ABSTRACT

A PROGRAM FOR IMPROVEMENT OF INFORMATION SYSTEMS AT SMALL, PRIVATE, PREDOMINANTLY NEGRO COLLEGES

by Paul Allan Pacter

An information system is the network of flows of information from preparer to user. When contrasted with their development for business enterprises, research into the design of effective information systems for academic institutions has been neglected. Smaller private institutions, facing unique problems, lack of coordinating effort by supporting bodies, and limited resources, have generally lagged behind their larger sister institutions in adoption of integrated management information systems.

The small, private, predominantly Negro colleges have provided higher education to the majority of Negro young people in the past and will continue to do so for the foreseeable future. The quality of the service they render depends, in part, on the quality of the information provided to their decision-makers. It therefore follows that these (and all similar) institutions should be assisted in the development of effective management information systems. To that end this study examined the decision-making process at institutions of higher education, identifying decision centers according to hierarchial authority. The kinds of decisions made at each of these college decision centers were inventoried, examined, and found to be primarily of a managerial nature. Yet the present information systems at the 44 surveyed small Negro colleges, patterned after accrediting association requirements, are oriented to external stewardship reporting and only incidentally to managerial reporting.

The requirements of the regional accrediting association and of <u>College and University Business Administration</u>¹ were found to be directed toward financial reporting, and permissive of much freedom in selection of alternative accounting techniques. As a result compliance by the private predominantly Negro colleges with these requirements has not achieved the stated goals of uniformity and comparability. More important, compliance with accrediting agency standards has often been viewed as an end in itself, with the resulting college information systems inadequately informing decision-makers for their managerial decisions.

Criteria of <u>usefulness</u>, <u>objectivity</u>, and <u>feasibility</u> (following Sprouse) were established for the inclusion of

¹The guide to accounting principles for academic institutions.

measurable or knowable properties in a college information system. Determination of feasibility involves a measurement of the value of an item of information which, with present capabilities for measuring college outputs, has not been successfully accomplished. Rather than to abandon consideration of feasibility, compliance with regional accrediting agency standards, with <u>College and University Business Administration</u>, and with the recommendations of the 1966 publication, <u>Financial Analysis of Current Operations of Colleges</u> <u>and Universities</u>, was assumed to be feasible. Given this assumption, the characteristics of data to be processed by a college information system were examined and were found to be similar with the capabilities of automation at the punched card, unit record equipment level.

This study presents detailed statistics concerning present information gathering and processing practices at the 44 small, private, predominantly Negro colleges participating in the survey. The degree of generalizability of the findings and recommendations of this study to a specific college, of course, depends on the degree of similarity of that particular institution to those which were surveyed.

A PROGRAM FOR IMPROVEMENT OF INFORMATION SYSTEMS AT SMALL, PRIVATE, PREDOMINANTLY NEGRO COLLEGES

Ву

Paul Allan Pacter

A THESIS

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Department of Accounting and Financial Administration

.

PREFACE

During the summer of 1965, I spent over three months working with the registrar and business manager of a small (500 students) private (Methodist-supported and -operated) predominantly Negro college in Mississippi. My objective for the summer was to assist the college administration in the utilization of a punched card, unit record information system for its internal record keeping needs.

During that summer I had the opportunity to visit several other Negro colleges. I observed that the record keeping practices at these particular schools did not appear to provide the kinds of information with which college administrators could make the best possible informed decisions.

Such a cursory examination, of course, could do no more than indicate a possible area for further research. As was to become evident to me later, in fact, the entire area of college management information systems has been the subject of only a negligible amount of study, and the majority of what has been done concerns itself with external financial reporting.

With the encouragement of the Vice-President of a similar college in Florida, and the assistance of several administrative departments at Michigan State University, I

ii

initiated a proposal for research to the Division of Higher Education Research of the United States Office of Education, Department of Health, Education, and Welfare.

The proposed research had two general objectives: first, to determine if shortcomings in the business and academic records systems of the small private Negro colleges did, in fact, exist; and, second, if such shortcomings did exist, to develop profiles of the specific shortcomings, to identify their causes, and to project the consequences of alternative tactics to achieve improvements, in such a way as to develop a theory about academic records management which could be generalized to all academic institutions.

Tentative notification of approval of the project came in July, 1966. The exact terms of the contract between the United States Office of Education and Michigan State University were negotiated in September, 1966, with the official commencement of the project on September 15, 1966.

The research reported herein was performed pursuant to this contract. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

iii

ACKNOWLEDGMENTS

Michigan State University, and especially its Department of Accounting and Financial Administration, have provided me with three rewarding and enlightening years of graduate education, an experience which I would not hesitate for an instant to recommend to qualified individuals with aspirations toward teaching or research careers in accountancy. Dr. James Don Edwards, Chairman of the Department, has given of himself far more than I had any right to expect.

The members of my dissertation committee, Dr. Wilbur Brookover, Dr. Stuart Mead, and Dr. Gardner Jones (Chairman), have guided my thesis research in a spirit of professional co-partnership that belies our professor-student relationship.

The financial support provided me by the Department of Accounting and Financial Administration, the Earhart Foundation, and the Bureau of Research of the U.S. Office of Education has enabled me to concentrate on learning rather than earning.

To these individuals and groups, to my family, to my mentors, and to my fellow graduate students in accounting, I acknowledge a debt which will never be fully repaid.

iv

TABLE OF CONTENTS

		Page
PREFACE		ii
Chapter		
I.	INTRODUCTION	1
	1.1 Background of College Management	1
	1.2 Background of College Information Systems	5
	1.3 Background of the Predominantly Negro	- -
	Colleges	6 10
	1.5 Need for This Study	10
	1.6 Organization of the Study	11
	1.7 Limitations of This Study	12
	1.8 Procedural and Notational Conventions	13
		10
II.	PRESENT INFORMATION STANDARDS FOR COLLEGES A CRITICAL DISCUSSION	14
	2.1 History to 1952	14
	2.2 "College and University Business	
	Administration"	18
	2.3 The Regional Accrediting Agency	22
	2.5 The Regional Accrediting Agency	<i>L L</i>
	2.4 The Roles of Federal Government	26
	Agencies	20
	2.5 The Role of the Accounting Profession .	2/
	2.6 Recapitulation	29
III.	DECISION-MAKING WITHIN A COLLEGE	
	ENVIRONMENT	46
	3.1 General Decision Concepts	46
	3.2 General Information Concepts	48
	3.3 The College Environment	51
	3.4 Classifications of College Information .	54
	3.5 The Place of Accounting Information	
	Within the System	55
	3.6 College Organization	59

Chapter

	3.7	Decision Centers Within a College 3.7.1 Policy-Making Decision Centers	. 6	3 3
		3.7.2 Tactical Decision Centers	• 6	5
		3.7.3 Operational Decision Centers .	• 6	5
	3.8	Inventory of Decision Functions Within		
		a College Hierarchy	. 60	6
		3.8.1 Policy Level Decisions	. 6	7
		3.8.2 Tactical Level Decisions	. 6'	7
		3.8.3 Operational Level Decisions	. 70	0
	3.9	Recapitulation	. 72	2
IV.	COLLI	EGE INFORMATION SYSTEM DESIGN	• 7	3
	4.1	Decision Center Organization	. 7	3
	4.2	Information Systems	. 74	4
	4.3	College Information Systems: A		
		Managerial Orientation	• 7 [·]	7
	4.4	"Financial Analysis of Current		
		Operations of Colleges and		
		Universities".	. 80	0
	4.5	Efficiency of College Information		Ŭ
	1.5	Systems	9	1
	4 6	Coordination of a College Information	• 2.	-
	4.0	Sustam	a.	1
	A 7	Pecanitulation	• J.	λ
			•)	T
v.	PRESE	ENT INFORMATION SYSTEMS AT PRE-		
	DOMIN	NANTLY NEGRO COLLEGES	• 9 [·]	7
	-			
	5.1	The Survey	• 9 [.]	7
	5.2	Accounting Periods and Accruals	. 9	9
	5.3	Fund Accounting	. 104	4
	5.4	Annual Audit	. 10'	7
	5.5	Budget Preparation	. 10	9
	5.6	Budgetary Control	. 11	3
	5 7	Financial Reports	11	5
	5 8	Cost Assignment and Allocation	• 11	à
	5.0	Internal Control	·	2
	5.9	Andemia Decorda	. 12/	2
	5.10	Academic Records	• 12	0
	2.11	Present Practices Compared with	1.2	0
	F 10	Present Standards	• 12	7
	5.12	present practices compared with		~
		Decision-Makers' Needs	· 130	0
	5.13	Miscellaneous Findings	. 13	5
	5.14	Recapitulation	. 13	5

Chapter

VI.	EFFI	ICIENCY OF COLLEGE INFORMATION SYSTEMS	137
	6.1	The Feasibility Question	141
	6.2	Efficiency	141
	6.3	Automation of a College Information	
		System	147
	6.4	Present Automation at Small Private	
		Negro Colleges	153
	6.5	Recapitulation	155
VII.	CONC	CLUSIONS AND RECOMMENDATIONS	157
	7.1	Conclusions	157
	7.2	Recommendations	162
	7.3	A Final Challenge	164
REFEREN	CE BI	IBLIOGRAPHY	165

Page

LIST OF FIGURES

Figure			Page
3.1	The scope of accounting information	•	58
3.2	Organization structure for a liberal arts/education-oriented college of around 1,000 students and 50 faculty members	•	64
4.1	Decision centers of a small, private college	•	73
5.1	Selected findingsaccounting periods and accruals	•	104
5.2	Selected findingsfund accounting and inventories	•	107
5.3	Selected findingsannual audit	•	109
5.4	Selected findingsbudget preparation	•	113
5.5	Selected findingsbudgetary control	•	115
5.6	Selected findingsfinancial reports	•	118
5.7	Selected findingscost assignment and allocation	•	122
5.8	Selected findingsacademic records	•	129

LIST OF APPENDICES

Appendix		Page
2-A	Basic Principles	30
2-в	Standard Four, Financial Resources; Illustrations and Interpretations	38
2– C .	Applicability of Auditing Standards to College Audits	44
4- A	Symptoms of Inadequate Management Reporting	96

CHAPTER I

INTRODUCTION

1.1 Background of College Management

Higher education in the United States has experienced phenomenal increases in demands for its services since World War II. Approximately 1,500 junior and senior colleges and universities served nearly 2,000,000 students in the years immediately after the War; today nearly 2,200 such institutions enroll about 6,000,000 students [21, p. 37; 13, p. 757]. Predictions by the U.S. Office of Education indicate over 8,000,000 degree candidates by 1974 [21, p. 29].

Annual operating and capital expenditures by higher education have increased from under \$2 billion after the War to \$10 billion today and are projected to reach nearly \$15 billion by 1974 [21, pp. 35-36].

A college¹ is essentially an <u>environment for learn-</u> <u>ing</u>. All colleges have been created by a segment of society with an overriding central mission--<u>encouragement of</u>

¹The word "college" will be used hereinafter in the generic sense to include junior and senior colleges and universities which grant academic degrees in recognition of learning achievement.

<u>learning</u>. In fulfillment of this mission within the boundaries of specific institutional objectives, every college performs, to varying degrees, each of four direct service functions and one indirect support function [25, pp. 9-10]:

Direct Service Functions

- 1. Instruction
- 2. Research
- 3. Services to the public
- 4. Services to the academic community

Indirect Support Function

5. General support of the four direct service functions.

In fulfillment of its mission--education--and in performance of these five functions, a college combines certain resources in such a way as to maximize the value to society of outputs which, unfortunately, are not susceptible to quantitative measurement. The resource inputs of a college are of three general types:

- 1. Human resources
- 2. Physical resources
- 3. Academic climate.

Human resources include faculty, college administration, students, and supporting staff.

Physical resources include the college buildings and grounds and equipment and supplies.

Academic climate is a general favorable environment for learning, made up only in part of human and physical resources. It is also comprised of attitudes and synergistic interactions among human and physical resources and, therefore, can only in part be purchased in the market place.

In accomplishing any mission it is essential that there be management--"the task of creating the internal environment for organized effort to accomplish group goals," which in the case of a college are the encouragement and advancement of learning [11, p. 4].

Management functions have traditionally been classified into five activities:

- Planning: selecting objectives and programs to meet those objectives.
- 2. Organizing: determining the activities needed to accomplish the objectives and developing authority relationships.
- 3. Staffing: manning the organized activities.
- 4. Directing: guiding and supervising subordinates.
- 5. Controlling: assuring that actual events conform to plans.

Despite statements (and practices) one sometimes finds to the contrary, "management is essentially the <u>same</u> <u>process in all forms of enterprise</u> and at all levels of organization" [11, p. 4]. Former Chancellor Litchfield of the University of Pittsburgh wrote that "administration and the administrative process occur in substantially the same generalized form in industrial, commercial, civil, educational, military, and hospital organizations" [12, p. 28].

"Good" management brings about "good" results which are defined by Koontz and O'Donnell as "the <u>efficient attain-</u> <u>ment</u> of enterprise objectives, whether economic, political, educational, social, or religious" [11, p. 7].

Yet only recently have colleges begun to apply those techniques of "scientific management" developed originally by and for businesses, and later adopted by government, to manage more efficiently their resources in their central mission--learning. A 1966 report by the University of Michigan's Institute of Public Administration¹ begins by stating, "Higher education in the United States is in the midst of a managerial revolution" [25, p. 3]. Rourke and Brooks indicate that "a growing number of universities are beginning to experiment with theories and practices usually identified with scientific management, or, as some would prefer, 'managerial science'" [18, p. 155]. Brown and Mayhew state that "higher education has come to adopt practices of management and control found effective by business, industry, and the military. Once it was assumed that education was different from business and could be conducted by unbusiness-like methods" [3, p. 86].

¹Entitled, <u>Financial Analysis of Current Operations</u> of Colleges and <u>Universities</u>.

A parallel might be drawn between educational institutions and business firms: the development of more effective management techniques has come initially from large industrial firms, with smaller, more closely held firms imitating after some lapse of time. Similarly the adoption of modern administrative practices in colleges has come first at large public institutions and major private universities. Yet to accomplish their goals <u>all</u> colleges <u>must</u> adopt such techniques and innovate new ones to fit their needs. The alternative is either that they perish or render a service inferior to that of more well-managed institutions.

1.2 Background of College Information Systems

Decision making pervades all five of the management functions (planning, organizing, staffing, directing, controlling), but is most critical in the planning and controlling functions. Decision making is essentially a judgment problem, a choice among alternatives. It involves (1) definition of the issue, (2) analysis of the existing situation, (3) delineation of alternatives, (4) deliberation, and, finally, (5) choice [12, p. 14]. Because decision making is essentially judgmental, various tools have been developed to facilitate <u>informed</u> judgments and to reduce the amount of chance involved in making the decision.

The basic input of these tools to facilitate judgment is <u>information</u>.

Every organization must develop a system whereby information needed for decision making is gathered, processed, stored, and retrieved in such a manner as to inform a decision-maker for his decision. A college, being an organization the purpose of which is to provide an environment for learning, must develop such an information system.

There are certain qualities which distinguish effective information systems from ineffective ones, and efficient systems from inefficient ones. Too often, colleges, and particularly smaller, private institutions, have centered the development of their information systems around accrediting agency or governmental standards rather than around the needs of their decision-makers. These standards have generally been outer-directed; that is, they have been established for external reporting purposes. Moreover, these standards are broadly permissive, and adoption is at times non-obligatory.

A lack of research into the information needs of internal decision-makers in a college environment has prevented institutions of higher education, and particularly smaller colleges which are imitative rather than innovative in management, from developing sound information systems.

1.3 Background of the Predominantly Negro Colleges

Although the predominantly Negro colleges and universities in the United States enroll less than 3 percent of all college students, their student bodies include over half

of all Negroes attending institutions of higher education in this country. And despite attempts toward increased racial integration in higher education, these Negro colleges will continue to educate a substantial portion of Negro college students for the foreseeable future [14, pp. 3-4].

Factors which range from psychological to geographical, from sociological to financial, indicate that these colleges will continue to attract many American Negro youths and but a tiny handful of non-Negro students. As Dr. Earl McGrath, Executive Officer of Columbia University's Institute of Higher Education, reports in his exciting study, <u>The Predominantly Negro Colleges and Universities in Transition</u>, "if, therefore, many Negro young people, particularly those in the southern region, are to receive <u>any</u> higher education, the institutions now primarily serving Negroes must for a considerable span of years furnish it" [14, p. 5].

There were 123 predominantly Negro¹ colleges and universities in the United States at the time of the McGrath study (1963-1964), and they "run the entire gamut of quality within American higher education" [14, p. 5]. They serve approximately 110,000 students at the senior college level and about 7,000 at the junior college level. The great majority of Negro colleges is in the eleven southeastern

¹Predominantly Negro means that over 50 percent of the student enrollment is Negro.

states of our nation, but several range as far north as Pennsylvania and Ohio and as far west as central Oklahoma.

Nearly all of these institutions began operations immediately subsequent to the Civil War, for the most part as elementary and secondary schools. Only in later years did they move toward college level studies.

The following table, compiled from Appendix A of the McGrath study, aggregately classifies the predominantly Negro colleges by sponsorship, curriculum level, accreditation,¹ and enrollment for 1963-1964:

	Public		Private		
	Senior	Junior	Senior	Junior	
Number of schools	35	16	52	20	
Number of accredited schools	33	3	39	4	
Aggregate enrollments	65,216	3,932	41,630	2,977	

Since 1963-1964 at least eleven of the publiclysupported junior colleges² have merged with their predominantly

¹Accredited means that the school is accredited by the appropriate regional accrediting agency, except for the two professional schools (medical and theology) accredited by the appropriate professional accrediting agency.

²Nearly all of these in Florida.

white counterparts, and at least one private junior college has discontinued operations; additionally, one two-year school has moved to the baccalaureate level. Enrollments have shown a continued sharp increase in a majority of the Negro colleges.

Note that over 90 percent of the publicly-supported Negro senior colleges and 75 percent of the privately supported Negro senior colleges were accredited by their regional accrediting association in 1963-1964. Nearly all of the remaining unaccredited senior institutions are presently making serious efforts toward gaining accreditation and, of course, the accredited schools are striving to maintain their status.

Since the predominantly Negro colleges fill a valuable need of providing a learning environment for an important part of our society, it therefore follows that they be encouraged to develop as fully as possible in their endeavors.

And since the development of an effective and efficient information system provides a basis for making informed decisions for "good" management, it follows that such development should be encouraged.

1.4 Objectives of This Study

This study, therefore, has three objectives:

<u>First</u>, to examine present standards which have been established for colleges and which have an effect on college information systems and to point out any weaknesses or shortcomings.

<u>Second</u>, to examine the business and academic information systems at predominantly Negro colleges and to point out any weaknesses or shortcomings.

<u>Third</u>, to make recommendations for the improvement of both the present standards and the information systems at the predominantly Negro colleges.

1.5 Need for This Study

Because colleges and universities have only recently come to adopt those principles of sound management heretofore innovated and employed by business and, later, government and the military, there is a paucity of published literature in the area of college management, specifically in the area of college information systems development. And since standards established by the appropriate accrediting agencies and by government have been general and have been directed toward external reporting, there is need for research into the development, at institutions of higher education, of information systems which provide a sound basis for informed decision making. Further, since the predominantly Negro colleges and universities in the United States fulfill an important mission--providing an environment for learning to half of the Negro-American college students--their development should be encouraged. And since the management of such colleges involves the making of decisions or informed judgments, it follows that present information systems at Negro colleges should be examined, and weaknesses and shortcomings indicated, so that needed improvements can be made.

1.6 Organization of the Study

<u>Chapter Two</u> will critically discuss the evolution of present standards for colleges which affect their information systems, pointing out strengths and weaknesses.

<u>Chapter Three</u> will consider decision-making within a college environment, defining college decision systems, contrasting such systems with those of businesses.

<u>Chapter Four</u> will discuss the design of a college information system based on the decision system defined in Chapter Three.

<u>Chapter Five</u> will present the results of a survey of present information systems at small, private, predominantly Negro colleges in the United States, including a critical commentary.

<u>Chapter Six</u> will consider efficiency of information systems in general and the efficiency of the present systems at Negro colleges in particular, including a discussion of automation.

<u>Chapter Seven</u> will present those conclusions and recommendations which have resulted from this study.

1.7 Limitations of This Study

In a sense, this research is a pilot study. Perhaps all original research is in the nature of a pilot study, but when one delves into an area which is yet to develop widely accepted theories, one is more prone to transgress than when researching in a more well-developed field.

Second, this study will be limited in scope by surveying only small, private, predominantly Negro colleges and by theorizing on the management of only these small institutions. One would expect that the generalizability of the results of this study might be less for large schools and publicly supported institutions than for colleges with characteristics similar to those surveyed.

Finally, the data presented in Chapter Five as the results of the survey are limited by the quality of present college information systems and by the willingness of officers of such institutions to divulge such data and by the accuracy of what was reported by these officers.

It might be added that the chief fiscal officer and the chief academic records officer of nearly every institution in the survey expressed his interest in the study and its findings.

1.8 Procedural and Notational Conventions

The ensuing report will respect the confidential nature of the data gathered from specific colleges and will present such data as numbers or percentages of institutions rather than names of the schools. Anonymity will be relaxed only for data which have been published publicly.

Nor will recommendations be made for improvements at specific institutions. The administrators of each school, however, can evaluate their own situations in the light of the general conclusions and recommendations of this study.

References of a bibliographical nature will be presented in square brackets following a reference, in the form [source number, page number]. Source numbers are indicated in the Bibliography following Chapter Seven. Comments of a descriptive nature will be included as footnotes on the page of text to which they apply.

Appendices will be included immediately following the chapter to which they relate. Appropriate reference will be made in the body of the chapter.

CHAPTER II

PRESENT INFORMATION STANDARDS FOR COLLEGES--A CRITICAL DISCUSSION

2.1 <u>History to 1952</u>

The preface to Charles F. Thwing's book, <u>College</u> <u>Administration</u>, published in 1900, states that it is "the first book published on the administration of the American college." The fact that Harvard College was founded in 1636, Yale in 1701, Princeton in 1746, and so forth, imbues Thwing's statement with significance. Surely Harvard, Yale, Princeton and the other American colleges were "administered" throughout their existence. Why, then, did it take nearly 300 years for someone to theorize in print on college management? Why did professional college managers not emerge until the twentieth century?

History reveals some clues. First, the field of scientific industrial management did not begin until the 1880's.² However, professional business managers emerged

¹New York: The Century Co.

²Frederick W. Taylor's <u>Principles of Scientific</u> <u>Management</u> was published in 1911.

with the development of "shops" in the late 1700's. Why did not professional college administrators develop similarly?

Perhaps of significance were attitudes toward education throughout history. Universities began in western Europe in the twelfth and succeeding centuries as guildlike associations of students, following the rediscovery of the teachings of Aristotle.¹ They were "owned and operated by those who composed them, namely, the teachers and the students" [4, p. 4). Even after many western European governments nationalized their universities in the 1800's, management of all internal operations remained in the hands of the fellows (that is, the faculty), who elected one of their own as titular master. Such, in fact, is the case in many European universities today.

It is therefore most likely that the founders of the First American colleges established them in the European tradition: colleges began in the New World as associations of scholars to be managed by these scholars. The one distinguishing innovation of the American institutions was the non-academic governing board. These boards of prominent officials of church and state were established for the purpose of launching the new institutions toward success, but

¹For example: Oxford (12th century); Cambridge (12th century); Leipzig (1409); Uppssala (1477).

somehow just never dissolved themselves.¹ After early faculty-trustee struggles at such places as Harvard and William and Mary, the result was supreme controlling authority over American colleges being vested in non-academic boards of trustees. College administrators did not exist for over 200 years. Then the controversy was rekindled near the start of the twentieth century.

Around 1900 the professors asserted themselves, demanded freedom from intellectual boundaries set up by trustees. In 1915 the American Association of University Professors was organized. Curricula broadened from the traditional, limited program to unrestricted search for truth in diverse fields. Thus the university, as we know it today, was born, and with it full-time college administrators.

With the growth of professional college management came the need for more adequate financial records. In 1921 the American Council on Education established the Educational Finance Inquiry Commission, which published thirteen volumes on the finance and management of higher education. In 1922 Trevor Arnett published a brief but forward-looking work, College and University Finance.² Lloyd Morey, chief fiscal

Capen likens them to Marx's dictatorship of the proletariat which ideally would wither as its task was completed, but, in fact, has not [4, p. 5].

²New York: General Education Board.

officer and later president of the University of Illinois, published his <u>University and College Accounting</u> in 1930.¹ In 1935, the American Council on Education published the report of the National Committee on Standard Reports for Institutions of Higher Education entitled <u>Financial Reports</u> for Colleges and <u>Universities</u>,² which became the precursor of the presently accepted handbook of college business administration.³ In 1944 John Dale Russell published his classic <u>The Finance of Higher Education</u> which set forth to outline "the problems of the management of business and financial affairs in institutions of higher education and to present the best available solutions to those problems" [19, p. v].

Each of these and other works of the early decades of this century contributed toward improved college management and the requisite improvements in college recordkeeping. In 1938 the National Committee on the Preparation of a Manual on College and University Business Administration⁴ was organized by the American Council on Education. Supported by two grants from the Carnegie Foundation and one from the

⁴Hereinafter, the "National Committee."

¹New York: John Wiley & Sons.

²Chicago: University of Chicago Press.

³College and University Business Administration, to be discussed in detail in section 2.2 of this study.

Commission on Financing Higher Education, the National Committee prepared a complete revision of <u>Financial Reports for</u> <u>Colleges and Universities</u>. The first volume of their work, <u>College and University Business Administration</u>, was published in 1952 by the American Council on Education.

2.2 "College and University Business Administration"

It is significant that the National Committee, under the chairmanships first of J. C. Christensen and later of A. W. Peterson, required fourteen years from inception to publication of their manual. National Committee membership included representatives of each of the regional associations of college business officers, the American Council on Education, and the U.S. Office of Education. A special committee of the American Institute of Accountants¹ advised on pertinent accounting and auditing matters. Business officers of most American colleges awaited the report of the National Committee with much anxiety.

College and University Business Administration has been received, in the last fifteen years, with even more enthusiasm than when it was awaited. It has become, in effect, the "bible" of college business officers. The foreword to Volume II of the same work, published in 1955, notes the impact in just three years of Volume I [17, p. v]:

¹Now the American Institute of Certified Public Accountants.

Volume I . . . has had wide acceptance. The principles of college and university accounting and reporting, as set forth in Volume I, have been adopted by a number of states as the official accounting procedure for their state institutions of higher education. The U.S. Office of Education will also use Volume I as the basis of the form on which colleges and universities report financial data to that Office.

The titles of its nine chapters give an indication

of the content of Volume I:

- I. Principles of College and University Business Administration
- II. Basic Principles of College and University Accounting
- III. Budgets and Budgetary Accounting
- IV. Reports--Annual and Internal
- V. The Balance Sheet and Supporting Statements
- VI. Current Funds Operating Statements and Accounting for Auxiliary Enterprises
- VII. Subsidiary Statements and Accounting Procedures for Loan, Endowment, Annuity, Plant, and Agency Funds
- VIII. Audits
 - IX. Allocation of Indirect Expenditures and Determination of Costs.

The accounting principles recommended in Volume I are based on the fund theory of accounting, or, simply, <u>fund</u> <u>accounting</u>, with the intent that "reasonable uniformity in the accounting procedures and in the published reports is both possible and highly desirable" [17, p. 15]. Vatter, long an advocate of the fund theory of accounting for businesses, ¹ describes a fund as follows [26, p. 12]:

As opposed to the entity or proprietary theories.

A fund, in the context of accounting for government and eleemosynary institutions, is a unit of operations or a center of interest; and, in a completely nonpersonal sense, the fund is the accounting entity. . . The accounts of each fund recognize not only all the asset items but also all the equities that pertain to that fund; in addition, there are also present complete classifications of revenue, expense, and income accounts. . . The fund is the <u>unit</u> of accounting in the sense that it represents the field of attention covered by a given set of financial records and reports.

The complete text of the sixteen basic principles of college accounting set forth in Volume I of <u>College and</u> <u>University Business Administration</u>, is presented as Appendix 2-A following this chapter.

Volume I is presently under revision by the National Committee and the new edition is expected to be released in October, 1967. In a letter from the Treasurer of the American Council on Education, it was stated to this writer that the present basic principles will remain in the revised volume, but several additional ones will be added.

Volume II of <u>College and University Business Admin</u>-<u>istration</u> deals with specific areas of managerial operation of colleges, such as purchasing, physical plant and property, staff, and investment management.

There is no doubt that the two volumes, in particular the first, have had enormous favorable impact on college record keeping. Yet this is not to say that college record keeping has approached either uniformity or perfection. First of all, Volume I deals almost entirely with

accounting and reporting rules. Yet accounting information is but a part of an entire information system. Secondly, adherence to the accounting principles of Volume I is not mandatory for unaccredited institutions, and certain alternatives in application are permitted. Thirdly, many smaller institutions, such as those to be considered in Chapter Five, have come to regard Volume I as an "end" in itself. That is, the goal of their information system standards should be limited to compliance with the letter of Volume I. In this regard, it might be argued that Volume I has had a dampening effect on the growth of college information systems. Fourthly, Volume I does not use a "total systems" approach to college information processing because it was not, in fact, intended to provide a basis for the establishment of a total college information system. Finally, Volume I is oriented to external reporting plus budgetary control of costs. Yet a myriad of other useful managerial reports can be prepared for educational administrators. In short, then, College and University Business Administration is an excellent but incomplete guidebook to the establishment of a college information system, and any tendency to regard it as complete will result in an inadequate set of available managerial information.

2.3 The Regional Accrediting Agency

Every college and university in the United States is within the geographical domain of one of six voluntary associations of non-profit colleges and schools. Accreditation by the appropriate regional accrediting agency has come to be regarded, especially by the general public, as proof that an institution is meeting at least minimum standards in its programs. As an example, the philosophy of accreditation by the Southern Association of Colleges and Schools is expressed in the opening paragraph of its <u>Standards for Colleges</u> [23, p. 21.

p. 3]:

The College Delegate Assembly of the Southern Association of Colleges and Schools is charged with the responsibility of accrediting institutions of higher learning in the southern region of the United States. This responsibility is exercised through the Commission on Colleges which considers its principal concern in accreditation to be the improvement of educational quality in the institutions of the area it serves.

Each of the regional accrediting associations in the United States has established a set of standards for colleges. These standards are relatively few in number and fairly general. For example, the Southern Association of Colleges and Schools has only eleven standards, entitled as follows [23, p. 5-30]:

Standard	One:	Purpose
Standard	Two:	Organization and Administration
Standard	Three:	Educational Program
Standard	Four:	Financial Resources
Standard	Five:	Faculty
Standard	Six:	Library
Standard	Seven:	Student Personnel

Standard Eight: Physical Plant Standard Nine: Special Activities Standard Ten: Graduate Programs Standard Eleven: Research.

Each of these standards (except Standard One) is presented in two parts: (1) a statement of principles (which can be changed only by the Association's overall representative chamber, the College Delegate Assembly) and (2) a numbered list of current illustrations and interpretations (which are subject to change "as evidence justifies" by the Commission on Colleges of the College Delegate Assembly).

Of course, every standard will have some influence on the development of an information system at a college or university. Certain portions of these standards, however, are worthy of mention in their direct connection to the building of an effective information system.

Standard One requires a clearly defined statement of institutional purpose, that is, subobjectives in its overall mission of preserving and creating knowledge. "All institutional programs . . . should be designed to achieve the stated purpose" [23, p. 5]. Thus a college administration needs information to measure achievement of purpose.

Standard Two requires administrative organization to marshall and coordinate resources to accomplish college objectives. This is a requisite to the implementation of a decision system and therefore an information system.

Standard Four, "Financial Resources," includes principles and interpretations concerning income, organization, expenditures, budgets, accounting and reporting, and purchasing. It recommends central control of business and financial functions under a chief fiscal officer responsible to the president and appointed by the governing board. His responsibilities include preparation of the annual budget and budgetary control, accounting and financial reporting, operation of the physical plant and auxiliary enterprises, procurement, and safeguarding funds.

In its interpretations which have a direct bearing on the design of an information system, Standard Four is very general in nature. An example of this generality may be found in the following quote: "Regardless of the size of an institution, an annual budget in <u>appropriate detail</u> is essential to proper operations" [23, p. 12, emphasis supplied].

The accounting information system of an accredited school must follow the generally accepted principles of college accounting as outlined in <u>College and University Busi</u>ness Administration, Volume I.

Neither this nor any other standard provides for the types of reports, financial or otherwise, which measure the accomplishments of the educational program as outlined in Standard Two.¹

¹Examples of this type of report are discussed in Chapter Four of this study.
Standard Four also provides for an annual, certified audit and an "organized program of internal audit and control" [23, p. 13].

In short, the implications of Standard Four on the development of an information system are many, but they also are insufficient. Standard Four provides a starting point from which to build a financial information system. The complete text of Standard Four is reproduced as Appendix 2-B following this chapter.

Standard Five, "Faculty," requires reports of teaching loads and evaluation of faculty performance which must be built into a college information system.

Standard Seven considers academic and personal student records [23, p. 19]:

Institutions shall have adequate student records but should be careful not to maintain unnecessary duplications. The registrar or other appropriate institutional official shall keep files of admissions and matriculation information, scholarship records, transcripts, and other essential data. Some of these records should be duplicated and other pertinent records should be developed and maintained by appropriate academic deans, directors, department heads, and any others charged with the responsibility of counseling.

The eleven standards for colleges provide selected guidelines for the development of an information system within a college. During an interview with several officials of the Southern Association of Colleges and Schools, a question was raised as to why the regional accrediting agency does not provide more specific guidelines and perhaps uniform techniques for business and academic record keeping. The response was a fear that doing so would result in the accrediting association accrediting itself. Yet the regional accrediting agencies can do much to foster the development of effective college management information systems. For example, selected case studies, under the sponsorship of the regional accrediting agency, would provide an administrator of a small college with useful examples with which to compare his own particular situation.

2.4 The Role of Federal Government Agencies

The Federal government has played an advisory role in the development of college management practices and college information systems. It does not have the authority to dictate managerial standards.

Its advisory role can still be a very useful and, at times, persuasive one. For example, in designing the form on which colleges report annual operating data to the Office of Education along the lines of the accounting procedures recommended in <u>College and University Business Administra-</u> <u>tion</u>, it has provided impetus for universal adoption of those procedures.

Its financial support of research studies encourages continued improvement of all facets of college management. Government publications, such as the 1965 book, <u>Guide to</u>

<u>College and University Business Management</u>, ¹ provides managers of smaller colleges with ideas for improving their administrations.

2.5 The Role of the Accounting Profession

The accounting profession generally has given little consideration to accounting for non-profit enterprises; and the majority of professional literature in this area concerns accounting for governmental units rather than colleges. Certain publications, primarily from the American Institute of Certified Public Accountants, have mentioned college accounting, usually from the point of view of an independent auditor. Appendix 2-C discusses one such publication on the applicability of generally accepted auditing standards to examination of college records.

Practically none of the literature of the major accounting professional journals has dealt with accounting information systems at colleges. The journal, <u>College and</u> <u>University Business</u>, is the primary source of literature on college accounting systems.

From time to time, professional committees have worked with other groups interested in college accounting. The Special Committee on College and University Accounting of the American Institute of [Certified Public] Accountants

¹U.S. Department of Health, Education, and Welfare, Office of Education, publication number OE-53011.

was formed in November 1950 to cooperate in the preparation of <u>College and University Business Administration</u>. The Special Committee participated in drafting the text of Volume I, especially chapter vii, "Audits," and reviewed all other draft material.

Certain accounting firms have provided technical and financial support for research studies. A good example is <u>Annotated Tabulations of College and University Accounting</u> <u>Practices</u> which was compiled by Haskins and Sells in 1964 [16, p. iii].

Manufacturers of equipment used in processing accounting (and other) data have done some work on college information systems development. The International Business Machines Corporation has publications which describe good examples of automated data processing systems at colleges ranging from 500 students to major universities. The Royal McBee Company has adapted its "Keysort" system to college academic record keeping.

In the end, though, the college accountants themselves, through the National Association of College and University Business Officers and five regional associations, have done the lion's share of study in the area of college information systems development, and interchange of ideas has often been informal, either by personal observation or conferences.

2.6 Recapitulation

In contrast with research into the development of information systems for business corporations, college system development has been all but neglected. Regional accrediting agencies have developed standards for colleges which give only minimal general requirements and are concerned primarily with stewardship reporting and budgetary financial control. Managerial information systems which provide for both intra-college comparisons over time and inter-college comparisons are yet to be considered at length.

Chapter Three will examine how decisions are made within a college environment and the kinds of decisions which must be made, for one cannot effectively alter the decision-making process to suit the available information system, but rather, the information system must be altered where necessary to the needs of the decision-making process.

APPENDIX 2-A

The following basic principles of institutional accounting are reproduced from pages 16 through 22 of <u>College and University Business Administration</u>, Volume 1, published in 1952 by the American Council on Education, by permission of the publisher (Copyright 1952, American Council on Education, 1785 Massachusetts Avenue, Washington, D.C. 20036).

BASIC PRINCIPLES

To meet the requirements of financial accounting and reporting for institutions of higher education, the following basic principles are recognized.

1. The accounts should be classified in balanced fund groups and this arrangement should be followed in the books of account and in the financial reports.

In order to ensure the observance of the limitations and restrictions placed on the use of the various funds, it is necessary that each fund group be treated as a separate and distinct entity in the books of account. These same fund groups should appear in the financial reports in order to show whether the applicable limitations and restrictions have been observed. If the annual operating budget includes funds of more than one group, that fact should be indicated clearly by appropriate segregation.

2. The financial transactions of the institution should be reported by fund groups.

This principle provides that the detailed transactions of the various fund groups should not be intermingled.

3. <u>The following fund groups are recommended</u>: <u>Current Funds, Loan Funds, Endowment and Other Non-Expendable</u> <u>Funds, Annuity Funds, Plant Funds, and Agency Funds.</u>

These six fund groups are sufficient for the majority of institutions. Under certain conditions other fund groups may be necessary or subdivisions of the foregoing groups may be desirable. For example, some institutions have found it expedient to establish a separate fund group for unallocated gifts which are not functioning as endowment and for which the use has not yet been determined. Pension funds administered by the institution may also constitute a separate fund group.

4. The current funds group includes funds available for general operating and for current restricted purposes.

The accounts of these two types of funds--operating funds which are available for any purpose, and funds which are restricted by outside agencies or persons as to their use--should be segregated into separately balanced groups, if practicable.

The advantage of this method is that the assets of the restricted funds, if separated from those of the general funds, cannot be used to finance inventories, receivables, and current expenses of the general funds without the facts being disclosed. However, if this segregation is not practicable, the assets of the two groups may be combined, provided the balance in restricted funds appearing on the liability side of the balance sheet is shown separately.

The current general funds may be subdivided further into two separately balanced groups, one for general operations and one for auxiliary enterprises. This subdivision is especially desirable if there are bonds outstanding or other forms of indebtedness on the plant used for the auxiliary enterprises.

5. The loan funds group includes only funds which are loanable to students, faculty, and staff.

If only the income of a fund may be loaned, the principle should be grouped with the endownment funds and the income added to the loan funds group.

Since loan funds normally are available only to students, funds which may be loaned to faculty and staff, if material in amount, should be identified clearly in the published reports.

6. The endowment and other non-expendable funds group includes only funds which are non-expendable at the date of reporting.

a) This principle implies that the primary purpose of these funds is investment, and that only the income from the investment may be used. b) The liability side of the balance sheet section for this fund group should show separately endowment funds, funds functioning as endowment, and funds held in trust by others for the benefit of the institution. Funds held subject to the payment of annuities, if small in amount, may be included in this fund group; if of major magnitude, they should constitute a separate fund group.

c) If practicable, each of the divisions in this group may be classified further, either on the balance sheet or in a supporting schedule, to show separately funds the income of which is unrestricted as to use and funds the income of which is designated for restricted purposes, such as professorships, scholarships, and research.

d) The assets of the funds in this group may be pooled for investment purposes unless prohibited by statute or by the terms of the instrument of gift. If they are so pooled, only one account is maintained for each class of investments of the pool. However, individual accounts must be kept for the principal of each fund in the pool. Investments of different fund groups--that is, current, loan, endowment, and plant funds--should be commingled in the same investment pool.

e) The assets of endowment funds and of funds functioning as endowment may be shown together whether or not investments are pooled, but the assets of funds held in trust by others must be shown separately from those held by the institution.

f) Funds held in trust by others include funds which are not under the control of the institution, but are held for its benefit by a trustee or other agency designated by the donor. It is desirable to include such funds on the balance sheet in order to show the total endowment resources of the institution.

g) Realized gains or losses on the sale of investments should be carried to the principal of the funds involved, or to an appropriate reserve account for pooled investments. Gains from the sale of assets of this fund group do not constitute income.

h) Investments purchased for the funds in this group should be recorded in the accounts at cost.

i) Securities and other property donated to an institution should be recorded in the accounts at market value or at an expertly appraised value as of the date of the gift. j) The book values of investments in this fund group should not be changed to reflect fluctuations in market prices.

k) In order to maintain unimpaired the principal of the funds in this group, suitable provisions should be made for the depreciation of real property held as investments, and for the amortization of premiums paid on securities purchased.

1) If endowment funds are invested in institutional property, these investments should be limited to incomeproducing property. Such investments should be accompanied by a formal commitment of the governing board for the amortization of the amounts so invested, in addition to the payment of interest from earnings of the property. If such earnings are insufficient, payment should be made from current general funds, or from other unrestricted funds; otherwise the principal may be dissipated. See Appendix C for a discussion concerning the investment of endowment funds in institutional property.*

7. The annuity funds group includes funds acquired by an institution subject to annuity or living trust agreements.

If these funds are small in amount, they may be grouped with endowment and other non-expendable funds, but should be identified clearly.

8. <u>The plant funds group includes funds designated</u> or expended for the acquisition of physical property used for institutional purposes.

a) Plant funds should be subdivided in separately balanced sections so as to report (1) funds not yet expended, and (2) funds already invested in plant.

^{*}Appendix C discusses investment of endowment funds in income-producing dormitories, and concludes that endowment funds "cannot be properly invested in plant or buildings of the college," even if they be income-producing. The argument is that investment in dormitories is not investment in the donor's use of the word, that the investment is "frozen," and that endowment fund trustees have a dual motive (namely, housing of students) in mind in the decision to invest in dormitories which might override their responsibility for prudent investment management.

b) Funds accumulated for the retirement of debt incurred for plant acquisition should also be reported in a separately balanced section of this fund group.

c) Plant items should be carried in the accounts at cost until disposed of. See Principle 12.

d) Gifts of property, such as land, buildings, equipment, and similar items, to be used for institutional purposes should be recorded in the accounts at an expertly appraised value as of the date of the gift.

e) Reserves created for renewals and replacements of institutional property should be identified clearly in the unexpended plant funds section of this group.

f) The total investment in physical plant assets used for institutional purposes should appear in the plant funds group. If endowment funds have been invested in institutional property, the value of that property should be reported in the plant funds group, and the amount of investment of those funds shown either as a deduction from the plant funds assets or as an account on the liability side of the balance sheet.

9. The agency funds group includes funds in the custody of the institution but not belonging to it.

Receipts and disbursements of agency funds are not institutional income and expenditures, and should be reported separately.

10. If money is advanced or loaned temporarily by one fund to another, that fact should be set forth on the balance sheet by showing the amount as an asset in the fund group making the advance, and as a liability in the fund group receiving the advance.

The purpose of this principle is to indicate clearly interfund borrowing. In general, interfund borrowing should be avoided.

11. <u>Receipts of cash or other property specifically</u> <u>designated to be added to the principal or balance of funds</u>, or to be expended only for physical plant additions, should <u>be accounted for separately from income expendable for cur-</u> rent purposes.

This principle provides for the exclusion from current income of all receipts which are intended to increase the assets and fund balances of loan, endowment, annuity, plant, and agency funds. Such receipts should be reported in the statements of fund transactions supporting the appropriate fund group on the balance sheet rather than in the current income statement.

12. The necessity for providing for renewals and replacements of property and of charging depreciation depends on the class of property under consideration.

a) Since, in general, the property used specifically for the educational functions of the institution was initially provided by gifts, grants, or legislative appropriations, and since such property is ordinarily replaced in like manner, it is not necessary to accumulate funds out of current income for renewals or replacements. See Appendix B for a discussion of the principles relating to depreciation of real property held by educational institutions.*

b) It is desirable to make provision for renewals and replacements of institutional service property and of property used for auxiliary or other income-producing activities. The necessity for making such provision will depend upon the financial program of the institution.

c) It is essential to provide for depreciation of real property held as investments of the endowment funds. A depreciation reserve, to be effective, requires a periodical transfer of cash from income to principal. This depreciation reserve should be included in the endowment funds group as a deduction from the related asset.

d) If replacement fund reserves for institutional property are created, they should be represented by cash or other liquid assets included in the plant funds group. A reserve account for replacements resulting merely from a journal entry without transfer of cash serves no useful purpose.

^{*}Appendix B discusses depreciation in educational institutions, and concludes that depreciation should only be taken on property used by auxiliary enterprises (to determine total operating costs) and on endowment fund assets held in tangible property (to prevent fund principle dissipation); and that depreciation, when taken, should always be funded by a cash reserve.

13. <u>Accounts should be kept on a modified accrual</u> basis.

In general, the accounts of colleges and universities should be kept on the accrual basis. This means that bills for materials received or for services rendered, whether or not paid, should be reported to the fullest extent practicable. Income should be reported when it becomes due or when a bill has been rendered for it, and appropriate allowances should be made for probable losses. Since the primary purpose of accounting in educational institutions is to report on the stewardship of the funds and property entrusted to the institution rather than to determine net profits and net worth, some items of income need not be accrued and certain expenditures need not be prorated. For example, few institutions find it either necessary or desirable to report accrued interest receivable, or to allocate insurance premiums to subsequent periods. Consequently, it may be said that the accounts of educational institutions generally are maintained on a modified accrual basis.

14. <u>Current restricted receipts should be reported</u> as income only to the extent expended during the year.

This principle recognizes that current funds frequently are received for restricted purposes, the related expenditures of which may extend beyond the current fiscal year. Such receipts are not income of the institution until the terms of the gift or grant have been met and the moneys expended in accordance therewith. Unexpended balances of grants are sometimes returnable to the grantors. The amount to be reported as income in any fiscal period, therefore, should be limited to the amount which has been expended in that period in accordance with the terms of the gift or grant.

The total receipts, disbursements, and the unexpended balances of such funds should be shown in a subsidiary statement called Summary of Changes in Current Restricted Funds Balances.

15. Earnings from endowment investments should be reported as current general income only to the extent distributed to the individual endowment income accounts.

This principle recognizes that when endowment assets are pooled for investment purposes, it may be neither practicable nor desirable to distribute all income from the pool in the year in which it is earned. Inasmuch as this undistributed balance may include both general and restricted income, it is desirable to exclude undistributed earnings from the income statement. The undistributed portion of earnings serves frequently as a reserve for stabilization of endowment income.

16. Income and expenditures of auxiliary enterprises should be shown separately from other institutional operations.

Since auxiliary enterprises usually are expected to be self-supporting, it is desirable to report their total operations separately in the current funds operating statements in order to show the extent to which this objective is achieved. Expenditures should include appropriate charges for the operation and maintenance of the physical plant, for general administration, and for other indirect costs.

APPENDIX 2-B

STANDARD FOUR¹ FINANCIAL RESOURCES

The financial resources of a college or university determine, in part, the quality of its educational program. Conversely, the quality of the educational program affects the ability of an institution to increase its financial resources. The adequacy of the financial resources of an institution is to be judged in relation to the basic purposes of the institution, the scope of its program, and the number of its students.

The organization of the business structure and the control of financial resources should always reflect the fact that financial resources are tools of the educational enterprise, never the reverse. The business management of an institution should exhibit sound budgeting and control, proper records, reporting, and auditing.

Financial planning for the future within each educational institution is a condition of wisely guided development. Planning should include specific projections of income from each source, specific plans for major categories of expenditure, and plans for the increase of capital resources.

ILLUSTRATIONS AND INTERPRETATIONS

1. Sources of Income

The sources of income for educational institutions are subject to variation with the fluctuations of the economy. State appropriations, appropriations from other supporting bodies such as churches, annual giving, tuition and fees charged to students, and income from endowment are each

¹Southern Association of Colleges and Schools, <u>Standards for College</u>, pp. 10-13 (Atlanta: S.A.C.S., 1965). subject to fluctuation. Private and church-related institutions should have a history of diversity of sources of income in order to indicate stability. Each institution should give evidence of the cultivation and utilization of each source of income so that the combination is adequate to its needs.

Endowments are highly important to non-tax supported institutions. Although income from endowment is subject to change with fluctuations in the economy, an institution having available income from this source strengthens the base of stability.

2. Stability of Income

Both public and private colleges shall exhibit stability of income as measured by at least three years' history. The amount shall be measured as income per student rather than in terms of gross amount of income.

3. Organization for the Proper Administration of Financial Resources

All business and financial functions of the institution should be centralized preferably under a single business officer responsible to the president. The more important functions which should be performed by the chief business officer and his staff include assistance to the president in the preparation of the institutional budget, control of the budget, the establishment and operation of an appropriate system of accounting and financial reporting, the supervision of the operation and maintenance of physical plant, the procurement of supplies and equipment, the control of inventories, the financial management of auxiliary enterprises, and the receipt, custody, and disbursement of funds belonging to the institution. In accordance with policies carefully developed by the board of control, the endowment funds and other investments should be administered by an appropriate officer or committee designated by that On all of these matters the president should report board. regularly to the governing board.

The chief business officer should be appointed by the governing board, upon the nomination of the president of the institution. Because of the numerous and varied responsibilities centered in the business office, selection of this officer is an important factor in the effective business management of the institution. He should be a well educated person, experienced in handling educational business affairs. He should realize that the purpose of his office is to serve the institution and to assist in the furtherance of its educational program. There should be a well conceived organizational plan assigning responsibilities of the various activities which together comprise the business office of the institution. The complexity of the required organization will depend upon the size of the institution and the volume of transactions of a business or a financial nature.

The chief business officer should be one of the principal administrative officers, along with those in charge of academic administration.

4. Educational Expenditures

In judging the adequacy of financial operations, Basic Educational and General Expenditures shall be used. These expenditures will include, for the fiscal year, General Administration and General Expense, Instruction and Departmental Research, Libraries, and Operation and Maintenance of the Physical Plant. In computing the expenditure per student, the total Basic Educational and General Expenditure is divided by the number of equivalent full-time students at the close of registration of the fall term.

The minimum expenditure, based upon the highest degree offered and the enrollment of the institution, shall be as follows:

Level of Offerings and	
Enrollment	<u>Minimum Expenditures</u>
Junior Colleges and	
Other Two-Year Institu- tions	
0-200	\$125,000
201-500	\$125,000 plus \$575 for every student in excess of 200
501 & Over	\$297,500 plus \$275 for every student in excess of 500
Bachelor's Level	
Institutions	
0-200	\$200,000
201-500	<pre>\$200,000 plus \$850 for every student in excess of 200</pre>
501-1,000	\$455,000 plus \$700 for every student in excess of 500
1,001 & Over	\$805,000 plus \$550 for every student in excess of 1,000

Level of Offerings and	
Enrollment	<u>Minimum Expenditures</u>
Master's Level Institutions	
0-200 201-500	<pre>\$250,000 \$250,000 plus \$1,000 for every student in excess of 200</pre>
501-1,000	\$550,000 plus \$850 for every student in excess of 500
1,001 & Over	\$975,000 plus \$700 for every student in excess of 1,000
Doctor's Level Institutions	
0-200 201-500	\$300,000 \$300,000 plus \$1,150 for every student in excess of 200
501-1,000	\$645,000 plus \$1,000 for every student in excess of 500
1,001 & Over	<pre>\$1,145,000 plus \$850 for every student in excess of 1,000</pre>

5. Budget Preparation

The budget is a statement of estimated income and expenditures for a fixed period of time, usually the fiscal year of the institution. The budget expresses in terms of dollars the educational program of the institution. Regardless of the size of the institution, an annual budget in appropriate detail is essential to proper operations. Since the annual budget is an expression of an educational program, its preparation and execution must be preceded by educational planning. It follows then that the instructional budget for the most part should be recommended by academic officers or deans, working closely with department heads and appropriate members of the faculty. Similarly, for other budget areas, recommendations should be made by the appropriate officers of the institution. The business officer assists in assembling and compiling the budget requests, prepares income estimates, and serves as a chief adviser to the president in the financial determination of budgetary allocations. The budget is presented by the president to the trustees for final approval. The review by the trustees should generally be limited to matters of broad policy and not matters involved with details. Preferably, forms should be devised by the institution which are used for the preparation of the

budget and are made available to the various divisions of the institution which participate in the budget making process.

6. Budget Control

After the budget has been approved by the president and adopted by the governing board, there should be a system of control. It is only in this way that plans of the governing board and the president with respect to the budget may be carried out and it is only in this way that the institution can operate according to a preconceived plan. Periodically, the accounting officer should render interim budget statements to department heads for their guidance and assistance in staying within budgetary allocations. Budgetary control is an administrative function, not a board function.

7. <u>The Relation of an Institution to External Budgetary</u> <u>Control</u>

No educational institution is properly administered nor can it conduct a sound educational program when any agency or officer other than the controlling board, the president, and business officer exercises financial control. Once funds have been appropriated for the operation of an institution, budget making and control of expenditure should be entirely within the institution under the jurisdiction of the governing board. If a state budget officer or state comptroller or any other financial officer or body outside the institution, to that same degree such outside officers exercise control over the educational function. Such practices are a clear violation of the principles stated in these Standards.

8. Accounting, Reporting, and Auditing

The accounting system should follow the generally accepted principles of institutional accounting as they appear in Volume I, <u>College and University Business Administration</u>, published by The American Council on Education. An essential principle of the system of accounting is that the information derived therefrom can be reliably compared with information obtained from the records of other institutions. Desirable uniformity in reports can be approached through the establishment of uniform classifications as recommended in this volume. The financial statement is a logical extension of the accounting system. If the accounting records are adequate, the preparation of the financial statement is a matter of reclassifying the information supplied by the books of record. Periodic written financial reports to the president are necessary for both the large and the small institution.

An annual audit with a certified report shall be made by competent accountants who are not directly connected with the institution. The accountants should be selected at least partially on the basis of their experience and knowledge of institutional accounting.

Complementing the accounting system and the external audit, there should be a well organized program of internal audit and control.

9. The Management of Income

There should be a suitable organization and adequate procedures for the management of all funds belonging to or owed to the institution. Normally, the cashiering function should be centralized in the business office and there should be a carefully worked out system for the receipt, deposit, and safeguarding of institutional funds. All persons handling institutional funds should be bonded.

10. Purchasing and Control of Store Rooms

For the institution which is large enough to justify a separate office for puchasing, as well as for the institution which is so small that its buying can be done by the chief business officer, it is essential to efficient operations that purchasing be done centrally. A logical adjunct of the purchasing function is a system of well organized store rooms, such as those for physical plant supplies, library supplies, and office supplies. It is advisable that there be established an inventory system on all of the equipment owned by the institution.

APPENDIX 2-C

APPLICABILITY OF AUDITING STANDARDS TO COLLEGE AUDITS

In its Statement on Auditing Procedures (S.A.P.) No. 33, <u>Auditing Standards and Procedures</u>, the Committee on Auditing Procedure of the American Institute of Certified Public Accountants sets forth ten auditing standards, listed here by key phrases:

General Standards:

- 1. Technical training of auditor
- 2. Independent attitude
- 3. Due professional care

Standards of Field Work:

- 1. Planning and supervision
- 2. Evaluation of internal control
- 3. Sufficient evidence

Reporting Standards:

- Conformity with generally accepted principles of accounting
- 2. Consistency
- 3. Adequate disclosure
- 4. Expression of an opinion and of character of audit examination.

Statement on Auditing Procedure No. 28, <u>Special</u> <u>Reports (Applicability of Reporting Standards in Special</u> <u>Circumstances</u>), was issued in 1957 and later incorporated into S.A.P. No. 33. In S.A.P. No. 28, the Committee on Auditing Procedure considered the applicability of the ten auditing standards to special circumstances. The Committee agreed that the three general standards and the three standards for field work apply in all special report engagements.

The first reporting standard does not apply to statements which do not purport to set forth financial position and results of operations. Preference, but not mandate, was shown by the Committee to avoidance of the use of the terms "balance sheet" and "income statement." Because, however, many annual financial reports of colleges do show financial position and results of operations, auditors have been hesitant to change the wording of their audit report, and therefore state that financial statements were prepared in accordance with generally accepted principles of accounting which, considering the principles of college accounting as reproduced in Appendix 2-A, is untrue. The second reporting standard is normally appropriate in special report engagements; the third and fourth reporting standards are always appropriate.

In 1960 the A.I.C.P.A. published a book, <u>Special</u> <u>Reports</u>, which gives specific examples of applications of S.A.P. No. 28, including college audit reports.

CHAPTER III

DECISION-MAKING WITHIN A COLLEGE ENVIRONMENT

3.1 <u>General Decision Concepts</u>

Decision-making is essentially <u>choice among alterna-</u> <u>tives</u>. The basic input of the decision-maker is <u>information</u>. The basic output is <u>selection of a course of action</u>.

Litchfield, following Dewey, ¹ delineates five steps in the idealized decision-making process [12, pp. 13-14]:

- 1. Definition of the issue
- 2. Analysis of the existing situation
- 3. Delineation of the alternatives and their consequences
- 4. Deliberation
- 5. Choice.

If one envisions the managerial hierarchy as a pyramid, the base of this pyramid would be <u>operational</u> decision-makers, the center <u>tactical</u> or <u>departmental</u> decision-makers, and the apex would be <u>policy</u> or <u>planning</u> decision-makers. The steps of the decision process are the same regardless of the hierarchal level.

¹John Dewey, in <u>How We Think</u> (New York: D. C. Heath & Co., 1910) first described these stages in a similar manner: (1) What is the problem? (2) What are the alternatives? (3) Which alternative is best?

The definition of the issue on which the decision is to be made is the most difficult step in the process. At the policy or planning level it is often intuitive in nature and depends, in part, on the perspicacity of high level managers. Defining operational issues, however, would likely follow from a well-designed control procedure (the fifth function of management). Information is required even for the definition of the issue. As the authority for decisionmaking moves up the managerial hierarchy, the required information is more likely to be of a nonrecurring nature and more likely to be generated from sources outside the entity.

Analyzing the facts about the existing situation involves the gathering and processing of data to apprise a decision-maker of the present state of affairs of a particular program or activity.

The determination of the consequences of known or estimated alternatives again requires predictive information as an aid to the decision-maker in fulfilling his function effectively.

In the deliberation stage, the consequences of each of the alternative courses of action are compared with the consequences of continuing the existing situation as it is. Part of this stage involves the assignment of relative values to alternatives in order to select from the myriad of possible courses of action.

Finally, the decision-maker selects one of the alternatives as his choice.

"Seeing that decisions are executed is again a decision-making activity," Simon notes, although perhaps at a lower hierarchic level. "Executing policy, then, is indis-tinguishable from making more detailed policy" [20, pp. 3-4].

Certain definitions, suggested by Bonini [2, pp. 16-18], are useful to put the decision-making process into perspective. A <u>decision center</u> is "a place in an organization where a decision or part of a decision is made. The effector of such a decision may be an individual, a group, or a machine." In order to design some efficient system whereby useful information is available for the decisionmaker when he needs it, an inventory of the entity's decision centers is needed.

A <u>decision rule</u> is a planned program for action at a decision center. For example, if inventory of part X is less than or equal to y units, then reorder. Bonini defines <u>decision parameters</u> as numerical constants in a decision rule, such as "y" in the above example.

A <u>decision system</u>, then, is "the sum total of all of the decision rules in the organization" [2, p. 18].

3.2 General Information Concepts

Information is the basic input of the decision process. Without information, the decision rules, and hence the decision system, are static and inoperable. It follows,

then, that in order to implement a decision system, a coordinated program for gathering, processing, and disseminating information must be designed.

<u>Information</u> is "knowledge, concerning some particular fact, subject, or event, in any communicable form" [22, p. 5]. Information should be distinguished from <u>data</u> in that the latter is simply an aggregation of facts to which no meaning has yet been assigned.

"An <u>information center</u> is a place in an organization where information is collected, transmitted, stored, analyzed, or compiled" [2, p. 16]. This information need not be quantitative; it must, however, be meaningful.

Information links, following Bonini, are lines of flow of information. The entire network of linkings of information within an entity is called an <u>information system</u>. "Thus, a given information system means a complete and explicit specification so that we will know who receives what information in the [organization], where the information is collected, how and when the information is transmitted, and so on" [2, p. 18].

The intent of any management information system, whether manual or automated, is to inform for decision. <u>Thus the criteria for effectiveness of any information sys-</u> <u>tem is its ability to inform some decision-maker for his</u> <u>decision</u>. A management information system must be useroriented (i.e., decision-maker-oriented).

Because so many properties of an organization (e.g., a college) may be measurable in some way, and thus transmitted through the information system, criteria must be established to select certain <u>measurable properties</u> to be included in the system.¹ In <u>A Statement of Basic Accounting</u> <u>Theory</u>, an American Accounting Association committee recommended four basic standards for accounting information [1, pp. 8-13]:

- 1. <u>Relevance</u>: exerts present or potential influence on designated actions (i.e., decisions).
- 2. <u>Verifiability</u>: independent observers develop "similar measures or conclusions" from examination of the same evidence.
- 3. <u>Freedom from Bias</u>: fair presentation to all interested parties.
- 4. <u>Quantifiability</u>: dollar valuation or other numerical measure.

Of these four standards, the one that overly restricts an entire information system for a college would be that of quantifiability. Certainly the home addresses of its students must be available in its information system; yet such data are not quantifiable. Sprouse suggests an alternate set of three criteria for information which would be more applicable to a total college information system [24, p. 112]:

¹For example, the number of blades of grass on the college campus may be accurately counted and included in the information system, but this information would likely be useless and not worth the cost of obtaining it.

- 1. <u>Usefulness</u>: useful to the seeker of the information to inform him better for his decision.
- 2. <u>Objectivity</u>: free from personal bias; verifiable.
- 3. <u>Feasibility</u>: the value of the information must exceed the cost of furnishing it.

Note that timeliness is within the scope of usefulness and accuracy is within the scope of objectivity.

Because there is a trade-off between objectivity and usefulness, an informed judgment on the part of the <u>user</u> of the information must be made so as to achieve an optimum balance between objectivity/feasibility on the one hand and usefulness on the other. For example, although it would be easier to prepare a budget based on a single level of activity in the ensuing period, flexible budgets for several levels of activity are prepared because estimates of future activity, while most useful, have less objectivity than historical data.

3.3 The College Environment

The discussion above has been a generalized framework of decision and information concepts, with no distinction between types of organizations within which the decisions are to be made. A decision system, with its requisite information system, is inherent in any organization, from a family to a fraternal group to a business to a college. However, it is obvious that identical decision systems and information systems, varying only in size, cannot suffice all

organizations within society. Decision systems and information systems vary as organization objectives vary.

For example, all business corporations have as their overall objective the maximization of the wealth of their shareholders.¹ Decisions at all levels of corporate management must be made with this objective in mind. A college, on the other hand, has as its overall objective the maximization of learning. Because this collegiate objective does not lend itself to quantitative measurement,² the decision systems and information systems at such institutions necessarily must be designed differently than those of business corporations.

Similarly, within each of these major organization types (business and college) there exist numerous individual entities, each of which has certain specific objectives subordinate to its overall objective. For instance, some business managements are willing to assume much risk with

¹For a well-developed argument for wealth-maximization, as opposed to profit-maximization, as the mission of business corporations, see Ezra Solomon, "The Objective of Financial Management," <u>The Theory of Financial Management</u> (New York: Columbia University Press, 1963), chapter ii.

²In an interesting experiment, Byron F. Doenges attempted to quantify college outputs in terms of Scholar Units of Learning Environment (SULE). One SULE is that combination of resources necessary for one student to become capable of serious and sustained independent study or for one faculty member to be engaged in scholarly activity. See Byron F. Doenges, "A Theory of College Administration" (unpublished Ph.D. dissertation, Indiana University, 1962).

the chance of high gain; others are more conservative, settling for more moderate but more certain returns. A college may place graduate education as its major subobjective consistent with its central mission--education; other schools may offer only liberal undergraduate programs; still others may offer only professional education. Each of these entities has specialized types of decisions to make, and hence needs a special information system.

Despite differences between individual college entities, certain environmental factors common to all institutions can be identified. Such factors will serve as the basis for establishing decision and information centers within the school's organization. These common environmental factors include the following:

- 1. The overall mission of any college is learning.
- A college is a service organization, performing four direct service functions (instruction, research, public services, and services to the academic community) and one indirect service function (general institutional support).
- 3. The aggregate human and physical inputs in performance of all five functions can be measured in terms of a common denominator, dollars of cost.
- 4. Responsibility for control of these costs (i.e., the lowest hierarchal decision center responsible for their incurrence) can be identified.
- 5. Outputs of the four direct service functions are difficult to measure quantitatively. Where they can be measured, the unit of measure is more likely to be physical (e.g., number of degrees awarded, number of articles published by faculty) rather than dollars.

- 6. Applications of certain business accounting techniques, such as profits, profit centers, contribution to fixed overhead, and rates of return, to the measurement of performance of the four direct service functions are difficult with presently accepted measuring capabilities.
- 7. Outputs of the indirect service function, general institutional support, can more easily be measured quantitatively, often in terms of dollars. As such, there is more likelihood of application of accounting techniques employed by business to such support functions than to direct academic functions.
- 8. Colleges have needs for much qualitative data as part of their permanent information systems, and design of any such system must include storage and access to this type of data.

3.4 Classifications of College Information

Dearden and McFarlan suggest five major classifications, or 32 possible combinations, of types of information [7, pp. 4ff]:

According to Object: <u>Action</u>: recipient takes immediate or future action. Nonaction: no action required.

According to Frequency:

<u>Recurring</u>: generated at periodic intervals. <u>Nonrecurring</u>: generated as needed.

According to Permanency: <u>Documentary</u>: written or other permanent form. <u>Nondocumentary</u>: oral or unpreserved personal observation.

According to Preparer:

<u>Internal</u>: generated within the firm. <u>External</u>: generated from without the firm.

According to Time Span:

<u>Historical</u>: measuring an activity which has already taken place.

<u>Predictive</u>: future projection.

Following the Dearden and McFarlan classifications, information in a college information system would normally be both action and nonaction; recurring; documentary; internal; and both historical and predictive.

3.5 The Place of Accounting Information Within the System

Decision-making pervades all management functions. The basic input of decision-making is information. Accounting information is a fraction of the whole area of information. The American Accounting Association defines the objective of accounting as providing information for the following purposes [1, p. 4]:

- 1. Making decisions concerning the use of limited resources.
- 2. Effectively directing and controlling an organization's resources.
- 3. Maintaining and reporting on the custodianship of resources.

4. Facilitating social functions and controls. The first three objectives are micro-oriented, that is, oriented to an individual entity and its managers. The fourth objective is macro-oriented, that is, directed toward the welfare of society as a whole. The accounting information system of a college, and in fact its entire information system, must be designed to meet all four objectives.

Davidson and Trueblood divide accounting information into two broad functions: (1) service and (2) stewardship [6, p. 577]. The service function involves information as a tool for internal decision-making within the entity. The service function combines objectives 1 and 2 of the previous paragraph. Users of college information for service purposes might include the college president, his administrative staff, the faculty, and the governing board.

Stewardship involves the maintenance of records for asset control and fulfillment of objectives, with particular reference to the responsibilities of managers toward an absent third party. Thus the stewardship function combines objectives 3 and 4 above, when it is understood that absent third parties include society as a whole. For an academic institution, users of stewardship information include the board of trustees, the sponsoring organization, creditors, past or potential donors, and government agencies.

The kinds of accounting information which serve the stewardship function and which serve the service or managerial function are not mutually exclusive; that is, certain information which in one instance might serve as a measure of stewardship might also be used for internal college management.

Following Sprouse,¹ those measurable properties of a college which would be included in its information system must meet three criteria: <u>usefulness</u>, <u>objectivity</u>, and <u>feasibility</u>. Although all such measurements would result in information transmitted through the system, not all of

¹Cf. p. 51, <u>supra</u>.

this information is accounting information. Traditionally, financial accounting information imposes three additional restrictions on the information: it must be (1) guantifiable, (2) in terms of money, (3) expressed on the basis of historical cost. More recently, managerial accounting information removes the historical cost restriction. The 1966 American Accounting Association publication, A Statement of Basic Accounting Theory, broadens the scope of accounting still further by removing the restriction of the use of money as the only accounting measuring unit [1, pp. 11-13]. The scope of accounting information can be visualized in Figures 3.1a and 3.1b. Figure 3.1a narrows the universe of all measurable properties into those which meet the criteria for information, namely the intersection of usefulness, objectivity, and feasibility. This shieldshaped area encompasses all information to be included in an information system. Figure 3.1b indicates that accounting information, by several definitions, is but a part of all information.

In designing an information system for a college, information belonging in the entire shield-shaped area would ideally be included in the system.

Following the classifications of information set forth by Dearden and McFarlan,¹ accounting information in

¹Cf. p. 54, <u>supra</u>.



its day-to-day gathering would be nonaction, recurring, documentary, internal, and historical. Accounting reports would likely substitute action for nonaction.

3.6 College Organization

In accomplishing its overall plan, a college must first determine those activities needed to accomplish its objectives and develop authority/responsibility relationships to direct such activities. In short, it must <u>organize</u>. "University organization structures have tended not to be distinct nor well defined" [9, p. vi]. Because the information system is determined by the decision system, which in turn is defined by the organizational structure of a college, precise specification of authority/responsibility relationships is mandatory for every institution.

Much has been written on college organization. Professor Hungate of Columbia University has an excellent discussion in his <u>Management in Higher Education</u> [10, pp. 76-113]. Glaze considers, position by position, the organization of a fairly large institution [9, pp. 54-90]. <u>College</u> <u>and University Business Administration</u>, the guidebook to college accounting principles, also discusses the organizational structure of institutions of higher education [17, pp. 4-9]. The organization structure presented in the next few paragraphs is a synthesis of these and other ideas. It is not intended to be the ideal for every, or perhaps any, college. It is intended to provide the groundwork for consideration of the information and decision systems of a private college with around 1,000 students.

The board of trustees, or governing board, somewhat comparable to a board of outside directors of a business firm, is found at nearly every private college. Despite some severe criticisms of the trustee system (as being political, self-perpetuating, unwieldly, unacademic, remote),¹ it is generally well-regarded as a valuable managerial asset and as necessary for stewardship control. The functions of the governing board are to determine and continually reassess college objectives; to approve programs to meet those objectives; and to provide stewardship control.

The chief executive (president) of the college has overall responsibility for carrying out programs to achieve college objectives as approved by the governing board. He alone should report to the trustees. The chief executive delegates his responsibilities to three "line" executives:

- 1. The chief academic officer (dean, provost, academic vice president, etc.).
- The chief fiscal officer (business manager, controller, etc.).
- 3. The chief student personnel officer (dean of students, etc.).

¹See, for example, Harry L. Wells, <u>Higher Education</u> <u>1s Serious Business</u> (New York: Harper & Brothers, 1953); and Francis E. Rourke and Glenn E. Brooks, "The 'Managerial Revolution' in Higher Education," <u>Administrative Science</u> Quarterly, IX, No. 2 (September, 1964), 154-181.
The chief executive is assisted by two "staff" executives:

- 1. The director of public and alumni relations.
- 2. The director of institutional research and planning.

The chief academic officer is responsible for directing the institution's educational functions (instruction, research, and educational services to the general public). He delegates his authority for tactical management (e.g., course content, scheduling, budgetary controls) to division chairmen.¹ For example, in an institution of around 1,000 students and 50 faculty, an educational structure consisting of divisions of (1) humanities, (2) social sciences, (3) physical and biological sciences, (4) mathematics, and (5) education seems appropriate, each of which is directed by a division chairman. The chief academic officer would delegate his record keeping authority to a registrar of academic records. The director of the library and, when warranted, a director of research, would also report to the chief academic officer. The chief academic officer would chair the faculty advisory committee on policies, plans, programs, and standards.

¹It is assumed that a small institution of around 1,000 students will have about 50 faculty members and that organization at departmental levels (e.g., English, music, religion, French, etc.) rather than at divisional levels (i.e., humanities, etc.) would prove unwieldly and unnecessary. Division organization does not preclude informal designation of certain faculty members as area supervisors for subdivisional coordination purposes.

The <u>chief fiscal officer</u> is responsible for the financial and logistical administration of the institution. He should be assisted by a chief accounting officer and his staff, a cashier, and directors of physical plant, purchasing, and auxiliary enterprises (such as food and residence services, bookstore, student union, etc.).

The <u>chief student personnel officer</u> directs such functions as recruitment, admissions, financial aids, cocurricular and extra-curricular activities, student organizations, medical and religious programs, and placement.

The <u>director of public and alumni relations</u> works closely with the president in fund raising and informing the public and alumni about college affairs.

The <u>director of institutional research and planning</u> is an officer found in larger college organizations and only more recently being accepted at smaller institutions. He is responsible for careful, continuing self-study by a college and for gathering data about students, faculty, costs, and operations, "for the purpose of making informed judgments instead of guessing or relying on the intuitions of the administrator in making decisions" [18, p. 159]. Rourke and Brooks discuss the need for and growth of offices of institutional research in colleges [18, pp. 158ff.]. They argue that the office of institutional research should be responsible both for "housekeeping" studies to solve emergency

problems and for recurring analyses of the effectiveness of educational programs.

Figure 3.2 portrays an organizational structure of an imaginary liberal arts/education-oriented private college of perhaps 1,000 students.

3.7 Decision Centers Within a College

With this background, we can now proceed to identify those decision centers within a small college organization that have (1) policy making, (2) tactical, or (3) operational decision-making responsibilities; to inventory the types of decisions to be made; and to ascertain just what information would be useful, objective, and feasible tools for making informed judgments.

3.7.1 <u>Policy-Making Decision Centers</u>.--In the context of college management, a policy is a plan of action affecting the institution as a whole. Thus policy-making decisions are those which determine institutional objectives and establish programs to meet those objectives. The <u>governing board</u> of the college and the <u>president</u> are the two policy-making decision centers in a small college. One often encounters the word "policy" in its generic sense, such as "it is our policy to take a physical inventory twice a year." This is a procedure, but not a policy.





3.7.2 <u>Tactical Decisions Centers</u>.--A tactical decision-maker has the responsibility for administering each of the major functional areas into which an institution is organized in order to accomplish objectives and implement its policies. The <u>chief academic officer</u>, <u>chief fiscal</u> <u>officer</u>, <u>chief student personnel officer</u>, and the <u>directors</u> <u>of public relations</u> and <u>institutional research</u> all have tactical decision-making responsibilities. That is, they organize and administer <u>detailed plans</u> for the accomplishment of college objectives and implementation of broad policies.¹

3.7.3 Operational Decision Centers.--An operational decision-maker is responsible for day-to-day supervision of an activity or program within one of the functional subdivisions of an institution. Operational decision centers within a small college organization would include each of the division chairmen; the registrar of academic records; the director of the library; the chief accountant; the superintendent of physical plant; the director of purchasing; the directors of auxiliary enterprises and services; the deans of men and women; the admissions officer; and the director of financial aids.

¹In a university organization, each of the deans or directors of colleges and schools within the university would have tactical decision-making responsibility.

3.8 <u>Inventory of Decision Functions Within a College</u> <u>Hierarchy</u>

Having delineated the decision centers of an academic institution, we can now proceed to inventory the specific types of functions performed by each of these decision centers for which decisions must be made.

Regardless of the hierarchic level of the decision center (i.e., policy-making, tactical, or operational) five general decision functions are performed:

- 1. Determination and reassessment of the specific <u>objectives</u> of the major activity over which the particular decision center has jurisdiction.
- 2. Determination and reassessment of the programs and activities necessary for fulfillment of established objectives.
- 3. Selection and evaluation of staff members.
- 4. Evaluation of the <u>effectiveness</u> of the programs and activities in relation to objectives (return measured against non-monetary standards or norms).
- 5. Evaluation of the <u>efficiency</u> of the programs and activities in relation to objectives (return per dollar spent).

In the next three subsections below, an inventory is presented of more specific types of decision functions which are performed by the various decision centers of a small college. This inventory does not purport to be exhaustive. Rather, it is meant to be indicative and to be used as an example against which an administrator of a particular institution can evaluate his own situation. 3.8.1 <u>Policy Level Decisions</u>.--At the policy-making level of a college administration (i.e., the governing board and the president) these general types of decision functions are performed:

- Determination of the objectives and policies of the institution in relation to social needs and available and potential resources.
- 2. Determination of long range plans for educational programs and auxiliary support programs.
- Determination of long range plans for resources, including raising of funds, public relations, investment of funds, capital and operating expenditure needs, and salary scales.
- 4. Appointment of key administrative personnel with tactical decision-making authority and approval of appointments of officers of instruction and staff of equivalent rank.
- 5. Assessment of current operations in relation to fulfillment of educational plans and of other auxiliary plans which support the educational function of the institution.
- 6. Aggregate budgetary and financial controls, including approval of the budget and evaluation of periodic financial reports. The governing board would perform this function from the point of view of stewardship control and the president from the point of view of managerial control.

3.8.2 <u>Tactical Level Decisions</u>.--Each of the five tactical decision centers has the responsibility for formulating and administering detailed plans for fulfillment of its function consistent with institutional objectives and established policies.

The chief academic officer performs the following general types of decision functions:

- 1. Formulation and approval of detailed plans for instructional programs, research programs, and instructional-related activities.
- Evaluation of the success of educational programs, including (a) evaluation of the effectiveness of instruction, (b) evaluation of the research activities of faculty members, (c) evaluation of the existing curricula and course offerings, and (d) consideration of changes in existing educational programs.
- 3. Evaluation of the success of instructional-related programs (such as the library, remedial clinics, co-curricular activities, and so on).
- Evaluation of the effectiveness of individual officers of instruction and instructional-related personnel, including (a) quantitative measures of teaching and research activity, (b) teaching effectiveness, (c) professional advancement, and (d) recommendations for promotions and salary increases.
- 5. Evaluation of the efficiency of educational programs against estimated monetary standards (budgetary control) and against historical, interdivisional, and intercollegiate results.
- Recommendations for appointment of officers of instruction and educational staff of equivalent rank.

The chief fiscal officer must perform the following

general types of decision functions:

- Formulation of detailed financial plans (i.e., budgets) for revenues and expenditures, both for the immediate fiscal period and the longer range future.
- Day-to-day management of cash moneys used in current operations, including receipt, custodial safeguards, management of short-term cash excesses or deficiencies, and cash disbursements.
- 3. Acquisition of the nonmonetary assets of the college and the discharge of liabilities arising therefrom.

- 4. Safeguarding, maintenance, and disposition of the nonmonetary assets of the college.
- Resource allocation including such things as (a) space utilization, (b) equipment utilization, (c) inventory management, and (d) recommendations for long-range needs.
- 6. Selection and evaluation of personnel other than officers of instruction or staff of equivalent rank.

The chief student personnel officer performs these

types of decision functions:

- 1. Formulation of detailed plans for matters relating to student affairs.
- 2. Operation and evaluation of the admissions program.
- 3. Operation and evaluation of the financial aids program.
- 4. Operation and evaluation of such extra-curricular and auxiliary student activities as residence hall programs, cultural programs, religious programs, student activities and organizations, and student health services.
- 5. Operation and evaluation of guidance, counseling, and disciplinary activities.

The director of public and alumni relations must

make the following kinds of decisions:

- Formulation and execution of detailed plans for fund-raising activities as approved by the governing board.
- 2. Direction and evaluation of programs for maintenance of continuing contact with alumni and selection of criteria for alumni records and analyses thereof.
- 3. Direction and evaluation of programs for relations between the college and the general public and specific groups of friends of the institution.

The fifth and final tactical decision center is the director of institutional research and planning. This office is unique in operation in that it fulfills a staff advisory function and only to the extent of research selection and design a decision-making function. It performs two general decision-supporting functions.

- 1. Recurring analyses of institutional operations.
- 2. Special analyses of specific situations as the need arises.

3.8.3 <u>Operational Level Decisions</u>.--The operational level decision center performs decision functions which are supervisory in nature. All such decision centers operate within the confines of both institutional objectives and the detailed plans of the tactical decision center under which they are organized. At the operational level, the decisionmaker is more likely to follow precise predetermined decision rules of the sort envisioned by Bonini.¹

Each operational decision center supervises a specific activity or program. Thus the general types of decision functions each performs are similar:

- 1. Allocation of staff personnel.
- 2. Allocation of space.
- 3. Allocation of equipment and other resources.
- 4. Scheduling (allocation of time).

¹Cf. p. 48, supra.

- 5. Evaluations of each of the above four allocations (i.e., staff loads, space utilization, equipment utilization, time utilization).
- 6. Evaluation of the success of the program or activity against predetermined objectives.
- 7. Budgetary control.
- 8. Recommendations for changes.

The division chairman serves well as an example of the decision functions performed by a supervisory decision center. His decisions include the following:

- Scheduling of courses offered, including frequency, days, hours, etc.
- 2. Assignment of faculty to specific sections of courses.
- 3. Recommendation for room assignments (final approval by an overall classroom coordinator).
- 4. Allocation of specific teaching aids and equipment.
- 5. Evaluations of the success of each of these decisions, including evaluations of enrollments, faculty loads, grading, teaching effectiveness, space and equipment utilization, etc.
- 6. Evaluation of the effectiveness of instruction and other divisional programs from the points of view of individual students, individual faculty members, specific major areas, the division as a whole, method of instruction, etc.
- Evaluation of the costs of instruction and other direct divisional expenditures, again from several points of view.
- 8. Recommendations for changes in curriculum, faculty additions, faculty promotions, new programs, etc.

3.9 Recapitulation

Decision-making is choice among alternatives. Using information to reduce the amount of uncertainty, the decision-maker selects a course of action. An effective information system is one which adequately informs the decisionmaker for his decision. This information system should process all information which is <u>useful</u>, <u>objective</u>, and <u>feasible</u>. Accounting information is but a part of all information which meets these three criteria.

In order to determine which information meets the criteria, the decision-making functions of each of a college's decision centers must be examined and an inventory must be taken of the types of decisions each decision center makes. An information system must be designed around the needs of the decision-maker, never the reverse.

In Chapter Four, the information needs of college decision centers will be examined.

CHAPTER IV

COLLEGE INFORMATION SYSTEM DESIGN

4.1 Decision Center Organization

In Chapter Three the decision centers of a small, private college were outlined. Figure 4.1 below reiterates these decision centers by level of managerial hierarchy:

Policy-Making:

Governing Board President

Tactical:

Chief Academic Officer Chief Fiscal Officer Chief Student Personnel Officer Director of Public Relations Director of Institutional Research and Planning

Operational:

Division Chairmen Registrar of Academic Records Director of the Library Chief Accountant Superintendent of Physical Plant Director of Purchasing Directors of Auxiliary Enterprises Dean of Men Dean of Women Admissions Officer Director of Financial Aids

Figure 4.1. Decision centers of a small, private college.

Chapter Three also listed the types of managerial decision functions which are performed by each of these decision centers. The delineation of the decision centers of an organization and the types of decisions they must make is the first step in the design of an information system. An information system must be developed around the needs of the decision-maker--never the reverse.

The design of such an information system can now be considered.

4.2 Information Systems

An information system is a network of flows of information from information centers (where it is gathered or analyzed) to decision centers (where it is used to facilitate the decision-making process). The design of an information system may evolve in several ways. Three of these approaches worthy of discussion may be labeled as follows: (1) expediency, (2) carefully planned subsystems, and (3) total systems.

The flows of information in an entity such as a college may be the result of <u>expediency</u>, an evolutionary process by which many information subsystems for parts of the entity result from "patchwork" rather than carefully planned design. In all likelihood, the needs for information by various decision centers have not been explicitly considered and there is little coordination of the various subsystems. The advantages of this approach are low costs of design and operation of the information systems. The obvious drawbacks are costly duplication of efforts (because of lack of coordination) and inadequate information available to the decision-maker.

A second approach to the design of an information system is that of <u>many information subsystems</u> within an entity, each of which has been <u>carefully designed</u> with the needs of the decision-maker in mind, but without coordination or integration among the various subsystems. For example, a college may have a business information system, a student records system, an alumni records system, etc., each of which serves the decision-making process well. The disadvantages to the design of an institution's record keeping procedures with this point of view are that costly duplication may result, that information available to certain decision centers may not be available to or known by other potential users, and that cost restrictions (resulting from duplication) may prevent the gathering of additional valuable information.

A third point of view by which an information system may be designed, which is the approach implied heretofore in this study, is that of an <u>integrated total information system</u> for an entity. In effect, this is a "system of systems" whereby the design of any subsystems has been coordinated for the decision-making needs of the entire entity. This point of view does not preclude the establishment of an

information subsystem for a particular decision-maker which is not linked to other subsystems. It only requires that the design of such subsystems be coordinated with the information needs of all decision-makers. For example, the system of systems concept does not prevent alumni records from being gathered by the alumni director solely for his own use. It would prevent the president's office from gathering a duplicate set of alumni records for its own use without prior consideration of a merged set of alumni records for the benefit of both the president and the alumni office.

This third approach, the total systems concept, has several advantages which make it the most acceptable of the three. First, <u>consideration of the needs of the decision-</u> <u>maker</u> is the prime prerequisite to the design of an integrated information system. This is accomplished by determining the types of decisions made at various decision centers and by then determining which information meets the criteria of usefulness, objectivity, and reasibility. Second, the total systems approach requires <u>coordination among the</u> <u>various decision centers</u> in the design and operation of an information system. The orientation of the system is toward the entity as a whole, as it should be. Third, the coordinated design will <u>eliminate duplication of efforts</u> and the unfortunate circumstance of information subsystems <u>operating</u>

at cross-purposes.¹ A final advantage of the total systems approach to the design of an information system is that of cost savings resulting from elimination of duplication and from coordinated planning for efficiency.

For these advantages, a coordinated total systems approach is highly preferred over the others.

4.3 College Information Systems: A Managerial Orientation

In Chapter Three it was indicated that decisionmakers perform both <u>stewardship</u> and <u>managerial</u> decision functions. It follows, then, that they need both stewardship and managerial types of information and that an information system must gather, process, and output both types. A major question to be answered is now to achieve the proper balance between the two.

Who are the users of stewardship information? Primarily they are the board of trustees, the sponsoring organization, creditors, donors, and governmental agencies. Notice that none of the users of stewardship information is an internal manager of the institution. Notice, also, that of all the decision functions inventoried in Section 3.8

¹An example of this, observed at a small college, is a situation where the registrar assigned each student a "student number" for academic record keeping purposes, the business office assigned him another number for his financial account, and the director of student affairs assigned him still a third number for dormitory and meal ticket identification. Each student was required to know all three numbers.

only one, number six under policy level decisions, pertained to stewardship. The great majority of decisions made in a college are managerial in nature. The design of a college information system, therefore, should be primarily oriented to the needs of internal managers.

It is interesting to recall, at this point, the discussion of present information standards for colleges in Chapter Two: "Regional accrediting agencies have developed standards for colleges which give only minimal, general requirements and are concerned primarily with stewardship reporting and budgetary financial control. Managerial information systems . . . are yet to be considered at length."¹ The one generally accepted guidebook for college information system development has been <u>College and University Business</u> <u>Administration</u>, Volume I, which "is oriented to external reporting [of financial data] plus budgetary control of costs."² Despite the fact that the majority of decisions made by college decision-makers are managerial in nature, uniform standards for gathering managerial type information do not exist.

This is not to say that colleges do not gather and use managerial type information. Certainly, the larger universities and colleges have pioneered only recently in

¹P. 22, <u>supra</u>.

²P. 21, <u>supra</u>.

the design of managerial information systems for their own needs, following their own standards of measurement and reporting. And, to a lesser extent, many smaller institutions have followed suit. The fact remains, however, that each school is "on its own" with the results that comparbility does not exist and that some smaller, less wealthy institutions barely begin to gather needed managerial information.

A change in orientation of business corporation information systems (most specifically, their accounting information system) is similar to the reorientation urged above for colleges. Since the early 1950's, accounting for businesses has come to place major emphasis on managerial analyses and uses of financial data and lesser emphasis on external statement preparation. The words "management" and "managerial" had never been juxtaposed with the word "accounting" in the titles of textbooks prior to the first edition of <u>Accounting: A Managerial Approach</u> in 1951.¹ Since then, many of the outstanding texts in the field of accountancy have done so, a reflection of the change in orientation of accountants to the internal managerial uses of financial information.

Ronald H. Robnett, Thomas M. Hill, and John A. Becket, <u>Accounting: A Managerial Approach</u> (1st ed.; Homewood, Illinois: Richard D. Irwin, Inc., 1951).

A major question to be answered, then, is exactly what information should be useful to college managers in the performance of the decision functions outlined in Chapter Three. A recent publication by the University of Michigan considers this very question.

4.4 "Financial Analysis of Current Operations of Colleges and Universities"

The Institute of Public Administration of the University of Michigan published in 1966 a report entitled <u>Financial Analysis of Current Operations of Colleges and Universities (hereinafter, Financial Analysis). This project was sponsored by several major educational organizations and supported by the U.S. Office of Education. In its introduction, <u>Financial Analysis</u> sets its focus on financial reports and analyses of colleges from a <u>managerial</u> point of view [25, pp. 5-6]:</u>

. . . These analyses must do more than accurately state the total expenditures or "costs" of the institution for a particular fiscal period. They must show for what purposes the money was spent at different institutions. They must point out what factors caused this cost to be what it was and the relationships that exist between these factors and the dollar expenditures. Such analyses should be capable of providing interinstitutional comparisons between similar institutions with similar missions and historical comparisons within the same institution. . . Such analyses should provide a means whereby the financial implications of present and proposed policies can be quickly measured. Further they should provide an evaluation of the actual operation of the institution in relation to institutional policies, clearly showing deviations from those policies and the financial results of such deviations.

To date, analyses providing such a breadth of information do not exist. . . . For higher education at large, such analyses cannot exist in the absence of agreed-upon principles, classifications, and definitions of financial and related nonfinancial data and other "ground rules" that will insure a common base for financial data and a uniform approach to analysis of such data.

Financial Analysis defines a college and the functions it performs as has been done in Chapter One of this study. The basic units of a college for which analyses must be made for decision-making purposes are called "analytic units." An analytic unit may be an individual (e.g., a student, a faculty member); a group of individuals (e.g., all freshmen, the entire faculty); or a program or activity of the college (e.g., a course, an academic division, the bookstore). Analytic units are classified as <u>environmental</u> when they render <u>direct service to a user</u>. They are called <u>support</u> units when they render service to an environmental unit or assist an individual being served by an environmental unit. The environmental unit is called the building block for analysis.

<u>Financial Analysis</u> suggests that institutions of higher education are "subject to three distinct types of analyses" [25, pp. 19-22]:

- The analysis of the kinds and quantities of factors which go into the creation of any given environmental or support unit.
- 2. The analysis of the utilization of each environmental or support unit.

3. An analysis of the utilization of the entire environment by any individual user or group of users.

Uniform ground rules for the measurement of financial data must be established to insure some degree of interinstitutional comparability. The authors of <u>Financial</u> <u>Analysis</u> indicate, as has been done earlier in this study, that such uniformity does not exist in the basic bodies of financial data gathered at colleges and universities. They begin with a <u>double entry fund accounting structure with</u> <u>appropriate internal control</u>. Within this framework, they make the following suggestions for the standardization of accounting concepts [25, pp. 37-47]:

- 1. A full accrual accounting system is mandatory for comparability.
- 2. All activities controlled and financially supported by the college are part of the institutional entity and should be included in the institution's financial data.¹
- Ideally, all income and expenses of the institution, whether physically or constructively received or paid, should be included in the institution's financial statements.
- 4. Any income available to the institution in the current period for general purposes should be reported as current income, regardless of subsequent use.

¹This has been called the <u>entity concept</u> by accounants. The question of the entity concept was studied by the 1964 Concepts and Standards Research Study Committee--The Business Entity Concept, of the American Accounting Association. Their report, "The Entity Concept," appears in the April, 1965, issue of the Accounting Review, pp. 358-367.

- 5. Only correction of prior years' errors should result in direct debits or credits to surplus accounts.
- 6. Certain expenses (a full list is given in [25, p. 46]) should be charged to the lowest organizational level responsible for their incurrence; other expenses (primarily buildings and grounds operating expenses, see [25, p. 46]) would not be allocated except for auxiliary enterprise operations.

With these ground rules formulated, <u>Financial</u> <u>Analysis</u> provides certain rules for assigning dollar costs to the analytic units and for the analysis of income and expenses. Fifteen <u>pro forma</u> report formats are presented which would assist college managers in the measurement of the performance of the analytic units. The titles of these report formats are presented here [25, pp. 187-207]:

- 1. Functional Analysis of Expenses
- 2. Functional Allocation of Human Resources
- 3. Analyses of Instruction
- 4. Analysis of Research
- 5. Analysis of Services to the Public
- 6. Analysis of Services to the Academic Community
- 7. Analysis of General Support
- 8. Special Report on Payments to Students
- 9. Analysis of Income by Function, Category, and Source, and by Restriction Status
- 10. Comparative Analysis of Income and Expenses by Function
- 11. Functional Allocation of Direct Academic Staff (Historical)

- 12. Functional Allocation of Direct Academic Staff (Interinstitutional)
- 13. Functional Allocation of Direct Academic Staff (Intrainstitutional)
- 14. Projection of Number and Cost of Direct Academic Staff Under Six Hypothetical Policy Alternatives Relating to Academic Counseling and Research
- 15. Comparison of Actual Number and Ratio of Non-Teaching Academic Staff with Institutional Policy.

Report Format 3, Analyses of Instruction, is reproduced on the next five pages, from pages 189-193 of <u>Finan-</u> <u>cial Analysis of Current Operations of Colleges and Univer-</u> <u>sities</u>, as an example of the kind of managerial information which should be available for intrainstitutional decisionmakers and interinstitutional comparisons.¹

In Part II of Financial Analysis is presented a suggested "Operating Manual for the Financial Analysis of Current Operations of Colleges and Universities" [25, pp. 385-433]. The suggestions in this manual are compatible with all requirements of Volumes I and II of <u>College and Univer</u>sity Business Administration.

<u>Financial Analysis</u> takes the "coordinated total system" approach to the design of an information system, as discussed above [25, p. 28]:

¹Note that "FTE" stands for <u>Full Time Equivalent</u>, a standard measure for equating individuals with part time loads to a full time basis for the purpose of analysis.

REFORT FORMAT 3 (BASIC SET) ANALYSES OF INSTRUCTION

Organized Teaching of Degree-Credit	Courses										
A. Analysis by Characteristic of Course Organization						D1rect Academ1c					
	Cost Per	Number of	Average	Number of Sections	Student Courses	Compen- sation	Number of	Number of FTE	Direct	Expenses	
	Student Course	Courses	Section Size	Per FTE Direct Academic	Per FTE Direct Academic	Average kate Academic	Student Courses	Direct Academic	Academic Compen-	Immediate Support	Total Expenses
						Year			101280		
Group Instruction	•					4				•	
Lecture Seminer Discussion on Ouitz	xx.xx \$	žž	23	× • •	× ×			X.XX.X		XXXXX ¢	
Laboratory	x x	ž	٤Ž	×.×	ž	2022	XXXXX	x.xxx	XXXXXX	XXXXX	XXXXXX
Lecture with Separate Quiz Sections	x, x	ž			XX	XXXX	XXXXXX	X. XX	XXXXX	XXXXX	XXXXX
Lecture Sections			ž:	x.x							
Uuiz Sections Lecture with Separate			ž	Y.Y							
Laboratory Sections	x.x	XXX	;	3	XXX	XXXX	XXXXX	x. xx	XXXXXX	XXXXX	XXXXX
Lecture Sections Laboratory Sections			\$ \$	x.x							
Lecture with Separate Quiz and Laboratory Sections	х.х	ž			XXX	XXXX	XXXX	х.х	XXXXX	XXXX	XXXXXX
Lecture Sections			X	x.x							
Quiz Sections Laboratory Sections			žž	X"X							
Other Instructional Arrangements	x. x	×	ž	х.х	XXX	XXXX	XXXXX	x.xx	XXXXX	XXXXX	XXXXXX
All Group Instruction One Teacher-One Student			ž	х.х							
Relationships Independent Study	х, х	ž			x	XXXX	XX	x.x	XXXXX	XXXX	XXXXX
Supervision of ursuate Candidacies	XX,XX	X			×	XXXXX	XXXX	x.x	XXXXX	XXXXX	XXXXX
Total Institution	хх.хх	XXXX			XX	XXXX	XXXXXXX	x.xxx	XXXXXXXX	XXXXXXX	XXXXXXXX
B. Analysis by Characteristic of Course Division Organization	Cost Per			Number of	Student Regis-	Direct Academic Compen-	Number of	Number of		Expenses	
	Student	Number of	Average	Sections	trations Par FWF	sation	Student Regist	FTE Direct	Direct	Tmmediate	Total
	tration	C 1012000	Size	Direct Academic	Direct Academic	Academic Year	trations	Academic	Compen- sation	Support	Expenses
Group Instruction											
Lecture Sectors Manuaton on Milz	* X.X.	X :	22	x.x	XXX	\$xxxxx.		X.XXX X.XXX	* XXXXXX		* XXXXXX
Laboratory	2 X X	ž	ž	x.x	ž	xxxx.	20000	X.XXX	XXXXXX	XXXXX	XXXXXXX
Other Instructional Arrangements All Group Instruction	x.x x.x	XXX	\$ \$	x.x x.x	X X	xxxx. xxxx.	XXXX	x.xx x.xx	xxxxx.		
One Teacher-One Student Relationships Tudanandant Studw					X		***	XX.X	XXXXX.	. XXXX	XXXXXX.
Supervision of Graduate	i				į						
Candidacies All 1-1 Relationships	XX.XX XX.XX				ž ž	xxxxx.	XXXX	x.x. x.x	xxxxx. xxxxx.	XXXXX	xxxxx.
Total Institution	х.х				XXX	xxxx.	XXXXXX	XXXX.X	XXXXXXX	xxxxxx.	xxxxxxx.

Direct Regis- Fer FTE Direct Academic Regis- fregis- freer Number Student Number FTE Freer Inrect Rer FTE Number Academic Year Student Freer Direct Name Student Student Freer Direct Namber Student Freer Direct Namber Student Freer Direct Namber Student Freer Direct Namber Student Student Name Student Student Student Name Xxx Xxxx Xxxx Xxx Xxxx Xxxx <t< th=""><th>Direct Direct Student Student Number of Number Student regis- compen- Student regis- compen- Student regis- sation Regis- Per PTE Number of Number Regis- per PTE Number of Number Regis- Direct sation Student per PTE Number of Number Regis- Direct sation Studentc per PTE Number of Number Academic Xuxx xxxx Xxxxx xxxx xxxx Xxxxx xxxxx xxxx Xxxxx xxxx xxxx Xxxxx xxxxx xxxx Xxxxx xxxxx xxxx Xxxxx xxxxx xxxx Xxxxx xxxxx xxxx Xxxxx xxxxx</th></t<>	Direct Direct Student Student Number of Number Student regis- compen- Student regis- compen- Student regis- sation Regis- Per PTE Number of Number Regis- per PTE Number of Number Regis- Direct sation Student per PTE Number of Number Regis- Direct sation Studentc per PTE Number of Number Academic Xuxx xxxx Xxxxx xxxx xxxx Xxxxx xxxxx xxxx Xxxxx xxxx xxxx Xxxxx xxxxx
Direct Regis- feer FTE Per FTE Direct Direct Reademic Academic Student Frations Number of Student Regis- fiegis- fiegis- fiegis- fiegis- fiegis- trations Student Academic Number of Academic Student Number of Academic Student Student Student Student Student Student Student Academic Student Student Student Academic Academic Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	Direct Direct Student Student Number of Student rrations sation Student rrations sation Student Per FTE Nerage Regis- Per FTE Nerage Biegis- Per FTE Nerage Regis- Per TTE Nerage Ax.xx Xxxxx Student Ax.xx Xxxxx Xxxxx Xx.xx Xxxxx Xxxx Xx.xx Xxxxx Xxxx Xx.xx Xxxxx Xxxx
Direct Direct Fiegis- Compen- Fieris Compen- Fieris Compen- Fieris Nerage Birect Rademic Rate Nerage Academic Nerage Academic Nerage XXX XXXX XXX XXXXX XXXX XXXXX XXX XXXXX XXXX XXXXX XXXX XXXXX XXXX XXXXX XXX XXXXX XXX XXXXX XXX XXXXX XXXX XXXXX XXXX XXXXX XXXX XXXXX XXXX XXXXX	Direct Direct Student Freg1s- F
Student Feg1s- trations Direct Academic XXX XXX XXX XXX XXX XXX XXX XXX XXX X	Coat Fer Frations Student Frations Fregis- Fregis- Fregis- Direct Direct Academic Ac
	Cost Fer Student Regis- ration x.xx x.xx x.xx x.xx xx

REPORT FORMAT 3--Continued

per
ntin
Co
ORMAT 3
REPORT F

E. Analysis by Degrees and Fields of Study				D1rect Academic				
		:	Student	Compen-	Number of		Expenses	
	cost rer Student Course	Student Courses	Courses Per FTE Direct	sation Average Rate	FTE Direct Academic	Direct Academic Compen-	Immediate .succort	Total Expenses
			Academic	Academ1c Year		sation		
Bachelor's Degrees				•		4		
Engineering Froineering		.xxxxx	ž		x.xx			\$xxxxxxx
Business	* X X X X X X				X.XXX			XXXXXX
Education	X.X	XXXXX	XXX	XXXX	X XXX	XXXXXX	XXXXX	XXXXXXX
All Brance	x.x	XXXXX	XX	XXXX	x.xxx	XXXXXXXX	XXXXXXX	XXXXXXX
MASTET'S Jegrees Froffreering	>> >>	>>>>	22		;			
Education				· · · · · · · · · · · · · · · · · · ·	× • ×			
	XX.XX	XXXX	XXX	XXXXX	x.xx	XUCCCC	XXXXX	XXXXXXX
Doctor's Degrees								
Education Education			XX	xxxxx.	× × ×			XXXXXX.
IIV	xx. xx	XXX	ž	xxxx.	x	XXXXXX	xxx.	XXXXXX
Total All Degrees and Fields	х.х	XXXXXX	XX	xxxxx.	x.xx	xxxxxxx	xxxxxx.	xxxxxxxx
P. Analysis by Student Levels (Frogress Categories)			Student	Direct Academic Compen-	Number of		Expenses	
	Cost Per	Number of	Courses	sation	FTE	Direct		
	Student Course	Student Courses	Per FTE Direct	Average Rate	D1rect Academic	Academic Compen-	Immediate Support	Total Expenses
			Academic	Academ1c Year		sation		
Institutional Term: Semester*								
Undergraduate Degree Progress Categories								
1	\$ XX.XX	XXXXX	XX	\$ XXXX	x.xx	\$ XXXXXX	\$ XXXXX	* XXXXXXX
0.0	XX.XX	XXXXXX	XXX	XXXX	XY.X	XXXXXX	XXXXX	XXXXXX
∂ - 1	×.×				× × ×			
ŝ	X.X	XXXXXX	ž	XXXX	X.X	XXXXXXX	XXXXX	XXXXXX
01	XX.XX	XXXXXX	XXX	XXXX	X.X	XXXXX	XXXXX	XXXXXXX
~					X			
. 0	XXX.XX	XXXX	ž	200	XX	XXXXX	XXXXX	XXXXX
10	XX.XX	XXXX	XXX	XXXX	X.X	XXXX	XXXX	XXXXX
Total - Undergraduate	XX.XX	XXXXXX	XXX	XXXX	X.XXX	XXXXXXXX	XXXXXX	XXXXXXX
Graduate Level Campus Course Stage (Pre-Dissertation): Master's Degree								
I UNATERS VALEBUILES	XX.XX	XXXX	XX	XXXX	X.XX	*****	XXXX	*****
101	X.X	XXXX	ž	XXXXX	X.X	XXXXX	XXXXXX	XXXXXX
, C	XXX.XX	XXX	X	XXXXXX	х.х	XXXXX	XXXX	XXXXX
4 and over	x.x	ž	ž	XXXXX	х.х	XXXXXX	XXX	XXXXX

penu	5
Conti	
FORMAT 3.	
REPORT	

F. Analysis by Student Levels (Progress Categories) (continued)			Student	Direct Academic Compen-	Number of		Expenses	
	Cost Per Student Course	Number of Student Courses	Courses Per FTE Direct Academic	sation Average Rate Academic Year	FTE D1rect Academic	Direct Academic Compen- sation	Immediate Support	Total Expenses
Doctor's Degree Progress Categories								
, r	\$ xx.xx	XXXX	xx	\$xxxxx	x.xx	xxxxx	\$ XXXXX	\$ XXXXX
0	XX,XX	XXXX	X	XXXXX	xx.x	XXXXX	XXXXX	XXXXX
Ś	XX.XX	XXXX	X	XXXXX	x.xx	XXXXX	XXXX	XXXXX
4	XXX,XX	XXXX	x	XXXXX	x**x	XXXXX	XXXX	XXXXX
ц	XX.XX	XXX	xx	XXXXX	x.x	XXXXX	XXXX	XXXXX
6 and over	XX,XX	X	×	XXXXX	x.x	XXXXXX	XXXX	XXXXX
Total - Campus Course Stage	xx.xx	XX	xx	XXXXXX	x**x	XXXXXX	XXXXXX	XXXXXX
Master's Degree Progress								
Categories (Dl and over)	XX.XX	X	×	XXXXX	x.x	XXXXXX	XXXX	XXXXX
Doctor's Degree Progress								
Categories (Dl and over)	XX,XX	XXX	ž	XXXXX	x. x	XXXXX	XXXXX	XXXXX
Total - Dissertation Stage	XX,XX	XXX	XX	XXXXX	x.x	XXXXXXX	XXXXX	XXXXXX
Total - Graduate Level	xx.xx	XXXX	X	XXXXXX	XXX.X	XXXXXX	XXXXXX	XXXXXX
Total - All Levels	xx.xx	XXXXXX	XXX	XXXXX	X.XXX	XXXXXXXX	XXXXXX	XXXXXXXX

*If an institution is on the quarter term basis, Undergraduate Frogress Categories would range from 1 to 15, Graduate Level Master's from 1 to 0, and Graduate Level Doctor's from 1 to 9.

Academic Counseling

Analysis of Academic Counseling	Cost Per Student	Student Regls-	Direct Academic Compen-	Number of Student	Number of		Expenses	
	Coun- seling Regis- tration	trations Per FTE Direct Academic	aation Average Academic Year	Coun- seling kegis- trations	FTE Direct Academic	Direct Academic Compen- sation	Immediate Support	Total Expenses
Assigned Counseling Graduate Committee Service	x xx *	XXX XXX	XXXXX XXXXX	XXXX XXXX	x.x. x.x	\$xxxx xxxxx	\$xxxx xxxx	\$xxxxx xxxxx
Professional Training Facilities								
Analysis of Frofessional Training Facilities	Cost Per Student	Number of Student	Opt1.mum No. of Student	Total		Expenses		
	Regis- tration in Facility	hegis- trations in Facility	Regis- trations in Facility	FTE Staff	Personal Compen- sation	Supplies and Expense	Total Expenses	Gross Income
Clinical Training Facility: Speech Clinic Teacher Training Facility:	\$xxx, xx	X	x	×	\$xxxx	\$ xxx.	\$ XXXX	\$xxx
Practice Teaching Contracts	XX,XX	XXX	ххх	х.х	XXXX	xxxx.	XXXXX	

-Continued
1
F
÷
EM
FORM
RT FORM
ORT FORM
EPORT FORM

50	
c	
0	
-	
g	
按	
ন	
ĕ	
	1

Analysis of Admissions			Cost Per	Number of Appl1-		Number of			Expenses	
	Cost Fer Student	Number of Student	App11- cation	cations Processed	Cost Per Student	Students Adm1tted	Total FTE	Personal Compen-	Supplies and	Total
1	Course	Courses	Processed	(Entire Year)	Admitted	(Entire Year)	Staff	sation	Expense	Expenses
All Admissions Activities	\$. xx	XXXXX	\$x.xx	XXXX	\$xx.xx	XXXX	х.х	*****	\$xxxxx	\$xxxx

Registration and Allied Activities

Analysis of Registration and					Expenses	
Allied Activities	Cost Per Student Course	Number of Student Courses	Total FTE Staff	Personal Compen- sation	Jupplies and Expense	Total Expenses
All Registration Activities	\$x.x	XXXXX	x.xx	\$xxxxx	\$xxxx	\$xxxxx

The data collection process itself is viewed not as a sporadic activity but as an integrated, coordinated process bringing together dollar and operational data, both projected and actual, which will give a meaningful and comprehensive description of the operation of the institution.

The major limitation of <u>Financial Analysis</u> is that its measurements for analyses are concerned only with quantitative measurements of the "environments" (inputs) which produce the products of a college. Qualitative measurements of the products (outputs) of an institution of higher education (such as the quality of its graduates, the quality of faculty research) are not considered because of inadequate standards for the measurement of such outputs of the institution.

The suggestions of <u>Financial Analysis of Current</u> Operations of Colleges and Universities provide a very viable and useful foundation for the design of a user-oriented college information system. It is consistent with the decision functions of college managers as outlined in Chapter Three. College administrators are urged to give consideration to the recommendations contained therein, especially at smaller institutions whose resources have not permitted them to develop, on their own, adequate managerial information systems. Adoption by all colleges of the reporting techniques

suggested in <u>Financial Analysis</u> would provide a uniform basis for interinstitutional comparisons.¹

4.5 Efficiency of a College Information System

Earlier, three criteria for information were established: usefulness, objectivity, and feasibility. Feasibility required that the value of the information must exceed the cost of furnishing it. The <u>efficiency</u> of an information system relates directly to the criterion of feasibility. <u>An</u> <u>information system is said to be efficient when the system</u> <u>provides information of the highest value (balance between</u> <u>objectivity and usefulness) for a given cost of furnishing</u> <u>it; or, conversely, if, for a given level of value of infor-</u> <u>mation, we have furnished it at the least possible cost</u>.

Efficiency will be discussed in detail in Chapter Six.

4.6 Coordination of a College Information System

Terms such as "coordinated," "integrated," "total systems," etc., have been used heretofore to describe college information systems. Such terms imply an orientation toward the college entity as a whole in the design of its

¹It is unnecessary to reproduce in this study the other report formats or all of the specific suggestions contained in <u>Financial Analysis</u>. Copies may be obtained for \$3.50 plus postage by writing to the Institute of Public Administration, The University of Michigan, Ann Arbor, Michigan.

information system. The advantages of this orientation have been discussed at length above.¹

No mention has been made, however, concerning the assignment of the responsibility for coordination and control of a college information system to a particular administrative officer. Because the coordinated information system serves the entire institution, control should be placed sufficiently high on the organizational hierarchy to assure an unbiased point of view. It is suggested here that there is one logical administrative office already included in the proposed organization of a small college which could ideally perform in this capacity: <u>the office of institutional</u> research and development.

The director of institutional research performs no decision-making functions except as to the selection of <u>what</u> shall be researched and the <u>methodology</u> of the research. His office does perform decision-supporting functions of preparing recurring and special analyses of institutional operations. As such, its primary stock in trade is information. Because this office is not directly connected with, or controlled by, one of the major direct service functions of an academic institution, it would not be oriented toward serving certain users within the organization to the exclusion of others. Because the director of institutional

¹Cf. Section 4.2, <u>supra</u>.

research reports directly to the president of the institution, he would not be subservient to any particular user. The responsibility for coordination of a college's information system, then, would complement the present functions of the office of institutional research and development and consideration should be given by individual institutions to the delegation of this responsibility to that office.

Too often the alternatives of assigning control to either the chief fiscal officer or to the chief academic officer (through the registrar of academic records) have resulted in suboptimal coordination. Many cases could be cited, for example, of either registrars or chief fiscal officers being assigned control of the development of an institution's automated data processing equipment, only to result in inaccessibility of this machinery to other institutional decision-makers.

A further alternative exists, and that is the creation of an additional tactical managerial position, reporting directly to the president of the institution, for the director of information processing. The primary advantage of this alternative would be the hope of complete elimination of any vestiges of bias toward one or another decisionmaker. However, there is no reason to suspect that the director of institutional research would be biased toward any particular decision-maker, and the creation of an office of information processing, in addition to the director of

institutional research, is viewed as an unnecessary proliferation of tactical departments. Furthermore, having dual positions of director of institutional research and of information processor, at the same hierarchic level, could easily result in unclear definitions of the boundaries of each office, internal conflict, and unnecessary duplication of efforts.

For these reasons, it is recommended that the director of institutional research and development be assigned the responsibility for coordination of the institution's information systems.

4.7 Recapitulation

The approach toward the design of college information systems should be a coordinated total information system for the collegiate entity as a whole. Anything less results in inadequate information, costly duplication, and inefficiency. Because the primary decision functions performed by college decision-makers (as outlined in Chapter Three) are concerned with internal college management, the information system should place major emphasis on managerial type information. Yet present standards for information deal primarily with the external reporting of stewardship information. The publication, <u>Financial Analysis of Current</u> <u>Operations of Colleges and Universities</u>, provides an excellent foundation for uniform measurement of the inputs to

each of the service and support functions of an academic institution. Consideration of the recommendations contained therein is urged, especially for smaller institutions whose resources have not permitted them to develop, on their own, adequate managerial information systems. Finally, responsibility for coordination of the information systems at small colleges should be delegated to the director of institutional research and development, whose function at present is primarily decision-supporting in nature.

Chapter Five, the results of the examination of present information systems at fifty small, private, predominantly Negro colleges will be presented, contrasting them with both present standards and the proposals contained heretofore in this study.

APPENDIX 4-A

SYMPTOMS OF INADEQUATE MANAGEMENT REPORTING

In the July, 1967, issue of the <u>Journal of Accoun-</u> <u>tancy</u>, Donald F. Markstein discusses symptoms of inadequate management reporting.¹ Certain of these symptoms have been selected for presentation below because of their universality of application to all management information systems including those of institutions of higher education:

- Inability of executives to explain changes from year to year in operations.
- 2. Uncertain direction of growth of the institution.
- 3. Unexplained deviations from budgets.
- 4. No internal discussion of reported data.
- 5. Record of some "sour" experiences in new programs or facilities.
- 6. Management surprise at financial results.
- 7. Poor attitude of executives about usefulness of information.
- 8. Lack of understanding of financial information on the part of nonfinancial executives.
- 9. Lack of concern for environmental changes.
- 10. Executive "homework" reviewing reports considered excessive.
- 11. Excessive use of tabulations of figures.
- 12. Multiple preparation and distribution of identical data to many executives.
- 13. Disagreeing information from different sources.
- 14. Lack of periodic comparative information and trends.
- 15. Lateness of information.
- 16. Too little or excess detail.
- 17. Inaccurate information.
- 18. Lack of standards for comparison.
- 19. Failure to identify variances from anticipated results by cause and responsibility.
- 20. Inadequate externally generated information.

¹Pp. 77-82.
CHAPTER V

PRESENT INFORMATION SYSTEMS AT PREDOMINANTLY NEGRO COLLEGES

5.1 The Survey

Of the lll predominantly Negro colleges and universities known to exist in the United States in early 1966, 71 were private institutions and 40 public institutions. Of the 71 private schools, 53 were senior colleges and 18 junior colleges. For reasons discussed earlier in sections 1.3, 1.4, and 1.5 of this study, the information systems of the Negro colleges in general were selected for study. Of these lll institutions, the 40 public institutions were not included in the survey for the following reasons:

- Reticence of the administrators of publicly supported Negro colleges to divulge the needed information.
- 2. Greater resources at the command of public institutions to conduct their own research based on their own particular needs.
- 3. Limitations of time available for the research.

Of the remaining 71 private institutions, 20 schools were eliminated from the survey either because they were not small colleges (fewer than 1500 students) or because they were geographically inaccessible within temporal or monetary

limitations. The remaining 51 institutions were invited to participate. Forty-four schools accepted the invitation and were visited; the remaining seven expressed interest in the project but were unable to select a visitation day mutually agreeable with the interviewer. Several of these forwarded by mail data which have been considered in this report.

Each of the 44 institutions was visited with the interviewer spending a full day at nearly all of these schools. Discussions were held with the chief fiscal officer and the chief academic records officer (registrar) and, where possible, the president and the chief academic officer. These individuals were asked to respond to an eight page list of questions pertaining to record keeping and information processing. The responses were immediately noted and were reviewed and summarized subsequent to the personal interviews. In addition, discussions were held with the staffs of the chief fiscal officers and the registrars where possible. Finally, each institution was asked to submit copies of its daily, monthly, and annual recurring reports and samples of its permanent academic records.

The results of the interviews were tabulated upon completion of the entire visitation period, which lasted nearly eighty days from October 4, 1966 through December 18, 1966. They will be presented below in Sections 5.2 to 5.10. Section 5.11 will then contrast present practices at these 44 institutions with the standards established by the

Southern Association of Colleges and Schools and the accounting practices recommended in <u>College and University Business</u> <u>Administration</u>. Finally, Section 5.12 will compare present practices with the information needs discussed earlier in Chapter Four and in <u>Financial Analysis of Current Operations</u> of Colleges and Universities.

Interspersed with these discussions will be selected case examples presented anonymously. Selected findings will be summarized in tabular form. The limitations associated with this survey have been noted in Section 1.7 above.

Although 44 schools were visited, not all respondents were able to provide a usable response to every question. For this reason, discussion generally will include percentages of responding institutions.¹

5.2 Accounting Periods and Accruals

Approximately 62 percent of all private Negro colleges were accredited in 1964 (the latest year of complete published data), including 75 percent of the senior and 20 percent of the junior colleges. Of the colleges included in the survey, 72 percent were accredited.

¹Note that percentages presented in both the annotated and tabular formats may not total exactly to 100% due to rounding.

Neither <u>College and University Business Administra-</u> <u>tion</u> nor <u>Financial Analysis</u> recommends the adoption of a particular fiscal year. <u>Financial Analysis</u>, in fact, provides a method for adjusting individual college data to a common fiscal year for comparison. Of 42 responding small, private, predominantly Negro institutions, 24 (57%) use a July 1 to June 30 year and 16 (38%) use a June 1 to May 31 year. One institution uses a September 1 to August 31 year and another uses a January 1 to December 31 year.

Annotated Tabulations of College and University Accounting Practices found that 19 of 21 small, private colleges (91%) use a July 1 to June 30 year [16, p. 25].

CASE 1: For 1966 (only) the fiscal year of this college was changed from a June 30 closing date to a June 10 closing date to coincide with the date of retirement of the college president. Application of the entity concept has been disregarded.¹

Of 41 usable responses, 38 institutions (93%) maintain their records to some degree on the accrual basis and 3 institutions (7%) use a cash basis. Of these 38, several use cash basis in their books of record but adjust their financial statements to an accrual basis. <u>Annotated Tabulations</u> found that 18 of 21 small private institutions (86%) used some degree of accrual basis accounting [16, p. 26]. Basic accounting principle 13 of Volume I states that

¹See note 1, p. 82.

"Accounts should be kept on a modified accrual basis" [17, p. 21].

The degrees of modification of the accrual basis by the 38 colleges not on the cash basis are by no means consistent. For example, of these 38 institutions, 29 (76%) accrue income earned but not yet received and nine (24%) make no such accrual. Twenty-two of the 38 schools (58%) do accrue salaries payable in their end-of-year financial statements; 13 make no salary accrual; three institutions indicated that this problem does not arise because all salaries are paid by the end of the fiscal year.

An allowance for doubtful accounts receivable is used by 23 of the 38 institutions (61%) whereas the remaining 15 institutions use a direct write-off method.

Prepaid insurance is recognized by 23 of the 38 institutions (61%) whereas 14 institutions expense insurance premiums when paid and make no adjustment. One institution has no prepaid insurance problem because premium payments coincide with the fiscal year.

Thirty-two of the 38 institutions on an accrual basis definitely accrue unpaid expenses at the end of the fiscal year (84%). Generally this is done by the auditor. Four institutions indicated they do not accrue unpaid expenses (11%) and two institutions were unsure if their auditor did make such an adjustment.

Depreciation of the physical facilities of nonprofit institutions has been the subject of much debate.¹ Volume I suggests that depreciation should be taken on property used by the auxiliary enterprises of an academic institution and on real property held as income-producing investments of endowment funds, but in any case should be funded by a cash reserve if it is taken [17, pp. 20-21]. Of 41 usable responses (including the three institutions on the cash basis) 40 indicated that they make no provision for depreciation at present. One institution indicated that it makes provision for depreciation of auxiliary enterprise equipment (but not buildings). One of the 40 schools not presently providing for depreciation indicated that it will shortly begin providing for and funding depreciation of its physical plant and equipment.

In discussion with college business officers, four individuals indicated that their auditors <u>do</u> provide for depreciation. Upon subsequent examination of the institutions' financial statements, however, no indication of any provision for depreciation or fund for replacements could be found. Several institutions indicated that their independent auditors have been urging them to take depreciation on all plant assets, perhaps the result of the auditor's

¹See, for example, Appendix B to Volume I of <u>College</u> and University Business Administration [17, pp. 143 to 151].

unfamiliarity with accounting principles for educational institutions.

In summarizing this discussion of the use of accrual accounting methods, it can be seen that while 93 percent of the institutions surveyed use accrual methods, the degree of modification varies among schools and little uniformity exists.

- CASE 2: In the annual report of the business manager of this institution, it is stated that "the accounts of the College are kept on an accrual basis." Yet this institution does not recognize accrued salaries or prepaid insurance, although it does accrue income, bad debts, and certain expenses.
- CASE 3: This institution, prior to the current year, recognized prepaid summer school income as income of the old fiscal year and recognized the related summer school expenses when paid in the next fiscal year. Recognizing a failure of the matching process, this institution now estimates summer school expenses and accrues them in the old fiscal year, even though the summer session occurs in the new year. A better matching, of course, would be to record the unearned income in the old year and not recognize it until the new fiscal year, at which time the expenses associated with the summer session would also be recognized.

Of 42 institutions, 36 (86%) have made no provision for encumbering accounts throughout the year. Four institutions presently use encumbrances (10%) and two institutions (5%) have provision for encumbrances in their existing accounting systems, although they are not presently in use.

Fiscal Years of 42 Institutions (July 1 to June 30 June 1 to May 31 September 1 to August 31 January 1 to December 31	in %) 57% 38% 3% 3%			
Basis of Financial Statements of Completely Cash Basis Accrual Basis (to some degree)	41 Institutions 7% 93%	(in %)		
Accrual Adjustments for Financial Statements of Selected Items by 38 Institutions (in %)				
	Do Mako			
	Adjustment	Do Not Make Adjustment		
Income Earned but Not Received	Adjustment 76%	Do Not Make Adjustment 24%		
Income Earned but Not Received Salaries Payable	Adjustment 76%	Do Not Make Adjustment 24% 42%		
Income Earned but Not Received Salaries Payable Doubtful Accounts Receivable	Adjustment 76% 58% 61%	Do Not Make Adjustment 24% 42% 39%		
Income Earned but Not Received Salaries Payable Doubtful Accounts Receivable Prepaid Insurance	Adjustment 76% 58% 61% 61%	Do Not Make Adjustment 24% 42% 39% 39%		
Income Earned but Not Received Salaries Payable Doubtful Accounts Receivable Prepaid Insurance Unpaid Expenses	Adjustment 76% 58% 61% 61% 84%	Do Not Make Adjustment 24% 42% 39% 39% 16%		
Income Earned but Not Received Salaries Payable Doubtful Accounts Receivable Prepaid Insurance Unpaid Expenses Use of Encumbrances in the Accour Do Presently Use Encumbrances	Adjustment 76% 58% 61% 61% 84% ats by 42 Instit	Do Not Make <u>Adjustment</u> 24% 42% 39% 39% 16% utions (in %) 10%		
Income Earned but Not Received Salaries Payable Doubtful Accounts Receivable Prepaid Insurance Unpaid Expenses Use of Encumbrances in the Accour Do Presently Use Encumbrances Encumbrances Provided For But	Adjustment 76% 58% 61% 61% 84% nts by 42 Instit Not Used	Do Not Make <u>Adjustment</u> 24% 42% 39% 39% 16% utions (in %) 10% 5%		

Figure 5.1. Selected findings--accounting periods and accruals.

5.3 Fund Accounting

The basic accounting principles of Volume I provide for six self-balancing fund groups: current funds; loan funds; endowment funds; annuity funds; plant funds; and agency funds [17, p. 16]. Of 42 responding institutions, 38 (90%) do use fund accounting to some extent. Four institutions (10%) do not use fund accounting, but rather have one general fund which encompasses all assets, equities, revenues, and expenses.

CASE 4: This institution, accredited, maintains no funds, only "one general cash account."

Of the 38 schools using fund accounting, one institution has no plant fund on its books (capital assets being expensed at the time of purchase) although it has a building fund for new buildings. Another institution has no plant fund (capital assets being maintained in its current fund). Two other institutions have plant funds containing only real assets (equipment being expensed at the time of purchase).

At least two of the 38 institutions maintain unexpended plant funds in the current fund group, with plant funds containing only expended portions. Several institutions have separate plant funds and building funds, although the vast majority combines expended and unexpended portions into one plant fund.

At least three institutions do not break down current funds into restricted and unrestricted portions.

Accounting for fixed assets (land, buildings, and equipment) appears to result in great disparity among institutions. Fewer than 10 institutions had a stated policy for capitalization or expensing of new items. Several schools, because of immateriality and expediency, had minimum dollar amounts (usually \$50) below which all equipment purchases were expensed through the current fund. Generally, plant assets are recorded at historical cost, although at least two institutions indicated that appraised values have been reflected, to some extent, in their books.

Three institutions admitted that new equipment additions are transferred to the plant fund at cost in the year of acquisition. Equipment which replaces (rather than adds to) existing assets is charged to the current fund and expensed in the year of purchase. No adjustment is made to the plant fund. The result is that the plant fund contains dollar amounts of cost of assets which are no longer owned by the institution.

- CASE 5: This institution purchases all new equipment from the current fund with no transfer to the plant fund. Old equipment traded in or sold is not removed from the plant fund. The business manager admitted that a complete inventory and appraisal of plant assets is needed.
- CASE 6: This institution's financial records were destroyed by fire in 1961 and it maintains no plant fund in its accounts.
- CASE 7: This institution expenses all equipment when purchased. Only land and buildings are in the plant fund.
- CASE 8: This institution is situated on 23 acres of prime land in a state capital. Land on its books is stated at \$6,000.
- CASE 9: When this institution trades in old equipment for new assets, the new assets are transferred to the plant fund; sometimes, however, the cost of the old assets is not removed from the plant fund.

Twenty-five institutions presently maintain an annual physical inventory or a perpetual inventory (with periodic physical count) of all assets (60%). The remaining 17 schools (40%) have no such inventory. Of the 25 schools with inventories, only six have numbered each asset item. An additional four schools have started a numbering system which at present is incomplete.

Use of Fund Accounting by 42 Institutions (in %) Do Use Fund Accounting 90% Do Not Use Fund Accounting 10% Use of a Plant Fund by 38 Institutions Using Fund Accounting (in %) Do Maintain a Plant Fund 89% Plant Assets Recorded in Current Fund 3% Plant Assets Not Recorded in Books 3% Plant Fund Contains Land and Buildings Only 5% Inventory of Assets by 42 Institutions (in %) Maintain Annual Physical or Perpetual Inventory 60% Do Not Presently Maintain an Inventory of Assets 40% Use of Identification Numbers for Assets by 25 Institutions Which Maintain an Inventory (in %) Use Identification Numbers 24% Do Not Use Identification Numbers 76%

Figure 5.2. Selected findings--fund accounting and inventories.

5.4 Annual Audit

Standards for Colleges of the Southern Association of Colleges and Schools requires that "an annual audit with a certified report shall be made by competent accountants who are not directly connected with the institution" [23, p. 13]. Of the 42 reporting institutions, 37 (88%) were audited by a certified public accountant; one (2%) was audited by a public accountant; and four (10%) were not audited. In all cases in which the audit report was examined (about 25 instances) the report was addressed to the governing board (in two cases, to the board and the president). At least five of the opinions rendered in the audit report were qualified. In one instance the opinion was disclaimed (not given) because of insufficient testing allowed by the terms of the engagement. In another instance, an opinion was expressed on the statement of receipts and expenditures but not on the balance sheet (because of insufficient tests).

Several business managers expressed dissatisfaction with their auditors because of the auditor's lack of knowledge about institutional accounting practices.

- CASE 10: The auditor of this institution is a member of the board of trustees. Is this auditor "not directly connected with the institution?"
- CASE 11: "Our auditors," indicated one business manager, "are commercial auditors. They have been urging us to adopt accounting practices normally used by business enterprises."
- CASE 12: This institution, unaudited, asked a local firm of C.P.A.'s for an audit every three years, because of financial considerations. The firm would not acquiesce.
- CASE 13: This institution now prepares a "full set of audit papers" for use by the school's independent auditors. This practice, they indicate, has reduced the time of the engagement from two months to two days plus quarterly interim audits. Their audit fee has also decreased by \$600.

Annotated Tabulations found that all 21 small private institutions it surveyed had independent public accountants examine their financial statements [16, p. 31].

Annual Audit of 42 Institutions by Independent Public	
Addited Annually by C.P.A.	88%
Audited Annually by Public Accountant	2%
Not Audited Annually	10%

Figure 5.3. Selected findings--annual audit.

5.5 Budget Preparation

Standards for Colleges states that "regardless of the size of the institution, an annual budget in appropriate detail is essential to proper operations" [23, p. 12]. Of the 42 small, private, predominantly Negro colleges surveyed, 40 (95%) do prepare an annual budget. Two institutions (5%) do not do so. Both of these two institutions indicated that they are run strictly on a cash basis: if cash is available they can incur an expense. One of the institutions which does prepare a budget indicated that the president prepares the school's budget alone, without staff assistance. The remaining 39 schools prepare their budgets with some degree of staff and/or faculty participation, although the ultimate responsibility in all cases is the president's.

Of the 40 institutions which do prepare a budget, the faculty, area chairmen, and staff of equivalent rank participate fully at 29 institutions (73%). These individuals participate to a certain extent, but not "fully," in an additional five schools (13%). At the remaining six colleges (15%), the budget is prepared by the president and the chief fiscal and administrative officers alone. At the 34 schools at which the operational managers participate in the preparation of the annual budget, formal budget request forms are used at 22 schools (65%). Two schools send a letter concerning budget requests to all budget units. The remaining 10 schools provide only for oral or informal participation of the operational level administrators in the preparation of the annual college budget.

At 27 of the 40 small private Negro colleges (68%), the proposed budgetary expenditures are broken down to departmental levels; at 10 institutions (25%), the budget unit is the division; at three institutions (8%), the entire instructional program is the budget unit.

Of 31 usable responses, 16 schools (52%) formally send notification to each budget unit before the start of the fiscal year of the budget appropriation approved for that unit by the board of trustees; at 11 institutions (35%), formal notification is sent subsequent to the start of the fiscal year; at four institutions (13%), formal notification is never sent to the head of the budget unit.

Budget preparation generally takes place starting in January or February. The budget is approved, either tentatively or finally, by the governing board at its spring meeting. Of the 40 schools preparing a budget, 27 (68%) do not revise the budget in the fall after exact enrollment

figures are known; 13 (32%) do make such a revision when necessary.

Budgets at the 40 institutions were so diverse in design as to make quantifiable analysis impossible. At greater than half of the institutions surveyed, the items budgeted to each budget unit (i.e., department or division) were salaries, student labor, and supplies and equipment. Several institutions simply had one account for each budget unit into which all direct expenses were lumped. Perhaps 10 institutions had more precise budget breakdowns by object of expenditure for their budget units, such as telephone, postage, fringe benefits, travel, etc. One institution has a possible 99 objects of expenditure which can be charged to each budget unit.

- CASE 14: This institution prepares a budget in May, revises it in September after fall enrollment, but never sends a copy of the budget to each budget unit head.
- CASE 15: At this institution, the department budget consists of one figure for "equipment and operating expenses."
- CASE 16: At this institution, the department budget figure includes only funds for equipment and supplies. Such expenditures as telephone, postage, travel, even salaries, which are controllable to some degree by the head of the department, are not budgeted by department.
- CASE 17: At this institution, the business manager alone prepares the budget, with no participation by the faculty or staff of equivalent rank.

- CASE 18: At this institution, the budget unit is the division. There are two budget accounts main-tained for each division: "salaries" and "other."
- CASE 19: At this accredited institution, the entire instructional program is the budget unit, with three object-of-expenditure classifications: "salaries," "supplies," "miscellaneous."
- CASE 20: This accredited institution has not prepared a budget in "two to three years."
- CASE 21: At this accredited institution, each instructional department has one budget figure which includes all direct expenses (salaries, supplies, equipment, student labor, etc.).

At 31 of the 40 small, private, Negro colleges with budgets, budget units are allowed to transfer appropriations between objects of expenditure, provided they do not exceed the total budgeted figure for the budget unit as a whole. Generally, this latitude does not include changes in expenditures for salaries without approval of the president.

Budget Preparation by 42 Institutions (in %) Do Prepare Annual Budget 95% Do Not Prepare Annual Budget 5% Participation in Budget Preparation by Faculty and Staff at 40 Institutions Preparing Budgets (in %) Faculty and Staff Participate Fully 73% Faculty and Staff Participate to Some Extent 13% No Participation by Faculty and Staff 15% Hierarchic Level of Lowest Budget Unit for Instructional Expenses at 40 Institutions (in %) Department 68% Division 25% Chief Academic Officer 8% Formal Notification of Approved Budget Figures to Budget Unit Directors at 31 Institutions (in %) Notification Prior to Start of Fiscal Year 52% Notification After Start of Fiscal Year 35% No Formal Notification 13% Revision of Budget After Fall Enrollment by 40 Institutions (in %) Budget Revised in Fall When Necessary 32% Budget Not Revised in Fall 68% Transfer Between Line Items Within Total Budget for Budget Unit at 40 Institutions (in %) Transfers Permitted (except salaries) 78% No Transfers Permitted 22%

Figure 5.4. Selected findings--budget preparation.

5.6 Budgetary Control

Despite the fact that 40 institutions prepare budgets, only eight (20%) provide budget unit heads with monthly budget reports. Two schools (5%) provide quarterly reports. Two others provide budget reports twice during each year. One institution sends one budget report during the year, and one school sends such reports every other month. At one school, following the principle of management by exception, a warning letter is sent to the budget unit manager if he is near the appropriated budget limit. At 25 institutions (63%), no budget reports at all are sent during the year. At some of these, of course, informal notification is sufficient. At several others, the budget unit itself is expected to maintain its own set of records of expenditures.

- This institution sends a monthly budget CASE 22: report to each budget unit. It has prepared a monthly budget figure for both income and expense items as simply a fraction of the total annual budget amount. For example, the monthly budget report for current fund income compares income of the present month with oneninth of the annual budgeted figure. This, of course, presumes current fund income flows into the institution evenly from September to June, an assumption most likely invalid. Similarly, one-twelfth of the annual budget for other income is the monthly budget figure against which actual results are reported. For all funds, the monthly expense budget equals one-twelfth of the annual budget. These budget figures have little value because income is not received nor are expenses incurred evenly throughout the year.
- CASE 23: This institution, as with Case 22, prepares quarterly budget reports by comparing actual amounts with one-fourth of the annual budget.

A forthcoming report by Mr. Joseph C. Paige of

Howard University, entitled, An Investigation of the

Procedures and Practices Employed in the Preparation of the

Annual Budget in Selected Private Predominantly Negro

<u>Colleges in the United States</u> (U.S. Office of Education project number 5-8318) will discuss budgetary practices at predominantly Negro colleges in greater detail than this study.

Frequency of Budget Reports to Budget Unit at 40 tions (in %)	Institu-
Monthly Budget Reports	2 0%
Monenty Budget Reports	20%
Quarterly Budget Reports	5%
Budget Reports Twice During Year	5%
Budget Reports Every Other Month	3%
Budget Report Once During Year	3%
Formal Letter Sent When Necessary	3%
No Formal Budget Reports	63%

Figure 5.5. Selected findings--budgetary control.

5.7 Financial Reports

College and University Business Administration suggests in Chapters V and VI that certain financial statements be issued annually by all colleges. These statements fall into three categories:

- 1. Balance Sheet
- 2. Statement of Current Income and Expenditures
- 3. Summaries of Changes in Fund Balances for Each Fund.

Of 42 reporting small private predominantly Negro colleges, 39 (93%) prepare a balance sheet at least annually. Two schools (5%), unaccredited, do not prepare a balance sheet at all. One institution did not prepare one for the current year but has done so in the past and plans to do so in the future. Of the 39, 17 schools also prepare monthly balance sheets and one prepares a balance sheet quarterly. One institution prepares a monthly statement of current assets and current liabilities, but prepares a full balance sheet annually.

All 42 institutions prepare statements of income and expenditures at least annually. Twenty-one of these (50%) prepare such a statement monthly.

In Section 5.6 it was indicated that only eight institutions prepare monthly budget reports which are sent to budget unit heads for control purposes. Seventeen institutions do prepare monthly budget reports, generally on a summary rather than a detailed basis, for the president and the governing board.

Twenty-six of 40 institutions (65%) prepare daily cash reports for the president, indicating receipts and disbursements, usually for the current fund only. Two schools (5%) prepare such reports weekly and one school prepares a cash report monthly. Generally, these reports show the beginning and ending cash balances as current receipts and disbursements. Three institutions indicated that while they do not prepare a recurring cash report for the president, they do appraise him in writing if an abnormal situation develops.

Of the 42 responding institutions, 20 (48%) prepare an annual financial report distinct from the financial statements included with the annual audit report. The remaining 22 institutions (52%) issue no separate annual report.

- CASE 24: This institution prepares a balance sheet but does not include accounts receivable in current fund assets.
- CASE 25: This institution maintains accounts receivable of \$45,000 on its balance sheet with a contra allowance for doubtful accounts of an equivalent sum (less any accounts collected after balance sheet date but prior to audit date).
- CASE 26: This institution issues no monthly reports at all because of lack of staff time to prepare them. The business officer indicates that he hopes to prepare certain statements on a monthly basis in the near future.
- CASE 27: Because of problems with collection of accounts receivable, this institution issues a daily statement of accounts receivable to the president for his consideration and action. This institution, incidentally, finds that over 90% of its National Defense Student Loans outstanding are presently delinquent.
- CASE 28: Two institutions' balance sheets are headed "For the period ended . . ." and "For the year ended. . . ." The balance sheet, of course, is a statement of financial position at a particular instant in time.

Preparation of Annual Institution Balance Sheet at 42 Institutions (in %) Annual Balance Sheet Prepared 93% Annual Balance Sheet Not Prepared 7% Preparation of Annual Statement of Income and Expenditures by 42 Institutions (in %) Annual Statement of Income and Expenditures Prepared 100% Preparation of Monthly Budget Reports for Use by Governing Board and President at 40 Institutions (in %) Monthly Report Prepared 43% Monthly Report Not Prepared 57% Preparation of Report of Receipts and Disbursements of Cash at 40 Institutions (in %) 65% Cash Report Prepared Daily Cash Report Prepared Weekly 5% 3% Cash Report Prepared Monthly Cash Reports Not Prepared 27% Preparation of Annual Financial Report of the Chief Fiscal Officer Distinct from Annual Audit Report at 42 Institutions (in %) Distinct Annual Report Prepared 48% No Distinct Annual Report Prepared 52%

Figure 5.6. Selected findings--financial reports

5.8 Cost Assignment and Allocation

For the purposes of this discussion, cost assignment is the charging to a budget unit of certain costs which are directly traceable to that budget unit. Cost allocation involves the charging to a certain budget unit of costs which are incurrent by reason of that unit's existence but which cannot be directly traced to that budget unit. Of the 42 institutions surveyed, 34 schools (81%) do some amount of cost assignment to various budget units. The cost of entertaining guests in the college dining hall is assigned at 27 schools. The use of institutional vehicles is charged to the appropriate budget unit at 24 schools. Twenty schools operate a central storeroom and supplies used are charged accordingly. Seven schools assign postage charges to various budget units. Six schools assign telephone charges. Several institutions assign fringe benefit costs to each budget unit.

In general, cost allocation is used only for revenueproducing enterprises such as intercollegiate athletics, dining hall, residence halls, student union, and the bookstore. Eighteen of the 42 schools (43%) charge their auxiliary enterprises with, at least, institutional utility and janitorial costs. Where these costs are not assigned directly by use of separate meters, time cards, etc., they are usually allocated on a square foot basis. Only two institutions charge auxiliary enterprises with "rent" of their facilities. Under basic accounting principle number 16 of College and University Business Administration, it is stated that "Expenditures [of auxiliary enterprises] should include appropriate charges for the operation and maintenance of the physical plant, for general administration, and for other indirect costs" [17, p. 22]. Yet at over half of the institutions surveyed, no such allocation is made.

Of 42 reporting schools, 35 have at least one individual who is a coach in an intercollegiate athletics program. Although in nearly every instance these individuals are both instructors and coaches, at only 14 schools (40%) are their salaries prorated between instruction and intercollegiate athletics. At all remaining institutions where the coach is also an instructor, his salary is charged entirely to instruction. At only 16 of the 31 institutions offering athletic scholarships are these scholarships reported separate from general institution scholarships in the annual financial statements. At 18 of the 35 institutions charging a student fee which includes athletic fees, this fee is prorated as revenue to intercollegiate athletics.

Two basic justifications are generally give for cost assignment and allocation: (1) to determine the "total cost" of operating a particular budget unit, and (2) to encourage cost control by managers of the budget unit to which the costs have been assigned or allocated. While both reasons are valid in the case of cost assignment, it is contended here that only the former (ascertainment of "total cost") is valid in the case of cost allocation. To what degree will cost control increase if a department manager is told that every month his department will be charged with X percent of general administrative costs, or, even worse, with X dollars of indirect costs? Cost accountants for businesses have become increasingly aware (as evidenced by

the professional literature) that not all indirect costs are allocable to every budget unit (i.e., cost center) for the purposes of cost control. In a similar manner, auxiliary enterprises of an academic institution should not be judged by their ability to "make a profit" after an arbitrary allocation of all indirect institutional costs, but rather they should be judged by their ability to contribute to such unallocable costs.

In designing a cost assignment and cost allocation system for an academic institution, then, the usefulness of arbitrary allocations must be considered.

- CASE 29: This institution charges each auxiliary enterprise with 5 percent of its gross revenues as institutional overhead. What purpose is served by such an arbitrary allocation?
- CASE 30: This institution allocates certain indirect costs, principally utilities, to each academic department on a percentage basis.
- CASE 31: All administrative costs are prorated to all departments by a predetermined percentage. Why?
- CASE 32: Administrative costs and utilities are charged to all departments at this university by a formula in use for 17 years.
- CASE 33: In presenting the results of operations of auxiliary enterprises on its financial statements, these three institutions do not charge the salaries of the staffs of these enterprises as direct expenses of auxiliary enterprise operations. Rather, they are "buried" as salaries of the chief fiscal officer's staff.

Assignment of Certain Traceable Costs to Individual Budget Units at 42 Institutions (in %) Certain Traceable Costs Assigned 81% No Cost Assignments Made 19% Allocation of Non-Traceable Indirect Costs to Revenue-Producing Budget Units at 42 Institutions (in %) Certain Allocations Are Made 43% No Allocations Are Made 57%

Figure 5.7. Selected findings--cost assignment and allocation.

5.9 Internal Control

The Committee on Auditing Procedure of the American Institute of Certified Public Accountants defines internal control as follows:

Internal control comprises the plan of organization and all of the coordinate methods and measures adopted within a business to safeguard its assets, check the accuracy and reliability of its accounting data, promote operating efficiency, and encourage adherence to prescribed managerial policies.

The design of a management information system for a business or an academic institution will determine to a great extent the degree of reliance one can place on that institution's internal control.

The Committee on Auditing Procedure listed four characteristics of a satisfactory system of internal control:

1. A plan of organization which provides appropriate segregation of functional responsibilities.

- 2. A system of authorization and record procedures adequate to provide reasonable accounting control over assets, liabilities, revenues, and expenses.
- 3. Sound practices to be followed in performance of duties and functions of each of the organizational department staffs.
- 4. A degree of quality of personnel commensurate with responsibilities.

The first two points have been discussed earlier in this study. Certain management practices have been selected for statistical summarization and are presented in the following paragraphs.

Of 42 surveyed institutions, 41 (97%) have prenumbered cash receipt forms, processed either manually or by machine. One institution (3%) does not use a prenumbered receipt.

At nearly all surveyed institutions, the idea of separation of duties is emphasized primarily in the area of cash control. Most institutions have different individuals performing the bookkeeping and the cashiering functions. Bank reconciliations are prepared monthly in all cases (except for inactive accounts), generally by the chief fiscal officer.

- CASE 34: The treasurer (chief fiscal officer) of this institution is also the cashier, prepares the daily cash report, makes bank deposits, signs checks, and prepares the bank reconciliations.
- CASE 35: The individual who reconciles the bank accounts of this institution is rotated every three months.

CASE 36: At this institution, cash disbursement checks are written by one individual directly from the vendor's invoice. A second individual ascertains the vendor's balance from the accounts payable register before the check is mailed.

Over 80 percent of the institutions surveyed pay accounts payable monthly. Nearly 70 percent indicated they take all purchase discounts offered. An additional 20 percent of the schools indicated that they take "some" of the discounts while 10 percent are unable to take any cash discounts.

The following table indicates the number of signatures required on checks written at 42 surveyed institutions:

Signatures on Checks	Number of Schools	<u>% of the</u> 42 Schools
One individual alone	4	10
One individual out of two possible	2	5
Two individuals out of two possible	22	52
Two individuals out of three		
possible	8	19
Three individuals out of three		
possible	1	3
Four individuals out of four		
possible	1	3
Two individuals out of six possible	1	3
By machine, one person has the key	2	5
By machine, two individuals have		
the key	<u> </u>	3
	42	100

CASE 37: At this institution, two individuals must sign all checks, the president and the treasurer of the governing board. The treasurer normally signs 500 blank checks in advance. To what avail is the use of two signatures on the checks of this institution?

CASE 38: This institution writes all checks for payment of accounts payable when they are due. However, because of a shortage of cash, the signed checks are kept in a desk drawer until such time as additional cash receipts provide funds to cover the checks.

Of 42 reporting institutions, 30 (71%) have had a deficit in the current fund surplus account at some time during the past 10 years. The following were the methods given for recovery from the deficit position:¹

- 1. Appeal to the sponsoring institution for a grant.
- 2. General appeal for funds to alumni and the public.
- 3. Carry forward and reduce through future surpluses.
- CASE 39: This institution covers certain deficits by having its governing board "release" some endowment fund principal.

Cash shortages in the current fund are generally reduced by appeals for funds, short term borrowing, and (less frequently) by borrowing from other funds within the institution.

Only four of 42 surveyed institutions have a separate purchasing agent (one who is not also the chief fiscal officer). In all but one case, however, purchasing is done centrally. Formal bids are always requested by 13 of 42 institutions (31%); bids are requested for purchases of large dollar amounts only at seven schools (17%); some

¹Note that several institutions recovered by use of several of these methods.

requests for quotations are sent at five other schools (12%); bids are seldom or never used at 17 institutions (40%).

At seven of the 42 institutions (17%) the president must approve and sign all purchase orders before they may be sent.

Nineteen of 42 institutions (45%) have central receiving of all incoming orders (with the usual exception of dining hall orders). Of 42 institutions, 37 (88%) notify the bookkeeper by some type of receiving report when orders are received.

Several institutions indicated that a paucity of competent personnel trained in the area of college management and accounting exists. At one institution, the position of chief fiscal officer is presently vacant because of a lack of qualified applicants.

5.10 Academic Records

Because of difficulties of categorizing the academic record keeping practices of the 44 surveyed institutions, it is impossible to present statistical summaries of current procedures. Listed below are certain observations frequently noted in discussions with the academic records officers of 43 institutions. These observations are not presented in any particular order of frequency or priority.

- Few institutions have established formal guidelines for discarding academic records documents which need not be permanently maintained. Every institution maintained at least two permanent documents: (1) the grade list submitted by the instructor, and (2) a permanent record card for each student. One institution maintained four traceable source documents in addition to the permanent record card.
- Related to the first observation are the problems 2. associated with sequential posting of grades. Especially in a situation where records are maintained by hand, each posting prior to recording the grade on the permanent record card increases the probability of error. At one institution, for example, the faculty member posts his grades from his grade book to a grade list. The registrar's office posts the grade from the grade list to each student's course registration card. From this card grades are posted to the grade report and finally from the grade report to the permanent record card. At each of these steps, all done manually, the chance for error is increased.
- 3. At the great majority of institutions, a duplicate set of permanent record cards is not maintained away from the premises of the office of the registrar. While most institutions do keep their records in fireproof storage vaults, loss of such records by file would be disastrous.
- The work load of the academic records office is not 4. spread evenly over the continuum of time (occurring principally at the end of each term, at registration, and at graduation). Operating under the pressure of time naturally increases the chance for error. Over 25 percent of the institutions surveyed do not "double check" their work during a non-peak workload They rely on the students and/or faculty to period. report errors. At least 10 percent of the institutions indicated that the students do not receive their grade reports for the first term's work prior to registration for second term courses. Several institutions indicated that they were at least one year behind in posting grades to permanent record cards.
- 5. Three reasons were generally cited for the fact that over one-half of the institutions surveyed retain permanently the attendance and grade books used by faculty members: (1) fear of not being able to

properly trace possible errors in recording and reporting grades; (2) adequate storage space; and (3) high turnover of faculty personnel and inability to contact individuals in case of future problems.

- 6. Nearly every institution indicated that recent "housekeeping" of curricula and course offerings had taken place, generally the result of attempts to gain or maintain accreditation. Courses that had not been offered for several years were eliminated from the catalogue.
- CASE 40: This institution offers the following courses, according to their 1966-1967 catalogue: Principles of Electronic Data Processing; Introduction to Programming Concepts and the Computer; Key Punch Operation; Data Processing and System Development; Accounting Machines Wiring and Operation; Functional Wiring Principles. This institution, an unaccredited junior college, neither owns nor has access to either punched card equipment or a computer.

Of 43 reporting institutions, 20 (47%) maintained academic records completely manually (with the exception of photostatic reproductions of the permanent record card for use as a transcript). Twenty institutions (47%) use the "Keysort" system of the Royal McBee Corporation. Three schools (7%) maintain academic records on punched card, unit record equipment manufactured by the International Business Machines Corporation. Two institutions, not using punched card equipment presently, possess these machines and are designing a system for their implementation in academic records processing.

Three institutions do not presently own or lease photocopying equipment. As a consequence, each transcript must be individually typed.

Processing of Academic Records at 43 Institutions (in	· %)
Processed Completely Manually	47%
Processed Using Royal McBee Keysort System	47%
Processed by Punched Card, Unit Record Equipment	7%

Figure 5.8. Selected findings--academic records.

5.11 Present Practices Compared With Present Standards

It is evident from the results of this research that the vast majority of the institutions surveyed has attempted to comply with the standards for college record keeping as indicated in <u>Standards for Colleges</u> of the Southern Association of Colleges and Schools. The majority of institutions has adopted most of the recommendations of <u>College and University Business Administration</u>, Volume I. Yet compliance is by no means universal among the surveyed institutions; nor have all institutions complied in the same way.

For example, not all institutions prepare a budget as required by Standard 4 [23, p. 12]. Of those that prepare a budget, not all invite participation of faculty members and staff administrators, as suggested in Standard 4. Not all institutions "render interim budget statements to department heads for their guidance and assistance in staying within budgetary allocations" [23, p. 12].

Not all institutions have adopted completely all of the sixteen basic accounting principles of Volume I. In fact, some institutions do not use fund accounting.

Management practices, as recommended in Volume I, are not universally adopted. For example, nearly half of the institutions surveyed do not maintain a physical inventory of assets.

Moreover, and perhaps more important, the goals of uniformity and comparability stated by the authors of Volume I have by no means been achieved. As has been indicated earlier in Section 2.2, Volume I is indecisive in many instances, allowing much leeway in the adoption of accounting procedures. Each college surveyed has selected from among the permitted alternatives those which it has adopted. The result is incomparability. This is evident, for example, in the discussion of the use of accrual basis accounting in Section 5.2.

One must conclude, then, that while present record keeping practices at the 44 surveyed colleges approach the established standards, they do not meet them.

5.12 Present Practices Compared With Decision-Makers' Needs

In Chapter Three the decision-making process was discussed in detail. It was indicated that the information system for an organization must be designed with the needs of the decision-makers of that organization in mind. Chapter Three delineated the decision centers of a typical small private college. Chapter Four considered the kinds of information which would be useful, objective, and feasible for those decision-makers.

Clearly, the standards established by the regional accrediting association are oriented primarily to the reporting of stewardship information. Yet the decision-maker needs are for managerial type information. In concentrating attention in designing its information system (or its several separate sub-systems) on meeting the established standards, a small college may unintentionally substitute a criteria of <u>acceptability</u> for usefulness. That is, many of the colleges surveyed have let Volume I and <u>Stnadards for</u> <u>Colleges</u> become the sole measure of an effective information system.

Thus the first observable difference between present practices at the 44 schools surveyed and the ideas outlined in Chapters Three and Four is that the needs of the decisionmakers have not been explicitly considered in the design of information systems at these colleges.

A second difference is the lack of integration of all the information systems at each individual institution. Especially evident was the lack of coordination of the business information system with the academic information system. For example, although the business manager may know the total cost of operating the institution's chemistry program, and although the registrar may know the precise enrollment figures for chemistry courses, these two sets of data are not often integrated in a report to the chief academic officer. In short, the kinds of managerial reports which are

useful to educational administrators are not generally included on a recurring basis in the information flows of most of the colleges surveyed. These are the kinds of reports championed in <u>Financial Analysis of Current Opera-</u> <u>tions of Colleges and Universities</u>. These are the kinds of reports which are useful, objective, and feasible at even the smallest institution. These are the kinds of reports which must be available if the quality of the instructional programs at academic institutions is to be continually evaluated and improved.

Not one institution surveyed has appointed one individual to coordinate information flows throughout his institution, although a small minority of schools has directors of institutional research and planning. In fact, many of the college officers interviewed in the course of this study indicated that their information systems had not really been planned at all, but rather they were the result of an evolutionary process. Too often the reply to the question of "Why do you do this?" was that "We have always done it this way."

It must be concluded, then, that the idea of a coordinated management information system for a small private, predominantly Negro college is at present not a reality.
5.13 Miscellaneous Findings

Certain data were gathered in connection with the research for this study which do not have direct implication on information systems design. Yet such data might be useful knowledge and are therefore presented here.

Of 42 surveyed institutions, 36 (86%) have an endowment fund. Six institutions (14%) have no endowment funds at present. Of the 36 schools with endowments, the administration of the endowment funds is handled by the sponsoring church in 19 cases (53%); by a local committee including a banker or a stock broker in 15 cases (42%); and some funds by the church and some by a local committee in 2 cases (5%).

Of 42 institutions, 34 (81%) have a retirement program for at least some of their faculty and staff. Sixteen of the 34 institutions (47%) participate in the Teachers' Insurance and Annuity Association (T.I.A.A.). Eighteen institutions (53%) either participate in the retirement plan of their sponsoring institution or have established a plan of their own.

At 10 of the 16 institutions participating in T.I.A. A., the individual and the institution each contributes 5 percent of the base salary. The highest total contribution under T.I.A.A. is 13 percent (school 8%, individual 5%).¹

¹At one institution, the individual and the institution each contributes 7-1/2% up to the first \$4,800 of salary.

The lowest total contribution under T.I.A.A. is 6 percent (school 3%, individual 3%). The highest individual contribution is 5%, except as indicated in note 1, page 133.

At six of the 18 institutions under other retirement programs, the individual and the institution each contributes 5 percent of the base salary. The highest total contribution under private plans is 15 percent (school 10%, individual 5%). The lowest total is found at three institutions whose plans call for the institution to contribute three-quarters of one percent up to \$4,800 of salary and one and one-quarter percent thereafter, with the individual contributing nothing.

Under T.I.A.A. only salaried employees are included. Of the 18 retirement plans that are not associated with T.I.A.A., 11 include all employees, salaried or hourly. Of the 34 institutions with retirement plans, participation is optional at only seven (22%).

Forty of 42 institutions participate in the Social Security program of the United States Government. The two institutions which do not participate (as eleemosynary institutions may elect) also do not maintain retirement programs at all.

Thirty of 42 institutions (71%) have an institutional hospitalization insurance program, with employer contributions ranging from 100 percent to zero.

Twenty-six of 42 institutions (62%) have an institutional major medical insurance program, with employer contributions ranging from 100 percent to zero.

Twenty-two of 42 institutions have group life insurance programs. Insurance coverage ranges from \$1,000 to \$20,000. Employer contributions often cover the first \$1,000 of insurance and only a fraction of the premium thereafter.

Few institutions have prepared complete manuals of business procedures and job descriptions for business office employees. Several institutions, however, have outstanding procedures manuals, with detailed rules both for individual jobs and for the business office as a whole.

Most institutions indicated that the basis of valuation of their physical plant and equipment for insurance purposes is historical cost, although several schools indicated that insurance appraisals had been made.

CASE 41: This institution has three different insurance agents and maintains policies with 20 different insurance companies. Community relations was given as the reason for the three agents. Financial considerations, however, have forced this institution to investigate consolidation of all insurance policies.

5.14 Recapitulation

Forty-four small, private, predominantly Negro colleges and universities in the southeastern United States were surveyed in an attempt to measure present practices in business and academic record keeping. The statistical

summaries presented in this chapter indicate that many and diverse practices are followed by these institutions. In general, the majority tries to meet the standards of the Southern Association of Colleges and Schools and of <u>College</u> <u>and University Business Administration</u>, Volume I. Compliance with these standards is by no means consistent, and the goals of uniformity and comparability are not achieved.

The orientation of the majority of the institutions' record keeping systems is toward stewardship information. Far less emphasis is placed on providing the kinds of managerial information which internal decision-makers need to effectively manage the institution in its major endeavor: the preservation and dissemination of learning.

Chapter Six will consider the question of efficiency in the preparation of the records of a small academic institution.

CHAPTER VI

EFFICIENCY OF COLLEGE INFORMATION SYSTEMS

6.1 The Feasibility Question

In Chapter Three, three criteria for inclusion of a measurable property in a college information system were established: usefulness, objectivity, and feasibility. It is feasible to include a certain measurement in the information system if the value of the information to the college (and its decision-makers) is greater than the cost of furnishing it.

While an acceptable standard for measuring the <u>cost</u> of furnishing a given item of information is available, namely the dollars of cost involved, no such acceptable measurement standard for the <u>value</u> of information exists. In some cases the value of a given item of information available at a given decision center at a given point of time can be measured in dollar terms. For example, the fact that the clerk responsible for payment of college accounts knows of the final date on which an account may be paid and a cas discount taken results in a measurable value for that item of information. This value, namely the cash discount taken, can be compared with the added cost, if any, of providing

the clerk with the proper information at the proper time. If the value exceeds the cost¹ then procedures whereby the clerk is properly informed should be adopted.

In other cases, however, it is difficult with present measurement capabilities to quantify the value of information in dollar terms. How does one measure the value, for example, of providing the academic counselling office with adequate background information on each student so that he may be properly guided in his collegiate program? How does one measure the value to the chief academic officer of information about the relative costs of operating individual academic programs at his institution? The basis for these problems is the fact that the outputs of an academic institution, unlike a business entity, are not susceptible to quantifiable measurement in terms of dollars. If one could assign a dollar value to each graduate based on his quality, then perhaps the value of much information could be determined. For if the dollar value of a graduate (and other college outputs as well) could be ascertained, then each item of information in a college information system could be valued in terms of increases to the quaity (and hence the value) of the graduate.

Such measurements of collegiate outputs are not presently a reality. Several individuals and groups are now

¹The time value of money has been disregarded in this simple example.

studying this problem. Notable among these is a study by M. G. Keeney, H. E. Koenig, and R. Zemach, sponsored in part by a National Science Foundation grant. This study presents a model of a typical institution in terms of flows of manpower and facilities inputs to two production sectors: academic and nonacademic. These flows are measured in terms of physical units. Outputs are measured in terms of combinations of these physical units to produce either developed manpower (i.e., graduates) or outside services (e.g., research, community services). Assignment of actual unit cost parameters to the physical flows results in measurement of outputs in dollar terms. Outputs are not, however, explicitly measured (and thus differentiated) in terms of quality. Although quality standards are implicit in the model, through limits in the "blend" of physical inputs, measurement of outputs, by quality and in dollar terms, has not yet been achieved. Nor have such measurements been successfully accomplished in any other studies, although this research continues at present.

Thus the problem of determining the value of information has not been solved. One solution to the feasibility question is the subjective determination of feasibility or infeasibility of a given item of information by professional

¹<u>State-Space Models of Educational Institutions</u> (East Lansing, Michigan: Division of Engineering Research, Michigan State University, 1967).

l

college information systems designers and college administrators. No doubt their decisions as to feasibility of certain items of information, especially the extrema, would be correct. For example, it is intuitively obvious that it is feasible for each academic institution to maintain a record of the names of each of its students. It is equally obvious that inclusion in a college information system of the actual number of blades of grass on its campus is not feasible. But is the inclusion in a college information system of the admission test scores of its students feasible? The answer to this and many similar questions is not intuitively obvious. Hence, the solution to the feasibility question which requires subjective determination by professional college managers may result in a less-than-optimal information system. It is hypothesized here, without proof, that most, if not all, colleges do presently use this method.

Until such time as the quality of college outputs can be measured in dollar terms, the feasibility question must remain unanswered.

The notion of feasibility is concerned with individual items of information--individual measurable properties of an academic institution. It is also concerned with groups of these individual items of information, for while each individual item may itself be feasible, certain items when considered in relation to other items in the information system are not feasible. That is, the feasibility of one

item of information is not independent of the other items in the system.

For example, the value of maintaining the date of birth of each of its students in its information system may exceed the cost to a college of furnishing it. Hence, it is a feasible item of information. Similarly, the value to a college of maintaining the current age of its students in its information system may exceed the cost of doing so. But would the value of maintaining both items of information in the system exceed the cost of furnishing them both?

This notion can be extended beyond simple pairs of measurable properties to triplets, quadruplets, etc. In fact, it can be extended to all of the possible subsets of all measurable properties.

6.2 Efficiency

When one considers all of those measurable properties selected for inclusion in an information system (i.e., those which are deemed to be useful, objective, and feasible), one can speak of the <u>efficiency</u> of that system. <u>An</u> <u>information system is said to be efficient when the system</u> <u>provides information of the highest value for a given cost</u> <u>of furnishing it; or, conversely, if, for a given level of</u> <u>value of information, it has been furnished at the least</u> <u>possible cost</u>. It is most important to realize that consideration of efficiency presumes a resolution of the question of feasibility. One must speak of the efficiency of a given system; a given system requires selection from among the possible measurable properties those which will be included in that system; this selection, in turn, requires determination of feasibility.

In order that the discussion of efficiency may proceed, then, it is necessary to make certain assumptions about feasibility.

1. It is feasible for a college information system to provide for the processing of all information required to meet the standards set by the appropriate regional accrediting association.

2. It is feasible for a college information system to provide for the processing of accounting data in such a manner as prescribed by Volume I of <u>College and University</u> <u>Business Administration</u>.

3. It is feasible for a college information system to provide for processing the kinds of information and reports recommended in <u>Financial Analysis of Current Opera</u>tions of Colleges and Universities.

With each of these three assumptions there goes the proviso that an efficient manner of processing these data is to be used. That is, although the information which will be processed as a result of adoption of these three assumptions has great value, it is not implied here that this information must be obtained "at any cost." A further proviso is that any inconsistencies within the requirements of these three bodies of information must be resolved in favor of usefulness to college decision-makers.

Given, then, that the minimum information system for a small college should include (1) compliance with all standards of the regional accrediting agency, (2) acceptance of the accounting requirements of Volume I, and (3) adoption of the kinds of managerial reporting formats suggested in <u>Financial Analysis</u>, what is the most efficient manner of gathering, processing, and reporting these data?

An examination of the <u>characteristics of the data</u> to be processed is necessary to answer this question. The data which would ordinarily be processed by a small college would possess the following characteristics:

1. Much of this data is quantifiable, in terms of dollars, physical units, percentages, and the like. Most accounting information is quantifiable in terms of dollars. Some, such as asset inventories, is quantifiable in terms of both dollars and physical units. Academic information often is quantifiable in terms of physical units. For example, enrollments are measured in numbers of students; manpower is measured in hours of time; test scores and grades can be measured in actual numbers or percentages.

2. Much of the college data which is not quantifiable is at least categorizable. For example, students can be classified as Baptist, Methodist, Catholic, etc.

Students can be grouped according to major area, residence, sex, career plans, etc. Faculty can be classified by field of instruction, academic preparation, marital status, etc. Equipment can be classified according to physical condition, size, etc.

3. Most pieces of college data are used several times in preparing different reports and analyses. For example, the account receivable from an individual student would be used when periodic statements are rendered, when payments are received, when the balance sheet is prepared, when analyzing delinquent accounts, etc. The student's course grade is used for term grade reports, for permanent records and transcripts, for counselling, and for analyses of grading habits of faculty members. Course enrollment data would be used to analyze course demand, to study room utilization, to determine unit costs of instruction, to prepare reports to the government, etc.

4. Data gathered from various sources is often integrated in final reports. For example, in attempting to determine the cost of, say, the chemistry program at a college, financial data would be gathered by the chief fiscal officer; enrollment data would be gathered by the academic by the academic records officer; certain qualitative data might be gathered by the chief academic officer. In order to analyze the progress of students receiving financial aid,

data from the chief fiscal officer, the student personnel officer, and the academic records officer would be merged.

5. The majority of reports and analyses to be prepared is of a recurring nature; that is, they are routinely processed at predetermined periodic intervals. The financial reports recommended in Volume I and the managerial reports recommended in <u>Financial Analysis</u> are examples of these recurring reports.

6. Timeliness is an important factor. For example, budget reports, to be useful for control purposes, must be prepared regularly. Bills must be paid when due. Grade reports must be prepared prior to registration for the ensuing term. Payrolls must be completed by payday.

7. Reasonable accuracy is required.

8. Large quantities of data exist even at a small college.

These eight characteristics of data to be processed at academic institutions indicate that some degree of mechanization in data processing would be suitable. Consider, for example, the characteristics suggested by Dearden and McFarlan as making advantageous the processing of data by automated methods [7, pp. 10ff.]:

1. A Number of Interacting Variables.

2. Reasonably Accurate Values.

3. Speed an Important Factor.

- 4. Repetitive Operations.
- 5. Accuracy Required.
- 6. Large Amounts of Information

Note the similarities between these characteristics and those of college data cited earlier.

<u>Financial Analysis</u> points out that adoption of the recommendations contained therein would likely require mechanization [25, p. 28]:

The data collection process itself is viewed not as sporadic activity but as an integrated, coordinated process, bringing together dollar and operational data, both projected and actual, which will give a meaningful description of the operation of the institution. Needless to say, such a process should include the use of the data processing system and any and all devices and techniques that would economically expedite data collection, processing, and reporting.

In their survey, "The 'Managerial Revolution' in Higher Education," Rourke and Brooks cite the "growing use of computers and electronic data-processing equipment in the management of public colleges and universities" [18, p. 167]. They are quick to point out, however, that the use of such equipment does not assure "scientific management." One must first examine the quality of design of a management information system before any consideration of automation. The most important criteria for a good management information system is effectiveness, as defined earlier. Efficiency must be subordinated to the needs of decision-makers. Given, though, that the general design of a college information proposed heretofore is effective, it appears that some amount of automation is necessary for maximum efficiency.

6.3 Automation of a College Information System

Data processing involves the flow of information from its source of its use. Automation involves the use of mechanical or electronic equipment to some extent in the processing of data. Automation can range from the simplicity of the use of an adding machine to the complexity of a fully integrated highspeed computer system serving the needs of all college decision-makers.

One might distinguish among four levels of sophistication of automation in college record keeping:

1. <u>Calculating Machines</u>.--Such machines as an adding machine and a calculator can reduce the time and drudgery and increase the accuracy of arithmetical computations, but the use of these machines alone still leaves the record keeping system virtually a manual one.

2. <u>Bookkeeping Machines</u>.--Bookkeeping machines, and their less capable cousins, posting machines, increase computational efficiency and reduce or eliminate such layout problems as columnarization and spacing in recurring reports. Their only "memory" capability is the accumulation of totals. In general, summary totals must be reinserted manually in the machine during an updating process, although several newer bookkeeping machines are designed to automatically pick up prior tools magnetically from a card.

3. Punched Card, Unit Record Equipment.--A punched card, unit record data processing system is often referred to as electric accounting machinery (E.A.M.). Data enters the system as holes punched in paper cards. Each card contains one item of data, that is, one record, hence the term "unit record" equipment. The basic output of the system is either a printed document or additional punched cards. E.A.M. has all of the advantages of a bookkeeping machine, namely the ability to perform calculations¹ and the ability to follow a predetermined format for recurring printed out-In addition, it has several other capabilities which puts. distinguish it from the lower order bookkeeping machines. First, it can alter its operation based on certain characteristics of the input data. Second, because items of data are stored individually and permanently on punched cards, this data can be rearranged or sorted mechanically. Third, because the output of the system can be a punched card, updated totals or summaries need not be manually reinserted when performing recurring operations. While these machines

¹Basic E.A.M. equipment has the ability to add and subtract; more sophisticated adaptations can multiply and divide as well.

have the ability to compare consecutive punched cards and to accumulate totals, they have no memory capacity. In addition, the unit record equipment is slow when compared with a computer system.

The three basic pieces of unit record equipment are the card punch, the sorter, and the tabulator. Each performs one of the three basic steps of record keeping: recording, classification, and reporting. In accounting, of course, these steps are known as journalizing, posting to the ledger, and preparing financial statements. Additional pieces of machinery are available to simplify or expedite one of these three record keeping steps. For example, the reproducing punch, the interpreter, and the verifier expedite the recording process. The collator simplifies the classification process. A calculating attachment to the tabulator expedites the reporting process.

In its application to a college information system, electric accounting machinery has a much broader scope of use than bookkeeping machines. Most of the unit record machines are controlled by permanently wired panels which are inserted to perform specific operations.

The primary manufacturer of unit record equipment is the International Business Machines Corporation. This equipment may be purchased (new and used) or leased directly from the manufacturer; it also may be purchased used from present owners or office equipment firms. A recent informal survey indicates that the three basic pieces of equipment (the card punch, sorter, and tabulator) can be rented for approximately \$300 monthly, including all maintenance and repairs. These same items, purchased new, would cost about \$30,000.000. Purchased used, they can be obtained for \$7,500 and up. Purchase, of course, involves maintenance and repairs by the owner, although service contracts are available from the manufacturer. Two publications by the International Business Machines Corporation describe application of these machines at academic institutions. <u>Punched Card Applications at</u> <u>Barrington College</u> (I.B.M. publication number K20-0010) considers their use at a college with 500 students. <u>Data Processing Applications at Wittenburg University</u> (I.B.M. publication number E20-0150) describes an institution with 1,200 students.

4. <u>Computers</u>.--The electronic computer has several characteristics which distinguish it from other data processing machinery. First, it operates at electronic speeds. Second, it has a memory capacity for the storage of data. Finally, it has the ability to alter the direction of its operation based on the results of its computations. Almost concurrent with their rapid growth in business data processing, computers have been adopted by large academic institutions both for the processing of their records and as an instructional and research tool. Rourke and Brooks point out that "without computers a substantial increase in

administrative personnel would have been necessary in higher education." Moreover, the computer has given college administrators an heretofore unavailable intimate knowledge about their institution to guide them in planning its programs and its destiny.

Each of these four levels of sophistication in the automation of a data processing system (viz., calculating machines, bookkeeping machines, punched card equipment, and computers) has application to a college record keeping situation. An academic institution must decide which among these (plus the alternative of a completely manual information system) will provide for maximum efficiency of operation. Certain advantages, however, make the consideration of a punched card, unit record system worthwhile for a small, private college which has decided to adopt the recommendations of the regional accrediting association, Volume I, and Financial Analysis.

1. In Section 6.2 eight characteristics of college data and reports were listed. These characteristics may be summarized as follows: (a) quantifiable, (b) categorizable, (c) recurring use of individual items of data, (d) integration of data from several sources and of various types, (e) recurring reports, (f) timeliness, (g) reasonable accuracy, and (h) large quantities of data. While a bookkeeping machine is suitable for coping with data processing some of these characteristics (viz., quantifiability, recurring

reports, timeliness, reasonable accuracy, and perhaps large quantities of data), it is particularly unsuitable for the recurring use of individual items of data, for integration of data from several sources and of various types, and for data which is categorizable but not quantifiable. Punched card, unit record equipment is capable of processing data with all of the eight characteristics.

2. The unit record equipment is capable of many and diverse applications, whereas bookkeeping machines are generally suitable for the processing of financial information only.

3. The cost of operating a unit record system is often not beyond the means of even an institution with 500 students.

4. A well-designed punched card, unit record system provides a good foundation for conversion to a computerbased system as the institution grows in size and needs.

5. A unit record system has capabilities for use as an instructional tool.

These reasons merit the consideration by administrators at small academic institutions of the use of electric accounting machinery in the automation of their data processing systems.

6.4 Present Automation at Small Private Negro Colleges

Of 44 surveyed small private predominantly Negro colleges, every one is presently using a calculating device of some sort. Eleven of the 44 schools (25%) process all records manually except for the use of these calculating machines. All of the remaining 33 institutions presently own or use bookkeeping or posting machines. Of these 33, 23 use at least one bookkeeping machine and 10 use a posting machine or a posting cash register.

The 23 institutions now using bookkeeping machines operate at least 29 machines including the following:

- 1 National Cash Register Company Model 31
- 2 National Cash Register Company Model 32
- 10 National Cash Register Company Model 33
- 1 National Cash Register Company Model 42
- 12 Burroughs Corporation Model F-1500
 - 1 Burroughs Corporation Model F-5300
- 3 Unknown or miscellaneous manufacturers.

In addition, four bookkeeping machines are known to be on order by these 44 institutions.

Six institutions of the 44 presently own or lease punched card, unit record equipment manufactured by the International Business Machines Corporation. The applications at each of these six institutions will be briefly presented below as indicative of the potential successes and problems in the use of punched card equipment:

INSTITUTION A: This institution had leased a small punched card system for over two years prior to consideration of any application for internal data processing. The equipment was used entirely for instructional purposes. At present, all academic records operations (including registration, class lists, grade reports, transcripts, special analyses) are prepared on the unit record equipment. Work is underway for gradual applications of financial accounting records and alumni records.

- INSTITUTION B: This institution has recently taken possession of its punched card equipment and has no operating data processing applications at present. Plans include academic records processing for the immediate future, business office records in the more distant future.
- INSTITUTION C: This institution has a large unit record system on which are processed all financial records, including budget requests, final budgets, budget reports, all journals and ledgers, monthly statements, student loan reports, payrolls, and physical inventories. No applications in the area of academic records exist or are planned because of reluctance on the part of the registrar to automate a system he believes is operating smoothly on a manual basis.
- INSTITUTION D: This institution has a large unit record system on which only academic records are processed. Lack of cooperation by the business office has prevented accounting applications to date.
- INSTITUTION E: This institution has a very large unit record system in use, processing both financial and academic records. Additional applications are planned gradually leading to the purchase or rental of a small computer system.
- INSTITUTION F: This institution has recently been given a vacuum-tube computer. It has leased a unit record system as auxiliary peripheral equipment. Academic records applications are planned for the immediate future; business office applications will follow.

Two other surveyed institutions utilize the data processing equipment at nearby academic institutions for the processing of at least some of their records. One of these

also uses the computer facilities of a nearby industrial firm, an officer of which is on their governing board.

Two institutions make use of outside commercial data processing services for the automation of some of their records.

One institution has been given a small digital computer, oriented ideally to scientific research but with definite capabilities for data processing. To date this institution still maintains its books entirely manually except for the limited use of an old bookkeeping machine.

Two institutions presently have large electronic computers on order. One of these is moving upward from smaller, less sophisticated equipment. The other is moving from what is essentially a manual operation to a large computer system. At least two other institutions indicated that a computer for use by internal record keeping would likely be ordered in the near future.

6.5 Recapitulation

The definitions of <u>feasibility</u> and <u>efficiency</u> both involve the notion of the value of a piece of information. The value of information in a college information system often cannot be measured in dollar terms because the outputs of an academic institution are not presently measurable in those terms. Rather than to avoid these questions of feasibility and efficiency, a minimum information system for a

college which (1) meets accrediting agency requirements, (2) follows Volume I of <u>College and University Business</u> <u>Administration</u>, and (3) adopts the suggestions contained in <u>Financial Analysis of Current Operations of Colleges and</u> <u>Universities</u> has been assumed to be feasible. Given the characteristics of the kinds of data processed by this minimum system, it appears that some amount of automation is necessary. Four levels of automation have been identified: calculating machines; bookkeeping machines; punched card equipment; and computers. Punched card, unit record equipment appears to possess the capabilities for processing data with the characteristics of college information at a cost which is not beyond the means of most small academic institutions.

One-fourth of the 44 small private Negro colleges surveyed process their records manually. The rest of the schools use, at least, a bookkeeping machine, with several operating punched card data processing centers.

Chapter Seven will summarize the results of this study and present several conclusions and recommendations.

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

When contrasted with information systems development for business enterprises, research into the design of effective information systems for academic institutions has been neglected. In particular, the larger public and private universities have pioneered in the development of information systems to meet their own needs. Smaller institutions, however, have been imitators rather than innovators in most of the strides they have made.

Small private colleges, facing unique information problems, lack of coordinating effort by sponsoring bodies, and limited resources, have generally lagged behind the larger institutions in consideration of a coordinated management information system.

The small private predominantly Negro colleges have provided higher education to the majority of Negro young people in the past, and all indications are that they will continue to do so for the foreseeable future. The quality of the service they render depends, in part, on the quality of the information provided to their decision-makers. It

therefore follows that these institutions, as well as all similar small colleges, should be assisted in the development of effective management information systems.

An information system is the network of flows of information from the preparer to the user. The users of information in an enterprise (such as a college) are decision centers. The decision centers at an academic institution can be categorized according to the hierarchic level of authority. The president and governing board constitute the policy-making decision centers. The chief academic officer, the chief fiscal officer, the chief student personnel officer, the director of alumni affairs, and the director of institutional research and planning are the tactical decision-makers, responsible for the implementation of policy. Academic department chairmen and staff of equivalent rank are operational decision-makers, responsible for administering specific programs or activities of the institution.

Each of these decision centers requires information as the means of reducing uncertainty in the making of decisions. An effective information system is one which adequately informs decision-makers for their decisions. An obvious problem, then, is the determination of exactly what information should be provided to decision-makers.

In general, most small colleges have been guided by the standards established by the regional accrediting agency in designing their information systems. The requirements of

these standards are vague when one considers the specific features necessary for an effective information system. The regional accrediting associations, in turn, require adherence to the principles of college accounting outlined in College and University Business Administration, Volume I. Volume I has done much to promote uniformity in accounting, yet complete uniformity does not exist. The accounting principles espoused therein allow many alternatives from which each institution may select. Nor does Volume I provide for a system which generates all of the kinds of information college decision-makers need. It has been shown that the primary users of college information are the college administrators themselves. These individuals need information of a managerial nature to assist them in making internal Yet Volume I provides primarily for stewardship decisions. information and only incidentally for managerial type information.

Three criteria have been accepted as applicable to the determination of which information should be included in a college information system:

- 1. Usefulness: of value to the decision-maker.
- 2. Objectivity: freedom from bias.
- 3. Feasibility: the value of the information is greater than the cost of furnishing it.

Primary among these criteria must be usefulness, and designers of college information systems must provide for an

optimum balance between usefulness on the one hand and objectivity and feasibility on the other hand.

A recent study, <u>Financial Analysis of Current Opera-</u> <u>tions of Colleges and Universities</u>, concluded that colleges must generate much more information of a managerial nature if they are to provide an effective service to the academic community and to society. To that end, <u>Financial Analysis</u> proposed a minimum management information system which produces the kinds of information useful to college decisionmakers.

Forty-four small private predominantly Negro colleges were surveyed in an attempt to measure their present practices both in relation to present standards and to decision-maker needs. Although several surveyed institutions have <u>not</u> made any attempt to comply with the standards of the regional accrediting agency and the principles of accounting recommended in <u>College and University Business</u> <u>Administration</u>, the majority of such colleges has attempted compliance. Yet even those which have tried to comply with the standards have not done so completely, with deviations so diverse as to make uniformity, and hence comparability, an unrealized ideal. The design of information systems at these colleges has been oriented to stewardship reporting; only to a much lesser extent has managerial information been included in the system on a recurring basis. Despite the advantages of a coordinated "total systems" approach to information system design, the majority of surveyed institutions has several unintegrated subsystems rather than one "system of systems."

The notion of feasibility, as applied to information, is particularly elusive in the context of an academic institution, because although the <u>cost</u> of furnishing an item of information can be obtained, its <u>value</u> is not measurable by present capabilities. Until such time as the value of information to college decision-maker can be measured, the determination of feasibility must necessarily be subjective.

Rather than abandon consideration of the question of efficiency in the operation of a college information system, one must make several assumptions. If it is assumed that (1) compliance with all regional accrediting agency standards, (2) adoption of the requirements of Volume I of <u>College and University Business Administration</u>, and (3) acceptance of the proposals of <u>Financial Analysis of Current</u> <u>Operation of Colleges and Universities</u> are all feasible, then the notion of efficiency can be considered. An information system is said to be efficient if it provides information of the highest value for a given cost; or, conversely, if, for a given value of information, that information is provided at the lowest cost.

The characteristics of the data to be generated by acceptance of the three assumptions above suggest that some

amount of automation of data processing is necessary for efficient operation of a small college information system. When these characteristics are compared with the capabilities of several levels of sophistication in automation, one reaches the conclusion that consideration of the use of punched card, unit record equipment by a small college is very worthwhile. Yet the majority of small, private, Negro colleges has at best reached the level of the use of bookkeeping machines or posting machines. Many such institutions process nearly all of their records manually. A few use unit record equipment and several now have or plan to acquire electronic computers.

7.2 Recommendations

In the light of the findings of the study, the following recommendations are made. Some of these are directed at the managers of individual academic institutions. Others may merit consideration by those organizations responsible for or interested in the development of standards for college information systems.

1. Because the primary users of college information are the internal college decision-makers themselves, the orientation of any college information system must be toward <u>managerial</u> type information rather than <u>stewardship</u> reporting.

2. Because uniformity, and hence comparability, of published college information is a desirable goal, compliance with the standards established by the regional accrediting should be included in a college information system.

3. Serious consideration should be given to the recommendations contained in <u>Financial Analysis of Current</u> <u>Operations of Colleges and Universities</u> as a basis for management-oriented portion of an information system, especially for a small institution whose resources do not permit the design of an individually-tailored system. In addition, the advantages for inter-college comparability of the adoption of these recommendations are obvious.

4. The design of a college information system should follow a coordinated total information system approach, rather than be a well-planned but unintegrated set of small subsystems, or, even worse, an unplanned "patchwork" approach.

5. The director of institutional planning and research is the ideal individual to assume responsibility for the coordination of a college information system. His hierarchic level and his freedom from bias render him the most qualified manager. His responsibilities should be for both recurring managerial reports and special analyses.

6. In order to provide the kinds of information recommended above, some degree of automation appears necessary. Consideration should be given to the use of punched

card, unit record equipment which has capabilities complementary to the characteristics of the kinds of data to be processed by colleges.

7. Research into finding acceptable measurement standards for the outputs of an academic institution is necessary if a workable measure of value of college information is to be obtained. This, of course, is a long range project which involves individuals from diverse fields of professional competence.

7.3 A Final Challenge

While all academic institutions have one overall objective--the encouragement and advancement of learning-differences among them create unique record keeping problems. The larger institutions have taken the lead in the development of information systems to meet their own needs. Yet their solutions to these problems may not necessarily coincide with those for small colleges. If the small institutions, and particularly small private colleges, are to meet modern challenges and not render a service inferior to their sister institutions, they must play an active role in the development of record keeping practices suitable for their particular needs. Those institutions which meet this challenge will be able to compete favorably with larger entities; the fate of those which do not is evident.

REFERENCE BIBLIOGRAPHY

- 1. American Accounting Association. <u>A Statement of Basic</u> <u>Accounting Theory</u>. Evanston: American Accounting Association, 1966.
- 2. Bonini, Charles P. <u>Simulation of Information and</u> <u>Decision Systems in the Firm</u>. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963.
- 3. Brown, Hugh S., and Lewis B. Mayhew. <u>American Higher</u> <u>Education</u>. New York: The Center for Applied Research in Education, Inc., 1965.
- 4. Capen, Samuel P. <u>The Management of Universities</u>. Buffalo: Foster & Steward Publishing Corp., 1953.
- 5. Churchill, Neil C., and Andrew C. Stedry. "Some Developments in Management Science and Information Systems with Respect to Measurement in Accounting." In <u>Research in Accounting Measurement</u>. Ed. by Robert K. Jaedicke, Yuji Ijiri, and Oswald Nielsen. Menasha: American Accounting Association, 1966.
- Davidson, H. Justin, and Robert M. Trueblood. "Accounting for Decision Making," <u>Accounting Review</u>, XXXVI (October, 1961), 577-582.
- 7. Dearden, John, and F. Warren McFarlan. <u>Management</u> <u>Information Systems</u>. Homewood, Illinois: Richard D. Irwin, Inc., 1966.
- Gentle, Edgar C. <u>Data Communications in Business</u>. New York: American Telephone and Telegraph Company, 1965.
- 9. Glaze, Thomas E. <u>Business Administration for Colleges</u> <u>and Universities</u>. Baton Rouge: Louisiana State University Press, 1962.
- 10. Hungate, Thad L. <u>Management in Higher Education</u>. New York: Bureau of Publications, Teachers College, Columbia University, 1964.

- 11. Koontz, Harold and Cyril O'Donnell. <u>Principles of</u> <u>Management</u>. New York: McGraw-Hill Book Company, 1964.
- 12. Litchfield, Edward. "Notes on a General Theory of Administration," <u>Administrative Science Quarterly</u>, I (January, 1956), 1-29.
- 13. Long, Luman H. (ed.). <u>The World Almanac 1967</u>. New York: Newspaper Enterprise Association, Inc., 1966.
- 14. McGrath, Earl J. <u>The Predominantly Negro Colleges and</u> <u>Universities in Transition</u>. New York: Institute of Higher Education, 1965.
- 15. Nance, Paul K., Leslie F. Robbins, and J. Harvey Cain. <u>Guide to College and University Business Management</u>. Washington, D.C.: U.S. Department of Health, Education, and Welfare, Office of Education, 1965.
- 16. National Association of College and University Business Officers. <u>Annotated Tabulations of College and</u> <u>University Accounting Practice</u>. New York: The National Association of College and University Business Officers, 1964.
- 17. National Committee on the Preparation of a Manual on College and University Business Administration. <u>College and University Business Administration</u>, Vol. I. Washington, D.C.: American Council on Education, 1952.
- 18. Rourke, Francis E., and Glenn E. Brooks. "The 'Management Revolution' in Higher Education," <u>Administra-</u> <u>tive Science Quarterly</u>, IX (September, 1964), 154-181.
- 19. Russell, John Dale. <u>The Finance of Higher Education</u>. Chicago: University of Chicago Press, 1944 (revised ed. 1954).
- 20. Simon, Herbert A. <u>The New Science of Management</u> <u>Decision</u>. New York: Harper & Row, Publishers, 1960.
- 21. Simon, Kenneth A., and Marie G. Fullam. <u>Projections</u> of Educational Statistics to 1973-1974. Washington, D.C.: U.S. Department of Health, Education, and Welfare, Office of Education, 1964.

- 22. Smith, W. A., Jr. <u>Syllabus for a Course in Management</u> <u>Information Systems</u>, Report no. 6. Bethlehem: Center for Information Sciences, 1965.
- 23. Southern Association of Colleges and Schools. <u>Standards for Colleges</u>. Atlanta: Southern Association of Colleges and Schools, 1965.
- 24. Sprouse, Robert T. "The Measurement of Financial Position and Income: Purpose and Procedure." In <u>Research in Accounting Measurement</u>. Ed. by Robert K. Jaedicke, Yuji Ijiri, and Oswald Nielson. Menasha: American Accounting Association, 1966.
- 25. Swanson, John E., Wesley Arden, and Homer E. Still, Jr. <u>Financial Analysis of Current Operations of Colleges</u> <u>and Universities</u>. Ann Arbor: Institute of Public Administration, University of Michigan, 1966.
- 26. Vatter, William J. <u>The Fund Theory of Accounting and</u> <u>Its Implications for Financial Reports</u>. Chicago: University of Chicago Press, 1947.
