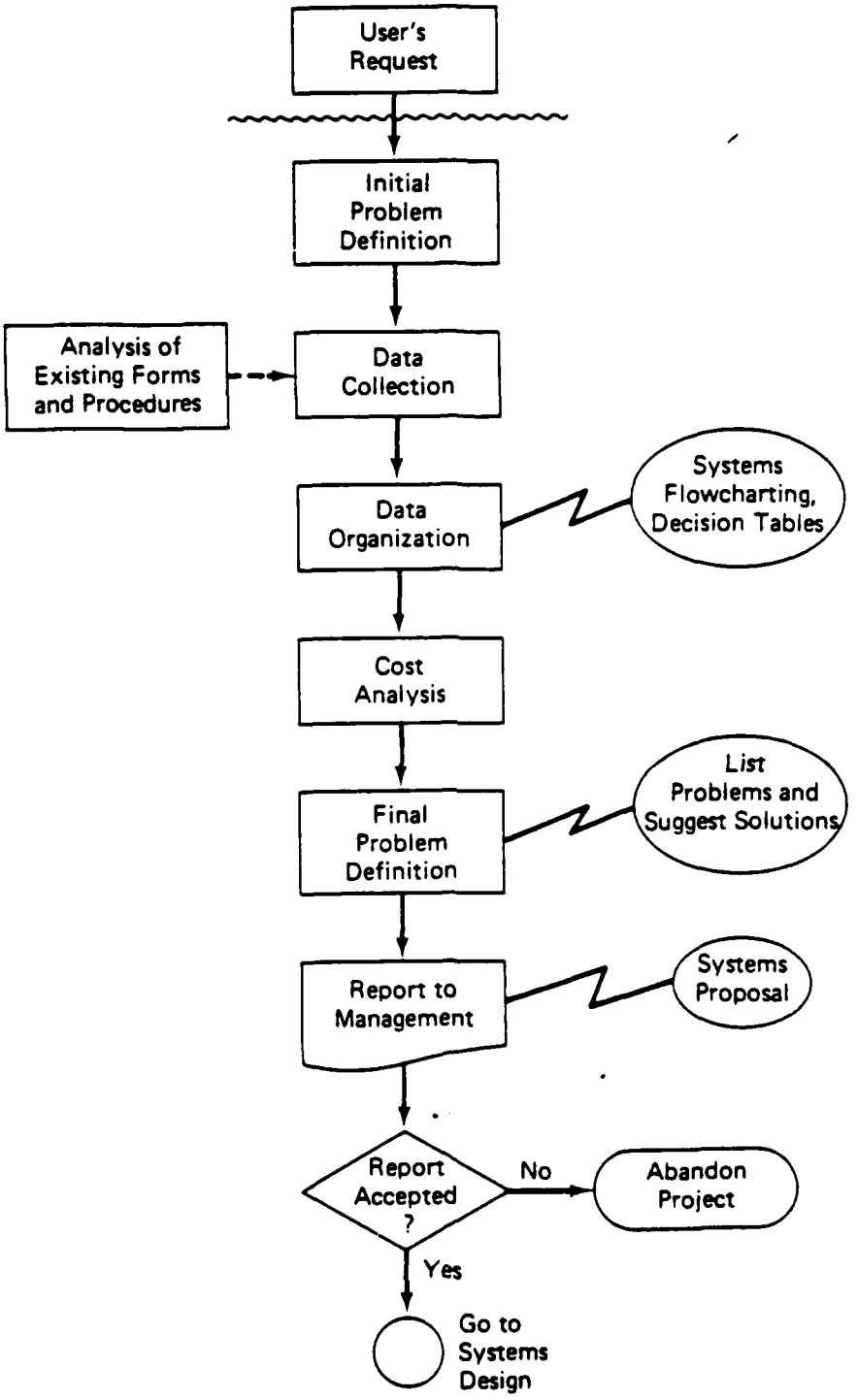


Figure 4. General Steps in Systems Analysis. (8:69)

status, and other data that describe a person. Morrison defines skills inventories as a specialized application of descriptive data, such as skills, abilities, job experience, and interests. Organizational status is defined by Morrison as data such as date of hire, organization location, job title, and other job related data indicating where a person is situated and what work he is doing in the organization. Work history is defined in the Morrison study as a compilation of past organizational positions, performance, and status changes. (23:10-18)

According to Lee and Thorp in their study, several decisions must be made prior to implementing a comprehensive HRIS. These decisions include, but are not limited to, the following issues:

1. Who has the responsibility for gathering data for the system?
2. Who has the responsibility for analyzing data for the system?
3. Who should receive human resource information and when?
4. What are some forms of gathering and reporting data? (19:44)

Lee and Thorp suggest that the personnel department, the line manager, and the employee share responsibility for gathering and analyzing data. They also suggest that the receivers of the human resource information include the

line managers, the personnel department, and the employee. The personnel department needs the information so that it can be analyzed and used to recommend action to the line managers. Line managers need the information to make decisions on how employees should be utilized. Government agencies require the information to insure compliance with equal opportunity laws. The employee should also have access to the information to ensure accuracy and to ensure that he has the opportunity to contest items in the file with which he disagrees. (19:43)

Finally, Lee and Thorp believe that the one person in the system whose requirements should take precedence, and who needs the information the most, is the line manager. The line managers should be the ones who decide how often the human resource information is needed and not some other party. (19:44)

Summary

The literature revealed several different methods of defining information requirements. The first was to define managers' jobs to be able to identify their information needs. Most of the authors agreed that the best method available for determining information requirements in the private and public sectors is open-ended questions.

III. Methodology

Introduction

The purpose of this research was to determine personnel information needs of Air Force squadron commanders. Several methods were used to answer the investigative questions posed in this thesis. Those questions were as follows:

1. What broad areas of personnel information do commanders use?
2. What types of personnel information does the commander currently receive? What are the current sources of this information?
3. What specific information from personnel records do commanders need most frequently?
    a. What information could legally be included on such a network?
    b. Who, in addition to the squadron commander, would have access to the network?

The methods used were the library search method, the telephone interview method, and the personal interview method.

Library Search Method

One method used to answer the research questions, and thus solve the problem, was the library search procedure. In their book, Research Methods In Librarianship, Charles

Busha and Stephen Harter contend library research is a valid research method because it may be the only alternative in many cases (5:12). Ronald Powell also supports this view in his book, Basic Research Methods for Librarians (28). Emory devotes a whole chapter to library research in Business Research Methods (13:135-155).

The first step in the search was to develop a bibliography. The researcher checked the Bibliographic Index: A Cumulative Bibliography of Bibliographies, New York: H.W. Wilson, 1937 to date. This publication, organized by subject, is an index to books, magazine articles, and other printed materials which include a bibliography. The researcher also requested the AFIT library conduct a Defense Technical Information Center (DTIC) Search for related subjects using the following search words:

managers, military commanders, information systems, computer networks, information exchange, information retrieval, management information systems, information requirements, requirements, user needs, decision making, and personnel management

The next step was to search the computer catalogs at Wright State University Library and the University of Dayton Library. These two libraries were used because they have a wide range of management information science (MIS) journals and books. The researcher also searched the catalog at the Wright-Patterson Air Force Base (WPAFB) Library. This library was used because it contains

information on military managers. The researcher also searched for regulations, pamphlets etc. on the subject and related areas in the DoD 0-2, Department of Defense Publications Directory and the AF 0-2, Numerical Index of Standards And Recurring Air Force Publications. These publications provided information on Department of Defense and Air Force regulations governing the handling of information.

Information was collected from other applicable sources. Professional and academic journals such as Communications of the ACM, MIS Quarterly, Harvard Business Review, Management Science, and Datamation were searched. Information science abstracts and management science abstracts were also examined for additional sources. The DTIC report summary was reviewed for pertinent technical reports, theses, and dissertations.

Step Three involved the validation of the information gleaned from the literature. The researcher conducted telephone interviews and personal interviews of a limited number of squadron commanders to validate the reliability of the library search.

Telephone Interviews

According to Emory, telephone interviewing has several advantages over other forms of information collection (13:169). The first, and most significant, advantage is

its moderate cost. One study reported that telephone interview sampling and data collection costs can run from 45 to 64 percent lower than comparable personal interviews (13:170). Much of the savings comes from lower travel costs. When compared to either personal interviews or mail surveys, the use of telephone interviews brings about a quicker completion of a study. When compared to personal interviewing, it is also thought that interviewer bias is reduced by the use of telephones (13:169-170).

Personal Interviews

Personal interviewing is a two-way conversation initiated by an interviewer to obtain information from a respondent (14:13). There are real advantages to personal interviewing. The greatest value lies in the depth and detail of information that can be secured. The interviewer may do more things to improve the quality of information that can be secured than with other methods (13:161). For example, interviewers can probe with additional questions, and gather supplemental information through observation (14:32). Finally, interviewers can make adjustments to the language of the interview because they can observe the problems and effects that the interview is having on the respondent (14:145).

According to Emory, three conditions must be met to have a successful interview (13:161). These are (1) the availability of the information needed from the respondent;

(2) an understanding by the respondent of his or her role; and (3) adequate motivation by the respondent to cooperate (13:161). In this study, all the respondents had the needed information available as part of their everyday operations.

The interviewer provided the respondents with an understanding of their roles at the time the interviews were scheduled. The interviewer also explained the type of answer sought, and how complete the answer should be.

All the respondents in this study were interested in the outcome of the study and motivated to answer the questions posed by the interviewer.

The interview guide, based upon the literature review in Chapter II, used in this study follows:

1.a. What kinds of personnel information do you (as a squadron commander) receive from CBPO?

1.b. from Accounting and Finance?

1.c. from other agencies on base?

2. How often do you use the information obtained from the above agencies?

3. How do you use this information?

4.a. What specific personnel reports do you receive?

4.b. Do you generate any reports?

4.c. How often do you generate them (if applicable)?

5.a. Do you find these reports useful?

5.b. Is there something you would like to change about the report (add or delete)?

6. Is there some personnel information that you need to do your job that you are not receiving now?

The squadron commanders who were interviewed included those stationed at Wright-Patterson AFB (AFLC) and Goodfellow AFB (ATC), so as to survey different commands in different geographical areas. The AFIT squadron section commander, the Wright Patterson Regional Medical Center squadron section commander, the Air Base Wing squadron section commander, the Air Force Logistics Command Headquarters squadron section commander, the 18150 Testing and Evaluation squadron commander, and the Detachment 2 squadron commander were interviewed at WPAFB. These commanders were included because their accessibility, and because their familiarity with AFIT research projects increased the likelihood of participation.

The researcher also interviewed squadron commanders at Goodfellow AFB, Texas. These commanders included the 3498 Air Base Group squadron section commander, the 3498 Security Police Squadron commander, the 3498 Transportation Squadron commander, the 3481st and the 3484th Student Squadron commanders, and the 3480th, 3490th, and 3495th Technical Training Group squadron section commanders. The squadron commanders at Goodfellow were selected because ATC personnel are at every Air Force base and over 95 percent

of all Air Force personnel have passed through ATC. Goodfellow supplies training for every command in the Air Force.

Step Four was to interpret the information collected in Step Three. The data was grouped into broad categories of information and interpreted using frequency distributions. The data gathered in Step Three was compiled into logical findings which are presented next in Chapter IV.

Step Five was to draw conclusions from the findings, and to present them in Chapter V.

IV. Analysis

Introduction

The research problem to be solved by this thesis was to determine what personnel information Air Force squadron commanders require to effectively manage their personnel. An interview with open-ended questions was determined to be the most appropriate methodology to collect the data required to solve the research problem and answer the investigative questions, which were:

1. What broad areas of personnel information do commanders use?
2. What types of personnel information does the commander currently receive? What are the current sources of this information?
3. What specific information from personnel records do commanders need most frequently?

a. What information could legally be included on such a network?

b. Who, in addition to the squadron commander, would have access to the network?

Chapter IV summarizes the data collected in these interviews.

This chapter is organized so that the data follows the same organization as the interview guide presented in Chapter III. The response analysis is grouped according to the six questions of the interview guide. The sections of

the interview guide are analyzed by the following areas: demographic; personnel information received from CBPO, personnel information received from Accounting and Finance, personnel information from other base agencies; frequency with which personnel information is used; uses of personnel information by squadron commanders; specific reports received by squadron commanders, reports generated by squadron commanders; perceived usefulness of personnel information, and proposed changes to reports; and personnel information that is needed but not being received. Data from each question are reported in a table which follows a general discussion of frequency distributions for each question.

Interviewee Demographics

The interviewees in this study ranged in grade from first lieutenants to lieutenant colonels, with the majority of the interviewees being captains. All interviewees had been commanders for a year or longer, with the majority having held the position of commander for 13 months.

Tables I.a. and I.b. present the interviewee demographics. In these tables, and in all the tables in this chapter, "N" stands for the number of interviewees who responded with that particular item. "Percentage" or "%" represents the percentage of interviewees out of the total

number of interviewees who responded to a question with that particular answer.

Table I.a.

Grades of Interviewees

Grade	N	Percentage
1st Lt	2	12.5
Capt	10	62.5
Maj	2	12.5
Lt Col	2	12.5

Table I.b.

Time Current Position Held

Time in Current Position	N	Percentage
Less than 12 months	0	0
More than 12 months, but less than 24 months	10	62.5
More than 24 months, but less than 36 months	4	25.0
More 36 months	2	12.5

Personnel Information Received From CBPO

Interview Question 1.a.: What kinds of personnel information do you (as a squadron commander) receive from CBPO?

Interviewees' responses to the kinds of personnel information received from CBPO were generally the same. As expected, most of the squadron commanders interviewed reported the same kinds of information were received from CBPO. The frequency distribution of the personnel information used by commanders is shown in Table II.a. The information is organized by frequency of response, with the most frequently mentioned item first and so on. The Alpha Roster was the most frequently mentioned item. Over 93 percent of the interviewees specifically stated that they received the Alpha Roster from CBPO. The next most frequently mentioned item was the Unit Personnel Management Roster. The UMPR was reported by 87.5 percent of the interviewees. A majority of the commanders also reported receiving Control Rosters, with 81.25 percent stating that they received this data. The Commander's Enlisted Management Roster was reported by 75 percent of the interviewees, and Weight Management Program Information was reported by 50 percent of the interviewees.

Table II.a.

Personnel Information Received From CBPO

Information Received	N	Percentage
Alpha Roster	15	93.75
Unit Personnel Management Roster (UMPR)	14	87.50
Control Roster	13	81.25
Commander's Enlisted Management Roster (CEMR)	12	75.00
Weight Management Program Information	8	50.00
Promotion Selection/ Nonselection Information	5	31.35
Airman Performance Reports/ Officer Performance Reports Information	5	31.35
Other Information	4	25.00

Personnel Information Received From Accounting and Finance

Interview Question 1.b.: What kinds of personnel information do you receive from Accounting and Finance?

The majority of the squadron commanders interviewed in this study stated that they did not receive any personnel information from Accounting and Finance. However, a few commanders mentioned that they did receive some personnel information from Accounting and Finance. Table II.b. summarizes these responses.

Table II.b.

Personnel Information Received from Accounting and Finance

Information Received	N	Percentage
None	12	75.00
Leave Information	4	25.00

Personnel Information Received from Other Base Agencies

Interview Question 1.c.: What personnel information do you receive from other agencies on base?

When asked what personnel information they receive from other base agencies, aside from CBPO and Accounting and Finance, most of the interviewees initially responded negatively. However, upon further consideration, a few mentioned various pieces of information received from various base agencies. Some commanders noted more than one item in each of the categories. Table II.c. shows the distribution of the interviewees' responses to this question.

Table II.c.

Personnel Information Received from Other Base Agencies

Information Received	N	Percentage
Security Clearance Information	8	50.00
Medical Information	6	37.50
Social Actions Information	4	25.00
Mental Health Information	3	18.76

Frequency of Use of Personnel Information

Interview Question 2.: How often do you use the information obtained from these agencies?

Interviewees differed in their reported frequency of use of the information they reported receiving in response to Question 1. Most mentioned that the frequency of use of certain personnel information depends upon other factors, so the frequency of use of the information would differ from month to month. Table III summarizes the most frequent responses according to daily, weekly, and monthly use. "N" is the number of interviewees who responded with the particular item. The symbol "%" is a percentage of total number interviewed, not a percentage of the squadron commanders who responded with that particular item.

How Personnel Information Is Used

Interview Question 3.: How do you use this information?

The use of personnel information by interviewees fell into the four categories defined by Morrison as discussed in Chapter II. These categories are (1) descriptive data, (2) skills inventories, (3) organizational status, and (4) work history. Table IV shows the distribution of the uses of the personnel information received by the squadron commanders in this study. In this table, Category 1 is descriptive data, Category 2 is skills inventories,

Table III.

Frequency of Use of Personnel Information

Information	Daily		Weekly		Monthly	
	N	%	N	%	N	%
Alpha Roster	15	93.7	1	6.3		
Unit Personnel Management Roster					12	75.0
Control Roster			4	25.0	9	56.3
Commander's Enlisted Management Roster					12	75.0
Security Clearance Information	1	6.3	5	31.3	2	12.5
Weight Management Roster			5	31.3	3	18.9
Medical Profiles	6	37.5				
Promotion Selection/ Nonselection Roster					5	31.3
Airman Performance/ Officer Performance Roster			5	31.3		
Leave Information					4	25.0
Social Actions Information			4	25.0		

Category 3 is organizational status, and Category 4 is work history.

Specific Reports Received

Interview Question 4.a.: What specific personnel reports do you receive?

Most of the squadron commanders reported that they received many different personnel reports. Most of the responses are the same as those in previous tables. The commanders did mention some specific reports not mentioned previously. Table V.a. presents the responses in order of frequency.

Reports Generated

Interview Question 4.b.: Do you generate any reports?

Only five squadron commanders stated that they generate personnel information reports on a regular basis. Those who did generate reports stated that these were summaries of information sent to the next level in the chain of command. They unanimously agreed on the types of information that these reports contain. Table V.b. lists the types of information contained in the reports generated by squadron commanders.

Table IV.

Uses of Personnel Information

Information	Category 1		Category 2		Category 3		Category 4	
	N	%	N	%	N	%	N	%
Alpha Roster	13	81.3			4	25.0		
Unit Personnel Managment Roster			14	87.5	6	37.5		
Control Roster							13	81.3
Commanders' Enlisted Management Roster	7	43.8					12	75.0
Security Clearance Information	8	50.0	8	50.0				
Weight Management Roster	8	50.0						
Medical Profiles	6	37.5	3	18.8				
Promotion Selection/ Nonselection Roster	5	31.3						
Airman Performance/ Officer Performance Roster			5	31.3	5	31.3		
Leave Information	4	25.0						
Social Actions Information							4	25.0

Table V.a.

Specific Reports Received

Information Received	N	Percentage
Alpha Roster	15	93.75
Unit Personnel Management Roster	14	87.50
Control Roster	13	81.25
Commander's Enlisted Management Roster	12	75.00
Automated Security Clearance System Roster	8	50.00
Security Police Incident Reports	8	50.00
Weight Management Program Roster	8	50.00
Promotion Selection/ Nonselection Roster	5	31.35
Airman Performance Reports/ Officer PErformance Reports	5	31.35
Quality Force Roster	4	25.00
Safety Report	2	12.50

Table V.b.

Information Contained in Reports Generated

Quality Force Information	Incident Reports
Safety Information	Status of Discharges
Disciplinary Actions	Projected Departures
Awards and Decorations	Projected Leaves/Absences
Manning Levels	

How Often Reports Generated

Interview Question 4.c.: How often do you generate personnel reports (if applicable)?

Of the five commanders who stated that they generated personnel reports, four stated that these reports were generated weekly and one stated that the report was generated monthly.

Are Reports Useful?

Interview Question 5.a.: Do you find these reports useful?

Every squadron commander stated that he found all the personnel reports he received useful. However, one commander stated that some of the reports, such as the Weight Management Roster, the Control Roster, the Quality Force Roster, the Summary of Legal Actions (distributed by the base judge advocate), and the base summary of all disciplinary actions, were redundant. He said that he was unable to review every piece of personnel information carefully because of the volume and stated that he sometimes received the same information from more than one source within the same agency on base.

Changes In Reports

Interview Question 5.b.: Is there something you would like to change about the report (add or delete)?

Six commanders commented on what changes they would like to see in the personnel reports they receive. All of these changes dealt with format changes rather than content changes. Four commanders suggested adding more graphics, such as bar charts, so that changes in status are easier to spot. Three interviewees suggested using more tables instead of narrative statements so that the information was apparent at a glance.

Personnel Information Required And Not Received

Interview Question 6.: Is there some personnel information that you need to do your job that you are not receiving now?

Eighty-seven percent of the squadron commanders replied that they received all the information they needed from various agencies. One commander commented on the difficulty of obtaining exception reports through channels. Exception reports were identified as reports that are not generated routinely by any base agency. This commander, who asked not to be identified, had to "get the information someplace else" for a listing of certain AFSCs in the organization. Another commander commented on not being informed about medical conditions of his personnel. He stated that the medical facility relied on the member to relay the information to the unit. Overall, however, the more than 85 percent of squadron commanders did not express dissatisfaction with the personnel information they received.

Summary

The largest single group of interviewees were captains with approximately a year's experience in the position of squadron commander. The majority of the interviewees agreed on the amount and kinds of personnel information

they receive. Most of the personnel information the squadron commanders in this study received came from CBPO with a few other pieces of information coming from various other agencies on base. The frequency of use of different kinds of personnel information varies considerably among the different squadron commanders. However, the majority of the commanders appear to use this information in the same manner. Additionally, the squadron commanders who generate reports on personnel information themselves generate a summary of the information they receive from other sources. This summary usually goes to the next level in the chain of command. The squadron commanders interviewed in this study appeared to have the personnel information that they required to do their jobs. The areas of common personnel information needs among the squadron commanders have been discussed in this research. This research could prove to be foundation upon which an information system for squadron commanders could be built. The personnel information requirements of Air Force squadron commanders are of sufficient importance to be included in an MIS system or on a shared Local Area Network.

Chapter V contains findings, recommendations, and conclusions based on the data presented in this chapter.

V. Summary Of Findings, Recommendations, and Conclusions

Significance of Results

Little research has been accomplished prior to this effort in determining the personnel information needs of Air Force squadron commanders. This research was developed to provide an initial base of knowledge so that programmatic research efforts could follow.

The need for the information requirements of squadron commanders to be defined is growing as the Air Force use of microcomputers and Local Area Networks becomes more widespread and more administrative functions become automated. The shared personnel information requirements of squadron commanders must be determined so that a common, shared database could be developed. Such a shared database would aid in avoiding the proliferation of redundant databases within each organization and a deluge of out-of-date reports. The literature supported interviewing as an initial method to determine the information requirements squadron commanders have in common. This study used an interview format to determine current personnel information the commanders receive and what personnel information squadron commanders would like to receive. One conclusion of this research is that the squadron commanders do have sufficient personnel information requirements in common to justify the development of a common database.

To determine squadron commanders' personnel information requirements, several investigative questions were addressed to solve the problem statement:

1. What broad areas of personnel information do commanders use?
2. What types of personnel information does the commander currently receive? What are the current sources of this information?
3. What specific information from personnel records do commanders need most frequently?
    a. What information could legally be included on such a network?
    b. Who, in addition to the squadron commander, would have access to the network?

Investigative Question 1. What broad areas of personnel information do commanders use?

This study has indicated, both by interviewing and by supporting literature, that the personnel information of Air Force squadron commanders falls into four broad categories. These categories are the ones described by Morrison that were discussed in Chapter II. The squadron commanders in this study agreed that the personnel information they use to do their everyday job can be divided into four categories. These categories are (1) descriptive data, (2) skills inventories, (3) organizational status, and (4) work history. Interviewees

also noted that some of the information could be used for several different purposes; therefore, some information could be in more than one category.

Investigative Question 2. What types of personnel information does the commander currently receive? What are the current sources of this information? Results of interviews showed that squadron commanders most often receive descriptive data. Table III in Chapter IV shows the types of information commanders use most frequently. The next three types of most frequently mentioned information fall under the categories of work history, descriptive data, and skills inventories. The most common source of personnel information is the Consolidated Base Personnel Office (CBPO). Other significant sources of information are the medical facility and Security Police.

Investigative Question 3. What specific information from personnel records do commanders need most frequently?

a. What information could legally be included on such a network?

b. Who, in addition to the squadron commander, would have access to the network?

This study has shown that commanders report using the Alpha Roster most often. This roster contains information such as name, rank, social security number, duty location and duty telephone, security clearance, and home address. Interviewees also stressed the importance of having access

to derogatory information on individuals under their command. Modern technology has made it possible to protect the privacy of certain information in an organizational database by making it necessary to have a password to gain access to that information (23:64). Thus, any information available to squadron commanders currently could be included on an automated system using a shared database.

Finally, in answer to, "who should have access to the personnel information if it were in a shared database?", Lee and Thorp suggest that the personnel department, the line manager, and the employee should share responsibility for gathering and analyzing data (19:43). This would mean that these people would have to have access to the personnel information in order to do so. In the Air Force environment, this would translate to whichever base agency that originates the personnel information, the squadron commander, the direct supervisor, and the Air Force member or civilian employee.

Recommendations

This study has three major recommendations. First, the research indicates that there is sufficient shared data among squadron commanders to warrant a shared database. Second, more research needs to be done to more explicitly identify the particular personnel information needs of the Air Force squadron commander population. Third, the format of existing reports that the commanders use should be

changed so that the squadron commanders can easily note any changes in status or exceptions to the rule.

Shared Database. A database is an orderly collection of facts used in everyday business to meet the information requirements of an organization or its personnel. The ideal database would contain all the information required in the process of conducting a business. The ideal database would contain current, historical, and forecast information which would be stored in a logical manner and be available for retrieval as needed. Ideally, the database would provide only the information necessary to satisfy each request; however, cost considerations frequently rule out maintenance of a database at this level. Generally, the information contained in a database is limited to the more practical level of active data. Therefore, a database should be kept at a practical level while omitting information that can be stored more economically in a different manner. (27:383)

A shared database should be established at base level of every base. The database should contain the active data that is used by squadron commanders on a regular basis. A shared database would reduce the amount of redundant data that squadron commanders receive.

Top management needs to become involved in the automation of base and squadron functions. This would ensure that the IS/OA developed would agree with and

further the organization's strategic goals (4:14). To accomplish this, top management would have to follow the four steps recommended by Lee and Thorp in their study. These four steps are (1) assess organizational objectives and strategies, (2) set MIS mission, (3) assess environment, and (4) set MIS policies, objectives, and strategies (4:14).

Information that might be contained in a shared database should be determined using a questionnaire survey. This recommendation is covered in more detail later. Initially, the personnel information contained in the shared database should fall into the four broad categories reported by Morrison that were discussed in Chapter II.

Based on this research, the shared database should include, but not be limited to, the information found in the Alpha Roster, the information found in the Unit Personnel Management Roster (UPMR), the information found in the Control Roster, and the information found in the Commander's Enlisted Management Roster (CEMR). The personnel information found in the Alpha Roster specifically includes name, rank, social security number, duty title, duty location, duty telephone number, supervisor's name, and projected departure date. The UMPR contains information on the level and skills of unit manning authorizations. The UMPR also contains the authorized ranks and AFSCs for each job in the unit. The

Control Roster contains information on those personnel who have been identified as requiring extra supervision because of some unfavorable incident. The CEMR contains information on those personnel who have been placed on the Control Roster or who have Unfavorable Information Files in their records.

This shared database should be developed based upon the information requirements identified by the squadron commanders themselves. Each base should hire a contractor to develop the structure of the database to ensure the database's proper functioning and to properly identify the different functions and personnel data entities used in the everyday operations of a squadron.

Further Research. The data gathered and analyzed in this research should be corroborated by further studies. Confirmation of these results will strengthen the value of the information.

There are four areas of recommended research to follow on to this effort. These areas will be listed first, then explained. The first effort would be a duplication of this work. Another area to explore would be surveying group level commanders. The next recommendation is to that the research should follow the next logical progression of general systems analysis. This next step should be to survey a larger population of Air Force squadron commanders using this study as a basis to build upon. A last

recommendation is that the different major commands be segregated as to the personnel information the squadron commanders require.

The first effort of duplicating this work would add to the validity of the information gathered during this study. The same interview questionnaire could be used with modification to eliminate some of the problems encountered. The major difficulty with the survey questionnaire was the fact that the questions were open-ended and depended upon the interviewees' recall of events. The interviewees could be given the specific questions in advance of the interview so that they could make notations on the exact information used and, thus, more accurately express their usage of the different types of personnel information.

Administering this same interview questionnaire to a sample of group commanders would also provide interesting information. It would be very useful to identify what areas of personnel information group commanders feel are most useful. It would be interesting to note if there were differences in the kinds of personnel information used by both groups.

Next, a larger group of squadron commanders could be surveyed to determine the personnel information requirements of squadron commanders throughout the Air Force. This group should consist of at least one percent of the squadron commanders in the Air Force. The survey

instrument should group together the information from the reports mentioned in Chapter IV. For example, name, rank, and social security number could be grouped together as descriptive data. The survey instrument should ask about frequency of use of different types of personnel information and about the importance of the availability of each type of information to the squadron commanders.

Finally, the results of such a survey questionnaire could be compared by different commands. If a survey questionnaire were to distributed throughout the Air Force, it would be of great interest to compare the commands with regards to the types of personnel information they primarily use.

Format Of Existing Reports. Several of the squadron commanders noted off the record the difficulty they had in detecting any changes in personnel information they received from other agencies on base. They said this stemmed from the reports coming on page after page of computer printout. Five of the squadron commanders indicated that they had their administrative support sections reproduce at least part of the reports so that the changes in data were more easily recognized. The overwhelming majority of commanders (81.25 percent) indicated to the researcher that they would prefer the reports in a graphic format for quick reference, rather than in narrative form. Appendix B contains an excerpt

from a report generated by one of the squadron commanders in an attempt to make changes in certain types of information more obvious. In his article, Benbasat discusses several studies that have investigated the impact of the mode of presentation on profit performance and decision-making time (2:66). Benbasat states that, while there is no statistical difference in the decision-making time, the difference in the attitude of the manager is considerable (2:66). This difference in attitude is reflected in the managers use, or lack of use of, the information in the decision-making process (2:67). Therefore, if a majority of squadron commanders prefer to use a graphical presentation of data, the satisfaction and productivity of these commanders should improve if the data they require is presented in that form.

Summary

This research was an effort to determine the personnel information requirements of squadron commanders. The findings suggest that there are sufficient common areas of personnel information between squadron commanders to make the idea of a shared database a possibility. This finding indicates the need for further research to identify the common personnel information used by all the Air Force squadron commanders. This study and follow on research

could be useful in the management of personnel information throughout the Air Force.

Appendix A: List of Interviewees and Organizations

Alphabetical listing of the Air Force squadron commanders who were interviewed for this study and their organizations.

Baker, Matthew, Lt Col, 2081 Communications Squadron Commander

Bayba, Edward, 1Lt, 3490th Technical Training Group Squadron Section Commander

Bethel, James, Capt, 2750th Air Base Wing Squadron Section Commander

Blanpred, Robert B., Capt, Detachment 2, 1361 Commander

Davis, Elizabeth, Capt, Air Force Institute of Technology Squadron Section Commander

Feldhaus, Thomas E., Capt, 3495th Technical Training Group Squadron Section Commander

Griffith, Laura, Capt, 3484th Student Squadron Commander

McCoppin, J.V., Capt, 18159 Testing and Evaluation Squadron Squadron Section Commander

Miller, Lawrence, Capt, 3481 Student Squadron Commander

Miller, Willie, Major, 3498 Mission Support Squadron Commander

Pease, Anne Marie, Lt Col, USAF Regional Medical Center Squadron Section Commander

Romanczuk, Jeffrey B., Capt, 3480th Technical Training Group Squadron Section Commander

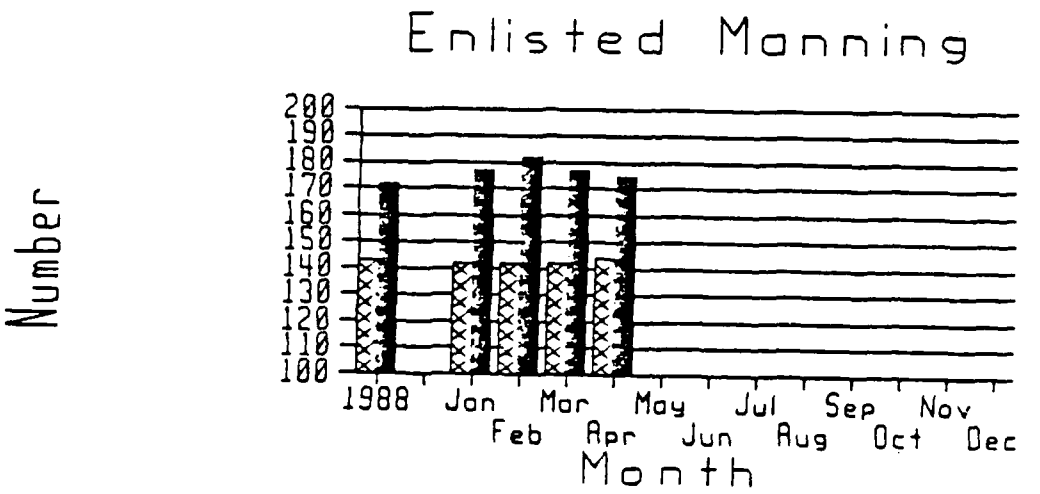
Stephens, B., Major, 2046th Information Systems Group Squadron Section Commander

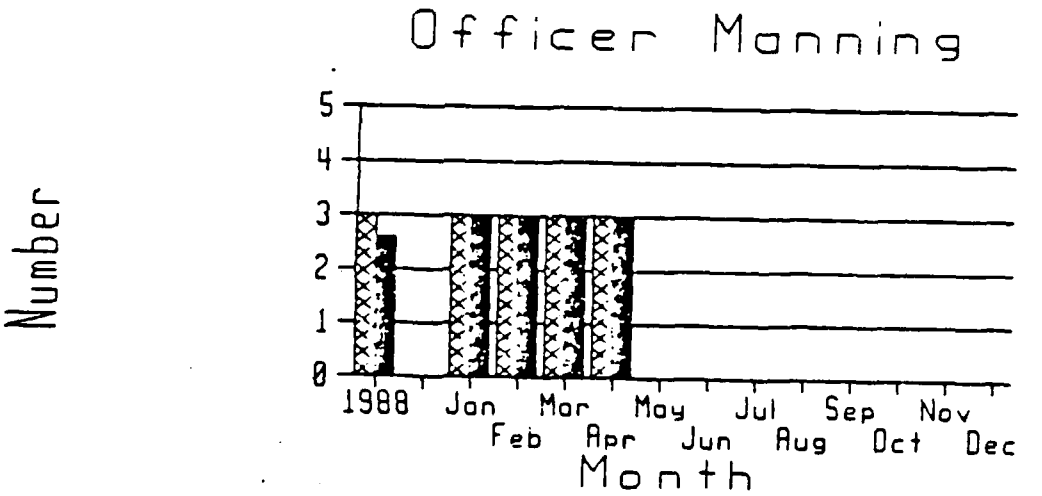
Weissman, Frances, Capt, 3498th Transportation Squadron Commander

Wilkinson, William, 1Lt, AF Headquarters Squadron Section Commander

Younginer, Matthew, Capt, 3498th Security Police Squadron Commander

Appendix B: Exercepts from Report With Graphic Format Generated By A Squadron Commander

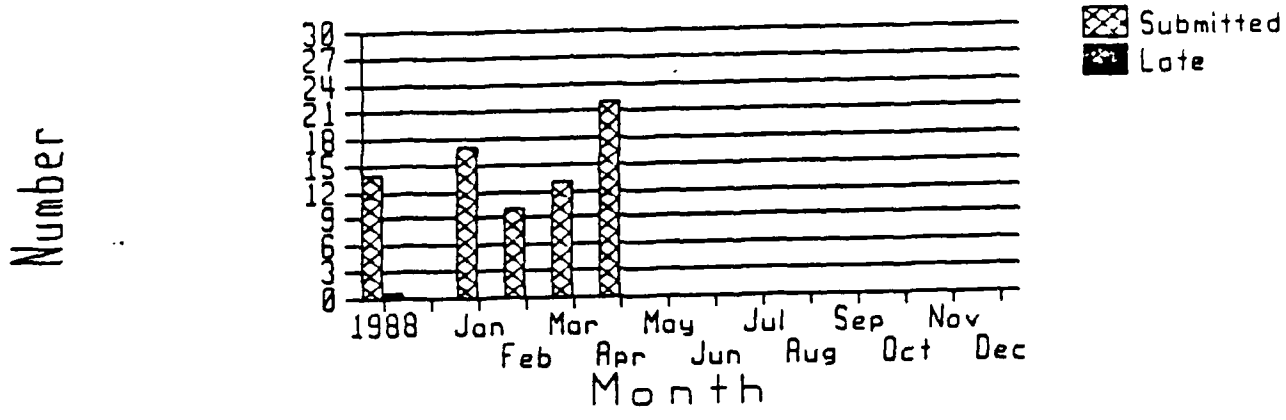




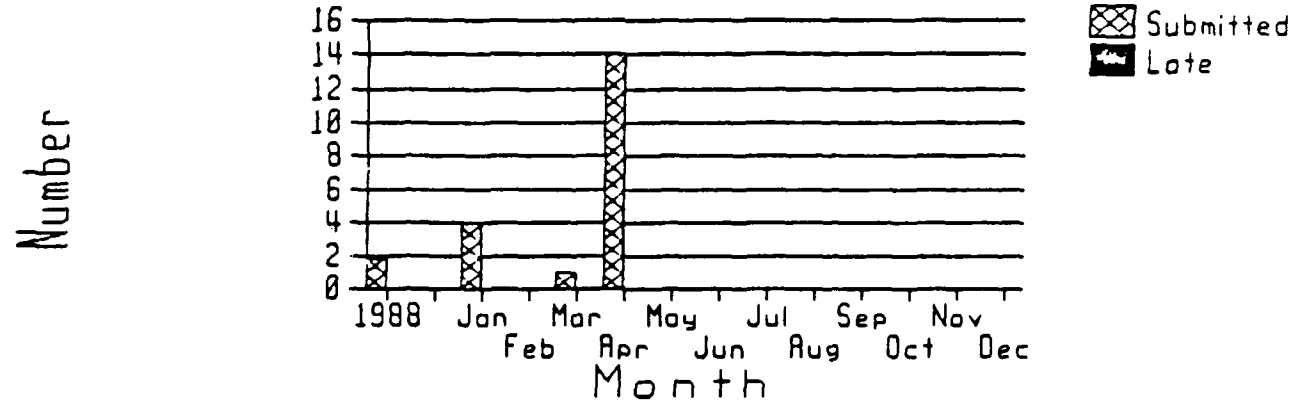
Authorized
Assigned

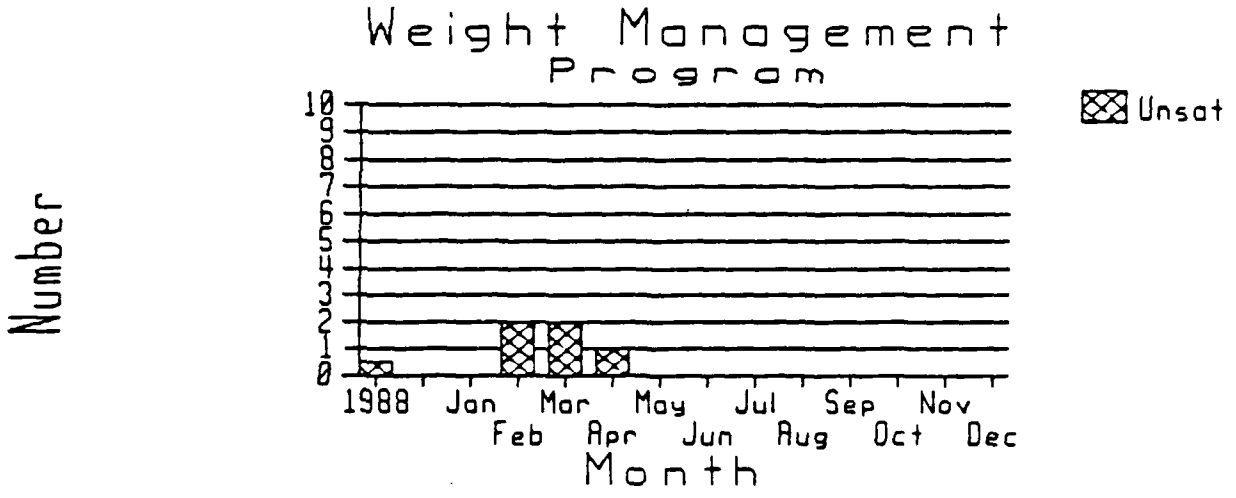
Source: 2081 Communications Squadron, Air Force Communications Command, Trends Analysis Report, Goodfellow AFB TX May 1989.

APR Statistics



Awards and Decorations

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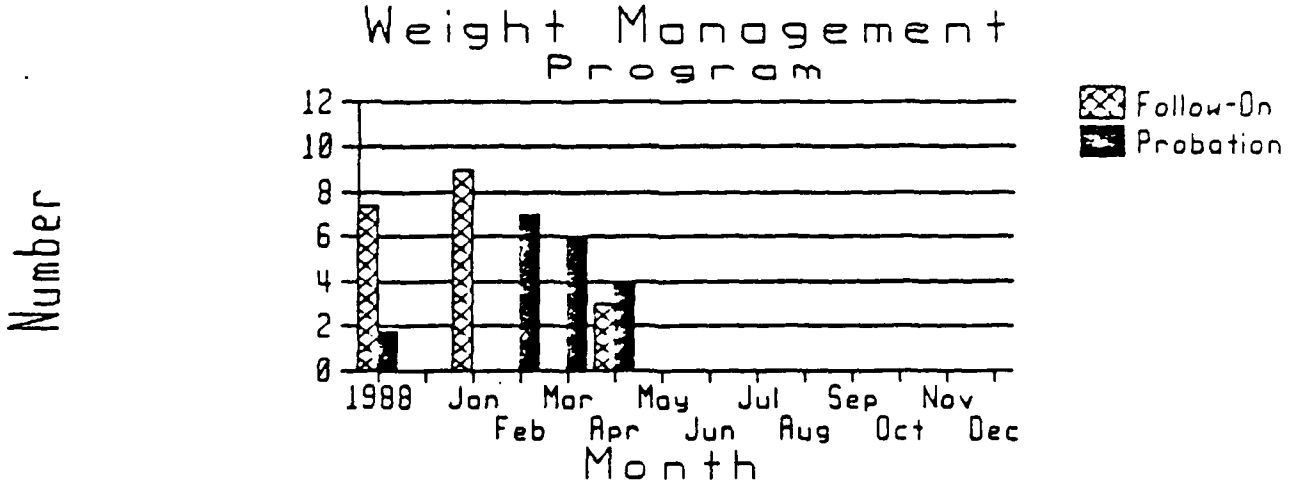
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Follow-On
Probation
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Vita

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The purpose of this study was to examine and determine the personnel information requirements of Air Force squadron commanders. This study had three basic objectives: (1) to identify the personnel information squadron commanders currently receive, (2) to identify what personnel information they would like to receive, but are not currently receiving, and (3) to identify the personnel information that squadron commanders use to do their everyday job.

The study found that the squadron commanders do have many common personnel information requirements and recommends development of common, shared databases at each base.

Analysis of interviewee responses found that there was some redundant personnel information received by squadron commanders. The majority of squadron commanders agreed that they receive the personnel information they need to carry out their duties. A few of the squadron commanders suggested changes to the format of the personnel information they currently receive. These squadron commanders believed that this format change would allow them to make more efficient use of the information they currently receive.