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RELATED FACTORS IN ORGANIZING INSTRUCTOR MANPOWER NEEDS IN THE COLLEGE OF EDUCATION IN THAILAND

by

Thawat Burirug

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
Degree of Doctor of Education

Western Michigan University
Kalamazoo, Michigan
April 1975
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Finally, a very special word to my lovely wife, Pensri, and three beautiful children, Thirapong, Thirapan, and Thiraporn, for their patience, understanding, and forbearance during the past three years.

Thawat Burirug

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CHAPTER I

INTRODUCTION

Background of Education in Thailand

The present education system in Thailand is the product of many forces and influences which have been forged and tempered over many centuries. The first educational system in Thailand was quite similar to that of the monastic and cathedral schools of medieval Europe, i.e., it had a religious orientation and was centered in the temples. Historical evidence shows that the system was quite informal and offered only limited subject matter. The primary purpose was to provide moral and religious instruction and, for all practical purposes, was designed to train only male members of the society. Vocational training was carried on within the family unit. Young boys were taught how to farm, hunt, fight, and develop some of the basic skills in handicrafts; girls were also given training in farming as well as domestic skills. Only the children of the aristocracy could expect to receive training in the arts and other areas associated with "higher education."
The history of education in Thailand may be divided logically into three periods: 1

1. The period of traditional education, from 1257 to 1868.

2. The period of educational expansion, from 1868 to 1931.

3. The present period, from 1932 to this day.

Period of traditional education

King Ram Khamhaeng, the third king of the Sukhothai period, in 1283 introduced the alphabet that has been used continuously to the present time. This alphabet was modified from time to time until the present system of writing was formed. Literature of the Sukhothai period indicates that even a few women were given the opportunity to become literate, but generally this privilege was extended to men in the court and temples.

This monastic, or temple, education continued for at least six centuries, i.e., from the beginning of the Sukhothai period (1257-1377) through the Ayudthya period (1377-1767) and the Thonburi period (1767-1782), up to the

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beginning of the first stage of the Ratanakosin period (1782-1868).

During this era there were few significant changes in the educational system. The government did not take an active role in education because it was felt that this was primarily the responsibility of religious leaders. Hence, the Buddhist priests (monks) assumed the major responsibility for "public" instruction.

During the Ayudthya period (1377-1767), Thai people were brought into contact with the Western world for the first time. Records show that some Portuguese came to Thailand in 1511. Later, in 1662, French missionaries arrived in Thailand. They brought with them many skills and ideas which helped the educational program to progress during this period. They set up private schools to teach Christian and Western culture to the natives. King Narai, who suspected the motives of the French missionaries, maintained a tight control over these private schools.

Thailand was brought into contact with Western countries again during the reign of King Rama II. Presbyterian missionaries came to Thailand and started setting up schools to teach religion. American missions contributed greatly to the improvement of Thai education, especially after one
of their leaders, Dr. Bradley, set up a printing press in 1837 to print Thai books.

As Thailand established closer relations with the Western countries, greater interest developed in learning foreign languages. King Rama IV studied English in order to better understand Western culture and politics. He, along with his children and some countrymen, were taught by an Englishwoman, Mrs. Anna Leonowens. Rama IV laid the foundation for a period of educational reform and expansion in the reign of his successor, Rama V.

Period of educational expansion

A modern school was established by King Chulalongkorn (Rama V) on the palace grounds in 1871. This school was the first of its kind in Thailand, and its primary purpose was to train boys for office work or civil service. It differed from other schools of the time because the latter were dedicated simply to bringing up boys to be "well-read men of good behavior." The Royal Command School, or Palace School, had regular hours for learning and employed laymen as teachers. It taught not only reading and writing, but also arithmetic and other subjects which would be required in government offices.
The growing need for government officials as the government expanded its scope of work, and the demand to set up a common standard for public instruction, prompted the establishment of more of these schools in 1884. Some public instruction was extended into the provinces, but the lessons were taught in the Buddhist temples or wats. The promotion of such instruction is an example of the administrative wisdom of King Rama V. On one hand, he was preserving the old custom of wat learning, and on the other, he was curtailing the great expense that would have been involved in the construction of new schools. King Chulalongkorn's reign initiated a new era in the history of the nation. Through his encouragement of education, many government schools were opened, and people were happy to send their children to these schools.

In 1887, the Department of Education was established, and 5 years later it became a ministry. The new ministry was assigned the responsibility for cultural and religious affairs as well as educational administration. The Ministry of Education laid the foundation for educational expansion and better administration. New textbooks were written for teaching the Thai language in the schools, and a nationwide system of examinations was put into practice.
Though the character of education at the end of the nineteenth century seems parochial, there was a tendency towards establishing a broader national scheme, and this called for some sort of systematic plan of education. In 1898, such a scheme was formulated dealing with all the provinces of the kingdom. This national scheme of education outlined curricular content and established grade levels within the total system of education; a specific reference to girls' education was included.

Another scheme of education was put into effect in 1909 which divided education into two streams: academic and vocational. It was agreed at that time that higher education institutions would be established later. A revised plan was announced in 1913 by King Rama VI; a 3-3-3-2 plan of education was adopted instead of the former 3-3-3 plan. From that time on, all general educational plans were formulated on a national basis. The first Private School Act was passed in 1918, dealing with the registration and government supervision of private schools. It was followed in 1921 by the first Compulsory Education Act, which stipulated that all children, both boys and girls, were to go to school from ages 7 to 14. Advanced studies were offered at Chulalongkorn University,
which had been founded in 1916, and a system of national education was under way. Looking back at the educational schemes, one can see that an effort was made to train young people to suit economic and social conditions of the time.

The present period

The year 1932 marks the beginning of the third and present period of Thai educational history. The new revolutionary government made many efforts to improve the educational system. Increased emphasis was placed on meeting the needs of the individual, even though it was still stressed that education should meet social needs that were in harmony with the economic and political system of the country. A new national scheme of education (a 4-4-4 plan) was devised the year the revolutionary government came into power. To help implement the plan, an educational council was appointed as an advisory body; 3 years later, a new compulsory education act was passed. The following year, the 1936 National Scheme of Education was amended in the form of 4-3-3-2, and this remains as the basic organizational scheme. A new private school act was also adopted which provided for financial assistance to these schools.
and also provided for school visitations by inspectors from the Ministry of Education.

Several things happened in 1936 which affected the educational system. The revolutionary government wanted to expand elementary education as fast as possible, spurred by certain "provisional articles" in the Constitution. The Constitution stated that Parliament was to be composed of two types of members: elected and appointed. It also stipulated that the provinces in which more than half of the adult population were literate would have full representation. This brought a rapid expansion of elementary education throughout the kingdom. A considerable amount of the budget was spent on a literacy campaign, and little was left for developing secondary education. Secondary-school programs were cut down to 6 years (grades 5-10). A few pre-university schools (grades 11-12) were set up to educate a select group of tenth graders who would enter the university. Those who could not enter the pre-university schools could go on to higher vocational schools. Vocational schools on lower levels (grades 5-7 and 8-10) were established because the government wanted to discourage the students from academic study and to encourage them to train for some vocation. In order to save expenditures on
academic secondary schools, the government proclaimed that it would maintain only a limited number of government secondary schools as examples for private schools. This meant that the majority of high-school students had to be taught in private schools. The result of all this was the concentration of educational resources in the Bangkok area and the rapid expansion of private secondary schools.

Another scheme of education was adopted in 1951, but it was essentially the same as its predecessor with only slight modifications and additions. It organized the school system into 4 years of elementary education, 3 years of lower secondary school, 3 years of upper secondary school, and 2 years of pre-university classes. The lower secondary grades were divided into three streams: (1) an academic stream for the children who wanted to prepare for higher learning, (2) a vocational stream for those who wanted to seek employment earlier, and (3) a general stream for those who did not want to go beyond grade 7. On the upper level, there were two streams: academic and vocational. From grade 10 on, three grades of higher vocational schools were organized parallel to the two pre-university classes. It was hoped that fewer students would go on to the academic stream and that a great number of them would
take vocational and general courses. Perhaps it was because opportunities for work in the fields of industry and commerce were so limited and the prestige of white-collar jobs was so high that few went into the vocational stream. Whatever the reasons, however, the majority of secondary-school students strived to enter the academic stream, especially on the lower secondary level.

The imbalance of enrollments caused great concern to educational authorities. During the time that the country needed semiskilled and skilled craftsmen and the capacity in higher education was limited, they did not want too many students in the academic stream. They tried to improve vocational education in many ways: school facilities were provided, better teachers were recruited, and more diversified courses were offered. Still vocational schools on lower levels continued to lose students to academic schools. Only the higher vocational schools gained more students.

In the meantime, government academic schools could not expand fast enough, and private schools flourished in Bangkok and other big towns.

In 1958, the government appointed a committee to reexamine the national scheme of education in existence at that time. This committee continued to function until
September 1959, when its work was taken over by the newly established National Council of Education. In the following year, a draft scheme was submitted to the government which was finally adopted and became known by royal proclamation as the 1960 National Scheme of Education.

By virtue of this new scheme, the educational ladder of the country comprises 12 or 13 years. Elementary education consists of 7 years, and children are encouraged to stay in school at least until they are fully 15 years of age. Secondary education has 5 years in the academic or general stream and 6 years in the vocational stream. The school-leaving age is at the end of grade 7 in the elementary school and normally at the end of grade 10, or grade 12 (academic stream) or grade 13 (vocational stream), in the secondary school.

It is noteworthy that, prior to this change, elementary education consisted of 4 years and secondary education of 6 years, plus 2 years of pre-university education intended primarily for those competent for college work, making a total of 12 years. This plan, however, was abandoned in the 1960 scheme, as it was found that 4 years of elementary education did not give sufficient time to prepare for secondary education in a modern age and children
were still inadequately developed when they finished elementary schools. It was also found that almost all secondary-school students wanted to go on to the pre-university level regardless of whether or not they were qualified to go to college.

In compliance with the new scheme, the former 4-year compulsory elementary education is to be gradually extended to 7 years, depending upon the economic ability of the country. Furthermore, secondary education will be geared more to meet the personal-social needs of youth and will be closely associated with the economic development plan of the nation, thus setting a stage for secondary schools with comprehensive programs designed to serve both the college-bound and the youth.

It is thus seen that, under the 1960 National Scheme of Education, more recognition has been shown regarding child development and the principle of equality of opportunities.

Undoubtedly, to achieve the changes as proposed by the new scheme, very careful educational planning is highly necessary. Educational policies and strategies will have to be redetermined.
Teacher Training

On October 12, 1892, King Chulalongkorn first established a teacher training school to train elementary teachers at the so-called Children's Home in Bangkok. From that time until 1927, teacher education continued to grow, slowly but steadily.

Beginning in 1928, important changes were noted. A 3-year elementary teacher training school, admitting graduates of grade 10 or of the preelementary teacher training schools, came into existence. On the higher level there was a 2-year secondary teacher training school, enrolling graduates of grade 12 or of the elementary teacher training school.

From 1932 on, the need for certified teachers became greater and more varied, especially on the secondary level. Therefore, many kinds of secondary teachers began to be trained, such as the vocational secondary teachers, the agricultural secondary teachers, and the physical-education secondary teachers, all on a certificate level.

To cope with rapidly increasing problems regarding

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teacher supply and demand on all levels, the Department of Teacher Training was also established within the Ministry of Education, in 1954. Prior to this date, teacher training had been a function of the Department of Secondary Education.

Pre-service training

Currently, programs for pre-service training of teachers are organized on the following general bases:

(a) A 2-year program after grade 10, leading to the Elementary Teaching Certificate.

(b) A 2-year program (after a), leading to the Secondary Teaching Certificate.

(c) A 4-year program (after a or after grade 12) or a 2-year program (after b), leading to the Degree of Bachelor of Education.

(d) A 2-year program (after c), leading to the Degree of Master of Education.

(e) A 1-year program (after c) for further depth in one particular area, leading to the Higher Certificate for Specialized Teaching.

To train prospective teachers in these various programs, there are now 35 teacher training schools in the country, plus the College of Education and its seven branches. Furthermore, to promote educational research, particularly in the fields of test and measurement and
child study, the Test Bureau of the College of Education and the Bangkok Institute for Child Study are working very closely with the College of Education.

In addition, the Departments of Vocational Education, Physical Education, and Fine Arts train teachers in those special fields in their own schools, on the levels of the Elementary Teaching Certificate and the Secondary Teaching Certificate.

In-service training

(1) The Department of Teacher Training conducts regular annual external examinations for those teachers who wish to upgrade their academic status and professional standing. A special curriculum on the elementary teaching certificate level as well as on the secondary teaching certificate level is designed for external examination purposes. In preparation for these external examinations, teachers may study on their own or may attend special classes held by the Teachers' Institute of Thailand, or other agencies with permission from the Ministry of Education.

(2) The College of Education runs the so-called Twilight School in the evening throughout the year, and the
summer session every year, for the benefit of those teachers who want to work towards the Bachelor of Education degree.

(3) Specialized seminars and conferences are held regularly for teachers by various agencies of the Ministry of Education.

The provision of adequate numbers and of properly qualified teachers at all levels was a continuing problem in 1970. The government's efforts to exploit all possible sources, including the employment of monks, and to increase enrollment in teacher training institutions did not keep pace with requirements. In 1961, there were 14,367 students in teacher training schools; by 1967, enrollment had increased to 27,810.

The failure of teachers' salaries to keep up with the rising cost of living in the 1960's was also a handicap. The shortage of qualified teachers was especially critical in rural areas. Most teachers were trained in Bangkok, where they learned to appreciate the amenities of city life. Many had strong preferences for employment in the larger cities, which tended to perpetuate a condition that found the quality of rural education considerably below that of the cities.
The College of Education in Thailand

In 1954, the School of Higher Teacher Training at Phanmirt, Bangkok, was changed to the College of Education. The law creating this institution authorized it to grant a diploma in education and bachelors' degrees, masters' degrees, and doctors' degrees in education. The college opened with 200 students.

During the years that the College of Education was expanding into the rural areas, it continued to carry out fully its original mandate for the preparation of teachers. In 1955, two branches—one at Bang Saen in Cholburi Province and the other at Patoom Wan in Bangkok—were added as affiliates of the College of Education. Each branch offers a 4-year degree-granting program. The College of Education at Phitsanulok Province (1967) and at Mahasarakam and Song Khla provinces (1968); the College of Education at Pranakorn, Bangkok (1969); and the Physical Education Teacher College (1970, operated by the Department of Physical Education) were introduced. The major purpose of the branches at the provinces is to provide both 2- and 4-year teacher training.

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programs in a provincial area for preparing elementary and secondary teachers.

Beginning in 1954, the College of Education received technical and financial assistance from the International Cooperation Administration/Washington and from the United States Operations Mission to Thailand through a contract with Indiana University. This contract terminated in 1962. During this period, over 100 members of the staff were provided assistance to study abroad. This, together with technical and commodity assistance, has helped the institution to develop a sound education program for preparing teachers.

The College of Education—Prasanmirt, Patoom Wan, and Bang Saen—has a demonstration school, a good library, and a reasonably adequate science laboratory.

In 1955, the Prasanmirt branch of the college opened afternoon classes known as "twilight classes," thus offering its program for in-service teachers. The Twilight Program was extended to Patoom Wan in 1959 and to Bang Saen in 1962. Now, all of the colleges in four provinces have the Twilight Program. Enrollment in twilight classes now exceeds 12,000 students. The College of Education also operated a 6-week summer session for in-service
teachers. In addition, the staff and facilities of the College of Education are frequently used for institutes, conferences, and workshops of professional people.

In June 1961, the college admitted its first graduate students, for the following programs: a 2-year program, leading to the Degree of Master of Education; and a 1-year program for further depth in one particular area, leading to the Higher Certificate for Specialized Teaching.

**Purposes of the college**

The College of Education accepts the following as its major objectives:

1. The preparation of elementary, secondary, and vocational teachers for the schools of Thailand.
2. The preparation of college teachers for the teacher training institution of Thailand.
3. The preparation of educational leaders, administrators, and supervisors, who will work at all levels of education.
4. The preparation of instructional materials for use at the elementary, secondary, and college levels.
5. The in-service education of teachers and educational leaders.
6. The provision of consultant services for educational agencies of Thailand.
7. The conduct of research on educational problems.

The College of Education is organized into five departments and, by July 1972, had 57 divisions as well as additional academic units. The five departments are: (1) the office of president, (2) Department of Educational Research, (3) Department of Education, (4) Department of Humanities and Social Sciences, and (5) Department of Science and Mathematics.

Through an act of law in 1954, the College of Education was placed within the College of Education Board and composed of the Minister of Education, the Undersecretary of Ministry, the president of the college, the vice-president, and the heads of departments. All of these individuals are members of the board by their positions. The other members are appointed to the board by the King. The numbers shall not exceed two-thirds of the number of individuals who are members of the College of Education Board because of their positions.

The Minister of Education is the chairman of the board and the Undersecretary of the Ministry is the vice-chairman. The head of the office of the president is the secretary of the board. Term of membership for appointed members shall be 2 years.

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The Six-Year Plan in Educational Development

In 1960, the Six-Year National Economic Development Plan was drawn up by the government, covering the periods between 1961-1963 and 1964-1966. In conjunction with, and as an integral part of, the said economic development plan, the Six-Year Plan in Educational Development was accordingly devised and put into effect.

Nevertheless, prior to the Six-Year Plan in Educational Development, the Ministry of Education had a development plan of its own which served as a basis for all educational operations. This was the Regional Education Development Project including Higher Education (REDPHE Plan), which, appropriately, later on became the main part of the 6-year educational development plan.

At about the same time, in accordance with the recommendation made by a UNESCO regional conference held in Karachi, an educational development plan was also drawn up for expansion of elementary education from 4 to 7 years, to be implemented in all schools within 2 decades. This plan was widely known as the Karachi Plan. The 7-year

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1Office of the Prime Minister, op. cit., pp. 495-99.
elementary education as suggested by the Karachi Plan was readily adopted by the government, as may be seen in the 1960 National Scheme of Education. The Karachi Plan was later modified to include all phases of education, and thus was prominently reflected in the Six-Year Plan.

In 1963, during the time of the Six-Year Plan, the government appointed a committee to seek foreign loans for further acceleration of educational development, called the Committee on Loan Projects for the Development of Education. This was the first time that foreign loans had been sought for educational development purposes.

Again in 1963, to consolidate and coordinate plans and projects in all educational endeavours, the Educational Planning Office was created within the Office of the Under-secretary, Ministry of Education. This office was to work closely with other planning agencies such as the National Economic Development Board, the National Education Council, and the Government Budget Bureau.

The Five-Year Plan in Educational Development

With the Six-Year Plan rapidly coming to a close in 1966, a new development plan was completed. It was the Five-Year Plan in Educational Development, covering the

This plan was drawn up in close association with the new 5-year economic development plan of the nation. According to the Five-Year Economic Development Plan, a very great demand for middle-level manpower was emphasized. This implied that a considerable number of youth of secondary-school age must be trained vocationally for various occupations as envisaged in the economic plan.

Altogether, there were 58 projects in the Five-Year Plan, 17 of which were new, while the rest were continuations of the ongoing plans. For example, a summary of teacher training projects may be stated as follows: in order to cope with the rapid increase in school population, the teacher training programs would necessarily be expanded. In 1966, the following enrollments were noted: elementary teaching certificate level (grade 12), 14,498; secondary teaching certificate level (grade 14), 3,378; bachelor's and master's degree levels, 1,900. In the last year of the Five-Year Plan, the following enrollments were expected: elementary teaching certificate level (grade 12), 22,200; secondary teaching certificate level (grade 14), 5,200; bachelor's and master's degree levels, 4,300.

In addition, the Physical Education Teacher College
would be required to graduate 1,900 physical-education teachers by the end of the Five-Year Plan.

Statement of the Problem

The College of Education, the first institution of higher learning for the teaching profession in Thailand, was established in 1954 and serves as a model for other teacher training schools. It offers various programs leading to the Bachelor and Master of Education degrees, and the probability of a higher degree in the future. Accordingly, the educational change in Thailand involves an effort to expand the nation's educational system by creating more schools, and to train more degree teachers in order to better educate more students. At the same time, concerning national development, an effort has been made to improve the quality of existing schools and teachers through the use of selected educational innovations. The Ministry of Education has trained a number of degree teachers, according to a plan which is to be used as a guideline for reaching the national goals. The Ministry of Education usually sets up a 5-year plan; normally, this plan is drawn up in close association with the 5-year economic development plan for Thailand. An example is the
Five-Year Plan in Educational Development, covering the period between 1967 and 1971. Of all the planning that has been done in the Ministry of Education, by the Teacher Training seemingly, the one thing that has been covered is the installation of a program to take care of the instructor manpower needs in the College of Education. This problem has interested the public for a long time. Although there was much discussion about the issues centered around manpower needs, no one has made a serious study of the area. The study emphasized in this proposal will try to find the factors that are concerned with manpower in order to organize the instructor manpower needs in the College of Education.

Problem Rationale

In developing countries, the most important thing employed to achieve the objective of work is the planning. With lack of planning, the research shows, many operations will be inefficient and could operate incorrectly. Planning is necessary for administration because it is the guideline to success and attainment of the preconceived goals. A good plan should encourage cooperation and coordination among the people and organizations. It
should eliminate conflict and frustration.

This study will seek to find the model of the instructor manpower needs that involve three variable factors: the students enrolled, the number of courses, and the annual budget. The study will induce further research on this topic. When this plan is implemented, various organizations will be involved in the process of decision-making until the goals established are achieved.

Objectives

The objectives of this study are as follows:

1. To determine the relationship of the variable factors and the instructor manpower needs in the College of Education.

2. To compare the number of instructors and variable factors in each college branch. This will be conducted in order to plan, organize, direct, staff, and control the activities of the College of Education.

3. To create a workable model that could be used to plan, organize, and staff the activities of the College of Education, promoting cooperation and coordination among the people and organizations involved.

Hypotheses

The four hypotheses state that there is a correlation among the three variable factors involved with the
instructor manpower needs in the College of Education. The following three essential factors can be used to organize the instructor manpower needs in the College of Education: students enrolled, number of courses, and annual budget. With this preface, each hypothesis can be stated more meaningfully:

1. Instructor manpower needs in the College of Education will be correlated with the number of students enrolled and the ratio between students and instructors.

2. Instructor manpower needs in the College of Education will be correlated with the number of courses that are approved by the College of Education Board.

3. Instructor manpower needs in the College of Education will be correlated to the college's annual budget. Included in this will be the instructors' salaries and the instructional facilities.

4. Instructor manpower needs in each branch of the College of Education will be correlated with the three variable factors—students enrolled, number of courses, and annual budget—as found in the whole college.

Scope and Limitation of the Study

The study investigates the relationship between the instructors and the three variable factors: students enrolled, number of courses, and the annual budget in the College of Education in Thailand. The study was limited
to the College of Education at: Prasanmirt, Patoom Wan, Bang Saen, Pranakorn, Phitsanulok, Mahasarakam, and Song Khla. The college instructors included in this study were those professional staff members in the organizational divisions of the college. The instructors involved in this study included: (1) admission, registration, and records; (2) finances; (3) student activities; (4) counseling and guidance; and (5) central administration.

The students enrolled were both full- and part-time (twilight) students who were working for bachelors' degrees.

Organization of the Dissertation

Chapter I of the dissertation was devoted to an introduction to the background of education in Thailand which included teacher training, a historical sketch of the College of Education, and a description of the Five-Year Plan in Educational Development. Also included within the first chapter were a statement of the problem, problem rationale, objectives, hypotheses, scope and limitation of the study, and a brief outline concerning the organization of the dissertation.

Chapter II, "Related Literature," contains a review
of literature relating to educational planning in terms of general organization and the need for planning and resource allocation in institutions. Educational accountability is explained, and research relating management by objectives to organizational effectiveness is described.

Chapter III, "Design and Methodology," contains a description of the methods used for data-gathering, the specific questions to be answered by this study, and the treatment of data.

Chapter IV, "Results," serves as a presentation and analysis of data collected in accordance with the purpose of this investigation.

Chapter V, "Summary, Conclusions, and Recommendations," reviews the problem and procedures used, summarizes the findings of the investigation, and presents conclusions and recommendations.
CHAPTER II

RELATED LITERATURE

Overview

Chapter II is divided into two major sections. The first section investigates the area of educational planning in terms of the general organization, the need for planning, and resource allocation in institutions. It further concerns itself with the organization in regard to accomplishing the task and providing the necessary leadership. In the second section, educational accountability is explained in terms of the development of this responsibility in schools. Research that relates management by objectives to organizational effectiveness is described.

Importance of Planning in an Organization

In the developing countries, educational planning is very important to educational system. UNESCO, for instance, has encouraged the setting of general goals and has justified the provision of planning for education. Aid agencies (UNESCO, AID, Alliance for Progress) have sponsored international meetings to encourage underdeveloped countries to
formulate educational plans. The underlying model for this planning covers three elements:

1. Goals are set in terms of the numbers of children who have a fundamental right to be educated.

2. A time period is established within which the goals are to be met.

3. A price tag for the education is calculated on the basis of very rough, sometimes imprecise estimates of unit (per-pupil) costs.

Whatever the goal set at the international level, each country must face its own problems and deal with them within the limits of its own resources. The amount of aid to be forthcoming from international agencies is extremely small in comparison to the need. Concerning the Kenya Development Programme, Davis¹ says:

In the last resort the total size of the educational programme depends on what the country can afford not only in respect of the initial cost of building and equipping new schools but also of subsequently maintaining them.

A planning hierarchy has many facets. The planner must be aware of these facets and must carefully define their inclusion in, or exclusion from, the planning process. A hierarchy of planning could evolve by virtue of stated

organizational delimitations or formulation of the economic value or structure of the organization. In this manner, planning hierarchies specific to predetermined planning goals and objectives could be built.

The planner needs an overriding systematic way of approaching planning problems. Hansen¹ offers a hierarchy which should be most useful in providing a framework for the planning process: (1) identification of problem, (2) diagnosis of the problem situation, (3) clarification of the diagnostic findings, (4) search for solution, (5) mobilizing for change, and (6) making the actual change decisions. These six items reflect an objective, rational approach to planning. If adhered to by the planner, the process should assist in determining viable alternatives for programs.

Davis² stated that to plan any program of human resource development, from literacy to university education, developing countries must follow a model which provides an estimate of the number to be accommodated in the


²Davis, op. cit., pp. 10-11.
program. This model must permit the country to program a balance between what it would like to do and what it can and must do. What most countries would like to do, if they could, is to offer universal education through primary school, and sometimes through secondary school. What most countries must do is produce sufficient numbers of educated and trained people to staff government and private institutions and man the economy.

What most countries can do is to strike the optimal balance between aspirations and resources. The first step is the planning of an educational program that will produce some meaningful results. The second step is determining the minimal unit costs of these programs. But the minimal unit cost is not one that provides a result so substandard that no meaningful result is achieved; it is, rather, one that yields a product at some standard. That standard is assessed by measurement of achievement and performance. When the quality and the cost of the program are set, it is appropriate to assess the resources that will be available and thereby determine the numbers that can be accommodated. If this number is smaller than the number minimally required, greater effort and larger resources must be provided, or the social and economic development
aspirations must be scaled down. But the educational product should never be diluted to reach mere number goals.

Universal education through primary and secondary school may be the only appropriate ultimate goal, but the models will be addressed to attainable goals. The models are meant for technicians. They are offered with full sympathy for politicians who may still be forced to go on with public promises of universal education, even when they know that their country does not have the resources to provide it.

Education at all levels, from literacy to university programs, contributes to social and economic growth; but developing countries cannot plan on so simple a basis as "the more education, the better."

Casasco\(^1\) presents the need for planning by stating:

Orderly growth and efficient resource allocation in universities requires a systematic and coherent way of planning ahead, by envisioning the scope and direction of instructional development. Although university administrators recognize the need for charting the future course of their instructions, planning is one of the least understood functions of administration.

To bring the meaning and purpose of planning into clearer focus, one must know such basic concepts as:

The university is structured conceptually as a set of interconnected functional sectors or subsystems: (a) students; (b) production (academic and nonacademic); (c) resources (personnel and physical facilities); (d) administrative control.

A recent report by Koening\(^1\) stated that the objective of higher education cannot be defined apart from the economic and social context in which the university operates. The model designed to aid university administrators in the overall allocation of resources consists of sets of equations that describe the relationship of resources to production and, based on these, the associated unit costs of production. Resources (input) are described as personnel, space, and equipment; production (output) is described as developed manpower, research, and public or technical services. The model does not tell the decision-maker how to create a more effective educational institution, but provides him with a tool for evaluating the changes in the

types of resources or the potential economic gain which could result from proposed changes in the design of the institution.

Ramseyer\(^1\) believes that the academic department is neither functionally nor philosophically appropriate for a professional college. Academic departments have grown up around traditional disciplines or compartments of knowledge. But professional colleges place great importance upon what man does with his knowledge and his total education. For example, a professional college of education must concern itself with aspects of teaching or educating. This is a function which relates to the development of human beings not only as persons, but as persons whose unique science and art is that of facilitating learning knowledge and how to apply it. The professional college achieves its functions best when it is working in harmony with, and in relationship to, large "knowledge chambers" in order to use this knowledge for its own ends. However, professional colleges err when they assume that the distribution of their functions is analogous to the

classification or compartmentalization of knowledge which makes up the disciplines of the liberal arts college. Ramseyer says that the professional college of education, for example, has four major functions:

1. To prepare personnel for professional teaching and leadership positions in a variety of educational institutions (from preschool through university and in both formal and informal institutional settings).

2. To contribute to the understanding of education as a body of knowledge.

3. To contribute to the development of institutional organizations (both formal and informal) and service systems to facilitate teaching and learning.

4. To provide leadership in effecting planned change in existing educational institutions in terms of need and accumulated knowledge about education.

The college of education is the agency of the university charged with the chief responsibility for leadership in designing and executing programs for the preparation of personnel who expect to become professionals in this field. This is not to say that the modern college of education does, or can even be prepared to, carry on this function completely. Rather, it is the college in the university setting which (1) assumes the leadership for determining what should be included in a preparation program for
educational personnel; (2) determines what can be done toward this end by departments of related colleges; (3) determines what is uniquely the function of departments of the college of education; and (4) facilitates the implementation of these efforts. Specifically, then, the college:

1. Plans cooperatively with departments, schools, and colleges of the entire university to make appropriate arrangements for the performance of those functions which each department can do best (provide an appropriate knowledge base).

2. Distinguishes between the knowledge base provided in a congenial and cooperative university working environment and the provision of professional learning experiences which are distinctly the role of the staff of the college of education.

3. Provides an appropriate learning environment in which the prospective educator may learn, through theory and its applications in practice, the many aspects of professional knowledge which contribute directly to his role as a professional educator.

4. Provides an opportunity for the development of leadership or some other specialized competency in various aspects of education by giving the student the opportunity to view and evaluate the educational process from several viewpoints: those of his professional colleagues, those of other professional and knowledge-developing disciplines, and those of practitioners.

If we look at how knowledge contributes to learning and how people have organized to bring knowledge-acquiring
and learning together and analyzed, and if we look at the
social and governmental means at our disposal to facilitate
learning, we shall see the school as a social system, with
teaching, guiding, supervising, and administering as inter-
related subsystems. We shall also have a rationale for
program units in the professional college. Consider, for
example, a department of administration in the college.
The contribution of administration, as one of these sub-
systems, to the total task of the college depends upon
decisions as to the common elements of the several subsys-
tems and the unique contributions to be made by the admin-
istration subsystem.

In many cases, education practices that are effective
in one setting simply do not produce what is wanted in
another. Miles\(^1\) suggests that incongruence between the
innovation and the potentially accepting system may account,
in part, for such failures. No two educational environ-
ments are exactly alike, for the requirements are differ-
ent, the problems are different, and the people are cer-
tainly different. It is therefore unlikely that outcomes

\(^1\)Miles, M. B., "Educational Innovation: The Nature of the Problem." In M. B. Miles (ed.), *Innovation in Edu-
cation*. New York: Teachers College Press, Columbia Uni-
can ever be identical.

Because of such considerations, it is clear that educators should develop procedures that will enable them to adapt materials and practices to fit a particular situation. While such a procedure would resemble what is often called educational research and development, Romine suggests that the procedure that is used should take into account several considerations, all of which are important to the innovative teacher.

(1) The procedure should be based on the fact that educational environments, as well as educators themselves, differ greatly. An educational program, with its processes, tools, system, and approach, may produce positive results in one environment but in the hands of another person be anything but effective.

(2) A field development procedure should emphasize the necessity of evaluation and revision. This imperative grows out of the fact, implied above, that educational programs and procedures cannot be accepted by reputation, but must be tested and shaped to the environment and the

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working situations of others who will use them.

(3) Any field development procedures should combine method and research in such a way that they become interrelated, if not inseparable. Relatively little is known about some extremely important variables in education, e.g., how certain personality and environmental characteristics affect rates of learning.

(4) The field development procedure should be so general that it can be used in a variety of situations, yet specific enough to bring about results whenever positively applied.

(5) Anyone who participates in field development should take into account that a solution to one problem will often affect other aspects of the environment and may, in some cases, actually produce a new set of problems elsewhere in the institution.

"It is readily apparent that our society has come to depend to an increasing degree on work which is performed by groups and teams, rather than by individuals working alone. The days of isolated individuals and independent living have long since disappeared from the scene. In view of this increased organizational complexity of life, the importance of groups organized to accomplish the myriad
tasks faced by our society has become evident. Whenever individuals are brought together as a group, the coordination and the effective use of individual efforts toward a common group goal require leadership, as it is readily evident that assembling capable individuals into a group does not necessarily insure teamwork. Fiedler,\(^1\) in his leadership studies, emphasized:

To determine why some groups become effective and why others disintegrate or remain only marginally productive is, therefore, of considerable importance to any agency or organization which must rely on teams.

Recent efforts to accomplish the determination have resulted in a great deal of research concerned with leadership. Much research has attempted to discover: What do we really know about leaders and leadership? Beginning efforts in the study of leadership focused primarily upon the leader. Early researchers shared, with the average man, a fundamental bias in regard to leadership. They were influenced by the tendency to see persons as originators of actions, and thus believed that leadership behavior originated from the personal qualities of the leader.

Biased in this manner, the early research effort gave too little attention to the contributions of the group structure and situations for such behavior.

In their efforts to broaden the base of their considerations, Maslow,\(^1\) McGregor,\(^2\) and others have concerned themselves with human needs as a point of inquiry. Hierarchies of such needs developed by these writers have been quite similar. They generally follow a pattern such as the one advanced by McGregor, which moves in a sequenced manner from the basic physiological and safety needs at the lower end of the hierarchy to the self-fulfillment needs for realizing one's own potentialities, continued self-development, and creativity at the opposite end of the continuum. Extending the hierarchy-of-human-needs position, Maslow has explained:

> Behavior is dominated by the need which has the strongest potency at a given time. After satisfaction at that (lower) level, motivation goes up the hierarchy to esteem needs and self-actualization.

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More recently, Getzels' recognition of the two dimensions of organizational behavior—the idiographic and monothetic considerations—provides a useful theoretical model of organizational behavior which parallels the earlier concerns of McGregor. Similarly, Presthus, in his writings from the field of organizational theory, delineated two types of organizational goals. Presthus referred to goals associated with productivity and broader organizational purposes as "manifest" goals. The goals associated with individual needs of the actors in the organization he called "latent" goals. Presthus contends that these latent or unofficial goals are not only legitimate, but actually assist the organization in achieving its official goals. Halpin and Croft attempted to describe and define organizational climate. The "open climate" as described by them appears to provide ample opportunities

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3Halpin, Andrew W. and Croft, Donald B., Organizational Climate of Schools. Chicago: Midwest Administration Center, University of Chicago, 1963.
for the desired self-actualizing behavior:

The open climate depicts a situation in which the members work well together and enjoy friendly relations. . . . The behavior of the administrator is characterized by the genuineness and flexibility of his actions. . . . He creates a climate in which the teachers produce easily and in which acts of leadership may emerge from any source.

Such an organizational climate would also lead the organization toward an experience of continuous "self-renewal," as called for by Gardner.¹ According to Gardner, if an organization is to develop continuous self-renewal capabilities, it must have an effective program for recruitment and individual development, recognizing that people are the ultimate source of renewal; it must have built-in provisions for self-criticism which depend upon an openness of communication channels; and, finally, the organization must be interested in what it can become, rather than what it has been.

The preceding theoretical arguments—representing, at best, only a fraction of the significant material in this area—state very clearly the necessity for the healthy organization to make adequate provision for wide participa-

tion in problem-solving. Concomitantly, increased communications between and within all levels of the organization are required if effective decision-making is to occur. As stated, the increasing complexity of the organization and its tasks requires professional staff—administrators and teaching faculty—who are more highly specialized themselves.

Educational Accountability and Management by Objectives

The issue of accountability received high priority in education in the early 1970's and has caused educators to seek new methods of managing education. Mortimer pointed out that the term "accountability" first appeared in the Education Index in June 1970. But the idea of this word is not new. Sherman said:

"Payment by Results" was a feature of colonial British education policy during the nineteenth century in West Africa. The Education Code of Sierra Leone in 1870 provided for a "result" grant of expense for each pass in an examination.

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in the three R's. This policy was followed in Gambia, the Gold Coast and Nigeria. The policy was an imitation of English system which was abandoned in England in 1897.

The concept of holding schools accountable for how they spend their money as measured by output in the form of student achievement is of very recent origin, at least on the national level. Beyond this, it has always been taken for granted that more money was, in most cases, the answer to educating our children: that with the addition of money to buy more teachers, more equipment, and more visual aids, the quality of education would naturally rise. Austin\(^1\) shows that two recent findings concerned with education are probably responsible for raising questions about accountability:

1. The lack of success that has been almost universal across the country in attempting to raise markedly the achievement level of children . . . . Although we have increased teacher salaries, reduced classroom size, and bought additional audio-visual aids, we do not seem to have greatly raised these children's academic abilities.

2. We have the results of an evaluation study entitled "Equality of Educational Opportunity Survey," done by James Coleman. That

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particular survey indicated that the schools, the people who ran them, the way they were organized, or almost any other variable, seemed to have little effect upon the performance of children as measured by standardized achievement tests.

Recently, Cohen suggested that one of the reasons school systems have not proven to be more successful in meeting educational needs of children is that the incentives and reward structures set up in the schools have almost nothing to do with the quality of the children's performance. There is growing evidence that the interests of the professional educator and those of the children are rather different. That is, the children's major interest should be that of being educated; for doing this well, the professional ought to be rewarded. This does not commonly seem to be true. For instance, we have a great deal of information on the performance of the students, but we have almost no information on the performance of the school. With great regularity, children are identified as having failed. There is almost no instance in which the school has been identified as having failed, although it is

obvious that it frequently does. As a result of a much
greater questioning attitude, there has emerged a quest
for alternatives to the present public educational system
with its built-in, professionally guarded system.

Public education is expensive. Educational budgets
have soared upward in recent years to meet the needs of
more students and the demand for higher quality of educa-
tion. It is widely recognized that, statistically, a posi-
tive correlation exists between the income of an individual
and the number of years of formal education he has com-
pleted. Thus, from the standpoint of an individual, the
investment of time and money in his education is not only
economically rewarding, but also, and perhaps more impor-
tantly, rewarding both personally and socially. For soci-
ety, it is economically beneficial for the masses of its
people to be well educated. As stated by noted economist
Samuelson 1 of the Massachusetts Institute of Technology:

Investing in equipment might yield society an
interest return of, say, 10 or 15 per cent per
annum. If investing in people, by providing
more in the way of education, can step up their
economic productivity greatly—and the record
suggests that this is indeed true—then society

1 Samuelson, Paul A., Economics: An Introductory Anal-
ought likewise to spend more for education to promote growth.

The benefits from education of the masses are both individual and collective. Therefore, public education merits and receives wide public support. As Durost has pointed out, many people concerned with education have taken the position that it is essential for the schools to show hard data to prove that the enormous amounts of money being spent are producing some positive results. Thus, the term "accountability" has come into vogue, and it is very much the "in" thing to talk about. "Accountability" as defined by Webster's Third New International Dictionary means "the quality or stage of being accountable; liable or responsible." When that term is applied to education, the basic idea seems to be that the individual or individuals carrying out some assigned task are to be held accountable for their performance. There is a demand for positive proof to present to the board of education at the state or local level—or of the Congress—that the programs have been successful as measured against a carefully stated set of objectives which have been drawn up before the project.

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is put into action. The problem facing the schools is how to meet this demand without destroying public education in the process by destroying the confidence the public has in its schools.

Now, in 1974, the term has become a familiar part of the vocabulary that deals with administrative and management concerns in education. This growth of interest in accountability in educational circles has been evident not only by the increase of writing and speeches on that subject, but also by an increase in practices which have met the accountability criterion. In 1971, 29 states in the United States were working toward constructing an educational accountability approach to state educational management. Education at all levels has become cognizant of the need to be accountable to constituents for the effective and efficient use of the resources committed to education.

Mortimer pointed out that higher education has been facing increasing constituent concern about the management

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2Mortimer, op. cit.
of higher education and has attempted to relate managerial efficiency to educational effectiveness. Millett,¹ in a keynote address at a national conference, discussed management. Two of the forces contributing to this crisis, according to him, were that (1) the general public does not believe that colleges are effectively managed, and that (2) there is an absence of unique management techniques to solve problems in higher education. Hodgkinson² attempted to define the issue dealing with accountability when he said: "The question really is, are we willing to state what it is we think we do for and to students?"

The issues raised in current discussions of accountability in education are certainly not new issues in education, even though their currency on a wide scale in education is recent. As early as 1940, Tyler³ pointed out

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²Hodgkinson, Harold L., "How can We Measure the Value Added to Students by a College of Education?" The Chronicle of Higher Education, November 13, 1972, p. 10.


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that evaluation fundamentally was a process for finding out how far the objectives were being realized. In his widely studied educational syllabus, *Basic Principles of Curriculum and Instruction*, Tyler listed four questions which he identified as fundamental to the development of curriculum and instruction:

1. What educational **purposes** should the school seek to attain?
2. What educational **experiences** can be provided that are likely to attain these purposes?
3. How can these educational experiences be **effectively organized**?
4. How can we determine whether these purposes are being attained?

These questions have current applicability to the discussion of accountability in education. Educators have for some time understood the concept that goals and purposes in education must be clarified if there is to be purposeful activity toward goals and if there is to be appropriate evidence that indicates progress toward or attainment of goals.

Educators who have searched for methods to administer education in an accountable manner have found that the system of management used in business and industry, which

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is called "management by objectives," has potential for higher education. Bogue\(^1\) examined four managerial styles: (1) management by crisis, (2) management by objective, (3) management by exception, and (4) management by perception. He stated that management by objectives (MBO) assumes a more rational attempt to control the direction of organized activity. For one thing, the objectives provide an unambiguous foundation for evaluating processes. A second advantage of defining objectives is that it helps us to examine the processes and input necessary for accomplishing goals. A system is generally conceived to have the elements of "input," "process," and "output." These three elements are connected by a "feedback loop," which insures capacity of the system to adapt.

MBO is a system of management which begins by defining output. Statements of output are used as criteria by which to judge the quality of activity (behavior). Output statements are also used to govern the release of input. Odiorne\(^2\)

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described MBO as follows:

MBO is a system under which the manager and subordinate sit down at the beginning of each period and talk until agreement upon job goals is achieved. During the period, the subordinate is given wide latitude in choice of method. At the end of the period the actual results are jointly reviewed against agreed upon goals, and an assessment of the degree of success made. The process is begun again.

The interest in the use of MBO in higher education has become widespread. In November 1972, the Catholic University of America in Washington, D.C., called the First National Conference on Management by Objectives in Higher Education to inform educators about the applicability of MBO to higher education. Approximately 200 persons concerned with higher education attended the conference. Training conferences, like the one conducted by William Rainey Harper College in January 1973, are scheduled with increasing frequency to teach higher education administrators how to implement the system of MBO. Shotzberger, reflecting on administration in higher education, stated:

We need to learn more about managing by objectives. This means more than our important,

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but not specific, statement of purpose. We should be stating objectives in terms of quantities and qualities of output, at what costs, with what resources, and by what devices.

Since Drucker\(^1\) coined the term "management by objectives," there has been continued interest in results-oriented systems of managing. MBO can be described as a systematic method of answering three questions vital to management: (1) Where are we going? (2) How will we get there? and (3) How will we determine when we have arrived?

The MBO system is based on the premise that if objectives or results expected of persons or groups are carefully defined and stated, then the likelihood of attainment of such objectives is great. In addition, the system stresses the need of attention to the motivational forces present when people work effectively.

The systematic approach of MBO toward objective planning and attainment has been accepted widely throughout business and industry. Business management has shifted from an activity orientation to a results orientation. Objectives, output, results, or ends that are clearly defined govern the release of input resources and, finally,

are the criteria by which to judge the quality of activity. Odiorne\(^1\) emphasized that objectives must be defined before energy or resources are released to achieve them.

The great use of MBO in business and industry (and its increasing use in education) came about despite the lack of research to support or refute its use. Ivancevich\(^2\) said:

> A vital question is whether MBO has been able to accomplish the planning, controlling, and motivation objectives claimed by its advocates. From scientific and empirical points of view, this question is yet unanswered.

Studies by numerous scholars (Drucker, 1954; Odiorne, 1965; Howell, 1967; Gell and Molander, 1970; Odiorne, 1971) emphasize both the positive and negative attributes of dynamic MBO programs. These works are primarily descriptive studies or, at most, case analyses that do not examine the cost and benefits of MBO with scientific vigor.

Babcock,\(^3\) in a doctoral research study, reported that


the fundamental change in all successful MBO programs is
the creation of managerial role stability. After analyzing
three different enterprise environments, he specified cer-
tain conditions that must exist in an MBO environment.
Among the findings listed are:

1. MBO can have an almost immediate favorable
effect on organization effectiveness and
efficiency, provided its implications are
preceded by careful planning.

2. MBO is a durable and continuing way to
insure organization effectiveness and
efficiency, assuming continued attention
is paid to its implementation and adminis-
tration and provided the environment
remains favorable.

3. MBO has virtually untapped potential for
improving the relationships, communication,
and coordination among managers in the
lateral subunits of a firm.

Although research on the use of MBO in education has
not been reported, advocates of the MBO system have
reported cases of implementation and use of MBO with many
organizational benefits.¹ Hacker² scrutinized the problems

¹Lahti, Robert E., Harper College Organizational Devel-
oment and the Implementation of a Management by Objectives
System in an Educational Environment. Palatine, Ill.: Wil-
liam Rainey Harper College, 1970; and Lahti, "Management by
Objectives." College and University Business, LI (July
1971), 31-33.

²Hacker, Thorne, "Management by Objectives for School." 
Administrator's Notebook, XX (November 1971), 4.
of MBO rather than the successes. He emphasized that subordinates are unwilling to maximize their risk by accepting challenging goals, since the chance of failure is increased. Hacker also pointed out that the high premium on measurability of objectives often results in quantifiable goals which are insignificant. He concluded that "unanticipated and undesirable effects can be expected from introducing MBO into a school system" and that "means are needed of assessing how well it serves its intended purposes and at what cost to other components of the school system."

Collins reviewed the literature about MBO to determine its implications for community colleges. He emphasized that "the amount of research concerned with the applications and effectiveness of MBO is rather limited." Collins pointed out that the use of MBO was increasing at a much more rapid rate than subsequent knowledge about it. Although perturbed by the lack of research evidence, he concluded from a study of MBO systems that "MBO has sufficient advantages that should make it potentially more

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effective than traditional management systems." He also stated that "concepts of MBO are extremely applicable to community college administration."

MBO was being used by many organizations because of its sound theoretical base and its prospect for increasing organizational effectiveness. However, there was a lack of empirical evidence that MBO increases organizational effectiveness. Although a beginning at such research has been made in business situations (management experts claim that MBO serves four managerial needs: planning, improved communication, motivation of employees, and coordination of systems),¹ there was a dearth of such research and evidence in education.

¹Lahti, "Management by Objectives," op. cit., p. 31.
CHAPTER III

DESIGN AND METHODOLOGY

Review of the Problem

The major task of this study was to determine the relationships among the following selected variables: the number of instructors, students enrolled, the number of courses, and the annual budget(s) of the College of Education in Thailand. The College of Education in Thailand consists of seven branches: Prasanmirt, Patoom Wan, Bang Saen, Phitsanulok, Mahasarakam, Song Khla, and Pranakorn. The major analysis consisted of comparing the model of the instructor manpower needs in each of the seven branches of the college with the four variables named above as found in the college as a whole. The purpose of this chapter is to describe the data collection procedures and the model for analysis of the data.

Collection of Data

The data used for the study cover the years 1965-1974. The data were obtained from the main record files that are available in the President's Office in each college branch.

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This information includes: the number of instructors, the number of students enrolled, the number of courses, and the annual budget of the college branch.

Procedures

The head of the President's Office in each of the college branches was initially contacted by a letter, which contained a form to be filled out (see Appendix A). The letter briefly described the nature of the study and specified the data needed. After a 6-month period, the heads of the President's Office who had not returned the data by mail were sent a follow-up letter asking them to respond with the pertinent information (see Appendix B). The requested data were ultimately acquired from all seven college branches.

The number of instructors in each college was the main criterion measured in this study. Therefore, the dependent variable was the number of instructors in the colleges. The number of students enrolled, the number of courses, and the annual budgets were the first, second, and third independent variables, respectively.
Data Analysis

For purposes of this study, the variables were partitioned in the following manner:

1. The number of instructors (whole college and each branch).
2. The number of students enrolled (whole college and each branch).
3. The number of courses taught (whole college and each branch).
4. The annual budgets (whole college and each branch).

A correlation analysis was used to determine the nature and extent of relationships between the dependent and independent variables. The correlations were used to answer the following questions:

H1: What is the relationship between the number of instructors and the number of students enrolled in the College of Education in Thailand?

la: What is the relationship between the number of instructors and the number of students enrolled in the College of Education Prasannirat?

lb: What is the relationship between the number of instructors and the number of students enrolled in the College of Education Patoom Wan?

lc: What is the relationship between the number of instructors and the number of students enrolled in the College of Education Bang Saen?
1d: What is the relationship between the number of instructors and the number of students enrolled in the College of Education Phitsanulok?

1e: What is the relationship between the number of instructors and the number of students enrolled in the College of Education Mahasarakam?

1f: What is the relationship between the number of instructors and the number of students enrolled in the College of Education Song Khla?

1g: What is the relationship between the number of instructors and the number of students enrolled in the College of Education Pranakorn?

H₂: What is the relationship between the number of instructors and the number of courses in the College of Education in Thailand?

2a: What is the relationship between the number of instructors and the number of courses in the College of Education Prasanmirt?

2b: What is the relationship between the number of instructors and the number of courses in the College of Education Patoom Wan?

2c: What is the relationship between the number of instructors and the number of courses in the College of Education Bang Saen?

2d: What is the relationship between the number of instructors and the number of courses in the College of Education Phitsanulok?
2e: What is the relationship between the number of instructors and the number of courses in the College of Education Mahasarakam?

2f: What is the relationship between the number of instructors and the number of courses in the College of Education Song Khla?

2g: What is the relationship between the number of instructors and the number of courses in the College of Education Pranakorn?

H₃: What is the relationship between the number of instructors and the annual budgets in the College of Education in Thailand?

3a: What is the relationship between the number of instructors and the annual budget in the College of Education Prasanmirt?

3b: What is the relationship between the number of instructors and the annual budget in the College of Education Patoom Wan?

3c: What is the relationship between the number of instructors and the annual budget in the College of Education Bang Saen?

3d: What is the relationship between the number of instructors and the annual budget in the College of Education Phitsanulok?

3e: What is the relationship between the number of instructors and the annual budget in the College of Education Mahasarakam?
3f: What is the relationship between the number of instructors and the annual budget in the College of Education Song Khla?

3g: What is the relationship between the number of instructors and the annual budget in the College of Education Pranakorn?

The Pearson product-moment correlation coefficient (the Pearson $r$) was used to compute the relationship between dependent and independent variables.\(^1\) The data obtained from the colleges were teletyped into the computer at Western Michigan University. A computer program named "Compute the Correlation Matrix for All Variables"\(^2\) was used for the purposes of this study. It was decided that significance would be at the .05 level or less for this study.

$H_4$: The product-moment correlation coefficient between the number of instructors and the three variables (students enrolled, number of courses, and annual budgets) is not different in each college branch and the whole college.

Hypothesis 4 was tested by comparing all of the


product-moment correlation coefficients that were found in Hypotheses 1, 2, and 3 and subhypotheses 1(a, b, c, d, e, f, g), 2(a, b, c, d, e, f, g), and 3(a, b, c, d, e, f, g). This comparison was made by the use of the z-test based on Fisher's Z-transformation of \( r \).

The \( .05 \) level was established as the criterion for statistical significance.

Chapter III reviewed the problem and described the data collection procedures and the model for data analysis. Research findings are presented and discussed in Chapter IV.

CHAPTER IV

RESULTS

In Chapter IV, results of the analysis of data related to questions proposed in Chapter III are presented. An introductory section is followed by a discussion of the findings. The findings are discussed in two sections: one section encompassing Hypotheses 1, 2, and 3, and the other section pertaining to Hypothesis 4. The results of each research hypothesis are presented in subsections, according to the subhypotheses under discussion.

Introduction

The specific purpose of this study was to gain information relative to the following questions:

1. Is there a relation between the number of instructors and the number of students enrolled in the College of Education in Thailand and all of the college branches?

2. Is there a relation between the number of instructors and the number of courses in the College of Education in Thailand and all of the college branches?

3. Is there a relation between the number of instructors and the annual budgets in the College of Education in Thailand and all of the college branches?
4. Is there a difference between the correlations among the four variables (number of instructors, number of students enrolled, number of courses, and annual budgets) in the College of Education in Thailand and all of the college branches?

Findings and Discussion

**Hypotheses 1, 2, and 3**

What is the relationship between the number of instructors and the number of students enrolled ($H_1$), the number of courses ($H_2$), and the annual budgets ($H_3$) in the College of Education in Thailand?

A correlation matrix was used to show the Pearson $r$. These correlations, shown in Table 1, indicated that there

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlation Matrix Among Four Variables Classified by the College of Education in Thailand</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Instructors</th>
<th>Students</th>
<th>Courses</th>
<th>Budgets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructors</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>0.9912*</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses</td>
<td>0.9906*</td>
<td>0.9891*</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Budgets</td>
<td>0.9823*</td>
<td>0.9939*</td>
<td>0.9890*</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

*Significant at the .01 level.

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were positive relationships between the number of instructors and the number of students enrolled ($H_1$), the number of courses ($H_2$), and the annual budgets ($H_3$) in the College of Education in Thailand. The absolute values for all of the correlations were very high.\footnote{Fox, David J., \textit{The Research Process in Education}. New York: Holt, Rinehart and Winston, Inc., 1969. P. 225. For evaluating size of a correlation, Fox uses an absolute scale. He considers that "if $r = \pm 0.50$ the absolute value is low, since at best 25 percent of variance is shared. From $r = \pm 0.70$ to $\pm 0.86$ the absolute value is high. Then if the correlation is above $\pm 0.86$, it would be considered very high, for here more than 75 percent of the variance is shared."} The distribution of the number of instructors and the number of students enrolled shared 98 percent of their variance.\footnote{loc. cit., p. 219. "We arithmetically square the correlation, multiply it by 100, and then read it as the percent of variance shared by the two distributions."} The distribution of the number of instructors shared 98 percent of their variance with the number of courses, and shared 96 percent of their variance with the annual budgets.

Subhypotheses 1a, 2a, and 3a

What is the relationship between the number of instructors and the number of students enrolled (1a), the number of courses (2a), and the annual budget (3a) in the College of Education Prasanmirt?

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1 $-$ Fox, David J., \textit{The Research Process in Education}. New York: Holt, Rinehart and Winston, Inc., 1969. P. 225. For evaluating size of a correlation, Fox uses an absolute scale. He considers that "if $r = \pm 0.50$ the absolute value is low, since at best 25 percent of variance is shared. From $r = \pm 0.70$ to $\pm 0.86$ the absolute value is high. Then if the correlation is above $\pm 0.86$, it would be considered very high, for here more than 75 percent of the variance is shared."

2 $-$ loc. cit., p. 219. "We arithmetically square the correlation, multiply it by 100, and then read it as the percent of variance shared by the two distributions."
The correlation matrix in Table 2 revealed that there were positive relationships between the number of instructors and the number of students enrolled, and between the number of instructors and the annual budget in the College of Education Prasanmirt. The absolute values of the correlations were very high. There was negative relationship between the number of instructors and the number of courses, however; this college offers more graduate courses than undergraduate courses. The distribution of the number of instructors shared 92 percent of their variance with the number of students enrolled; shared 18 percent of their variance with the number of courses; and shared 93 percent of their variance with the annual budget.

Table 2

Correlation Matrix Among Four Variables Classified by the College of Education Prasanmirt

<table>
<thead>
<tr>
<th>Variable</th>
<th>Instructors</th>
<th>Students</th>
<th>Courses</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructors</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>0.9582*</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses</td>
<td>-0.4299</td>
<td>-0.2178</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>0.9639*</td>
<td>0.9412*</td>
<td>-0.2327</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

*Significant at the .01 level.
Subhypotheses 1b, 2b, and 3b

What is the relationship between the number of instructors and the number of students enrolled (1b), the number of courses (2b), and the annual budget (3b) in the College of Education Patoom Wan?

The correlation in Table 3 shows that there was positive relationship between the number of instructors and the number of students enrolled in the College of Education Patoom Wan. The absolute value was very high. There were negative relationships between the number of instructors and the number of courses, and between the number of instructors and the annual budget. The absolute values

Table 3

Correlation Matrix Among Four Variables Classified by the College of Education Patoom Wan

<table>
<thead>
<tr>
<th>Variable</th>
<th>Instructors</th>
<th>Students</th>
<th>Courses</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructors</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>0.9334**</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses</td>
<td>-0.5429</td>
<td>-0.5793</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>-0.7647*</td>
<td>-0.7508*</td>
<td>0.6408*</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

**Significant at the .01 level.
were low and moderate, respectively. The distribution of the number of instructors shared 87 percent of their variance with the number of students enrolled; shared 29 percent of their variance with the number of courses; and shared 58 percent of their variance with the annual budget.

Subhypotheses 1c, 2c, and 3c

What is the relationship between the number of instructors and the number of students enrolled (1c), the number of courses (2c), and the annual budget (3c) in the College of Education Bang Saen?

The results of the correlation matrix as reported in Table 4 suggest that there was a positive relationship

Table 4

Correlation Matrix Among Four Variables Classified by the College of Education Bang Saen

<table>
<thead>
<tr>
<th>Variable</th>
<th>Instructors</th>
<th>Students</th>
<th>Courses</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructors</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>0.9803*</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses</td>
<td>0.2264</td>
<td>0.3246</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>0.2753</td>
<td>0.2122</td>
<td>0.1812</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

*Significant at the .01 level.
between the number of instructors and the number of students enrolled in the College of Education Bang Saen. The absolute value was very high. There were negative relationships between the number of instructors and the number of courses, and between the number of instructors and the annual budget. The distribution of the number of instructors shared 96 percent of their variance with the number of students enrolled; shared .05 percent of their variance with the number of courses; and shared .08 percent of their variance with the annual budget.

Subhypotheses 1d, 2d, and 3d

What is the relationship between the number of instructors and the number of students enrolled (1d), the number of courses (2d), and the annual budget (3d) in the College of Education Phitsanulok?

Correlations reported in Table 5 indicated positive relationships between the number of instructors and the number of students enrolled; between the number of instructors and the number of courses; and between the number of instructors and the annual budget in the College of Education Phitsanulok. The absolute values for all of the correlations were very high. The distribution of the number
Table 5

Correlation Matrix Among Four Variables Classified by the College of Education Phitsanulok

<table>
<thead>
<tr>
<th>Variable</th>
<th>Instructors</th>
<th>Students</th>
<th>Courses</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructors</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>0.9773*</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses</td>
<td>0.9303*</td>
<td>0.9737*</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>0.9849*</td>
<td>0.9841*</td>
<td>0.9639*</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

*Significant at the .01 level.

of instructors shared 96 percent of their variance with the number of students enrolled; shared 87 percent of their variance with the number of courses; and shared 98 percent of their variance with the annual budget.

Subhypotheses 1e, 2e, and 3e

What is the relationship between the number of instructors and the number of students enrolled (1e), the number of courses (2e), and the annual budget (3e) in the College of Education Mahasarakam?

An inspection of the correlations in Table 6 showed that there were positive relationships between the number of instructors and the number of students enrolled; between
Table 6
Correlation Matrix Among Four Variables Classified by the College of Education Mahasarakam

<table>
<thead>
<tr>
<th>Variable</th>
<th>Instructors</th>
<th>Students</th>
<th>Courses</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructors</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>0.9851*</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses</td>
<td>0.9947*</td>
<td>0.9967*</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>0.9716*</td>
<td>0.9631*</td>
<td>0.9506*</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

*Significant at the .01 level.

The number of instructors and the number of courses; and between the number of instructors and the annual budget in the College of Education Mahasarakam. The absolute values for all of the correlations were very high. The distribution of the number of instructors shared 97 percent of their variance with the number of students enrolled; shared 99 percent of their variance with the number of courses; and shared 94 percent of their variance with the annual budget.

Subhypotheses 1f, 2f, and 3f

What is the relationship between the number of instructors and the number of students enrolled (1f), the

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number of courses (2f), and the annual budget (3f) in the College of Education Song Khla?

Correlations reported in Table 7 indicated positive relationships between the number of instructors and the number of students enrolled; between the number of instructors and the number of courses; and between the number of instructors and the annual budget in the College of Education Song Khla. The absolute values for all of the correlations were very high. The distribution of the number of instructors shared 88 percent of their variance with the number of students enrolled; shared 85 percent of their variance with the number of courses; and shared 94 percent of their variance with the annual budget.

Table 7

Correlation Matrix Among Four Variables Classified by the College of Education Song Khla

<table>
<thead>
<tr>
<th>Variable</th>
<th>Instructors</th>
<th>Students</th>
<th>Courses</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructors</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>0.9404*</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses</td>
<td>0.9232*</td>
<td>0.9887*</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>0.9675*</td>
<td>0.9919*</td>
<td>0.9751*</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

*Significant at the .01 level.
Subhypotheses 1g, 2g, and 3g

What is the relationship between the number of instructors and the number of students enrolled (1g), the number of courses (2g), and the annual budget (3g) in the College of Education Pranakorn?

Correlations shown in Table 8 indicated that there were positive relationships between the number of instructors and the number of students enrolled; between the number of instructors and the number of courses; and between the number of instructors and the annual budget in the College of Education Pranakorn. The absolute values for all of the correlations were very high. The distribution of the number of instructors shared 91 percent of their

Table 8

Correlation Matrix Among Four Variables Classified by the College of Education Pranakorn

<table>
<thead>
<tr>
<th>Variable</th>
<th>Instructors</th>
<th>Students</th>
<th>Courses</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructors</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>0.9531*</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Courses</td>
<td>0.9457*</td>
<td>0.9328*</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Budget</td>
<td>0.9904*</td>
<td>0.9525*</td>
<td>0.9094*</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

*Significant at the .01 level.
variance with the number of students enrolled; shared 89 percent of their variance with the number of courses; and shared 98 percent of their variance with the annual budget.

Table 9 summarizes the data analyses for the three questions relating to relationships between the number of instructors and the number of students enrolled, the number of courses, and the annual budgets in the College of Education in Thailand as a whole and all of the college branches in this study.

**Hypothesis 4**

Is there a difference between the correlations among four variables (instructors, students enrolled, number of courses, and the annual budgets) in the College of Education in Thailand and all the college branches?

To test Hypothesis 4, subhypotheses were compared by use of the z-test based on Fisher's Z-transformation of r. The .05 level was established as the criterion for statistical significance. Hypothesis 4 was divided into three parts: subhypotheses 4a, 4b, and 4c.
Table 9

Correlation Coefficients Among Four Variables Classified by the College of Education in Thailand and All of the College Branches

<table>
<thead>
<tr>
<th>College of Education in Thailand</th>
<th>Instructors/Instructors</th>
<th>Instructors/Students</th>
<th>Instructors/Courses</th>
<th>Instructors/Budgets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand (n = 10)</td>
<td>1.0000</td>
<td>0.9912**</td>
<td>0.9906**</td>
<td>0.9823**</td>
</tr>
<tr>
<td>Prasanmirt (n = 10)</td>
<td>1.0000</td>
<td>0.9582**</td>
<td>-0.4299</td>
<td>0.9639**</td>
</tr>
<tr>
<td>Patoom Wan (n = 10)</td>
<td>1.0000</td>
<td>0.9334**</td>
<td>-0.5429</td>
<td>-0.7647*</td>
</tr>
<tr>
<td>Bang Saen (n = 10)</td>
<td>1.0000</td>
<td>0.9803**</td>
<td>0.2264</td>
<td>0.2753</td>
</tr>
<tr>
<td>Phitsanulok (n = 7)</td>
<td>1.0000</td>
<td>0.9773**</td>
<td>0.9303**</td>
<td>0.9894**</td>
</tr>
<tr>
<td>Mahasarakam (n = 5)</td>
<td>1.0000</td>
<td>0.9891**</td>
<td>0.9947**</td>
<td>0.9761**</td>
</tr>
<tr>
<td>Song Khla (n = 6)</td>
<td>1.0000</td>
<td>0.9404**</td>
<td>0.9232**</td>
<td>0.9675**</td>
</tr>
<tr>
<td>Pranakorn (n = 6)</td>
<td>1.0000</td>
<td>0.9531**</td>
<td>0.9457**</td>
<td>0.9904**</td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

**Significant at the .01 level.
Subhypothesis 4a

Is there a difference among the correlations between the number of instructors and the number of students enrolled in the College of Education in Thailand and all of the college branches?

The z-values in Table 10 showed that there was no difference among the correlations between the number of instructors and the number of students enrolled in the College of Education in Thailand and all of the college branches, at the .05 level of significance.

Table 10

<table>
<thead>
<tr>
<th>College of Education in Thailand</th>
<th>z-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prasanmirt</td>
<td>1.3102</td>
</tr>
<tr>
<td>Patoom Wan</td>
<td>1.7772</td>
</tr>
<tr>
<td>Bang Saen</td>
<td>0.6529</td>
</tr>
<tr>
<td>Phitsanulok</td>
<td>0.5568</td>
</tr>
<tr>
<td>Mahasarakam</td>
<td>0.3254</td>
</tr>
<tr>
<td>Song Khla</td>
<td>1.3172</td>
</tr>
<tr>
<td>Pranakorn</td>
<td>1.0127</td>
</tr>
</tbody>
</table>

Note.—The critical values for z are 1.96 and -1.96 at the .05 level of significance.
Subhypothesis 4b

Is there a difference among the correlations between the number of instructors and the number of courses in the College of Education in Thailand and all of the college branches?

The z-values in Table 11 showed that there was no significant difference at the .05 level among the correlations between the number of instructors and the number of courses in the College of Education in Thailand and all of the college branches, except Prasanmirt, Patoom Wan, and Bang Saen.

Table 11

z-Values Among the Correlations Between the Number of Instructors and the Number of Courses in the College of Education in Thailand and All of the College Branches

<table>
<thead>
<tr>
<th>College of Education in Thailand</th>
<th>z-Value</th>
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</thead>
<tbody>
<tr>
<td>Prasanmirt</td>
<td>4.0915*</td>
</tr>
<tr>
<td>Patoom Wan</td>
<td>3.8090*</td>
</tr>
<tr>
<td>Bang Saen</td>
<td>4.5237*</td>
</tr>
<tr>
<td>Phitsanulok</td>
<td>1.5779</td>
</tr>
<tr>
<td>Mahasarakam</td>
<td>-0.4328</td>
</tr>
<tr>
<td>Song Khla</td>
<td>1.4839</td>
</tr>
<tr>
<td>Pranakorn</td>
<td>1.2521</td>
</tr>
</tbody>
</table>

*The critical values for z are 1.96 and -1.96 at the .05 level of significance.
Subhypothesis 4c

Is there a difference among the correlations between the number of instructors and the annual budgets in the College of Education in Thailand and all of the college branches?

The $z$-values in Table 12 showed that there was no significant difference at the .05 level among the correlations between the number of instructors and the annual budgets in the College of Education in Thailand and all of the college branches, except Patoom Wan and Bang Saen.

Table 12

z-Values Among the Correlations Between the Number of Instructors and the Annual Budgets in the College of Education in Thailand and All of the College Branches

<table>
<thead>
<tr>
<th>College of Education in Thailand</th>
<th>z-Value</th>
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</thead>
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<td>Prasanmirt</td>
<td>0.5312</td>
</tr>
<tr>
<td>Patoom Wan</td>
<td>2.4134*</td>
</tr>
<tr>
<td>Bang Saen</td>
<td>3.7716*</td>
</tr>
<tr>
<td>Phitsanulok</td>
<td>-0.5568</td>
</tr>
<tr>
<td>Mahasarakam</td>
<td>0.1409</td>
</tr>
<tr>
<td>Song Khla</td>
<td>0.4116</td>
</tr>
<tr>
<td>Pranakorn</td>
<td>-0.5057</td>
</tr>
</tbody>
</table>

*The critical values for $z$ are 1.96 and -1.96 at the .05 level of significance.
Table 13 shows a summary of the significant differences among the correlations between the number of instructors and the number of students enrolled, the number of courses, and the annual budgets in the College of Education in Thailand and all of the college branches in the study.

Table 13

<table>
<thead>
<tr>
<th>College of Education in Thailand</th>
<th>Instructors/Students</th>
<th>Instructors/Courses</th>
<th>Instructors/Budgets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prasanmirt</td>
<td>1.3102</td>
<td>4.0915*</td>
<td>0.5313</td>
</tr>
<tr>
<td>Patoom Wan</td>
<td>1.7772</td>
<td>3.8090*</td>
<td>2.4134*</td>
</tr>
<tr>
<td>Bang Saen</td>
<td>0.6529</td>
<td>4.5237*</td>
<td>3.7716*</td>
</tr>
<tr>
<td>Phitsanulok</td>
<td>0.5568</td>
<td>1.5779</td>
<td>-0.5568</td>
</tr>
<tr>
<td>Mahasarakam</td>
<td>0.3254</td>
<td>-0.4328</td>
<td>0.1409</td>
</tr>
<tr>
<td>Song Khla</td>
<td>1.3172</td>
<td>1.4839</td>
<td>0.4116</td>
</tr>
<tr>
<td>Pranakorn</td>
<td>1.0127</td>
<td>1.2521</td>
<td>-0.5057</td>
</tr>
</tbody>
</table>

*The critical values for z are 1.96 and -1.96 at the .05 level of significance.
Chapter V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter V contains a review of the problem and procedures, a summarization of major findings, and a presentation of the conclusions. Also included are recommendations for further research.

Review of Problem and Procedures

The specific goal of this research was to investigate the factors that related to organizing instructor manpower needs in the College of Education in Thailand. The subjects for the study consisted of seven branches of the College of Education in Thailand: Prasanmirt, Patoom Wan, Bang Saen, Phitsanulok, Mahasarakam, Song Khla, and Pranakorn. The data used in the study were the historical data for the years 1965-1974 in each college branch. The information included: the number of instructors, the number of students enrolled, the number of courses, and the annual budgets. These data were to be supplied by the head of the President's Office at each college branch.

In order to carry out the objectives of this study,
four major questions were investigated:

1. Was there a relationship between the number of instructors and the number of students enrolled?

2. Was there a relationship between the number of instructors and the number of courses?

3. Was there a relationship between the number of instructors and the annual budgets?

4. Was there a significant difference among the correlations between the number of instructors and the three variables named above (number of students enrolled, number of courses, and the annual budgets) in each college branch and the college as a whole?

The Pearson product-moment correlation coefficients (the Pearson \( r \)) were determined and correlation matrix models were used to investigate the relationship between independent variables (the number of students enrolled, the number of courses, and the annual budgets) and the dependent variable (the number of instructors). Probability levels and strengths of association were also reported. The statistical model used to test for significant differences between the whole college and each college branch measured was the \( z \)-test based on Fisher's Z-transformation of \( r \). Results of the various analyses are summarized below.
Summary of the Findings

The results of the 25 specific questions studied in this investigation were presented and analyzed in Chapter IV. The findings related to the four major questions of this research are summarized as follows:

(1) The results of the investigation indicated that there was a positive relationship between the number of instructors and the number of students enrolled in the College of Education in Thailand and all of the college branches. The absolute values for all of the correlations were very high.

(2) The investigation revealed several significant positive relationships between the number of instructors and the number of courses. The absolute values of these correlations were very high. Only three college branches—Prasanmirt, Patoom Wan, and Bang Saen—were shown to have no relationship between the number of instructors and the number of courses.

(3) Positive relationships between the number of instructors and the annual budgets were found in all of the college branches. The absolute values for the correlations were very high, except for Patoom Wan and Bang Saen.
(4) The z-values from the correlations between the number of instructors and the number of students enrolled in the College of Education in Thailand and all of the college branches indicated that differences did not exist at the .05 level of significance.

The z-values from the correlations between the number of instructors and the number of courses in the College of Education in Thailand and all of the college branches showed that differences did exist at the .05 level of significance for Prasanmirt, Patoom Wan, and Bang Saen. No other differences were found at the .05 level of significance.

The z-values from the correlations between the number of instructors and the annual budgets in the College of Education in Thailand and all of the college branches showed that differences did not exist at the .05 level of significance, except for Patoom Wan and Bang Saen.

Conclusions

The conclusions stated in this section are the investigator's personal observations, which were based on the findings of the study. The conclusions are intended to be of some assistance to the consumer and to the practitioner.
in relating the investigation in a useful way to problems at the college level.

Linear relationships were found between the number of instructors and the number of students enrolled in all of the college branches. It is concluded that the number of students enrolled in a college is a factor that is related to organizing instructor manpower needs.

Other linear relationships existed between the number of instructors and the number of courses in the College of Education in Thailand, Phitsanulok, Mahasarakam, Song Khla, and Pranakorn. It was concluded that the number of courses in a college is a factor that is related to organizing instructor manpower needs. However, there were three colleges that showed no relationship between these two variables. The reason that might explain this phenomenon is as follows: Prasanmirt is the College of Education that is expected to provide the graduate level in education. Therefore, this college offers more graduate courses than undergraduate courses. Patoom Wan and Bang Saen have a limited number of courses; they offer only social science. Thus, some of the instructors assigned to Patoom Wan and Bang Saen actually teach at Prasanmirt. Some are assigned to Patoom Wan and Bang Saen, but work at the Ministry of
Education.

The last linear relationships were found between the number of instructors and the annual budgets in the College of Education in Thailand, Prasanmirt, Phitsanulok, Mahasarakam, Song Khla, and Pranakorn. It is concluded that the annual budget in a college is a factor that relates to organizing instructor manpower needs. The annual budget at each college included the instructors' salaries and the instructional facilities. Patoom Wan and Bang Saen, offering only the field of social science, received smaller budgets than did the other college branches. Therefore, a relationship between the number of instructors and the annual budgets in these two colleges did not exist.

A final conclusion is that the model of the instructor manpower needs in the College of Education in Thailand which related the number of students enrolled, the number of courses, and the annual budgets will be a workable model that would be the same in all of the college branches.

Recommendations

Instructors are being called upon for more accountability of student achievement. At the same time, administrators are expected to facilitate this trust for account-
ability by raising the academic standard of the school. An increased understanding of the related factors in organizing instructor manpower needs will help the administrators to strengthen greatly the position of the school in its pursuit of insights to improve the educational system. In this quest, the findings of this study could be useful to the administrator in helping him to meet the needs of instructors on his staff. Those persons charged with the trust for the budgets may wish to consider the strengths and areas of the instructor manpower needs examined in this study to enhance efforts to fulfill their responsibilities. If the school is to be effective, there is a necessity for some degree of consensus as to reasonable expectation and perception of the actual situation of members of the social system.

The basic outcome of this investigation was the identification of some of the factors related to instructor manpower needs. Perhaps of equal importance was the identification of some factors commonly thought to be related to instructor manpower needs, but found not to be related. Knowledge of the relationship these various factors have to instructor manpower needs benefits the consumer and the practitioner. The study has implications for administrators...
and researchers.

Identification of linear relationships between the number of instructors and the number of courses and the linear relationships between the number of instructors and the annual budgets raises the question: Do these factors relate to instructor manpower needs, or do these factors vary in degree with the number of instructors? The answer to this question cannot be ascertained absolutely from this investigation, but it is an important question for future investigators of instructor manpower needs to explore.

It is hoped that the present study has helped to provide insight for further research in the area of related factors in organizing instructor manpower needs. In view of the fact that significant relationships between the number of instructors and three variables were found, it is recommended that further research be conducted to:

1. Investigate the cause-and-effect relationship between the number of instructors, the number of courses, and the annual budgets. In addition, probe the following variables in order to better hypothesize the relationship between the number of instructors, the size of the college, and the college location.

2. Investigate the model of the number of instructors in each department in the
College of Education in Thailand and all of the college branches. Do they result in the same ways as the model of the college?

3. Investigate the model of the number of instructors in each division in the departments of the College of Education in Thailand and all of the college branches. Do they result in the same ways as the model of the department?

This study will be the guideline for the administrators in the field concerning instructor manpower needs in their divisions or departments. Finally, the model could be used to plan, organize, and coordinate cooperation among the people and organizations involved.
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APPENDIX A

A letter was sent to the head of the President's Office at each of the college branches (Prasamnirt, Patoom Wan, Bang Saen, Phitsanulok, Mahasarakam, Song Khla, and Pranakorn), asking for the following information for the years 1965-1974: the number of instructors, the number of students enrolled, the number of courses, and the annual budget for that college branch. Enclosed with each letter was a form on which to return the requested data.
หน้า ก้าน

อธิบาย แสดง

ว่า หน้าลับล่างของข้อความ

ด้วยทัศนคติทางวาร์ ข้อเรื่อง จำนวนวิทยาลัยวิชาการที่

มีการศึกษา ทั้งกว่าubblesของแผนผังกิจการ 

Educational Leadership อยู่ที่ Western Michigan University จนถึงที่สุดท้ายสุดที่

หน้ามี "RELATE FACTORS IN ORGANIZING INSTRUCTORS MANPOWER

NEEDS IN THE COLLEGE OF EDUCATION IN THAILAND" ความที่เป็นที่น่า

สนใจเรื่องที่ใช้ข้อมูลของแผนผังว่า 10 ปี จำนวนผู้เข้ารับการอบรมของ

บริษัทที่ทำงานต่อหน้าการดำเนินการในทางที่น่าสนใจ

จำนวนของราย ที่ใช้ หน่วยศึกษา จำนวนกิจการปัจจุบัน แต่มีการที่ให้

ยึดข้อมูลตัวอักษรด้วย

ถ้าประจาโครงศึกษาที่ทำหน้าที่จัดหาข้อมูลดังกล่าวที่น่าประ

กำกับในการดำเนินการของปัจจุบัน หรือไม่ ได้ให้เป็นสิ่งที่มีที่ให้ Address ชิง

ด้วยผู้ใหญ่ : Mr. THANAT Burirug

105 SPINDLER HALL. W.M.U.

KALAMAZOO, MICH. 49001.

ผู้ชอบเรื่องอยู่ที่จะอ่านได้เฉพาะผู้วิทยาศาสตร์ที่ข้อมูล

และ สำหรับข้อมูลที่จะมีอยู่ที่ไม่ที่ทำให้ความรู้เรื่องเหล่านี้ด้วย

ข่อย

ขอแสดงความนับถืออย่างสุข

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APPENDIX B

A follow-up letter was sent to the head of the President's Office in the College of Education at Prasanmirt, Patoom Wan, Bang Saen, Mahasarakam, and Song Khla, asking again for the previously requested information.
หอทอ

ขอเกี่ยวกับ

เรียน หน่วยงานกล่าวถึงการ ประสานงาน

ด้วยที่ได้รับหมายเรียน กรณี ราชการที่เกี่ยวกับการจัดการ

พิธีการ ได้ในบันทึกที่เกี่ยวกับงานที่เกี่ยวข้องล่วงหน้า ที่จัดเป็น

ปัจจุบัน การจัดการให้ทราบผลล่วงหน้า อีก กระนั้น

ขอที่จะได้รับการอนุญาตให้ทราบผลล่วงหน้า จะได้รับการจัด

ปฏิบัติให้เหมาะสมจะต้องจัดการให้ถูกต้องอย่างมีผล แผนที่จะจัด

ได้รับความเห็นจากท่านเรียกจัดส่งสรุปผลที่ ได้รับจาระต่อมา

อย่างที่คุ้น

ขอให้เห็นถึงข้อสรุปที่มีอยู่

กับที่ที่ไปด้วย ทั้งหมดที่ได้ ราชการที่เกี่ยวกับการจัดการทุก

จสกิจที่เกี่ยวข้องที่จะต้องจัดการอย่างถูกต้อง ขอให้รับความอยู่ประทุก

เมื่ออย่างไรในการให้ความอยู่ตรงกัน

ขอให้เห็นถึงข้อสรุปที่มีอยู่

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หอทัก

ขอกรุณาให้ ฯลฯ

หรือหน้าสีที่กากบาท ประจำ

ที่อยู่เลขที่หนึ่ง บ้านวิภัย ทำร้อยแรกที่วัดท้าวศรีสุริยา

ตินทริก ได้ส่งจดหมายและแบบฟอร์มที่ติดต่อขออนุญาตทั้งหมดที่เป็นหน้า

ที่อยู่หน้าสู่บริษัทลูกน้อยถ้าจะเจ้า จดหมายแจ้งวันที่ 16 กันยายน

เสียหาย นั้นถือว่าสิ้นมา ๖ เดือน และให้บริษัทลูกของข้างกี่เสีย

ต้นหนึ่งปัจจุบันจะต้องจ่ายทั้งกับเงินที่ยังกับสัญญาล่วงหน้า ที่หน้าสีเจ้าเร่ง

หรือสอบถามข้อมูลจากท่าน กรุณาติดต่อที่กลุ่มทุ่งใหญ่ หรือจ้างก่อผังค์

อย่างด้วย

อีกหนึ่งเหตุผลที่จึงต้องปรับตัวตามภารกิจ ที่ถูกปฏิบัติต่อ

กับอาจารย์ต่อไป ที่ต้องจ่าย อาจารย์วิทยาลัยวิจัยการก้าวหน้าที่นั้น

ซึ่งเป็นทุ่งใหญ่ ถือว่าเรียงประชากรที่อยู่ที่เริ่มต้น ถือเป็นความต้องการที่

เป็นอย่างยิ่งในการให้ความรู้และผลของ

ขอแสดงความนับถือ

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หองค์

๑๐ คุมมั่นเน้น ๑๖๑๕ ๑๓๗

เรียน หนุนหัวสันนิษฐานวิเคราะห์ มูลความคิด

ที่มีความจำเป็นซึ่งนั้น ยุทธวิธี อาจอยู่วิจัยเรียบร้อยก่อนหน้า

ผ่านผู้โดย ที่มีจงตระกูลและแนวทางให้ต้องคัดเครื่องมือที่ก้าวไป

ในทางที่เป็นไปได้ที่จะสำเร็จจ้าง

ปรากฏที่รุ่นรุ่นที่หนึ่งที่มีความรู้

สมบัติและแนวปฏิบัติที่ดีที่สุดใน

๑๖๑๕ และ ๑๖๑๖ ที่ข้างจัดจัดที่จะ

กุรุสติกนิทิตติย์ของชุมชนที่มีกับ

ประมาณที่สูงที่สุดจะเป็นมณฑล

๑๖๑๕ และ ๑๖๑๖ บางที่ที่จัดจัดที่จะ

เมื่อสิ้นสุด

ขอให้แสดงขอบพระคุณที่บังเกิดเรื่อง

ทรงรัชทาย

(THAWAT BURBUR)

105 SPINDLER HALL, W.M.U.
KALAMAZOO, MICH. 49001)
อย่างที่กล่าวมาแล้ว วุ้นวาย สาระวิทยาศาสตร์ที่เกี่ยวกับ
พืชมนุษย์ ได้ถูกจัดทำและบันทึกอยู่ในเอกสารอื่น ๆ ที่จัดเตรียม
ไม่ได้ในกรอบที่เป็นมาตรฐานของที่ทำการต้น ประกอบด้วยข้อมูลต่าง ๆ ที่รวบรวม
โดยข้อมูลเกี่ยวกับเงินเดือนภูมิศาสตร์ ที่พิจารณาได้
ที่เหล่านี้ถูกตีแผ่ลงในหนังสือที่เป็นเล่มใหญ่หลายเล่มที่เกี่ยวกับ
เรื่อง ที่มีอยู่ ที่พิจารณาได้ จนถึงเรื่องที่ถูกวัดอย่างต่อเนื่อง
โดยวิธีวิทยาศาสตร์ ที่มีอยู่ อย่างต่อเนื่อง

ขอแสดงความนับถือ

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