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COST ACCOUNTING SYSTEM

(A COLLEGE APPROACH)

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A RESEARCH TOPIC

Presented to Business Division

Beirut University College

*Application of Cost Accounting System to Educational  
Institutions: The Case Study of Beirut  
University College (1984)*

In Partial Fulfillment

of the Requirements for the Degree

Master of Science in Business

Management

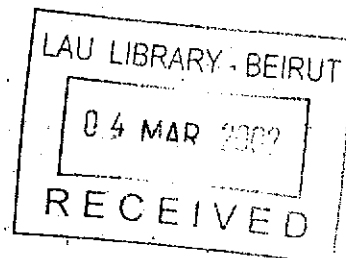
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(A College Approach)

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## I N T R O D U C T I O N

An essential tool for an administrator who is running a profit or nonprofit enterprise is the knowledge of costs; especially that there is no administrator in the world who has more resources than he can use; and when resources are limited, choices have to be made, it becomes essential that these choices are based on an accurate assessment of the cost situation. Moreover, the continuing life of different institutions is based upon the extent to which these institutions are able to adjust themselves to the impact of costs. Stressing the above points related to costs, the subject of costs turns out to be one of the most important and critical subjects of business becoming by this the essential base for planning, organizing, and budgeting. To avoid risky position, one of the theories of business studies in the name of "cost control" was created. Hence, cost finding, cost control, and cost interpretation become all necessary if modern business is to survive the complex nature of operations today. No business organization, large, or small, can operate successfully without adequate cost data and, above all, without the proper interpretation of that data, simply because, the diversification of operations, the continuing growth of different organizations, and many other pressures, all make it important for an organization to know exactly where it stands all times.

However, on the margin of the control theory, most of the business studies programs stress the nature of costs and the way to account for them in profit oriented or commercial organizations, disregarding by this nonprofit organizations, the thing which left behind it so many questions about their characteristics

the nature of costs that normally faces them, their accounting system, and their approach in treating their costs. For all these questions, the following study was formulated, and was limited to colleges and universities mainly because the business of rendering a service of education without the concept of earning a profit is the most complex system among the others. Starting from this point, the objective of this study in its turn turned out to find out a complete cost accounting system which helps determine some items of costs that are helpful in decision making at college. BUC (Beirut University College) is chosen for this purpose. To achieve this objective, it is not intended that the entire work be purely technical, but rather based upon readings in books (listed in the bibliography), and sitting at interviews with the BUC administrators who constitute the sources of data. Furthermore, the full costs techniques approach of allocating indirect costs to cost objectives would be adopted. In addition to this, and before closing this introduction, a presentation about the organization of this study must be shown up.

It should be noted that this study would consist of six chapters distributed as follows; Chapter one deals with a review of accounting with an emphasis on cost accounting in general and the essentials of full cost accounting in specific. The second Chapter is a direct exposition of the different characteristics that nonprofit organizations have, with an emphasis on an applied system in colleges and universities. The Third Chapter deals with



the BUC organization as a nonprofit organization with an emphasis on the managerial and administrative aspects of this enterprise. Whereas, the fourth chapter is directly related to the allocation of indirect costs, the fifth chapter is concerned with the analysis of the results. Summary and recommendations are all included in the sixth chapter.

## CHAPTER I

### ACCOUNTING REVIEW

Accounting is the science of analyzing the effects of transactions, interpreting them and reporting their implications in periodic reports and statements. The field of accounting is divided into two major parts: 1) financial accounting and 2) managerial (cost) accounting. The major distinction between them is their use by two different classes of decision makers. Whereas financial accounting is mainly concerned with how accounting can serve external decision makers such as creditors, stockholders, governmental agencies and others, the field of managerial (cost) accounting is mainly concerned with how accounting can serve internal decision makers such as managers.

#### History of Accounting

An understanding of the current position of accounting requires a study of the historical development of accounting thought and practice. Accounting developed historically as the needs arose, changes occurred gradually in accounting techniques and concepts, and hence, new accounting practices have been necessary to keep pace with changing economic institutions.

Like most disciplines, accounting thought has evolved gradually over many years. Financial accounting precedes cost accounting in this respect. Record keeping dates back to about 3600 B.C., and some accounting concepts can be traced back to

early Greek and Roman periods, but the true start of accounting is originated in the 14th century when the double-entry book-keeping system which constitutes the essential concept of the modern accounting system was first used. However, the first record of a complete system of double-entry book-keeping was found in the records of a medieval merchant of Genoa, Italy, originating about the year 1340. It was in 1494 when the first published work describing the double-entry book-keeping and giving insight in the reasoning behind the accounting records. This work was primarily a treatise on mathematics prepared by Luca Pacioli, and it included a section on double-entry book-keeping system. This book led to the spreading of what was called at that time; "The Italian Method" throughout Europe in the 16th and 17th centuries. Among the factors that played also an important role in the diffusion of this theory were: (1) the political decline in Italy, and (2) the discovery of the new world.

With the political decline in Italy at the end of the 15th century the Italian cities began to decline as a center of trade. However, the center of commerce moved to Spain and Portugal and then to Antwerp and Netherlands. It was natural then that the Italian system of double-entry book-keeping should spread to these countries.

During the period of 16th - 17th centuries, the purpose of book-keeping turned out ( it was already stated by Pacioli)

to be a principal. Instead of providing information for the owner, it turned into giving the trader without delay, information as to his assets and liabilities. In relation to this point, some recent evidences supported the theory that business was recognized as a separate entity from the personal affairs of the owner.

One of the early significant development early in the period of the 17th - 18th centuries was the official recognition of a balance sheet. In the year 1673, the Code of Commerce in France required that a balance sheet be drawn up at least every two years by every businessman.

The tremendous changes in accounting thought occurred in the 19th - 20th centuries when the technological revolution took place in England. The result of this revolution was that accounting expanded at an accelerated rate because of the rapid growth in trade and industry, particularly in the United States and England. The effects of technology on business sectors were both direct and indirect. Some of the indirect effects were: 1) the distinction between Capital and Income, 2) cost as the basis of asset valuation, and 3) the development of the going-concern concept in business :

- a) Unless there is a good evidence to the contrary accounting assumes that an entity will continue to operate for an indefinitely long period in the future.
- b) Accounting would attempt to measure at all times what the entity is currently worth to a buyer.

- c) That the resources currently available to the entity will be used in its future operations.
- d) If however, the accountant has good reasons to believe that an entity is going to liquidate, then its resources would be reported at their liquidation value. <sup>1</sup>

The direct effects were: 1) the development of the concept of depreciation - fixed assets have a useful life over which the net salvage value is equal to zero, and 2) the development of cost accounting.

#### Cost Accounting

The widespread growth of industrialization, particularly in England and the United States during the last half of the 19th century, gave rise to the development and expansion of cost accounting. This in turn led to changes in the concepts of inventory valuation, the allocation of overhead to products, and the adaptation of accounting records and statements to serve management as well as stockholders and creditors.

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<sup>1</sup> Antony, Robert N. and Reace James S. Accounting Text and Cases, (Homewood Ill. Irwin, Richard D. Inc., 1970, p.26)

### A. Cost Accounting Development

Although the calculation of costs by products was found in the 14th and the 15th centuries, the costs calculated however, were only the prime costs (costs of the material used plus the direct labors); but as stated in the beginning of this chapter, the concept of cost accounting, fixed assets and depreciation were all direct results of industrialization. Prior to the 19th century, the concept of depreciation was not an important concept mainly because fixed assets were not a significant aspect of commerce and industry, but with the advent of the factory system and mass production fixed assets became a sizeable cost in production. Besides this concept, there are other reasons that played an important role in the theory of costs: 1) the recognition of overhead as a necessity, mainly due to the use of heavy power equipment and the development of mass production techniques, 2) the manufacturing process, itself created a need to the concept of cost. It is in the period of the 19th early 20th century that the production process became complex with one firm producing a variety of products.

All these factors together strengthened the importance of the concept of cost as accompanying production. With increasing production that took place in the period of 1890 to about 1915, a rapid development in cost accounting took place. The basis structure of accounting was formulated, the mechanics for integrating the cost records with the general accounts were devised, the procedures for distributing expenses to individual jobs had been well worked out, and finally overhead allocation became almost common.

In summary, the basic concept was that all actual expenses were allocable to the production process.

The principles of scientific management founded by Frederic Taylor in the early start of the 20th century came to fortify the principles of cost accounting. These principles of scientific management had efficiency in production as the ultimate goal. As a means of measuring this efficiency, managers and engineers turned to the cost accountant and worked with them most of the time, leading by this to a change in concept of cost ascertainment to that of cost control. As a result accounting became a management tool for measuring efficiency, and accordingly required cost information before the event as well as comparison afterwards. This led in its structure later on to the development of a standard cost and the distinction between the true cost of production and the actual cost that includes the costs of waste and inefficiency.

#### 1. Relation to Management Accounting

In order to plan for an organization, and control its activities, the responsible managers need information about what is happening within the organization. In business organizations, management accounting is the system which provides such information. This kind of accounting is applicable to all kind of organizations whether they are profit oriented or nonprofit oriented ( the distinction will be shown later on). Since a significant portion of management activity is devoted to anticipating, minimizing, and controlling costs, the logical starting point in the

study of management accounting becomes the study of costs. Moreover, because cost accounting is concerned with gathering, classifying, recording, summarizing, and reporting of cost information, hence assist the manager in making a host of decisions, it becomes indistinguishable from the term management accounting, and the two terms became synonymous.

## 2. Types of Management Accounting Systems

Before introducing the three types of management accounting systems and their uses, it should be noted that the term "cost" as used is differentiated from the term "expense". An expense is one type of cost. It is that item of cost that is subtracted from revenue in a given accounting period, where "cost" is a measurement, in monetary terms, of the amount of resources used for some purpose.

The management accounting provide cost information that helps the managers of certain organizations to carry out their responsibilities. Yet, there is no single nor unified management accounting system. Rather, there are three different types of cost information, each used for a different purpose.

These are :

### a) The full Cost Accounting System

Briefly displayed, it is that part of cost accounting which considers that the real cost of a product or a service, is not only the direct cost, but added to it a fair share of the indirect cost incurred for such production.



b) The Differential Costs Accounting System

It is a behavioral system of costs. This term is used to describe cost differences among two or more alternatives under consideration. This type of accounting is mostly used in alternative-choice problems. In other words, it is used to answer the question: how costs would behave if one of the courses of action was adopted as compared with an alternative course of action? Therefore, differential costs (in this approach) constitute what is called the basis for decision-making, and accordingly the least cost choice would be adopted.

c) The Responsibility Accounting System

This term is sometimes called activity accounting. Responsibility accounting recognize the business organization as a set of independent responsibility centers. It traces costs to responsibility centers which are considered to be individual organizational units, headed by a responsible manager who is primarily responsible for making decisions about the costs.

However, since this study is related to a nonprofit institution (BUC), full costs systems as structure and elements must be clarified, because nonprofit institutions in general, charge their fees based on this system. Why this is so? The rationale behind it is as follow :

A nonprofit organization often has a monopoly position. It should not set prices that exceed its costs, for to do so would be taking unjustifiable advantage of its monopoly status.

Furthermore, the organization does not need to price above cost. If it does so, it generates a profit and by definition no person can benefit from such a profit. A nonprofit organization should not price below full cost because that would provide services to clients at less than the services are presumably worth; this can lead to a misallocation of resources in the economy. <sup>2</sup>

#### B. Essentials of Full Cost Accounting.

Full cost means all the resources used for a cost objective. Cost objective in its turn is the technical name given for the purpose for which costs are measured. While various items of costs are divided into two categories: direct and indirect, the full cost of a cost objective turned out to be the sum of its direct cost plus a fair share of applicable indirect costs.

1. The Direct Costs : Direct costs are those that are readily traceable to or identifiable with a specific activity or product whether this latter is tangible (goods) or intangible (services). It is important here to realize that these costs are traceable and identified by the accountants in a particular firm who choose to identify whether a cost is direct or not.

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<sup>2</sup> Antony, Robert N. and Herzlinger, Regina E. Management Control in Nonprofit Organizations, (Homewood Ill: Irwin, Richard D. Inc., 1980, p. 389 ).

Direct costs category includes two major parts called:

- a) direct materials (instructors' books expenses, pads and block-notes expenses, examination booklets etc...)
- b) direct labors (salaries of professional personnel, salaries of secretaries, salary of the chairman, etc...)

In short, when the direct cost of a particular organization unit, activity, or function is considered, the direct costs are these current expenses incurred exclusively for it.

## 2. The Indirect Costs

Indirect costs or overhead costs are all costs that are not classified as direct. They are either common or joint to several products or activities. Therefore, they are not traceable or they cannot be traced economically. Overhead consists of two categories of costs :

- a) Costs that are indirect but have relations with the overall process of the production of the services rendered (i.e. staff benefits, student services, services like heat, light, power, maintenance, depreciation etc...)
- b) Costs that do not have any relation with the overall process of production. For example, operation and maintenance of the physical plant, gardeners' salaries, etc.....)

3. Allocation of Indirect Costs to Individual Cost Objective

Cost allocation is an inescapable problem in nearly every organization. How should the costs of shared services be allocated among departments? How should the college or university's costs be split among its different schools or department? How... and how ...?

There are essentially three facts of cost allocation:

- a) choosing the cost objective (the dependent variable) which is essentially an action. In our case, our cost objective is the cost per student.
- b) choosing and accumulating the costs (the dependent variable) that relate to the cost objective. In our case the direct and indirect or overhead costs.
- c) choosing a method for especially identifying "b" with "a".

For allocating indirect costs, this entails choosing a cost allocation base which differs from our category of expenditure to another.

## CHAPTER II

### THE SYSTEM SPECIFICATIONS

Before introducing the system that can be commonly adopted by colleges and universities, it should be noted that the approach in calculating the full cost constitutes a common approach among different institutions. It should not be necessarily be regarded as the only and unique approach for the simple reason that cost concept differs from one institution to another. In brief, this chapter is organized in a way to show up the major differences between nonprofit and commercial organizations, and based upon these differences a system of cost accounting is adopted to colleges and universities.

#### Nonprofit Organizations

One of the principal differences between nonprofit and commercial organizations is that they have different reasons for their existence. Whereas, the ultimate objective of a nonprofit organization is to meet some socially desirable need of the community or its members without earning a profit for its owners, the ultimate objective of a commercial organization is to realize net profit for the stockholders through the performance of some service wanted by other people.

#### A. Categories of Nonprofit Organizations

Like every category, this category of organization include different sets, where every set in its turn is composed of different elements that have some common characteristics among them. These categories include all enterprises such as :

- a) Health Care Organizations: hospitals, health maintenance organizations.
- b) Educational Organizations: schools, colleges, and universities.
- c) Membership Organizations: religious organizations, labour unions, professional associations, fraternal organizations, social clubs.
- d) Human Service Organizations: Red Cross, scouting and similar youth organizations, various charitable organizations.
- e) Art Organizations: museums, public, broadcasting stations, orchestras, ballet companies and theatres.

The common characteristics that differentiate between nonprofit and commercial organizations are :

- a) The absence of a Profit: Instead of profit, many nonprofit organizations are concerned with the size of their cash balance. They exist only as long as they have sufficient cash to provide for their program. For this reason, as long as the nonprofit organization has sufficient resources to carry out their objectives, there is no real need for making a profit or having an excess of income over expenses.
- b) Their tendency to be a service organizations: They offer services without a profit. They receive money from sources that are at least equal to their costs, if they are to continue to render a service.

- c) Constraints on goals and strategies: The freedom of choice on the industry within which a commercial organization is going to do business, and the easiness of changing strategies if management decides that a change is desirable, cannot be easily done in nonprofit organizations. Most of them have much less of choice and slowly changes of strategies.
- d) Less dependence on clients for financial support: Financial support to commercial enterprises comes from sales of goods, thus, the market dictates the limits within which the company can operate in both the product (if needed or not) and the selling prices that must be in line with what the market is willing to pay. In nonprofit institutions the figure differs. Some receive their financial resources from sales revenues (colleges and universities) that depend entirely on tuition from students while some others receive a significant amount of financial support from sources other than the revenues from services rendered in the form of grant or support.
- e) The dominance of professionals: The problem is that professionals tend to give inadequate weight to the financial implication of their decisions in nonprofit enterprises. Like the physician who feels that no limit should be placed on the amount spent to save a human life, a professor in a university sometimes feels that no limited

amount should be spent on a project that he might feel sound, although in a world of limited resources such an attitude is unrealistic.

- f) Differences in top management: In most organizations, one person who is the boss, becomes the chief executive officer. In some nonprofit enterprises, the chief executive does not have such an overall responsibility. The president of a university, is considered as a leader of a "community of scholars" and hence does not involve himself in business matter or other aspects of the university management neglecting by this his essential mission.

#### B. Accounting Distinctions

In addition to the differences in characteristics, nonprofit and commercial organizations differ in treating their accounting transactions. Although this difference is resulted from the nature of their existence, this however, does not deny the fact that managers of nonprofit organizations face many of the same problems and decisions as do their counterparts in commercial businesses. Yet, in trying to appreciate the differences between the two types of organizations, it is desirable first to have a look on the area of accounting differences.

1. Cash v/s Accrual Account: Cash basis as used by nonprofit institutions means reflecting only transactions where cash has been involved; no attempt is made to record unpaid bills owned by the institution or amount due to it. In the contrary accrual basis is used by commercial means



in addition to recording transactions resulting from the receipt and disbursement of cash, the amounts the firm owe or owned is recorded. Recently there is a shift from cash basis to accrual basis in large or medium non-profit organizations, besides the fact that certain non-profit organizations use a modified form of cash basis accounting where certain items are recorded on an accrual basis and certain items on a cash basis.

- 2) Fund Accounting: In fund accounting, assets are segregated into categories according to the restrictions imposed on their use. Unrestricted (general) funds are in one fund, restricted funds in another, building funds still another, and so forth. In reporting, the nonprofit institutions present separate financial statements for each fund; the matter which is unused in commercial enterprises.
- 3) Treatment of Fixed Assets: As a general rule, fixed assets may or may not be recorded in nonprofit enterprises, while in commercial enterprises are recorded as assets, and are depreciated over their expected useful life. Actually, there is no single generally accepted principle in handling of fixed assets and depreciation in nonprofit enterprises. However, the treatment of this case is left to the nature of the organization and its needs.
- 4) Transfers and appropriations: Transfers are frequently made between funds in nonprofit organizations; they are

not accounting terms used by commercial enterprises.

- 5) Contributions and pledges: In commercial enterprises there is no such thing as pledge. If they legally owed money, then the amount is recorded as an account receivable. Some nonprofit enterprises record pledges because they know from experience that they will collect them.
- 6) Non cash contributions: This category includes donations of securities, equipment, supplies and services. Commercial enterprises seldom are recipients of such income.

The differences and distinctions already shown do not change in the approach of cost accounting already written about chapter I, but (compared to commercial business) might create distinctions in the allocation of indirect costs, and the uses of some costs. Anywhere, the following system will reveal this point.

#### THE SYSTEM

A system is a collection of entities or things which receive certain inputs and is constrained to act upon them to produce certain outputs. In this connection, a cost accounting system concerns itself with the accumulation of the costs of manufacturing a product in case of commercial enterprise, or of rendering a nonprofit service as in the case of this study. The purpose of the system is, however, to help the management of the

college concerned control their "production divisions" so that steps can be taken at the right time.

A. Uses to Management

Cost accounting system is the process within an organization which provides information used by an organization's managers in planning, coordinating, controlling day-to-day operations; it also gives managers information needed for long-range planning and for major decisions such as the introduction of a new course, or department, or the closure of a division, or changes in tuition fees. All these issues call for decisions that should depend upon accounting information.

Stated simply, managing a business is a matter of deciding what should be done. At every step in this process management is faced with alternatives, and every decision to do something refrain from doing something involves a choice. As a practical matter, however, information which flow from the cost accounting reports constitute the basis on which a wide variety of business decisions should be made. This system helps management also for internal control purpose. It provides the necessary information to protect the resources of the college against waste and inefficiency, to ensure accuracy and reliability in accounting and operating data, and evaluating the level of performance in all divisions of the college.

Besides planning and controlling, the system plays an important role in budgeting. By definition, the budget is a statement of the estimated income and authorized expenditure for a fixed period, usually one year. Income and expenditures are based

on estimation. Estimates of expenditures represent the institution's best judgement, in advance of spending to continue the educational programs. Best judgement, however, needs a base to rely upon. The information given by this system as to the cost per student in each division, assists in better distribution of the budget among the divisions. Furthermore, the system aids in tracing cost behavior as to how variable cost would vary if FTE (full time equivalent of the total number of students enrolled) is changed and how fixed costs are increased through time. To remind only variable costs are the items of cost that vary directly and proportionately with the volume of activity taking place in the college; while fixed cost is a term which refers only to items of cost that do not change automatically with changes in volume. Therefore, to make judgements, to compare costs from year to year, and to decide on the volume of the activities, the system helps in this respect.

Being a helpful management tool for administration, this system helps a division in itself, from one hand the chairman or the chairwoman becomes aware of the total costs incurred in his/her division; this in turn helps in comparing and setting better future plans. On the other hand, the interested students would benefit in learning how a cost accounting system can be used in colleges and universities.

#### B. choice of a System

Cost accounting in short, can provide whatever information in whatever detail a business desires or requires. The

information which it can provide is limited only by the cost of the cost accounting itself. Cost accounting contributes to cost control through the current, pertinent information provided about an aspect of cost and by pinpointing responsibility for cost performance. The primary function of a cost accounting system is to find out the costs in useful detail and to report them in intelligible and timely statements or reports. The system will be no better than the controller, chief accountant, or other accounting personnel responsible for devising it and supervising its operation.

Regardless of the cost accounting system used, the system cannot be expected to exert control. It is only a tool for control. It should be emphasized however that neither a perfect cost accounting system or any number of well conceived operational controls built around it will effect automatic control. The effective control of costs or of any faces of business activity is dependent upon the competence and vigilance of the personnel charged with the responsibility for control. Therefore, cost accounting can provide the data for informed management thinking. It cannot eliminate the necessity for the thinking. It can supply the factual basis for planning and policy formulation; it cannot ~~supply~~ plan and make policy, but rather it can show up in effectual performance and cannot initiate any corrective steps. Control is exercised by people employing cost accounting and the other management tools in hand.

Therefore, being an important management tool, the first consideration in the installation of a cost accounting system is:

What information does management want? What is needed to reflect the effectiveness of control? In short, the chosen system should be designed to yield the data which management wants or requires.

C. The System Design

A cost accounting system adopted to colleges and universities might consist of the following steps:

- 1) Define the time period when the cost should be studied.
- 2) Define the production areas i.e.: Academic divisions at B.U.C.
- 3) Determine the direct costs for each "production area".
- 4) Determine the indirect costs and categorize them.
- 5) Allocate indirect costs to each production area on equitable allocation basis.
- 6) Determine the necessary items of costs.

1. Direct Cost Determination

The first step in cost determination is to identify the direct costs that are properly chargeable. Their identification is not difficult. Cost Accounting standards Board (CASB) states that one out of two deal criterion must be satisfied in order to accept whether a particular item of cost is direct or not.

- a) If the item of cost is traceable to a particular objective, or not, or if only the cost objective caused incurrence of the cost; b) if the item of cost is feasible to measure the amount of resources that was used for the mentioned cost objective. 3

However, expenditures for salaries, wages, materials, and expenses incurred exclusively for the benefit of the object of study, and carefully related to the time period under study, would constitute the direct costs.

The next step is to add those indirect costs that would contribute to the output being studied. In the allocation of indirect costs, there are two major considerations that should be carefully considered:

- a) The order of allocation of the several categories of indirect costs.
- b) The choice of equitable basis of allocation.

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<sup>3</sup> Antony, Robert N. and Reace, James S. Accounting Text and Cases. (Homewood Ill. Irwin, Rochard D. Inc., 1970, p. 501); quoted from Cost Accounting Standard Board Restatement of Operating Policies, Procedures, and Objectives, May 1977, p.6

## 2. Indirect Costs Categories

Indirect costs can be categorized as follows:

- a) Staff Benefits: This category usually includes :
- i) provision for retirement allowances; it is generally a percentage of salaries and wages fixed by the college statute.
  - ii) health services: health services can be provided in two ways, either in the form of contract, or through constitutional offices.
  - iii) workmen's compensation insurance: is a defined percentage of salaries and wages.
  - iv) group insurance: it is the amount of insurance coverage.

Staff benefits can be allocated to each "production" by the number of staff serving in each "production area".

- b) Use Cost of Capital Assets: Capital assets category includes: land, buildings and equipment. If they are rented, the rental amount will be included as a part of the total used of capital assets, and hence the rental amount for each "production area" will be considered as direct cost and the remaining rental amount can be allocated on square foot area used by the several "production area". If they are institution owned than:

- i) land is never depreciable; it does not constitute any problem.



ii) equipment: if there is inventory, then it is likely that 10% of cost as shown on the inventory may afford a fair estimate of use value. If there is no inventory, the average annual expenditures in the past ten years may afford a measure of the use value. Allocation is made depending on the usage of equipment.

III) buildings: among different methods, the following method in calculating the cost of a building can be used:

The annual use of value of a building is considered to be its present estimated value, for insurance purposes, divided by the estimated fair length of its life in years. 4

The use value of the building may be allocated on the basis of square-foot area assigned to the several activities.

c) Operation and maintenance of physical plant: This category includes:

i) Expenditures for supervision; utilities, heat, gas, water, and electricity.

ii) Operations: including the care of grounds, buildings, furniture and services of production.

iii) Maintenance: including repairs and renewals, alterations of plant; properly insurance and general trucking.

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<sup>4</sup> Hungate, Thad L. Finance in Educational Management of Colleges and Universities (Bureau of Publications, Teachers College, Columbia University, New York, 1954). p.116

This category may be allocated on the square-foot area occupied by several "production area".

- d) Student service expenses: This category includes: the expenses of the office of admission, student academic records, placement, health service, student guidance. The basis of allocation can be done through two alternative ways:
- i) either the number of students served in each "production area": or
  - ii) through the number of students enrolled in each "production area" stated in (FTE).
- e) Library Expenditure: The direct expenditure for libraries include: the salaries of secretaries and clerks, supplies and expenses including periodicals and bindings. The outlay of books are not included but rather a value may be assigned to the use of books. For a college or a university which lacks this approach, value of books in the library or may be a calculated value as follows:

Total number of new books purchased during the last year exclusive of gifts, divided by ten, this afford a measure of the annual replacement of books, will represent the cost that may appropriately be included as a part of the cost of the library. 5

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<sup>5</sup> Hungate, Thad L. Finance in Educational Management of Colleges and Universities. (bureau of Publications, Teachers College, Columbia University, New York, 1954). p. 116

Allocation can be made through the following ways:

- i) the librarian's estimate of use; or
  - ii) the number of students that have access to it in each "production area".
  - iii) the direct expense of the benefiting divisions.
- Faculty use will be considered a direct cost for the division.

- f) General expense related to instructional activities: Expenditures for bulletins, catalogues, commencements, and memberships in professional organizations. These expenditures may be allocated to the benefiting educational activities on the basis of the size of the student body stated in FTE.
- g) General administration expenses: Include those of governing board, the president, the vice president; the dean office, and the business office. Allocation is based on the level of professional faculty people instructing in each "production area" converted into FTE, only after considering the expenses related to each faculty as direct costs.
- h) General institutional expenses: These expenditures relate to the institution as a whole. They include public relations, fund raising, public audit. They may be allocated equally to each "production area".

## CHAPTER III

### BEIRUT UNIVERSITY COLLEGE

The purpose of this chapter is to promote a broader understanding of the institution where the system is going to be applied. To satisfy this purpose and apply the different procedures of the system, firstly, the nature of BUC must be mentioned, secondly, its organizations be presented, and thirdly, its "Production areas" be well defined. The above conditions will constitute the main themes of this chapter.

#### Historical Background

Beirut University College (BUC) which is a liberal arts institution located in the city of Beirut, the capital of Lebanon, dated back in its origin to the year 1835 when first was known as a school for girls in the Turkish Empire. After this modest beginning, this institution was known later on by the name of the American Schools for Girls. This college which is equivalent to a university level of education passed through different periods: in 1924 a two year program was added to the American school for Girls turning by this its position from a high school to a junior college recognized by the name of American Junior College For Women. In 1927, this college was transferred to Ras Beirut, and in 1933 to its present location. In the period 1949-1950, the program of the college was expanded, reaching by this a university level. In this period, the name of the college changed. It was

known as Beirut College for women. Moreover, in this period, the college was granted a provisional charter by the Board of Regents of the University of the State of New York with authorization to grant both the Associate in Arts Diploma (AA), and the Bachelor of Arts Degree (BA). In 1955 the college was granted an absolute charter by the same board of regent to grant the degrees of Bachelor of Arts (BA) and the Bachelor of Science (BS) and the degrees of Associate in Arts (AA) and Associate in Applied Sciences (AAS). In 1973, the college witnessed another change of its name. In order to reflect its standing as a university level institution, the name of the college was changed to Beirut University College (BUC).

The major changes occurred in the year 1974, 1975 and 1981. It was in 1974 when males were admitted to only five majors in the BA/BS program, while in 1975, all majors were offered for the interested male. To continue to play an increasingly important role in education, this institution opened its first master level program in 1981. Starting October 5th of this year, the program of "Masters of Science in Business" was opened for the interested and qualified students.

#### The Organization of BUC

To consider carefully each center of this institution, and take it later on it the computation process, the physical organization of the college must be firstly shown up, and secondly,

its managerial and academical organization should be represented.

A. The Physical Organization of BUC

The campus of the college, which is located over 17,500 m<sup>2</sup> includes eight buildings distributed as follows: 1) Sage Hall, 2) Nicol Hall, 3) Irwin Hall, 4) Shannon Hall, 5) Orme-Gray Hall, 6) The Faculty Building, 7) The Fine Arts Building and 8) The gymnasium.

- 1) Sage Hall: This hall over an area of 630 m<sup>2</sup> was built in 1933, and was the first building on the site. No days, it is the principal classroom building. It is also the academic place of the Natural Science Division. For this reason, it contains the science laboratories in addition to the needed equipment of the computer for the computer-major students.
- 2) Nicol Hall: Built in 1943, this hall occupies 1,208 m<sup>2</sup>. It is composed of three floors in addition to a ground floor. The ground floor houses the Student Center, Student Cabinet Offices, a cafeteria, and a lounge for students. The first floor (area of 1,050 m<sup>2</sup>) is occupied by the Applied Language Studies Division. Whereas, the Business Studies Division and two learning laboratories occupy the second floor ( an area of 1,014 m<sup>2</sup>), the third floor was turned into faculty apartments.
- 3) Irwin Hall: It was completed in 1950. This building contains administrative and faculty offices. It is charac-

terized by: a large auditorium, the Alumnae lounge, micrographing center, and the Stoltzfus Library on the top floor of the building. It occupies an area of 813 m<sup>2</sup>.

- 4) Shannon Hall: is the place where the social sciences division is academically located. Completed in 1953 - 1954 it includes: an institute for women studies in the Arab World, a Children's library, and the Nursery School, in addition to some faculty offices. It occupies an area of 293 m<sup>2</sup>.
- 5) The Faculty Building: erected in 1965, on an area of 288 m<sup>2</sup>. It contains: ten apartments for faculty, the computer center, and the main telephone switchboard.
- 6) Orme-Gray Hall: it is a dormitory place for resident full time girls. It was dedicated in 1965 over an area of 1600 m<sup>2</sup>. The president's home is in its Penthouse.
- 7) The Fine Arts Building: Built over an area of 660 m<sup>2</sup>. This building constructed in 1970 contains a theatre known by the name of Gulbenkian Theatre, faculty offices, classrooms, design, drawing, painting, sculpture, graphics, photography studies, and the radio/TV studies. It contains also an exhibition Hall which is recognized as: Sheikh Zayed Exhibition Hall.

- 8) The Gymnasium : Built in 1970 over an area of 878 m<sup>2</sup>. It contains facilities for all physical education activities. It includes a large swimming pool, volleyball and basketball courts, rooms for modern dance, and two tennis courts on the roof.

B. Administrative Organization of BUC

One of the simplest ways of presenting a picture of an organization, is to draw up an organization chart. This Chart is simply a diagram of the formal authority structure, it shows by job title who reports to whom. Because, this system does not give a complete or wholly accurate picture, the chart is usually accompanied by "job descriptions" to avoid confusion and duplication of effort. Administratively, BUC is organized as follows:

1. Board of Trustees

The Board of Trustees consists of nine to nineteen members. At least, two-third of its members must be United State citizens including at least one resident of the State of New York. The same members of this board serve also as members of the Board of Overseers. This board is directly responsible to the Board of Regents of the University of the State of New York for the college basis policies, the academic standing of the college, the acquisition, use and disposal of property, and for the appointment of the President of the college.



## 2. Board of Overseers

The Board of Overseers consists of twenty five to thirty five members composed of all members of the Board of Trustees. This board which is responsible for the overall operation of the college, is also responsible to the Board of Trustees. The majority of the members of the board are citizens of countries of the Middle East, with at least nine United States citizens including one resident of the State of New York. The officers of the Board of Overseers are : a) The Chairman, b) The Vice-Chairman, and c) The Secretary-Treasurer. They are selected annually.

## 3. The Nominating Committee

The three members of this committee are also members of the Board of Trustees which appoints them. The job of this committee is to receive nominations each year before the annual meeting of the board, and submit these nominations for the at-large vacancies to the Board of Overseers for election. It also submits to the board: the state of officers and Executive Committee members to serve for the ensuing year.

## 4. The Executive Committee of the Board

In addition to the three officers named above, four Board of Overseers members are elected at the annual meeting; the total of seven board members constitute the Executive Committee. This committee meets monthly, sees that the policies and programs of the Board are implemented, exercises all powers of the Board to treat policies that are inconsis-

tent with the Constitution or By-Laws of the Board. All the activities of this committee are subject to the review and control of the Board.

5. The Standing Committee

These committees are constituted by the Board of Overseers to carry out its responsibilities. The administrative officer listed opposite each committee will meet with that committee, serve as its secretary, and a coordinator of its activities. These Standing Committees are :

- a) Planning and Administrative Committee..... Director of Administration
- b) Development and Relations Committee..... Director of Development.
- c) Academic Affairs Committee..... Academic Dean
- d) Student and College Life Committee..... Director of Guidance of Residence Halls.

a) Planning and Administrative Committee

This committee is responsible to the Board of Overseers for the development and subsequent modification of the Board policies covering programs of planning, finance, facilities, and personnel. These programs include subjects like: the long range planning activities of the college; the review of planning studies to determine the land, buildings, and

major equipment needed by the college in the future; the evaluation of the financial, accounting, banking, insurance, legal, audit, and investment practices of the college; the evaluation of the annual budget for all funds within the context of the long range plan; the review of the analytical studies which are the basis for changes in fees, changes in numbers of staff personnel, changes in salary structures, and finally the management methods adopted by the staff in implementing educational and related programs of the College.

b) Development and Relations Committee

This Committee is responsible to the Board of Overseers for the development and subsequent modification of the Board policy covering development, relations, and public information. The development program which is concerned with raising current and capital funds, includes the public information program and the relations program. The public information program is designed to inform the various and different constituencies of the college in order to attract the desired students, staffs, faculties, and funds in support of the educational programs of the college. The relations program deals with the social image of the college. This program is established to fortify the relations between

the college and the schools, alumni, parents, churches, and government.

b) Academic Affairs Committee

This committee is directly responsible to the Board of Overseers for maintaining the acceptable and agreed academic standards to both the Board of Regents of the University of the State of New York and to the Ministry of Education of the Republic of Lebanon for the development and subsequent modifications of the Board policies covering admissions, financial aid, academic affairs, and the total educational program of the college.

d) Student and College Life Committee

This committee is responsible to the same Board for the development and subsequent modification of the Board policy covering student and college life, the evaluation of the special programs designed to enrich intellectually, socially, and spiritually the life of student, faculty, and members of the college.

C. The Campus Administration

What was mentioned in the above section, stays in the context of generalities and specification of responsibilities to the Board of Overseers; but, the real administration of the college remains in the hands of a direct responsible group of people.

This group of people is in direct charge for the daily activities of the college. They carry out the business plans, execute them, run the affairs of the college, deal directly with students and teaching faculty; hence, applying the principles of the Board directly on campus. To fulfill their duties, these people work either individually or through groups in the form of council committees. This group of people consists of the following :

1. President

The President of the college is selected, supported, and removed by the Board of Overseers. By definition, he is the executive, administrative, and academic head of the college. The full responsibility and authority given to him by the Board, makes him the general leader of operations of the college. He is directly responsible to the Board of Overseers where he is considered as ex-officio member without vote.

2. Administrative Officers

The major administrative officers (Vice-President for Relations, Dean of the College, Director of Administration, Director of Development, and Registrar) are nominated by the President and then confirmed by the Board of Overseers. In turn, other administrative like staff and faculty personnel are appointed by the appropriate supervisor only after the approval of the President and the Executive Council.

a) Vice President for Relations

As the title inspires, the occupier of this position represents the president for relation matters. He or she plays the role of an intermediate between the

college and the external world; and is directly responsible to the President.

b) Academic Dean

The Academic Dean is the direct supervisor of the total educational program of the college. He or she presides the faculty meeting.

c) Director of Administration

The major part of his job is directly related to the financial matters that concern the college. Whereas the overall budget and financial control is the responsibility of the President, the overall financial control of the educational programs rest with the Dean and the responsibility of overall financial control of the current fund rests with the Director of Administration. Furthermore, he is responsible for the budget and operation of the Plant Fund, he handles the investment transactions of the Endowment Fund, supervises the development Fund, and safe keeps Agency Fund (Fund held in custody of the college for others). Moreover, the purchase of supplies, rental and disposal of capital equipment should be authorized by him. Besides these direct missions, the Director of Administration has an "approval authority" used jointly with the President. He assists this latter in the approval of Loan Fund (for example: transactions for long term student loans) he also approves the expansion of current ~~and~~ Fund Contingency and some contract services that are charged

to specific accounts.

Only after the writing approval of the President, that the following types of financial and legal transactions becomes some of the duties of the Director of Administration: short-term borrowings and investments, opening and closing of bank accounts, inter-funds borrowings, tax negotiations, contracting for insurance, and other such related financial transactions.

d) Director of Development

He is involved in following up educational developments, maintaining contract with other institutions to define problems, interpreting events, recommending projects, and organizing activities that are helpful in sustaining growth of the college.

e) Registrar

The registrar is the responsible supervisor of the registrar's office and the reference to whom employees in that office refer to. Basically, all matters between this office and the external environment needs to be approved by him (actually her). Besides this job, she has a representative role. She represents the above office in the executive councils meetings as well as other councils when needed.

However, to continue the process of "Campus Admi-

nistration", it was certain that some offices should be established to take care and run the daily affairs of the college. It should be noted that these offices are headed by a responsible supervisor who is referred to the Director of Administration in one way or another.

These offices are:

1. Business Office

This office is supervised by the controller.

The job of this office is to deal directly with the daily financial operations of the college.

2. Campus Services Office

Maintenance; reservations for facilities and equipments; care permit; college identity card; food and drink orders; purchase of equipment and supplies; stationary, stamps, and books order; transport facilities; and finally post office affairs are all the missions of this office.

3. Personnel Office

Problems like salary and salary review; wages; overtime pay; compensation and grievances; medical and insurances problems; annual vacation leave or sick leave; in addition to all non-academic conflicts that face staffs, employees, and teaching personnel are referred to this office.



4. Residence Halls Office

To solve conflicts among the residences of this dormitory, and to report about the administrative needs of this building, are the two main reasons for the establishment of this office.

5. Computer Center

It is the center of information. The duty of the person in charge is to provide the necessary data when needed.

B. The Academic Administration

This administration is composed of people who are directly involved in the production of education. In terms of management, the preceding section (excluding the President and the Dean) includes staff people, while this section consists of "in line" people. Besides the President and Academic Dean, this group consists of :

1. Division Chairman

The Chairman of each division (actually there are five) is appointed by the Dean of the College after the consultation with the members of the division. He must have at least one year experience in professional ranks. He is appointed for one year term first, but he is eligible for three more years provided that he is evaluated each year. The Chairman is responsible to the Dean of

the college for: 1) being an administrative leader to this division, 2) coordinate the activities of his division utilizing division members for the necessary committee work and student advising; 3) preparing the budget of his division; 4) staffing the division with adequate personnel; and 5) normally carry a nine hour teaching.

2. Director of Guidance

The main mission of the Director of Guidance is to provide students with the necessary attention concerning their physical, social, emotional and academic growth and that through academic advising service, counselling service, and health service, Furthermore, all students' activities must be approved by this office to be officially accepted on campus.

Coordinate work, as well as better planning and decision making, different groups in the form of councils were established. Some of these councils are administrative while others are academic. These councils consist of the staff and the line people mentioned previously. They report to the Board through the "same name holder" committee of the Board.

Academic Divisions

According to the By-Laws of the college, the Academic

Divisions should not be less than three nor more than six. Actually there are five divisions, and changes in this arrangement may be made upon the recommendation of the curriculum council and the specific approval of the Executive Council. However, these divisions which will constitute the "Production Areas" are composed as follows :-

1. Natural Science Division

With an objective to prepare students for scholarly and applied science - oriented careers, the division offers major Bachelor of Science program in Chemistry, Computer Mathematics, Computer Science (AAS, BS), Biology/Chemistry, Math Education, and Science Education for students preparing for graduate school. It also offers a Dual Degree Program, a Pre-Pharmacy Program in cooperation with universities in USA, under which the student attend BUC and continue his studies there where he receives his degree. Moreover, an AA program in general science is also offered by this division.

2. Business Division

The Business Division offers the necessary education to prepare its students to responsible roles in managerial and professional positions in business. To achieve this objective, this division offers BS program in Business/Accounting, Business/Management, Business/Economics, Business/Marketing, and Business/Computer. It also offers a program leading to an Associate in applied

Science in Secretarial Studies and Business Management. Recently, a new program leading to MS in Business was opened.

3. The Humanities

This division prepares students to participate in both intellectual and artistic achievements. It offers AA/AAS program in Advertising Design, Communication Media, Interior Design, Liberal Arts, Library Science besides BA program in Fine Arts, Communication Arts, and English. As supporting fields, this division also offers disciplines of Arabic, History, Music, Philosophy, and Religion in addition to courses in Cultural Studies.

4. Social Sciences

The creation of a better understanding of human nature and relationships is the objective of this division. The following programs are offered. Teacher Education (AAS), BA programs in Human development with emphasis on: Early Childhood Education, Elementary Education, Developmental Psychology, and Social Work. Furthermore, this division offers an International Affairs program with the following emphasis on: Consular and Diplomatic Service, International Economics, Developmental Studies. In addition, a BA program in Political Science is also opened for interested students.

## 5. Applied Language Studies

With the objective of improving the language teaching effectiveness, this division offers the following programs: TOEFL (Teaching of English as a Foreign Language), TAFL (Teaching of Arabic as a Foreign Language, Intensive English Program, and Special Arabic Program.

To complement the system of Education, a "Learning Resources Center" was established on Campus. Nowadays the college administration is thinking of gathering its separate units into one center. This center consists of "The Library", The Learning Laboratory (audiovisual) equipments and materials facilities to help the students in the learning process), and "The Material Preparation Laboratory" (duplicating, photocopying, plating, etc...).

To enhance the BUC curriculum, the college has also established the "Institute for Women's Studies in the Arab World" with the objective of promoting better understanding of women in this area of the world.

### Cost Allocation System

In allocating overhead costs, the college considers the total educational system as one body rather than academic divisions. To give an idea of the allocation system, a brief exposition on the expenses incurred in a particular period of time (the college uses one academic year) must be first mentioned.

A. Categories of Overhead Costs

Before allocating the overhead costs to the cost objective in the case of BUC - the college, like other institutions accumulates its expenses of the period in cost pools. This period covers a whole fiscal year (October - September). However, these cost pools are distributed as follows :

1. Administration and General

The following items are coded under this category;

- a) President's Office, b) Administration Office,
- c) Development Office, d) Relations Office, e) Student Affairs Office, f) Registrar's Office,
- g) Dean's Office, h) Computer Center and i) General.

2. Education

Includes all the expenses incurred in each division in addition to the following items: a) Nursery School, b) Library, c) Learning Laboratory, and d) Special Programs.

3. Auxiliary Enterprises

Residence Halls, Food Service, and Student Association, constitute the major items of this category.

4. Student Aid Program

The total Student Aid Program is composed of three items: a) Grants, b) Employment, and c) Loans.

5. Campus Service

5. Campus Services

The job of this office was mentioned previously, This category includes the expenses directly related to its job.

6. Miscellaneous

This category encompasses Replacement, and Contingencies and Transfers.

B. Overhead Allocation

In allocating Overhead Costs, the administrative officers of the college use a three steps system :

1. Dividing the college into four areas: Campus Service, Administration, Education, and finally, Auxiliary enterprises.
2. Allocating Campus Services to Administration, Education, and Auxiliary enterprises. Basis of allocation is a percentage of the total space occupied by each; 50% for education and 42% for Auxiliary Enterprises, and 8% for Administration and general.
3. Allocate Administration to Education and Auxiliary Enterprises on the basis of  $\frac{3}{4}$  for the first and  $\frac{1}{4}$  for the second.

To calculate the cost /Full time student/academic year, it is sufficient to divide the total cost allocated to Education by the total PTE/year

## CHAPTER IV

### ALLOCATION OF INDIRECT COSTS

After ascertaining the necessary information about the cost accounting system and the college, indirect costs will be distributed among academic divisions. In order to allocate costs on equitable basis, some necessary explanation should be given as to how indirect costs will be allocated to each production area. For this reasons, every cost center will be set apart , carefully analyzed, and accordingly distributed. However the entire work of this chapter is divided into two parts: work based on actual costs, and work based on projected ones.

#### Actual Costs

According to the first step of the system procedures displayed in the second chapter, the period over which the computations are applied must be mentioned. To start with, it should be noted that the entire work of this section is based upon data derived from the fiscal year 1981 - 1982. This year was chosen mainly because it includes the last recent and actual data on hand.

#### A. Cost Pools

Before allocating indirect costs to cost objectives, it should be noted that these costs are usually aggregated into pools. These pools normally take the form of either organizational unit or what is called "cost center", or expenditure object such as fuel and electricity, staff benefits, equipment, maintenance, etc... These costs may be aggregated into other categories



also, depending upon the system adopted in a particular organization. Beirut University College adopts the first approach.

Cost accumulated in indirect cost pools should be allocated to cost objectives in an equitable manner. An equitable allocation basis relates to the benefits received by the cost objective or to the activities of the cost objective that logically and reasonably caused the cost to occur. The bases selected for allocating indirect costs should be quantitative measures that can be applied in a practical manner. Such measures may be total direct costs, direct salaries and wages square feet of space occupied, population of students and/or faculty served or others as appropriate for the particular cost pool being allocated. 6

### B. Applications

Explanations as well as direct managerial work will both constitute the main theme of this section. By simply applying the theories concerned with the allocation of indirect costs stated in the preceding section, indirect cost centers as well as indirect cost activities will be allocated as follows :-

#### 1. President's Office

In the preceding chapter, the President was defined as the academic and administrative head of the college. In turn, this implies that the expenditures of this office must be distributed between administering Education and Auxiliary Enterprises. In the absence of an information system that traces how much each field consumes, the proportion of allocating overhead costs adopted by the college will be then used " 1/4 to Auxiliary Enterprises and 3/4 to Education

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<sup>6</sup> Welzenbach, Lanora F. College & University Business Administration, Washington D.C, 20036. p.359

Having now determined the specified amount for Education, in turn, this amount must be distributed among divisions on a logical quantitative measure that relates this center to Education. In searching for a connector between the two, the administration of Education then becomes this band which binds the two. On the divisional level, administering Education is the responsibility of the Chairman aided by full time professional faculty team, therefore it becomes logical that the weighted average of professional faculty people stated in FTE constitutes the basis of allocating the educational overhead of this center. Therefore, using (table 1) as the allocation base, the share of each division will be as follows :

Natural Science Division	LL. 95,030 x .18 = LL 17,105.40
Business Studies Division	95,030 x .20 = LL 19,006.00
Humanities Division	95,030 x .38 = LL 36,111.40
Social Science Division	95,030 x .10 = LL 9,503.00
Applied Language Studies Division	95,030 x .14 = LL 13,304.20

## 2. Dean's Office

Being responsible for the total educational programs of the college, the Dean of the College delivers his/her time in dealing with the needs and wants of each division through, its faculty people represented either in the form of a representative (Division Chairman), or in the form of committees. Accordingly, this becomes the direct reason for

TABLE (1)

FACULTY FTE

1981 - 1982

Faculty FTE	D I V I S I O N S					Total	Total %
	Natural SC	Business	Humanities	Social SC	Applied LG		
Falla 22	12.30	14.89	27.88	7.37	10.62	73.06	48.45
Spring 22	14.40	15.91	29.39	7.00	11.02	77.02	51.55
TOTAL	26.70	30.80	57.27	14.37	21.64	150.78	100.00
W. Average (Total/2)	13.35	15.40	28.64	7.19	10.82	75.40	-
W. Average %	17.71	20.42	37.98	9.54	14.35	100.00	-
Rounded	18 %	20 %	38 %	10 %	14 %	100.00	-

using the professional faculty people of each Academic Division in FTE as the basis of allocating the expenditures of this office (Table 1). Accordingly the share of each Academic Division is going to be :

Natural Science Division	LL. 273,480 x .18 =	LL 49,226.40
Business Studies Division	273,480 x .12 =	54,696.00
Humanities Division	273,480 x .38 =	103,922.40
Social Science Division	273,480 x .10 =	27,348.00
Applied Language Studies Division	273,480 x .14 =	38,287.20
	TOTAL	<u>273,480.00</u>

3. Administrative Office

Being the administration office of an academic institution, it becomes obvious that most of its work is related to Education. Accordingly, the bigger part of this office expenditures will be allocated to Education, while the smaller part will follow Auxiliary Enterprises. Since, the college have adopted the proportion of 3/4 to Education and 1/4 to Auxiliary Enterprises, this same proportion will be used in distributing costs between the two fields. Yet, Administration Office includes offices such as Business Office and Personnel Office which serve both faculty and students, which in turn implies that the allocation base must be a formula that considers both of them. To do that, the amount specified for Education must be divided between faculty and students as a first step.

However, to distribute this amount between the two, a percentage ratio must be first found. This ratio will be based on the time spent to serve each one. In the absence of an information system that helps determine a near-exact time spending, this matter will be left to theoretical assumptions. Since the student body is much bigger than that of the faculty, 80% of the total amount will be allocated to each Division using the FTE of students as the basis of allocations (Table 2), while the remaining 20% will be allocated on the basis of FTE of faculty people (Table 1).

For the distribution of this center expenditure, see Exhibit 1.

#### 4. Development Office

This office includes expenditures to conduct activities related to institution wide development and fund raising. On the divisional level, the development of the academic programs is the factor that relates this office to the Academic Divisions.

In turn, this implies that programs in each Academic Division (Table 3) are going to be used as the basis for allocating this cost center expenditures. Accordingly, each division share will be :

Natural Science Division	LL	176,733	x	.24	=	LL	42,415.92
Business Studies Division		176,733	x	.22	=		38,881.26
Humanities Division		176,733	x	.26	=		45,950.58
Social Science Division		176,733	x	.17	=		30,044.61
Applied Language Studies Division		176,733	x	.11	=		19,440.63
						Total	<u>176,733.00</u>

TABLE 2

STUDENTS FTE/DIVISION

1981 - 1982

F T E	D I V I S I O N S							TOTAL %
	NATURAL SC	BUSINESS	HUMANITIES	SOCIAL SC	APPLIED LG	UNCLASS	TOTAL	
FTE	335.54	597.12	307.03	80.57	304.35	-	1,624.61	91.87
MS	-	33.00	-	-	-	-	33.00	1.86
Unclass	-	-	-	-	-	(42.44)	(42.44)	2.40
Uncl. Spec.	-	-	-	-	-	(22.36)	(22.36)	1.27
Ext. Degree	-	-	-	-	-	(46.02)	(46.02)	2.60
TOTAL	335.54	630.12	307.03	80.57	304.35	(110.82)	1,657.61	100.00
Total %	20.24	38.01	18.52	4.86	18.36	(-)		100
Rounded	20 %	38 %	19 %	5 %	18 %	(-)		100

EXHIBIT I

DISTRIBUTION OF THE ADMINISTRATION OFFICE  
EXPENDITURE

Total expenses for the Administration Office		LL.	379,752
Less: 1/4 for Auxiliary Enterprises		LL.	94,938
To be allocated for Education		LL.	284,814
Amount to be allocated using FTE of professional faculty people is :	284,814 x .20 =	LL.	56,962.80
Amount to be allocated using FTE of Students in each division is :	284,814 x .80 =	LL.	227,851.20
Natural Science Division :	56,962.80 x .18	LL.	10,253.30
	227,851.20 x .20		45,570.24
		Total LL	55,823.54
Business Studies Division:	56,962.80 x .20	LL	11,392.56
	227,851.20 x .38		86,583.46
		Total LL	97,976.02
Humanities Division :	56,962.80 x .38	LL.	21,645.56
	227,851.20 x .15		43,291.73
		Total LL	64,937.59
Social Science Division :	56,962.60 x .10	LL.	5,696.28
	227,851.20 x .05		11,392.56
		Total LL	17,088.84
Applied Language Division	56,962.60 x .14	LL.	7,974.80
	227,851.20 x .18		41,013.22
		Total LL	48,988.02

TABLE 3

PROGRAMS

1981 - 1982

PROGRAM	D I V I S I O N S					TOTAL	TOTAL %
	NATURAL SC.	BUSINESS	HUMANITIES	SOCIAL SC	APPLIED LG		
AA, AAS	2	2	5	-	1	9	23.69
BA, BS	6	6	6	7	2	25	63.16
Dual Degree	1	-	-	-	-	1	2.63
Pre-Prog.	1	-	-	-	-	1	2.63
Intensive	-	-	-	-	1	1	2.63
Special	-	-	-	-	1	1	2.63
MS	-	1	-	-	-	1	2.63
TOTAL	10	9	11	7	5	42	100.00

Total % 23.81% 24.43% 26.19% 16.67% 11.9% 100%

Rounded 24% 22% 26% 17% 11% 100%



5. Relations Office

Continuous support and broader knowledge of the College require the establishment of an office of this kind. This cost center includes expenditures for activities to maintain relations with the Community, Alumni, or other Constituents, hence, morally benefit the Academic Divisions as a whole. Therefore, in the absence of a direct quantitative connector than can satisfy the condition of being an equitable basis of allocation between this office and the Academic Divisions, this cost center will be equally distributed among the Academic Divisions. Therefore, each division will share by 1/5 of the total overhead costs of this center:

Natural Science Division	LL. 201,657	x .20 =	LL 40,331.40
Business Studies Division	201.657	x .20 =	40,331.40
Humanities Division	201.657	x .20 =	40,331.40
Social Science Division	201.657	x .20 =	40,331.40
Applied Language Division	201.657	x .20 =	40,331.40
		Total LL	201,657.00

6. United States Development Office

This is an off-campus located in the United States of America. It complements the job of the local Development Office by providing this latter with the needed information. Since this office is complementary to the local Development Office, it becomes logical to allocate its expenditures on the same basis as the local Development Office (Table 3):

Natural Science Division	LL. 527,663 x .24 =	LL 126,639.15
Business Studies Division	527,663 x .22 =	116,085.83
Humanities Division	527,663 x .26 =	137,192.38
Social Science Division	527,663 x .17 =	89,702.71
Applied Language Division	527,663 x .11 =	58,042.93
	Total	<u>527,663.00</u>

7. Students Affairs Office

This is the synonymous name of the Guidance Office mentioned in the third chapter. This center includes expenditures for career guidance, personal connecting, advising, and health services for students; thus it is directly with students affairs and accordingly its expenditures will be allocated on the weighted average of students (FTE) enrolled in each division. (Table 2). By using this approach, the share of each Academic Division will be :

Natural Science Division	LL. 195,346 x .20 =	LL 39,069.20
Business Studies Division	195,346 x .38 =	74,231.48
Humanities Division	195,346 x .19 =	37,115.74
Social Science Division	195,346 x .05 =	9,767.30
Applied Language Studies Division	195,346 x .18 =	35,162.29
	Total	<u>195,346.00</u>

8. Registrar's Office

All its operational expenditures are related to students for activities to maintain, handle, and update records for students. This office serves a particular student in two ways : either in the form of pertaining to a specific

Academic Division or in the form of pertaining to different ones. To illustrate, during the registration period, the students register for different courses. In general, these courses by their nature belong to different Academic Divisions. In this situation, all the affairs belonging to these courses are directly related to the division where their courses are offered, and hence, the students taking these courses are considered as pertaining to different divisions. In another situation such when students request for documents related to their field of study, these students are served as pertaining to a special program offered by a particular division.

Since all students are served both way, allocation basis should satisfy both situation. To fairly distribute this indirect amount to Academic Divisions, this amount will be divided equally into two parts: the first part will be allocated on the basis of attendants in a division (total enrollments in total courses offered in each division), and the second part will be allocated on the basis of FTE of students in a division (Table 2).

For the distribution of these amounts, see Exhibit 2.

## 9. Nursery

There are different reasons behind sending one's child to a nursery. Some people are employed and need somebody to take care of their child, while some others are interested in the psychological and social development of the child.

TABLE 4

A T T E N D A N T S

1981 - 1982

ATTEND.	D I V I S I O N S						TOTAL	TOTAL %
	NATURAL SC	BUSINESS	HUMANITIES	SOCIAL SC	APPLIED IG	TOTAL		
Enrol.	4,097	3,469	5,829	1,330	137	14,862	84.90	
Gross Reg.	12	4	8	7	-	31	0.18	
Intensive	-	-	-	-	2,330	2,330	13.31	
Spec. Arabic	-	-	-	-	80	80	0.46	
Subtotal	4,109	3,473	5,837	1,397	2,537	17,303	98.85	
MS	-	202	-	-	-	202	1.15	
TOTAL	4,109	3,675	5,857	1,337	2,547	17,505	100.00	
TOTAL %	23.47 %	20.99 %	33.34 %	7.64 %	14.55 %	100 %		
ROUNDED	23 %	21 %	33 %	8 %	15 %	100 %		

EXHIBIT 2

REGISTRAR'S OFFICE EXPENDITURES

(DIVISIONS' SHARE)

Natural Science Division	LL. 200,557 x .23 =	LL. 46,128.11
	200,557 x .20	40,111.40
	Total	LL 86,239.51
Business Studies Division	LL 200,557 x .21 =	LL. 42,116.97
	200,557 x .38	76,211.66
	Total	LL 118,328.63
Humanities Division	LL. 200,557 x .33 =	LL. 66,183.81
	200,557 x .19	38,105.83
	Total	LL 104,289.64
Social Science Division	LL. 200,557 x 0.8 =	LL. 16,044.56
	200,557 x .05	10,027.85
	Total	LL 26,072.41
Applied Language Studies Division	LL. 200,557 x .15 =	LL. 30,083.55
	200,557 x .18	36,100.26
	Total	LL 66,183.81

Whatever the reasons are, it is realized that this center plays a double role, (1) it reflects a social image of the college, and (2) it constitutes an applied social studies center for students majoring in childhood development since it contains the necessary equipment needed for this program.

Practically, this center covers its expenditures by fees paid by children's parents. This center becomes self-sufficient, and hence, does not constitute an overhead expenses for the college. Thus, by considering a 100% coverage, this center will be disregarded from the cost centers list.

#### 10. Library

This cost center includes expenditures pertaining to employees' salaries, journal and journals binding costs, and is opened to the whole college and almost used by all students and faculty of the institution.

This duality usage of the library between faculty (mostly professionals) and students raises a question about the allocation base of this center costs. In satisfying both faculty and students, considerations will be given to students mainly because their access to library use and their rate of consuming books remain wider than the faculty people. Since on the average, a student registers for different courses usually offered by different

divisions, this same student attends the Library to fulfill the requirements of each course. Yet, this becomes the direct reason for considering the attendants in a division rather than its FTE. Accordingly, the share of each division is going to be:

Natural Science Division	LL. 619,122 x .23 =	LL. 142,398.06
Business Studies Division	619,122 x .21	130,015.62
Humanities Division	619,122 x .33	204,310.26
Social Sciences Division	619,122 x .08	49,529.76
Applied Language Division	619,122 x .15	92,868.30
	Total	LL. 619,122.00

11. Learning Lab

The salary of the working lab assistant and work aid of students working in this center, in addition to expenditures related to utilities and equipments altogether constitute the bulk of expenses for this cost center.

To graduate a student with an agreed standard, the college imposes requirements that must be fulfilled by each student. Among the requirements, there are few courses that must be completed by a learning linguistic laboratory work. These courses are: Freshman English I and II, Sophomore Rethoric, Arab Essay Reading and Writing I & II, and finally Appreciation of Arabic Literature. These courses academically belong to the Humanities Division. Since this lab is a complementary program to this division, its total costs of (LL 149,371.00) will be chargeable to the Humanities Division.

12. Computer Center

The Computer Center is used by both the Administration and computer Major students. Accordingly, its expenditures must be divided between the two.

From the Supervisor of the Computer Center own's experience, the students use of the computer dominates that of the Administration. The early start and the end of a semester witness a rush from the Administration's side for registering purposes. This rush decreases in intensity during the semester when the administrative issues are limited to printing reports. On the Student's side, it is observed that the students slightly use the computer at the early start of the semester, consume more of its time during the semester and finally rush at the end of the semester to submit their final projects. For these reasons combined together, it is agreed that the students consume 70% of the computer's time, while the Administration consumes the remaining 30 %.

Like every item of Administration, 1/4 of the 30% (7.25%) will be allocated to Auxiliary Enterprises, while the remaining 22.75% will be distributed among the five divisions on the same allocation basis adopted for the Administration Office.

For numeral illustration, see (Exhibit 3).



EXHIBIT 3

DISTRIBUTION OF COMPUTER CENTER EXPENDITURES

Total Computer Center Expenditure	LL.	250,239.00
Less: 30% for Administration		<u>75,071.70</u>
Left for Natural Science Division (70%)	LL.	175,167.30
The amount related to Administration is :		75,071.70
Less: 1/4 for Auxiliary Enterprises		<u>18,767.92</u>
Left for Academic Divisions	LL.	56,303.78
Amount to be allocated on the basis of FTE of Faculty is : 56,303.78 x .20	LL.	11,260.76
Amount to be allocated on the basis of FTE of Students is: 56,303.78 x .80 =	LL.	45,043.02
Natural Science Division	LL.	175,167.30
11,260.76 x .18 =		2,026.94
45,043.02 x .20 =		<u>9,008.60</u>
	TOTAL LL.	186,202.84
Business Studies Divisions :		
11,260.76 x .20 =	LL.	2,252.15
45,043.02 x .38		<u>17,116.35</u>
	TOTAL LL.	19,368.50
Humanities Division: 11,260.76 x .38 =		4,279.09
45,043.02 x .19 =		<u>8,558.17</u>
	TOTAL LL.	12,837.26
Social Science Division :		
11,260.76 x .10 =	LL.	1,126.08
45,043.02 x .05		<u>2,252.15</u>
	TOTAL LL.	3,378.23
Applied Language Division :		
11,260.76 x .14 =	LL.	1,576.51
45,043.02 x .18 =		<u>8,107.74</u>
	TOTAL LL.	9,684.25

13. IWSAW

The Institute of Women's Studies in the Arab World includes expenditures for activities like documentation, research, communication conferences, workshops, and a course on Arab Women. This center should be looked upon as having common subject matters that are of interest to both the Humanities Division and Social Science Division. Although, the course offered by this institute academically belongs to the Humanities Division, people who are running the affairs of this institute belong to both faculties.

According to the Director of Administration, this institute expenditures are approximately 90% covered by interested associations leaving by this an approximately 10% overhead expenses to be charged by the College. By taking the 90% as a coverage base, the remaining 10% will be equally allocated to both Social Science and Humanities Division.

Total Expenses		LL; 384,524.00
Less: 90%		346,071.60
Left as overhead		LL. 38,452.40
Social Science Division Share :		
38,452.40 : 2 =		LL. 19,226.20
Humanities Division share :		
38,452.40 : 2 =		19,226.20

14. Campus Services

Campus Services serve both Education and Auxiliary Enterprises. The separation of this center expenditures

between the two, becomes the essential step. In order to fulfill this condition, the traditional proportion of  $1/4$  to Auxiliary Enterprises and  $3/4$  to Education will be adopted. Having completed this first step, it becomes logical to search for a reasonable relationship between this center and Education, so as to use it as the allocation base.

As already mentioned in the this chapter, this cost center deals with the physical needs and wants of the College in general and the Academic Divisions in specific. Consequently, the relationship between this center and Education tends to be purely the physical support for Education like replacements and renovations, necessary equipments, office furniture, students desks etc... Thus, since every division is physically represented by the area it occupies, this center expenditures related to Education will be allocated on the basis of  $m^2$  area occupied by each division (See Exhibit 4, 5 and Tables 5, 6 ).

EXHIBIT 4

TOTAL AREA OF CLASSES

Nicol Hall (remaining ground floor)	m <sup>2</sup>	181
Nicol Hall (first floor - Intensives)		1,050
Nicol Hall (Second floor)		1,010
Shannon Hall		824
Fine Arts		3,287
Sage Hall		1,946
Gymnasium		1,853
Orme-Gray Basement		<u>400</u>
	Total	10,551

Less:

1. Linguistic Lab (Humanities)	m <sup>2</sup>	155	
2. Special Arabic Lab (Applied Languages)		70	
3. Natural Sciences Labs :			
a. Biology Lab		54	
b. Mechanical Engineering Lab		82	
c. Chemistry Lab I		86	
d. Chemistry Lab II		66	
e. Physical Science Lab		39	
4. Nursery		171	
5. Nicol (first floor - Intensives)		1,050	
6. Offices :			
a. Nicol Hall (remaining ground floor)		181	
b. Natural Science		290	
c. Business Studies Division		153	
d. Humanities		364	
e. Social Science Division		153	
f. Applied Language Studies		306	
7. Gymnasium		<u>1,853</u>	5,033
Area left for classes	m <sup>2</sup>		<u>5,518</u>

EXHIBIT 5

DISTRIBUTION OF CLASSES AREA

( DIVISIONS' SHARE)

Distribution of "Classes Area" by total credits in percents offered by each division (Table 5) will yield the area of classes occuppied by each division :

Natural Science Division	$m^2$	$5,518 \times .18 =$	$m^2$	993
Business Studies Division		$5,518 \times .21 =$		1,159
Humanities Division		$5,518 \times .47 =$		2,593
Social Science Division		$5,518 \times .11 =$		607
Applied Language Studies Division		$5,518 \times .03 =$		166

For total areas of each Division, refer to Table 6. Accordingly the share of each division will be :

Natural Science Division	LL.	$2,776,773 \times .35 =$	LL	971,870.55
Business Studies Division		$2,776,773 \times .13 =$		360,960.49
Humanities Division		$2,776,773 \times .30 =$		833,631.90
Social Science Division		$2,776,773 \times .08 =$		222,141.84
Applied Language St. Division		$2,776,773 \times .14 =$		<u>388,748.22</u>
Total			LL	2,776,773.00

TABLE 5

CREDITS OFFERED BY EACH DIVISION

1981 - 1982

	NATURAL SC	BUSINESS	HUMANITIES	SOCIAL SC	APPLIED IG	TOTAL
FALL 81	142	160	364	84	21	771
SPRING 82	152	167	393	93	21	827
TOTAL	234	327	757	177	48	1,598
TOTAL IN %	18.40%	20.46%	47.43%	11.08%	2.63%	100%
ROUNDED	18 %	21 %	47 %	11 %	3 %	

TABLE 6

AREA OCCUPIED BY EACH DIVISION

AREAS	NATURAL SC	BUSINESS	HUMANITIES	SOCIAL SC	APPLIED IG	TOTALS
Class Area	993	1,159	2,593	607	166	5,518
Linguistics Lab	-	-	155	-	-	155
Special Arabic Lab	-	-	-	-	30	30
Biology Lab	54	-	-	-	-	54
Mechanical Lab	82	-	-	-	-	82
Chemistry Lab I	86	-	-	-	-	86
Chemistry Lab II	66	-	-	-	-	66
Physical SC Lab	39	-	-	-	-	39
Nursery	-	-	-	171	-	171
Nicol Hall (1st floor)	-	-	-	-	1,050	1,050
Gymnasium	1,853	-	-	-	-	1,853
<b>TOTAL</b>	<b>3,173</b>	<b>1,159</b>	<b>2,748</b>	<b>778</b>	<b>1,246</b>	<b>9,104</b>
<b>TOTAL %</b>	<b>34.85 %</b>	<b>12.73 %</b>	<b>30.18 %</b>	<b>8.55 %</b>	<b>13.69 %</b>	<b>100 %</b>
<b>ROUNDED</b>	<b>35 %</b>	<b>13 %</b>	<b>30 %</b>	<b>8 %</b>	<b>14 %</b>	<b>100 %</b>

15. General Administration

Like every item of administration covering the whole institution, this item in its turn will be separated in terms of specified amounts for Education and Auxiliary Enterprises. In this sense, separation will be done through the traditional way already adopted for the Administration Office.

This category includes expenditures pertaining to different items. Till 1981 - 1982, the salaries of the main five administrators of the College: The President, The Dean, The Director of Development, The Director of Relations, and The Director of Administration, were included in this category. After 1982 - 1983, the salary of every administrator was transferred into his office expenditures. Yet besides these expenditures, Board of Overseers expenses as well as expenditures related to Council meetings, memographing, and joining associations are all included in this category.

As realized, this category includes expenditures for activities and persons that have either direct or indirect relationship with both students and faculty. To fairly distribute this amount to Academic Divisions, consideration to both Students and Faculty must be taken into account. To do that, this amount will be divided equally into two parts, where the first part will be allocated on the basis of FTE of Faculty (Table.1) and



the second part will be allocated on the basis of FTE of Students ( Table 2).

For the Distribution of General Administration costs, see Exhibit 6.

16. Auxiliary Activities

Include expenditures for activities like seminars, guest lectures, workshops, and general activities which benefit the College as a whole. The long range planning sheet of the college indicates that there is a special income that usually covers the expenses of such activities. As long as they are covered, Auxiliary Activities do not constitute any overhead expenses for the College. Only when expenses exceed the income for these activities that these activities turn out to create some overheads. In such case, the overhead amount will be allocated equally to each division because they morally benefit the whole institution. No such expenses were incurred on Campus in 1981 - 1982.

17. Extension Program

Extension Program courses are non-credit courses taken by either BUC students or interested outsiders. This program is self-sufficient. Its expenses are covered by fees paid by its attendants. As a conclusion, it does not constitute any overhead expense of the college, and accordingly, it is of no use to search for an allocation base.

EXHIBIT 6

GENERAL ADMINISTRATION EXPENSES

(DIVISIONS' SHARE)

Total General Administration Expenses	LL.	1,243,248
Less: 1/4 for Auxiliary Enterprises		310,812
Left for Education		932,436

Amount to be allocated on the Basis of FTE  
of Faculty and FTE of Student is: 932,436 : 2 LL 466,218

Natural Science Division	LL.	466,218 x .18 =	LL	83,919.30
		466,218 x .20 =		<u>93,243.66</u>
		TOTAL	LL	177,162.36

Business Studies Division	LL.	466,218 x .20 =	LL	93,243.66
		466,218 x .38 =		<u>177,162.84</u>
		TOTAL	LL	276,406.50

Humanities Division	LL.	466,218 x .38	LL	177,162.90
		466,218 x .19		<u>88,581.42</u>
		TOTAL	LL	265,744.32

Social Science Division	LL.	466,218 x .10 =	LL	46,621.86
		466,218 x .05 =		<u>23,310.90</u>
		TOTAL	LL	69,932.76

Applied Language Studies Div.		466,218 x .14 =	LL	65,270.52
		466,218 x .18 =		<u>83,918.80</u>
		TOTAL	LL	149,189.52

18. Student Aid

Regardless of scholarships and grants given by the government and private donators, the College offers four types of financial aid : honor scholarships, grants, work-study grants, and loans.

Work study grants is a program which provides the needed financial aid student with the opportunity to work within the college and hence earn a portion of his tuition. Consequently, these students are distributed among different offices and divisions, and thus, their work-study grants expenditures are counted as part of that office or division expenses. For this reason, their expenses will be disregarded mainly to avoid double-counting.

Concerning loans, they are granted to full-time students on the basis of a repayment schedule set by the student and the Business Office. This amount is re-collectable and hence should not be regarded as an overhead expenses for a period. The only loss that could have incurred and be considered as overhead expense is the "opportunity loss" expense. The sooner this money were invested, the more interest were accumulated, but since this contradicts with the principles of the college as a nonprofit institution, the whole matter won't be considered.

In addition to the government and private grants, the college offers a full tuition grants to students majoring in programs that the college likes to give support. However, it is not necessary that each division receive a share of these grants. These grants are offered for a needy student majoring in programs that lack enrollements in an attempt to either enhance these programs or encourage students to attend them. Thus, to fairly distribute these expenses, it must be known where these grants are offered. Not from a long time ago, these grants have been designated to both the Social Sciences Division and the Applied Language Studies Division. Taking this fact into consideration for the year 1981 - 1982, it becomes fair that the grant expenses be equally distributed between these two divisions. For 1981 - 1982, grant expenses were LL.296,176. The share of each division will be :

$$296,176 \times .50 = \text{LL. } 148,086.00$$

19. Contingency Transfers

This category includes transfers from the current Fund group to other fund groups made at the discretion of the governing board. Basically, these transfers are made to serve a variety of objectives such as addition to Loan Funds, general or specific plant additions, voluntary renewals and replacements of plant, and man-

datory debt service provisions relating to academic buildings (renewals and replacements) to the extent not financed from other sources.

Expenditures differ from Transfers. Expenditures are the recognition of the expanding of resources of the Current Fund group towards the objectives of each of the respective funds of that group. Transfers are amounts moved between fund groups to be used for the objectives of the recipient fund group. 7

In recording these transactions, transfers of the Current Funds are reported in the Statement of Charges in Fund Balance - Unrestricted Current Funds. These interfund borrowings are reported as Assets of the fund group making the advances and as liabilities of the fund groups receiving these advances. Thus, total institutional expenditures are not affected by the transactions and in turn do not constitute overhead expenses for the period.

20. Auxiliary Enterprises

Auxiliary Enterprises include expenditures related to Residence Hall, Campus Housing, and Cafeteria. These entities exist to furnish goods or services to students, faculty or staff, and that charge a fee directly related to. These do not constitute any indirect overhead expenses to be allocated to Education.

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Having by now determined the total cost centers and major activities which should be allocated to Education, it becomes sufficient to add to the direct cost incurred in each Division its applicable share of indirect costs. (See Table 7).

#### B. Cost/Different Level of Programs

To fairly distribute the costs within a division, it should be realized that the Business Studies Division is the only division which offers two levels of programs: graduate and undergraduate programs, hence, differentiation between the two must be done to avoid under or over estimation of the costs relating to these different programs.

##### 1. MS Direct Costs

To be considered as a full timer in the MS program the applicant professor needs to teach a load of six credits which are equivalent to two courses. In 1981 - 1982, PHD holders who taught in both programs taught on the average - one course in the MS program in addition to two courses in the BS programs. Since the full time load in the MS programs is six credits (two courses) and twelve credits (four courses) in the BS program, this implies that one PH.D holder teaching in both programs should be counted half full timer for the first program and half for the second one. Total weighted average of PH.D holders teaching in both programs in 1981 - 1982 was 3.63 FTE. Therefore the share of the MS program in terms of professional faculty people would be an equivalence of 1.81 FTE ( $3.63 : 2$ ). Since, one full time professional faculty PH.D

TABLE 7

TOTAL COSTS/DIVISION

1981 - 1982

Total Costs	D I V I S I O N S										Totals
	Natural SC	Business	Humanities	Social SC	Applied IG						
Direct Costs	1,089,933.00	1,177,386.00	2,393,734.00	616,811.00	722,372.00						6,000,842.00
Ind. Costs :											
a. Cost Centers											
Pres. Office	17,105.40	19,006.00	36,111.40	9,603.00	13,304.20						95,030.00
Dean's	49,226.40	54,696.00	103,922.40	27,348.00	38,287.20						273,480.00
Adm.	55,823.54	97,976.02	64,937.59	17,088.84	48,900.02						284,814.00
Develop.	42,415.92	38,881.26	45,950.58	30,044.61	19,440.63						176,733.00
Relat.	40,331.40	40,331.40	40,331.40	40,331.40	40,331.40						201,657.00
US Dev.	126,639.15	116,085.83	137,192.38	89,702.71	58,042.93						527,663.00
St Aff.	39,069.20	74,231.48	37,115.74	9,767.30	35,162.28						195,346.00
Regist.	86,239.51	118,328.63	104,289.64	26,072.41	66,183.81						401,114.00
Library	142,398.06	130,015.62	204,310.26	49,529.76	92,868.30						619,122.00
Lang. Lab	-	-	149,371.00	-	-						149,371.00
Comp. Center	186,202.84	19,368.50	12,837.26	3,378.23	9,684.25						231,471.00
IWSAW											
Comp. Serv.	971,870.55	360,950.49	19,226.00	19,226.00	-						38,452.00
			833,031.90	222,141.84	388,748.22						2,776,773.00
Subtotal (a)	1,757,321.97	1,069,901.23	1,788,627.55	544,134.10	811,041.25						5,971,026.00
b. Activities:											
Gen. Adm.	177,162.90	270,406.50	265,744.32	69,932.76	149,189.52						932,436.00
Grants	-	-	-	148,088.00	148,088.00						236,176.00
Subtotal (b)	177,162.90	270,406.50	265,744.32	218,020.76	297,277.52						1,228,612.00
Total Ind. Costs	1,934,484.87	1,340,307.73	2,054,371.87	762,154.86	1,108,318.77						7,199,638.00
Total Costs Rounded	3,024,424	2,518,293	4,448,106	1,378,966	1,830,631						13,200,480

holder costed the Business Division an approximate average of 127,272.00 LL, this in turn implies that direct costs salary amount for the MS program was LL. 127,272.00 x 1.81 = LL. 230,680.00

Direct costs category of a division includes the professors compensations in addition to "Academic Division other expenses" as specified on the Long-Range planning Sheet of the College. Usually this latter constitute approximately 9.5% of the total direct costs amount. Accordingly, for 1981 - 1982, this amount would be:

$$\text{LL. } 1,177,986 \times 0.095 = \text{LL. } 111,910$$

Since this amount is directly related to the Business Division, the FTE of Students in both programs within the Business Division should be then considered, taking into account the FTE of a student in the MS program any student who is holding nine credits (three courses), whereas twelve credits (four courses) are a must to consider their holder as a full timer in the undergraduate program.

MS	FTE	33	5.23 %
BS	FTE	<u>597.12</u>	<u>94.77 %</u>
Total		630.12	100.00 %

The share of the "Academic Division other expenses" for the MS program would be :

$$\text{LL. } 111,910 \times .0523 = \text{LL. } 5,855$$



Total direct costs for the MS program would be the summation of both: (1) direct compensations and (2) other direct expenses. Numerically, the amount is:

$$\text{LL. } 230,680 + 5,855 = \text{LL. } 236,535$$

## 2. MS Indirect Costs

It is sufficient to go through the following steps in order to calculate the indirect costs for the MS program. These steps are :

- a) Determine the total indirect costs for the Business Division. In this case, the amount is LL. 1,340,308.
- b) Determine the percent of FTE of students in both programs. This is already computed 5.23% for MS, 94.77% for the BS.
- c) Multiply the percent share of indirect costs of the MS program by the total indirect cost will yield the total amount to be allocated to the MS program. In this case :

$$\text{LL. } 1,340,308 \times 0.0523 = \text{LL. } 70,098$$

## 3. MS Total Cost

By adding the indirect costs of this program to the direct costs, the total costs of the MS program as incurred in the Academic Year 1981 - 1982 will be :

$$\text{LL. } 236,535 + 70,098 = \text{LL. } 306,633$$

#### 4. BS Total Costs

By subtracting total costs of the MS program from the total costs of the Business Division, total costs of the BS program will be obtained. Hence,

$$\text{LL. } 2,518,293 - 306,633 = \text{LL. } 2,211,660.$$

#### PROJECTED WORK

Work based on projected costs differs from that done for the actual. Projected works need a lot of assumptions to be done, simply because the present system adopted by the College disregards some necessary factors. For example, the present system does not include any indications as to what will be the projected FTE of Students/Division, although FTE of FTE of Students as one body is available. In turn, FTE of professional faculty people/Division is also missing, in addition to missing indication of whether a new educational program will be added to any concerned division, or, an old program will be deleted. For these reasons, pure theoretical assumptions will be first done, and secondly direct application in turn will take place.

#### A. Assumptions

For the reasons mentioned above, the distribution of cost centers among Academic Divisions will be based upon the following assumptions:

1. The same percent distribution of FTE (Students/Division) will be considered as the basis for a long range planning distribution, i.e. the same for the next five years.
2. The percent of programs offered in each division is still the same, i.e., neither new programs will be added nor existing one will be deleted (Table 2).
3. Area of Education is still the same (Table 6).
4. MS program constitutes the same percents of the total costs of the Business Division.
5. The same percents of attendants in each Division.

Any changes in these items require changes in the calculation procedures.

#### B. Direct Applications

Projected costs will be derived from the projected expenses of the Academic Year 1982 - 1983. Since the same computations approach adopted in the previous section will be adopted in its turn here and because the idea of how to arrange these costs is already transmitted, then, it won't be necessary to present detailed calculations, but rather, direct classification of the results in a table will suffice (Table 8).

For projected Students in each division and projected MS costs in the Business/Division see Exhibits 7 and 8.



EXHIBIT 7

PROJECTED FTE/DIVISION

1982 - 1983

To determine the projected FTE/Division, an approach of two steps will be considered:

1. Determine the total projected FTE (Students) for 1982-1983. To do that, it should be added to the weighted average of both FALL 82 and Spring 82, the projected FTE of the Summer sessions.

Projected FTE (FALL 82):	FTE	1640
Projected FTE (Spring 83)	FTE	1470
Total	FTE	3110
Weighted average (Total/2) :	FTE	3110 : 2 = FTE 1,555
Add: projected FTE (Summer 83)		260
Total projected FTE for this academic year =	FTE	1,815

2. Use the first assumption, and determine the share of each division in terms of FTE, after deducting 5% for the unclass students :

Natural SC Div.	FTE	1,724.25 x .20	=	FTE	344.85
Business St. Div.		1,724.25 x .38	=		655.21
Humanities Div.		1,724.25 x .19	=		327.60
Soc. SC. Div.		1,724.25 x .05	=		86.21
Applied Lg. Div.		1,724.25 x .18	=		310.36
Total					1,724.25

EXHIBIT 8

PROJECTED MS COSTS

1982 - 1983

To determine projected MS program costs in the Business Division, the followings will be considered :

- Actual Average Salary (PH.D holder)	LL.	127,272	
- Inflation rate 15%		19,090	
		<u>          </u>	
Total average compensation	LL.	146,362	
- Total projected FTE (PH.D holder) for the MS program :		1.81 + 1 = 2.81	
Total Compensation expense :	LL.	146,362 x 2.81 =	LL 411,277
- "Other Direct division expense"	124,417 x 0.053 =		<u>6,507</u>
Total Direct Costs			LL 417,784
- Total Indirect Costs	1,768,140 x 0.053 =		<u>92,473</u>
TOTAL MS Costs			510,257
- Left for BS programs :	LL 3,338,140 - 510,257 =		LL 2,827,883

## CHAPTER V

### COST ANALYSIS AND INTERPRETATION

Having by now calculated total costs for each Academic Division (Total costs for each program in the Business Division), this chapter completes its predecessor by finding out some elements of costs that are useful in decision making. Yet, presenting these costs items, analyzing them, and interpreting their outcomes, will all together contribute the main theme of this chapter.

#### COST INTERPRETATION

Data obtained in the previous chapter remain raw facts unless they are transformed into cost/items that have usefulness value in decision situations. However, to state clearly the usefulness of these cost/items, it becomes necessary to start defining these costs, calculating them for each division, and finally discussing them.

##### A. Cost/FTE

Cost/FTE transmits information about how much did one FTE student costs his division. Like all items of costs, cost/FTE is obtained by dividing the total costs of a division by its total FTE of students. However, the data obtained reflects the approximate cost/FTE for the reason based on the fact that students usually enroll for different courses offered by different Academic Division. In turn, this means that some adjustments should be done to reach the real Cost/FTE. These adjustments should be done as follows:

- a. Differentiate students by major so as to determine to what Academic Division they belong, and accordingly, arrange them by categories.
- b. Differentiate the courses taken by each student, so as to determine to what Academic Division they belong.
- c. Calculate the total cost contributed by each category of students.
- d. Exchange these costs contributions among Academic Divisions.
- e. Obtain the new and real total costs for each division.
- f. Divide by total FTE in each division and obtain the real cost/FTE.

Yet, in the absence of a computer which help differentiating the necessary items, the first approach will be adopted. Accordingly, Year 1981-1982 (using Table 2) would be:

Natural Science Division	LL. 3,024,425	: 335.54	=	LL. 9,014
Business Studies Division:				
a) BS Level	LL. 2,211,660	: 597.12	=	3,704
b) MS Level	LL. 306,633	: 33	=	( 9,290 )
Humanities Division	LL. 4,448,106	: 307.03	=	14,488
Social Science Division	LL. 1,378,966	: 80.57	=	17,115
Applied Language St. Div	LL. 1,830,691	: 304.35	=	6,015

The Cost/FTE determines the cost status of each division. First of all, this item gives the necessary information about the range over which the cost of each division is distributed. In the case of this study, the range is LL. 3,704 - 17,115.

Starting from this point, the highest end which is



LL. 17,115 arises some questions about the bearer of this cost; the Social Science Division. When the Academic Divisions are compared in terms of cost/FTE, one can immediately realize that the two divisions which pushed the average of the remaining three upwards are; (1) the Humanities Division, and (2) the Social Science Division. Yet, although the Humanities Division is much bigger than the Social Science Division especially when compared with this latter in terms of indirect costs, it shows a lower cost/FTE than does the Social Science Division. If an exchange amount was determined, the cost per FTE in the Humanities Division would have been decreased mainly because this division attracts the biggest number of students among the other divisions. This in turn would have lowered its total cost, hence, decreasing its cost per FTE. Moreover, if the same five divisions are compared in terms of total costs, Social Science Division bears the lowest cost, but unfortunately the highest Cost/FTE.

All the above combined together imply that the problem is in the enrollement and turnover of students within the Social Science Division. Finally Cost/FTE is a ratio of the total cost related to this division divided by the total FTE (Students) of the same division. Since the costs of the Social Science Division are the the lowest among the others, in turn, this means that the denominator is low. Therefore, to pull the ratio down, the denominator which is the FTE of students must be increased.

B. Cost/SPH

Student production hours is by definition the total enrollement in a division multiplied by the total credits offered by that division. When the total costs of a division is divided by its total student hours production, the cost/SPH is then reached. Therefore, cost/SPH shows in its previous stage the average cost of producing one hour of instruction in a particular Academic Division for a specified period (usually one year).

Moreover, cost/SPH constitutes the essential base for the concerned administrator to decide on the coming year cost/credit or what is widely known as the Tuition Fee. When added to this cost a forecasted inflationary amount in addition to a fair share so as to cover some deficits of the actual year, then, the total amount obtained won't be nothing more than the cost/credit that should be charged to students in any Academic Division for the coming year. If the administrators of a college are interested in setting a unique price, the average cost/SPH satisfies their desire. This average is simply the summation of the total cost/SPH of the Academic Divisions divided by the total number of divisions existing in a particular institution.

In brief, cost/SPH helps the decision maker set a tentative Tuition Fee for the coming year, but it does not give him the final figure. The final figure is obtained when the necessary income and donations are clarified. What were the cost/SPH in each division at BUC for the Academic Year 1981 - 1982 ?

Using the total costs of each division and its total production hours (Table 9), cost/SPH for different Academic Divisions are:

Natural Science Division:	LL. 3,024,424	: SPH 9,295	= LL 325
Business Studies Division:			
a. BS level	LL. 2,211,660	: 10,345	= 214
b. MS level	LL. 306,633	: 606	= (506)
Humanities Division	LL. 4,448,106	: 17,970	= 248
Social Science Division	LL. 1,378,966	: 4,008	= 344
Applied Language Division	LL. 1,830,691	: 7,394	= <u>248</u>
Total (excluding MS)			1,379
Average :	LL. 1,379	: 5	= LL. 275

These information reveal that relatively to the remaining three divisions, the cost/SPH for both the Natural Science and the Social science is high. In interpreting the results in another way, this means that relatively to their costs, these two divisions have produced less student hours production than they should. Therefore, to pull their cost/SPH downward, total students hours production in each division must increase. However, increasing student hours production requires increasing the total number of students in both divisions-which in turn-might require increasing the full time equivalence of professional faculty people hence increasing direct costs of each division.

This solution may be practical to the Social Science Division when the increase in the direct costs can be absorbed by the increase of the total number of students, since the only parallel increase remains in the field of professional faculty people, but when it

TABLE 9

STUDENT HOUR PRODUCTION

1981 - 1982

<u>PROD. HOUR</u>	<u>D I V I S I O N S</u>						<u>TOTAL</u>	<u>TOTAL %</u>
	<u>NATURAL SC</u>	<u>BUSINESS</u>	<u>HUMANITIES</u>	<u>SOCIAL SC</u>	<u>APPLIED IG</u>	<u>TOTAL</u>		
Enrol.	9,258	10,332	17,946	3,990	558	42,084	84.11	
Gross. Reg.	37	13	24	18	-	92	0.18	
Intensives	-	-	-	-	6,572	6,990	13.97	
Spec. Arabic	-	-	-	-	264	264	0.53	
Subtotal	9,258	10,345	17,970	4,008	7,812	49,430	98.79	
MS	-	606	-	-	-	606	1.21	
TOTAL	9,295	10,951	17,970	4,008	7,394	50,036	100.00	

comes to the Natural Science Division, one should be conservative. The nature of courses offered in this division differs from the Social Science courses. Courses offered in the first requires direct application while those of the second are theoretical and descriptive; which means that increasing total number of students in the Natural Science Division needs more laboratory materials, more equipment, and more machines besides an increase in professional faculty people. Taking these facts into consideration, comparative study between the increasing total number of students and total costs should be done before any decision of this kind is reached. When this type of decision does not fit the situation, then one should start searching for alternatives.

#### C. Cost/Attendant

An attendant is defined to be any student who attends a particular division to register for an average of two to three credits. When the credit hours of different courses offered by a division are the same such as the Social Science courses (every course is three credits), then, an attendant is defined as any student who is taking one course in a particular division.

Cost/Attendant in an Academic Division is obtained when the total costs of this division is divided by the total students who were enrolled in that division (Table 4). Total enrollements is obtained by adding up the total number of students enrolled in different sections of different courses regardless of their majors and their status (full timers or part timers). Accordingly, the cost/Attendants at BUC for the Academic Year 1981 - 1982 were:

Natural Science Division:	LL. 3,024,424	:	4,109	=	LL. 736
Business Studies Divisions:					
a. BS level	LL. 2,211,660	:	3,473	=	637
b. MS level	LL. 306,633	:	202	=	(1,518)
Humanities Division	LL. 4,448,106	:	5,837	=	762
Social Science Division	LL. 1,378,966	:	1,337	=	1,032
Applied Language St. Div.	LL. 1,830,691	:	2,547	=	719
Total (excluding MS)					<u>3,886</u>
Average :	LL. 3,886	:	5	=	LL. 777

This cost approach revealed that relatively to other divisions, the Social Science Division is lacking students enrollments. The main concentration of the administrators should be oriented towards either increasing the total number of students in this division or searching for a substitute in terms of income for this division.

Cost/Attendant is more realistic cost/student approach than that of the cost/FTE because it takes into consideration the total students who were really served in the division, and hence, contributed directly to the cost incurred in that division. Being an FTE student of a division does not necessarily means that this student is contributing directly to the cost incurred in his division; finally, he might have enrolled in courses which contributed directly to other divisions costs.

This type of costs help determining and setting more realistic budget for each division, especially when conflicts about budgeting arguments occur. Nevertheless, in the long run,

accumulation of these data will constitute a bulk of historical data that traces cost in each division which in turn helps in better planning and controlling.

D. Profit/Loss Status Analysis

To do this kind of analysis for each division, one should compare each division revenues to its total costs. Total costs for each division are already computed for each division (Table 7). To calculate the total revenues for a division, the different sources of revenues should be considered.

- a. Production Hours Revenue: To calculate the amount pertaining to each division, the students tuition fee per credit (LL. 230) for the Academic Year 1981 - 1982 will be multiplied by the total Students Hours Production of that year.
- b. Student Association Fees Revenue: Unless those taking less than four credits per semester, all the remaining students of the college pay an association fee. During the Academic Year 1981 - 1982, this fee was one hundred twenty five Lebanese Pounds (LL. 125) per student. By taking the starting condition into consideration, the total Student Association fee revenue will be computed by multiplying the total number of students in a particular division by the Student Association Fee (LL. 125).
- c. Labs Revenues: A laboratory Fee of one hundred Lebanese Pounds (LL. 100 ) is charged to students taking courses where Lab work is required. Total revenue of Lab work for a division will be computed by multiplying this Laboratory

TABLE 10

COST/DIFFERENT ITEMS/DIVISION

<u>COST/DIVISION</u>	<u>D I V I S I O N S</u>				<u>APPLIED LG.</u>	<u>TOTAL</u>
	<u>NATURAL SC.</u>	<u>BUSINESS</u>	<u>HUMANITIES</u>	<u>SOCIAL SC.</u>		
Cost/FTE	9,014	3,704	14,488	17,115	6,015	
Cost/SPH	325	214	248	344	234	
Cost/Attendant	736	637	762	1,032	719	
MS	-	-	-	-	-	
Cost/FTE	-	9,290	-	-	-	
Cost/SPH	-	516	-	-	-	
Cost/Attendant	-	1,518	-	-	-	



Fee by the total number of students enrolled in courses that require lab work. The Laboratory Fee for Intensives is Two Hundred Lebanese Pounds (LL. 200).

Having by now defined the sources of revenue, the Profit/Loss status for each division will be classified in (Table 11).

By separating the college into independent divisions, such analysis helps finding the sources of deficits that most nonprofit institutions usually face at the end of their fiscal year. By finding out these sources, the administrators of the college can define problems, interpret them, and finally reach a decision to cure the situation.

According to this cost accounting system adopted in this study, the major bulk of deficits comes from the Natural Science Division. The deficit in Natural Science Division as well as in another division roots back partially to the political situation which surrounded Lebanon during that period. Summer sessions of 1981 - 1982 were cancelled. No income from summer sessions entered the college as planned. Students turnover within the Academic Division stopped in turn. All these factors caused the total student hours production to fall at a time when fixed costs continued to incur. Since the volume of production in an Academic Institution is measured by the total number of student hour production, one can understand why total fixed costs per hour of instruction increased during that period relatively to previous

TABLE 11

PROFIT, LOSS/DIVISIONS

1981 - 1982

	D	I	V	I	S	I	O	N	S	
	<u>NATURAL SC.</u>		<u>BUSINESS SC.</u>		<u>HUMANITIES</u>		<u>SOCIAL SC.</u>		<u>APPLIED LG.</u>	
SPH Revenues	2,129,340	2,379,350	4,133,100	921,840	1,700,620					
SAF Revenues	43,250	78,750	41,125	9,875	36,375					
Lab Work Revenues	44,900	0	201,722	0	93,200					
Total Revenues	2,207,490	2,458,100	4,375,947	931,715	1,830,195					
Total Costs	3,024,424	2,211,660	4,448,106	1,378,966	1,830,691					
Profit/Loss	(806,934)	246,440	(72,159)	(447,251)	(496)					
MS Program	-	-	-	-	-					
SPH Revenues	-	303,000	-	-	-					
Total Costs	-	306,633	-	-	-					
Profit/Loss	-	(3,633)	-	-	-					

years. The total hours of instruction constitute the ground over which total fixed costs should be distributed, the lower these instruction hours, the higher the total fix costs/hour of instruction, hence by division. The end result will be a deficit especially when there is no income to cover the costs.

#### E. Cost/Program

What is the cost/program offered in a particular division might be interested data for the chairman who is running that division. In controlling cost distribution among the programs offered in his division, the chairperson becomes more able to make a host of decisions as to how costly some programs are, and thus, will set his own budget for the division on more rational bases.

It won't be a hidden secret to mention that these costs will be accumulated through time and hence becomes a directory which traces the behaviour of cost patterns of each program within each Academic Division. Yet, by projecting these costs from year to year, these data ease the chairperson's job in determining the quantity and quality of professional faculty needed for his division.

To calculate the cost of each program refer to Exhibits 9, 10, 11, 12, and 13.

EXHIBIT 9

COST/PROGRAM IN NATURAL SCIENCE DIVISION

Natural Science Division :

Biology/Chemistry	:	(LL 3,024,424 x 38)	:	349 = LL 328,307	10.89 %
Computer/Math	:	(LL 3,024,424 x 16)	:	349 = LL 138,656	4.58 %
Chemistry	:	(LL 3,024,424 x 10)	:	349 = LL 86,660	2.87 %
Computer Science	:	(LL 3,024,424 x 87)	:	349 = LL 753,939	24.93 %
Dual Degree	:	(LL 3,024,424 x 88)	:	349 = LL 762,605	25.21 %
Math Education	:	(LL 3,024,424 x 3)	:	349 = LL 25,998	0.86 %
Pre-Pharmacy	:	(LL 3,024,424 x 16)	:	349 = LL 133,656	4.56 %
Science Education	:	(LL 3,024,424 x 1)	:	349 = LL 8,666	0.29 %
Computer Sc. (AAS)	:	(LL 3,024,424 x 69)	:	349 = LL 597,952	19.77 %
General Sc. (AAS)	:	(LL 3,024,424) x 21)	:	349 = LL 181,985	6.02 %
				<hr/>	<hr/>
		Total		LL. 3,024,424	100.00 %

EXHIBIT 10

COST/PROGRAM IN BUSINESS SCIENCE DIVISION

Business/Computer	:	(LL 2,211,660 x 121)	:	639 = LL 413,796	18.94 %
Business/Account.	:	(LL 2,211,660 x 32)	:	639 = LL 110,756	5.01 %
Business/Economics	:	(LL 2,211,660 x 12)	:	639 = LL 51,534	1.88 %
Business/General	:	(LL 2,211,660 x 6)	:	639 = LL 20,767	0.94 %
Business/Management:		(LL 2,211,660 x 249)	:	639 = LL 861,821	38.96 %
Business/Marketing	:	(LL 2,211,660 x 16)	:	639 = LL 55,378	2.50 %
Business Manag (AAS)		(LL 2,211,660 x 195)	:	639 = LL 674,920	30.52 %
Secreterial Studies:		(LL 2,211,660 x 8)	:	639 = LL 27,689	1.25 %
				-----	-----
		Total		LL 2,211,660	100.00 %

EXHIBIT 11

COST/PROGRAM IN HUMANITIES DIVISION

Communication Arts D	:	(LL 4,448,106 x 53)	:	337 = LL 699,554	15.73 %
English Litterature	:	(LL 4,448,106 x 3)	:	337 = LL 39,597	0.89 %
Fine Arts	:	(LL 4,448,106 x 72)	:	337 = LL 950,337	21.36 %
History	:	(LL 4,448,106 x 1)	:	337 = LL 13,199	0.30 %
IDIS (HD)	:	(LL 4,448,106 x 1)	:	337 = LL 13,199	0.30 %
Advertising Design	:	(LL 4,448,106 x 41)	:	337 = LL 541,164	12.16 %
Communication Media	:	(LL 4,448,106 x 43)	:	337 = LL 567,562	12.76 %
Interior Design	:	(LL 4,448,106 x 98)	:	337 = LL1,293,515	29.08 %
Liberal Arts	:	(LL 4,448,106 x 9)	:	337 = LL 118,790	2.67 %
Library Science	:	(LL 4,448,106 x 16)	:	337 = LL 211,166	4.75 %
				<hr/>	
		Total		LL 4,448,106	100.00 %

EXHIBIT 12

COST/PROGRAM IN SOCIAL SCIENCE DIVISION

Human Development DF	:	(LL 1,378,966 x 6)	:	81 = LL 102,146	7.41 %
Human Development EC	:	(LL 1,378,966 x 11)	:	81 = LL 187,267	13.56 %
Human Development EE	:	(LL 1,378,966 x 17)	:	81 = LL 289,413	21.00 %
Human Development SW	:	(LL 1,378,966 x 5)	:	81 = LL 85,121	6.15 %
Int. Affairs CD	:	(LL 1,378,966 x 34)	:	81 = LL 578,825	42.00 %
Political Science	:	(LL 1,378,966 x 6)	:	81 = LL 102,146	7.41 %
IDIS SS	:	(LL 1,378,966 x 2)	:	81 = LL 34,049	2.45 %
				<hr/>	
		Total		LL 1,378,966	100.00 %

EXHIBIT 13

COST/PROGRAM IN APPLIED SCIENCE DIVISION

TEFL	:	(LL 1,830,691 x 13)	:	291 = LL 81,783	4.47 %
IDIS	:	(LL 1,830,691 x 1)	:	291 = LL 6,291	0.34 %
Techer Education	:	(LL 1,830,691 x 18)	:	291 = LL 113,239	6.19 %
Intensives	:	(LL 1,830,691 x 259)	:	291 = LL 1,629,378	89.00 %
				<hr/>	
		Total		LL 1,830,691	100.00%

### Cost Contribution per Program

Cost Contribution per Program is an attempt to calculate how much percent has one Academic Division contributed out of the total costs of achieving the requirements of a particular major. To transmit the idea of Cost Contribution, any major from any Academic Division can be considered. Yet, the major, over which this study is going to be applied are taken from the AA/AAS program offered in each division. AA/AAS programs were considered for two main reasons: (1) they are two years program, the thing which is homogenous to the work of this study, (2) they provide the necessary information about courses taken year by year.

#### A. Projected SPH

To calculate the total cost of a student who started his AA/AAS program at BUC in the Academic Year 1981 - 1982, and graduated at the end of the Academic Year 1982 - 1983, the projected SPH for 1982 - 1983 must be first found out. To calculate this rate, the following steps are necessary:

1. Specify a pre-determined rate between the actual Cost/FTE and actual cost/SPH. This rate is obtained by dividing actual cost/FTE in a division by the cost/SPH of that division.
2. Divide the total projected costs of a division (Table 8) by the projected FTE of each Academic Division (See exhibit 7) to obtain projected cost/FTE in each division.



3. Divide the projected cost/FTE by the pre-determined rate to obtain the projected cost/SPH.

For numerical illustration refer to Exhibits 14, 15 and 16.

Like all programs of the college, these programs include courses pertaining to different Academic Division. The credits to be taken by a student is specified yearly. By multiplying these credits by the cost/SPH in a division for each year, the total cost of the chosen program will then be reached. However, to calculate the percent contribution of each division, total costs of each division will constitute this rate.

B. AAS (Associate in Applied Science)

This program is offered by the Natural Science Division. In order to graduate, such a major student needs to fulfill the requirements of sixty six credits distributed over two years (thirty three credits a year). Total percent contribution of different divisions are shown in Exhibit 17.

C. AAS (Associate in Business Management)

This program is offered by the Business Division. The requirements of graduation in this program are sixty three credits distributed over two years as follows: thirty three credits for the first year and twenty eight for the second one. Numerical illustration is shown in Exhibit 18.

D. AAS (Associate in Library Science)

This program is offered by the Humanities Division. Sixty three credits are sufficient to accomplish the requirements of this major; thirty credits are to be accomplished in the first year, the remaining thirty three are left for the second year. Numerical illustration is shown in Exhibit 19.

EXHIBIT 14

A PREDETERMINED - RATE CALCULATION

Natural Science Division	:	LL 9,014	:	325	=	LL. 28.01
Business St. Division	:	3,704	:	214	=	17.30
Humanities Division	:	14,488	:	248	=	58.41
Social Sc. Division	:	17,115	:	344	=	49.75
Applied Language Division	:	6,015	:	234	=	25.70

EXHIBIT 15

PROJECTED COST/FTE

Natural Science Division	:	LL 4,279,983	:	344.85	=	LL 12,410
Business St. Division	:	2,827,883	:	655.21	=	4,316
Humanities Division	:	6,383,316	:	327.60	=	19,485
Social Sc. Division	:	1,917,178	:	86.21	=	22,238
Applied Language Division:		2,475,750	:	310.36	=	<u>7,977</u>
Total						LL 66,426
Average :		66,426	:	5	=	LL 13,285

EXHIBIT 16

PROJECTED COST/SPH

Natural Science Division	:	LL 12,410	:	28.01	=	LL.	443
Business Sc. Division	:	4,316	:	17.30	=		250
Humanities Division	:	19,485	:	58.41	=		334
Social Sc. Division	:	22,238	:	49.75	=		447
Applied Lg. Division	:	7,977	:	25.70	=		310

EXHIBIT 17

DIVISIONS CONTRIBUTION

AAS (APPLIED SCIENCE)

Natural Science Division (81-82) : Cr 9 x LL 325 = LL	2,925
(82-83) 18 x 443 =	<u>7,974</u>
Total Costs	LL 19,899
Business Studies Division(81-82) : Cr 12 xLL 214 = LL	2,568
(82-83) 6 x 250 =	<u>1,500</u>
Total Costs	LL 4,068
Humanities Division (81-82) : Cr 12 x LL 248 = LL	2,976
(82-83) 6 x 334 =	<u>2,004</u>
Total Costs	LL 4,980
Social Sc. Division (81-82) : Cr 0 x 344 LL	0
(82-83) 3 x 477	<u>1,341</u>
Total Costs	LL 1,341

Total Costs : LL 10,899 + 4,068 + 4,980 + 1,341 = LL 21,288

Having by now calculated the total costs of this program, each academic Division Contribution is going to be :

Natural Sc. Division	: LL 10,899 : 21,288 =	LL 51.20 %
Business St Division	: 4,068 : 21,288 =	19.10 %
Humanities Division	: 4,980 : 21,288 =	23.40 %
Social St. Division	: 1,341 : 21,288 =	<u>6.30 %</u>
Total		100.00 %

EXHIBIT 18

DIVISIONS CONTRIBUTION

(AAS IN BUSINESS MANAGEMENT)

Natural Science Division	(81-82) : Cr 9 x LL 325	=	LL. 2,925
	(82-83) 0 x 443	=	<u>0</u>
Total Costs			LL. 2,925
Business Studies Div.	(81-92) : Cr 9 x LL 214	=	1,926
	(82-83) 21 x 250	=	<u>5,250</u>
Total Costs			LL. 7,176
Humanities Division	(81-82) : Cr 12 x LL 248		2,976
	(82-83) 6 x 334		<u>2,004</u>
Total Costs			LL. 4,980
Social Science Division:	(81-82) : Cr 3 x LL 344	=	1,032
	(82-83) 0 x 47	=	<u>0</u>
Total Costs			LL. 1,032
Total Costs :	LL. 2,925 + 7,176 + 4,980 + 1,032	=	LL. 16,113

Divisions contributions are :

Natural Science Division:	LL 2,925	: 16,113	=	18.15 %
Business Studies Division	LL 7,176	: 16,113	=	44.55%
Humanities Division	LL 4,960	: 16,113	=	30.90 %
Social Science Division	LL 1,032	: 16,113	=	<u>6.40 %</u>
				100.00 %

EXHIBIT 19

DIVISIONS CONTRIBUTION

AAS (ASSOCIATE IN LIBRARY SCIENCE)

Natural Science Division	(81-82) : Cr. 2 x LL 325	=	LL 650
	(82-83) : 4 x 443	=	<u>1,772</u>
Total Costs			LL 2,422
Business Studies Divis.	(81-82) : Cr 4 x LL 214	=	LL 856
	(82-83) 2 x 250	=	<u>500</u>
Total Costs			LL 1,356
Humanities Division	(81-82) : Cr 21 x LL 240	=	LL 5,208
	(82-83) : 24 x 334	=	<u>8,016</u>
Total Costs			LL 13,224
Social Science Division	(81-82) : Cr 3 x LL 344	=	LL 1,032
	(82-83) : 3 x 447	=	<u>1,341</u>
Total Costs			LL 2,373
Total Costs : LL 2,422 + 1,356 + 13,224 + 2,373 = LL 19,375			
Divisions Contributions are:			
Natural Science Division	: LL 2,422	: LL 19,375	= 12.50 %
Business Studies Division	1,356	: 19,375	= 7.00 %
Humanities Division	13,224	: 19,375	= 68.25 %
Social Science Division	2,373	: 19,375	= 12.25 %
Total			<u>100.00 %</u>

## CHAPTER VI

### SUMMARY AND RECOMMENDATIONS

This study establishes broad guidelines for a cost accounting system that might be beneficial for different Academic Institutions. This Cost Accounting system uses the full costing approach and considers each Academic Division as a separate unit. The rationale behind separating units has three advantages; to trace cost in each division, to define the problems, and finally find a solution which cures these problems and not their symptoms. In brief, this implies making decisions based on a more rational base by focusing on parts of the entity first, and then on the entity as a whole.

To reach this objective, this research was conducted in different steps incorporated in different chapters. To apply the essentials of full costing approach, it was necessary to define the important background needed for this purpose. The essentials of full costing system were presented. The main differences between profit and nonprofit institutions were exposed, and finally the procedures of the suggested cost accounting system were determined.

The application of this system to BUC College required information about both, the physical and administrative organization of this institution, in order to define its main cost centers and "Production Areas" (i.e. Academic Division).

By using the data of 1981 - 1982, cost centers were allocated to "Production Areas" on the basis of quantitative mea-



asures which directly connect this cost center to any Academic Division. These allocation bases were: (1) the FTE of faculty, 2) FTE of Students, (3) Programs offered in each division, (4) Total attendants of a division, and (5) the area occupied by each division. Based on that, the total costs for each division was calculated and different items of costs were derived. These items of costs : (1) cost/SPH, (2) cost/Attendant, (3) cost/FTE (Students, (4) Profit/Loss analysis for each division, (5) cost of a major, and (6) cost contribution by programs.

Based upon the first four calculations, the results revealed that: (1) the Social Science Division lacked student enrollements relative to its total costs, (2) the Natural Science Division incurred high total costs relative to its total revenues which called for reviewing the tuition fee of this division in the absence of available places for enrollements, (3) The Humanities Division deficits could have been compensated if summer sessions were not cancelled that year; this deficit is not a base to judge the situation of this division unless previous evidence proves that this division falled into deficits; (4) the Applied Language Division is supported by its Intensives program, although their Bachelor degrees are lacking enrollements, and finally (5) the Business Division is safe, since it passed the most difficult days of the college without breaking even, nothing remains to worry about in this division.

Any chosen system remains incomplete unless it is followed by complementary steps. In real, a system looks like a chain which is composed of different rings. To be a useful chain, its

rings must be complete. However, if one ring is missing the whole chain becomes unuseful. Therefore, if a complementary system is sought, then the following recommendations are to be considered:

- a. A statistical Bureau. In each organization of this type a special bureau which deals with Statistics must be established. The job of this bureau is to keep deriving the necessary data, classifying them, arranging them in useful matter, and finally reporting the necessary outcomes at the right time to the right place, improving the management information system of the college.
- b. Students Body: The student body must be regarded as different separated units rather than one body especially in planning matters, to trace the position of each division. Moreover, a clear policy as to the projected quantity of students in Academic Divisions, as well as in programs (BA/BS, MS) must be agreed upon. All the above are needed to avoid excess of expenditures over the budgeted amount (low variance); and at the same time to avoid waste and inefficient use of funds.
- c. Students Turnover: Students turnover rate within each division must be kept under control. Students turnover (attendants) within an Academic Division constitutes one of the best solutions for divisions which usually face a decrease in their Student Hour Production (the social

Science Division in case of BUC). A possible solution in the absence of demands for programs within such divisions, is to impose more electives or college requirement courses from these divisions.

- d. Problems Treatment: When a problem occurs within an Academic Division, responsibilities are requested to find a solution for that area. In most colleges which treat their Academic Divisions as one unit, solutions usually affect the whole divisions and are reached on their accounts. In these circumstances, some divisions cover the problems of other divisions, and accordingly, the symptoms of these problems are cured, and not the problems themselves. For example, the total deficits for BUC in 1981 - 1982 can be cured, but still the source of these deficits (Natural Science Division) will incur each year if a solid treatment is not adopted. If left without treatment, it will keep on causing deficits. However, solutions that treat symptoms and leave the real causes untouched, remain invalid because they postpone the real treatments and leave the opportunity opened for these problems to show up again very soon.
- e. Cost/FTE : If the college is interested in the real Cost/FTE, simple modifications of the present system would satisfy this need. The system should be modified in a way to differentiate students by majors, courses by divisions, determine the total exchange amounts, get the new total costs of a division and then divide by the FTE to obtain the needed cost.

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