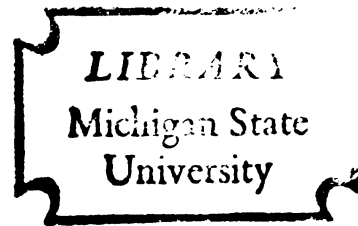PROFILES OF THAI HIGHER EDUCATION AS
MEASURED BY FACULTY, COURSE OFFERINGS,
STUDENTS, AND OPERATING BUDGETS

Dissertation for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
PANOM PONGPAIBOOL
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This is to certify that the

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BY FACULTY, COURSE OFFERINGS, STUDENTS,
AND OPERATING BUDGETS

presented by

Panom Pongpaibool

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of the requirements for

Ph.D. degree in Education

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ABSTRACT


PROFILES OF THAI HIGHER EDUCATION AS MEASURED
BY FACULTY, COURSE OFFERINGS, STUDENTS,
AND OPERATING BUDGETS


By

Panom Pongpaibool


This study was planned to discover the distribution
of resources and students among nine discipline groupings
and among eight multi-purpose Thai universities, and to
summarize and compare the distribution of faculty members,
students, course offerings, and operating budgets both
among the discipline groupings and among the universities
in such form as will furnish hard data upon which long
range planning may be based.

In the study, the faculty are the full-time members
assigned to teach in a discipline grouping, the course
offerings are the courses that belong to a discipline
grouping, the students are all regular undergraduate
students allocated to the discipline grouping in which they
are expected to get their degree, and the operating
budgets are amount of money allocated to a discipline group-
ing. The nine discipline groups are Agriculture, Arts,
Business and Management, Education, Engineering, Health

Professions, Languages and Literature, Sciences and Mathematics, and Social Sciences.

The data were collected from available sources. Faculty data were gathered from faculty lists and institutions' bulletins and catalogs. Course offering data were obtained from institutions' bulletins and catalogs. Student data were collected from Education Report, Institutions of Higher Education, Thailand 1971. Operating budget data were gathered from the higher education sections of Budgeting Bureau's Budget for Fiscal Year 1972.

The data were counted and distributed among the nine discipline groupings within each university. The data for Thai higher education were the summation of data of all the eight universities. The data were converted to T-scores. The profiles were drawn using the T-scores across the nine discipline groupings.

The findings revealed that in the four characteristics measured the profile of Thai higher education was generally high in the Health Professions, Sciences and Mathematics, and Social Sciences; and low in Business and Management, Arts, Education, and Languages and Literature. The profiles of individual universities showed that each university was generally dominated by one discipline grouping. No pair of universities had the same general profile. Among the four characteristics studied the closest relationship was between faculty and operating budgets.

# ACKNOWLEDGMENTS

To

Thab Pongpaibool
my mother
the woman I love most

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Chapter I

PROBLEM AND BACKGROUND

## Statement of Problem

The problem is to discover the distribution of
resources and students among nine discipline groupings and
among eight multi-purpose Thai universities, and to com-
pare the distributions of faculty members, students, course
offerings, and operating budgets both among the disciplines
and among the universities in such form as will furnish
hard data upon which long range planning may be based.

## Sub-Problems

Specifically, this study aims to answer the follow-
ing questions.

1. In the eight universities taken as a whole, what
are the differences in the amount of resources of faculty,
course offerings, students, and operating budgets currently
used in the nine discipline groupings?

2. In each of the eight Thai universities, what are
the differences in the amount of resources of faculty,
course offerings, students, and operating budgets currently
used in the nine discipline groupings?

3. Comparing each university with each other university and with the eight taken as a whole, what are the differences in the amount of resources of faculty, course offerings, students, and operating budgets currently used in the nine discipline groupings?

## The Significance of the Study

In order to understand the present situation of Thai institutions of higher education, one needs to go to their history.

The story of Thai institutions of higher learning starts in 1889 when the Royal Medical College was created at Siriraj Hospital. But the first national university was established in 1916 and was given the name Chulalongkorn University, as a memorial to King Chulalongkorn. At the beginning, Chulalongkorn was comprised of four faculties or colleges: Arts and Sciences, Medicine, Engineering, and Political Sciences. Only diploma courses of three years duration were given. At present, Chulalongkorn University has thirteen faculties: Education, Commerce and Accountancy, Political Sciences, Sciences, Engineering, Architecture, Economics, Arts, Medicine, Veterinary Sciences, Dentistry, Pharmacy, and Communication Arts.

The Democratic Revolution of 1932 was followed by the creation of a second university "Thammasat", in 1933.

Its main purpose was to provide education in the field of Law, Politics, and Economics. Formerly Thammasat was an open-door university and it granted only a law degree. Since 1959 the University has been further developed. New faculties have been created. At the present time Thammasat is composed of Faculties of Law, Commerce and Accountancy, Political Sciences, Economics, Social Administration, Liberal Arts, and Journalism and Communication. The University is known as "A Center of Social Studies and Humanities".

In 1943 Kasetsart University was founded upon the existing College of Agriculture and Forestry. The University in the early stages consisted of four Faculties: Agriculture, Cooperative Science, Forestry, and Fishery. Its purpose was to be a center of research and study in the field of Agriculture. In 1952 the field of economics was added to the curriculum and in 1954 the Faculty of Veterinary Medicine of the University of Medical Sciences was transferred to be a part of the University. The Faculty of Arts and Sciences was created in 1969. At the present time, Kasetsart University consists of eight Faculties: Agriculture, Fishery, Forestry, Arts and Sciences, Engineering, Economics and Business Administration, Veterinary Medicine, and Education.

In 1934 Silpakorn University was created. It was primarily concerned with the instruction and the promotion

of research works in the realm of fine arts and national culture. Recently Silpakorn has extended its campus to Nakorn Pathom province. The Bangkok campus consists of four Faculties: Painting and Sculpture, Thai Architecture, Decorative Arts, and Archaeology. Its Nakorn Pathom campus consists of Education and Arts Faculties.

Mahidol University was formerly known as the University of Medical Sciences. The University was first the Royal Medical College at Siriraj Hospital and was part of Chulalongkorn University. Later, the college became a university. In 1969, the university's name was changed to the present name, Mahidol University. Mahidol now consists of ten Faculties: Medicine at Siriraj Hospital, Dentistry, Pharmacy, Public Health, Medical Technology, Tropical Medicine, Sciences, Medicine at Rama Thibordi Hospital, Dentistry at Payathai, and Pharmacy at Payathai. Mahidol is planning to add a Faculty of Humanities and Social Sciences in the near future.

In 1964, Chiengmai University was promulgated as the first of Thailand's provincial universities in the northern part of the kingdom. At the beginning Chiengmai University was composed of three Faculties: Humanities, Sciences, and Social Sciences. Chiengmai now consists of seven Faculties: Humanities, Education, Social Sciences, Sciences, Medicine, Argiculture, and Engineering.

Khonkaen University was created in 1964 and began operation in 1965. The establishment of this university was a part of the development program for the northeastern region of Thailand. The University began with the Faculties of Engineering, Agriculture, and Sciences and Arts. The Faculties of Education and Nursing have since been added.

In 1968, Prince of Songkhla University was created, as a part of the development program for the southern region of Thailand. The University began with the Faculties of Engineering and Education. A Faculty of Sciences has since been added.

In 1971 Ramkamhaeng University was created in response to the need for more university places for secondary school graduating students. It is the only open-door university in Thailand now. Ramkamhaeng University consists of the Faculties of Education, Business Administration, Law, and Humanities.

The history of their founding reveals that the older universities were vocationally oriented. The newer institutions, however, were founded as part of the development programs for their regions. At the present time, the concept of universities as vocational centers is in process of change. Each institution is expanding and more programs are being offered at almost every institution.

The Second National Economic and Social Development

Plan (1967-1971) led the way for change. It stated:

> The University of Chiengmai and Khonkaen will
> establish new faculties in such fields as engineering,
> sciences, and education. The improvement projects
> being planned for Kasetsart University include plans
> to double enrollment capacity as well as to establish
> new faculties in the fields of arts, engineering,
> and sciences. At Chulalongkorn University the
> Faculty of Engineering will be improved through
> foreign assistance. In addition, a new Faculty
> of Dentistry, Faculty of Pharmacy and the Rama
> Thibordi Faculty of Medicine will be established
> as part of the University of Medical Sciences.
> Several developments will take place in relation to
> establishment of new institutions or relocation of
> existing institutions. The new University of the
> South will establish a Faculty of Arts and Sciences
> at Pattani and a Faculty of Engineering at Songkhla.
> The recently established National Institute for
> Development Administration will offer graduate level
> in public administration, business administration,
> development economics and applied statistics. The
> Silpakorn University will be moved to Nakorn Pathom
> where the Faculties of Arts, Natural Sciences and
> Music will be expanded (34:196-197).

The University of Medical Sciences, mentioned

above, is now Mahidol University and the University of

the South is Prince of Songkhla University at the present

time.

Michigan State University, during the years 1964

to 1968, under contract with US AID and the government of

Thailand, conducted a project in educational planning

in Thailand. Professor Archibald B. Shaw, chief of party

from December, 1967 to August, 1968, stated the purposes

of the project.

The purpose of this program is to provide
assistance in strengthening the capacity of the
Ministry of Education and the National Education
Council in both short and long range educational
planning, and to advise on action plans which may
have been adopted as educational policy in
Thailand (45:1).

The project led to many researches and publications
and brought trained personnel to help Thailand fulfull her
development plans for education at the elementary and
secondary levels and in higher education. During this time
the National Education Council (NEC), with advice from the
MSU staff, caused to many changes in university administra-
tion. The creation of Silpakorn University at its Nakorn
Pathom campus and the University of the South or Prince
of Songkhla University were among those developments.

At the present time, the country is in the Third
National Economic and Social Development Plan (1972-1976).
The plan stated the purposes concerning higher education as:

> 1. To level upwards the quality and efficiency
> of education at undergraduate level.
>
> 2. To initiate and support those programs which
> contribute to the needs of the country, such as
> agriculture, engineering, medicine, English, and
> Thai culture, and to encourage graduate programs to
> produce university teachers and country needs.
>
> 3. To support research work and text-book writing.
>
> 4. To support the regional universities to become
> cultural and educational centers of the communities
> of their region.
>
> 5. To initiate and support community colleges (35:25).

Both development plans and the MSU project led to many changes in Thai higher education. A new university has been established, one university has been relocated, many universities have been expanded, new roles have been added to the functions of universities, new programs have been developed, and university structure itself, has been reformed. In order to understand the new Thai universities and to have the necessary information to support the changes being made and proposed, new data are needed. The present situation in Thai higher education, particularly with respect to the way resources of trained faculty, qualified students, desirable course offerings, and public money are allocated required new data gathering. One such collection and organization of significant facts is the principal purpose of this study.

This study is planned to identify the differences between Thai universities in terms of four characteristics as they relate to university-emplasized fields of study. The four characteristics are number of faculty, course offerings, number of students, and operating budgets. The fields of study are classified into nine disciplines: Agriculture, Arts, Business and Management, Education, Engineering, Health Professions, Language and Literature, Sciences and Mathematics, and Social Sciences. The study is also planned to determine the

four characteristics within each university. The comparison
between and within universities will be made in terms of
profiles.

## The Limitation of Study

The Thai universities included in this study are
limited to the public universities under the Office of
State Universities that have graduated students in the year
1971.

The faculty members to be included in the study
are these teaching full-time only. Other kinds of faculty
are not included.

Course offerings are undergraduate courses only.

The students counted are those enrolled in programs
leading to bachelor's degree in the eight universities.

Operating budgets are departmental budgets of the
1972 academic year.

## Definition of Terms

Faculty: The body of persons responsible for
instruction in a university.

Student: One who is enrolled in an institution
of higher education in a curriculum
leading to a bachelor's degree.

Curriculum: A systematic group of courses or
sequence of subjects required for
graduation in a major field of study.

Course Offering: Courses listed in a faculty
or an institutional catalog.

Credit Offering: A number of semester credit
hours assigned to each course.

Operating Budget: The annual expenditure allo-
cated to the universities for educa-
tional and general purposes, which
include faculty salaries and administra-
tive expenses.

University: An institution of higher education
which is under the control of the
Office of State Universities in
Thailand.

Profile: A graph revealing the measured charac-
teristics of an inanimate object of
scientific scruntiny.

Discipline Grouping: A group of subjects that
are bound together in a common structure
of knowledge. The discipline groupings
in this study are based primarily on
"A Taxonomy of Instructional Programs
in Higher Education," U.S. Department
of Health, Education and Welfare, Office
of Education.

Agriculture: A discipline grouping including
General Agriculture, Agronomy, Soil
Science, Animal Science, Dairy Science,
Poultry Science, Fishery, Horticulture,
Food Science, Forestry, Natural Re-
sources Management, and Agricultural
Economics.

Arts:   A discipline grouping including History,
Archeology, Philosophy, Theology, Fine
and Applied Arts, Drama, Music, Commun-
ication, Library Science, and Archi-
tecture.

Business and Management: A discipline grouping
including Business and Commerce,
Accounting, Banking and Finance,
Investments, Business Management and
Administration, Hotel and Restaurant
Management, Marketing, Transportation
Management, Insurance, and Secretarial
Studies.

Education: A discipline grouping including
        Elementary Education, Secondary
        Education, Special Education,
        Educational Psychology, Educational
        Administration, Physical Education,
        and Industrial Arts.

Engineering: A discipline grouping including
        Computer Science, Agricultural Engin-
        eering, Architectural Engineering,
        Chemical Engineering, Civil Engineer-
        ing, Electrical Engineering, Mechanical
        Engineering, Geological Engineering,
        Metalurgical Engineering, Mining
        Engineering, Environmental Engineering,
        and Sanitary Engineering.

Health Professions: A discipline grouping
        including Nursing, Dentistry, Medicine,
        Optometry, Osteopathic Medicine,
        Pharmacy, Dental Hygiene, Public Health,
        Veterinary Medicine, Medical Technology,
        Dental Technology, and Radiologic
        Technology.

Languages and Literature: A discipline grouping
        including Thai, English, Other Foreign
        Languages, Literature, Comparative Liter-
        ature, Classics, Linguistics, and Speech
        Science.

Sciences and Mathematics: A discipline grouping
        including General Physical Sciences,
        Physics, Chemistry, Biology, Astronomy,
        Geology, Earth Sciences, Oceanography,
        Mathematics, and Statistics.

Social Sciences: A discipline grouping including
        Home Economics, Law, Psychology, Public
        Affairs and Services, Anthropology,
        Economics, Geography, Political Science
        and Government, Sociology, Criminology,
        and International Relations.

Chapter II

PHILOSOPHICAL AND THEORETICAL

BACKGROUND, AND REVIEW OF LITERATURE


Philosophical and Theoretical
Background

A university education is a western world heritage.

In the Middle Ages, the university was regarded as <u>Studium</u>

<u>Generale</u>--"an institution which is a permanent association

of scholars and students and which is largely self-govern-

ing and mainly self-perpetuating" (12). Its purpose was

to preserve and perpetuate theoretical knowledge. In the

Medieval period, the university, as Clapp also says, is

an institution providing ". . . the esoteric learning

necessary to human social life and necessary also to the

highest development of man and person". The Medieval

university was usually composed of four faculties: Arts,

Law, Medicine, and Theology. In the Middle Ages universi-

ties were autonomous institutions.

The nineteenth century brought another view of the

university as an institution dedicated to a search to widen

the bounds of knowledge rather than merely to preserve the

store of knowledge undiminished from generation to generation.

In this century, a professor was primarily a research scholar. Philosophy was regarded as pure knowledge, and was highly emphasized.

The present ideas of universities were developed from the nineteenth century. The development of the ideas can be seen from various persons' views.

Cardinal Newman described the function and purpose of a university education:

> A university training is the great ordinary means to a great but ordinary end; it aims at raising the intellectual tone of society, at cultivating the public mind, at purifying the national taste, at supplying true principles to popular enthusiasm and fixed aims to popular aspiration, at giving enlargement and sobriety to the ideas of the age, at facilitating the exercise of political power, and refining the intercourse of private life. It is the education which gives a man a clear conscious view of his own opinion and judgements, a truth in developing them, aeloquence in expressing them, and a force in urging them (36:157-158).

Devane criticized Newman's idea:

> The primary aim of Newman's university is to teach the 'diffusion and extension of knowledge rather than the advancement. If its objective were scientific and philosophical discovery, I do not see why a university should have students.' Newman seems to have no notion that a university can train an investigator, and he naively relegates the task of increasing learning to institutions and academies. His aim is to fit the student, in point of information, intelligence, and manners, for the world, not for the laboratory and the library. There is no real appreciation of the scientific method and temper which have informed our modern universities, nor is there any provision for revealing 'the grand development of human reason, from Aristotle down to Hegel.' In short, Newman's ideas were the collegiate and rather static ideas of the great English and American institutions of a century ago. . . (13:5).

Hutchins presented his idea of university education as: "The aim of higher education is wisdom. Wisdom is knowledge of principles and cuases". And he further said: "Metaphysics deals with the highest principles and causes. Therefore metaphysics is the highest wisdom (25:98)." The Hutchins idea of higher education highly emphasizes learning and discovering new knowledge rather than the repeating of existing knowledge as in Newman's ideas.

Carmichael, in his study--Universities: Common Wealth and America, said,

> The goal of university education is threefold: 1) to assist growth of the individual, his adjustment to his environment, the development of his intellectual powers and interests; 2) to prepare students for useful occupations or professions through assisting them in the acquisition of specialized knowledge and skills; and 3) to provide society with intelligent leaders and qualified workers in all those fields of endeavor, preparation for which requires higher education (9:84).

In addition to providing a learning environment, Carmichael indicates another dimension of a university education: the idea of providing university resources to a society.

The ideas of university education in Great Britain seem to be different from Charmichael's idea. As Marris quotes the ideas of J.S. Fulton, Vice Chancellor of Sussex and Herbert Butterfield, master of Pembroke College:

Fulton: The full aim of a university education
is to train the scientific mind in the service
of the merciful heart.

Butterfield: Universities ought primarily to
be regarded as the arena in which there is to
occur the electric contact between teacher and
pupil (30:171).

Neither of them mentioned community service or any similarity in their aim of a university education.

Banta (5) defines the goals of higher education as: 1. learning; 2. development of standards for judging the merit of ideas and the selection of worthy problems, and 3. appreciation of the fundamentally human basis for the development of knowledge. Banta's goals are limited to the context of contract between teacher and student only, so they cannot be considered as the general goals of higher education. His goals of higher education are based on the belief that the university does not educate. It is the student who does the educating; he educates himself, and he stimulates the faculty to educate themselves.

Mayer points out the aim of a university education is a very ultimate term. He said,

The ultimate function of the university is
utopian. It is to create a new society in which
rationality will prevail. In which beauty will
become a way of life. In which science will be
used constructively. In which virture and knowledge
will coincide, and in which creative ideas will
make for human happiness (32:1).

and

> Universities reflect the advancement of
> mankind. As the civilization has become more
> complex, as national frontiers have become more
> obsolete, as science has conquered many parts
> of nature, universities have a more significant
> function than ever. To preserve mankind, univer-
> sities must not only mirror the dominant current
> of society, but they must also be beacons of en-
> lightenment so that society can become more
> rational and humane (32:3).

Mayhew (33) says that American higher education is concerned with the following functions or purposes.

1. Higher education has a screening function. It is a means by which people are screened and some are allowed to enter the higher prestige vocations and professions.

2. Higher education has a custodial function. It is a means by which people in certain age or class groups are kept somewhat occupied until they can be assimilated by the labor force or retirement.

3. Higher education has a depository function. It has come to be a depository in which the collective memory of the race is preserved for future generations.

4. Higher education is an agent for causing social change.

5. Higher education is a means by which people are helped to find meaning for their lives, or to develop a sense of personal identity.

Perkins (40) discusses three aspects of knowledge: acquisition, transmission, and application. These three aspects reflect in three missions of the university. The acquisition of knowledge is the mission of research, the transmission of knowledge is the mission of teaching, and the application of knowledge is the mission of public

service. Perkins believes that these three missions de-
scribe the function of the modern university.

Higher education in Soviet Russia is linked closely
to the nation's needs. The law on higher education in the
USSR (1961) defined the objectives of universities and
other institutions of higher learning in seven points (27).

1. To train highly skilled specialists, dedicated
   in the spirit of Marxism-Leninism, well aware
   of most recent scientific and technological
   achievements at home and abroad as well as of
   the practical aspects of production capable of
   making the maximum use of modern technology and
   of inventing the technology of the future.

2. To carry out successfully research which will
   contribute to solving the problems involved in
   the building of communism.

3. To produce textbooks and teaching material of
   high quality.

4. To train teachers and research workers.

5. To provide advanced training for specialists,
   graduates of higher education working in
   various branches of the national economy, the
   arts, education, and the health services.

6. To disseminate scientific and political
   knowledge among the population.

7. To study problems connected with the employment
   of graduates and with the improvement of their
   training.

Thai educators view the aims of university education
somewhat different from the westerners. The roles of Thai
universities, as Ravi Bhavilai said, ". . . (to perform)
their role as agents for development by the training of
necessary manpower. . . (6:12)." In a more specific term

their role was to train people to be government officials.
Bhavilai later suggested that the universities should be
agents taking part in planning and development of the
country.

Kasem Sirisamphan thinks a university:

> . . . is the supreme source of technical knowledge
> and intellectual wealth of the nation.  It is not an
> 'ivory tower' in which academicians can take refuge
> for their own search for knowledge, or simply to
> teach their students.  It has another major role
> . . . that of providing technical services for
> society, in its role as an intellectual and
> technical leader of society (47:5).

From reviewing the ideas of a university, there
appear three major stages of development.  The first stage
is the idea of the university as a teaching-learning
institution.  The purpose of a university in this stage
is to preserve and perpetuate theoretical knowledge.  This
idea of a university appeared up to the medieval period.

In the nineteenth century, another dimension or
stage of university appeared.  The university in that
period began to emphasize research beside the teaching-
learning function.

The third dimension appears in the later half of
the twentieth century, and can be called service function.
In addition to teaching and research, the university in
the present period is turning to emphasize the providing
of service to its society.

There could be another dimension, but it does not appear in the material reviewed. Perkins calls this dimension, "The Mission of Creating an Ideal Democratic Community." According to Perkins, the mission of this dimension: ". . . stems from the notion that the policies of the universities must conform to the social aspirations of its members and that its very style and organization must conform to the idea of a democratic society (44)". This mission, that Perkins claims to be important does not seem to the writer to be a proper function of a university.

## The Review of Literature

### The Determinants of Quality of Higher Education

When Froomkin (19) studied the quality of higher education in the United States, he found eleven variables which, he believes, determines the quality of higher education. His variables are: 1) expenditures per student; 2) tuition per student; 3) enrollment; 4) research staff; 5) faculty-student ratio; 6) proportion of faculty with doctorates; 7) percent male; 8) percent teacher; 9) scholastic aptitude test scores; 10) percent to graduate school, and 11) number of doctorates. His findings appeared as:

> 1. Given a level of ability, a student who attends an institution with higher expenditures per student is more likely to go on to a Ph.D. than one who does not.

2. The continuation of a student to graduate school also depends upon his major and the type of institution he attends.

3. Student ability plays an important role in explaining the percentage of students going on to graduate school and Ph.D. production.

4. The ability factor is much more important, if coefficients are to be trusted, than expenditures per student.

5. If this finding is to be credited, recruitment of talented students is likely to pay off more than school subsidies.

At the Western Interstate Commission for Higher Education (WICHE) seminar in 1970, the Committee proposed "An Accounting structure for the Outputs of Higher Education: One Proposal". In the proposal, the outputs consist of four parts: instructional outputs, institutional environment outputs, research outputs, and public service outputs. Following are variables in each part.

Instructional Outputs

    Cognitive Attributes of Students:
        Level of General Knowledge
        Level of Knowledge in Chosen Field
        Basic Language Arts Skills
        Critical Thinking and Reasoning
        General Intelligence

    Affective Attributes of Students:
        Self-concept
        Satisfaction with Educational Experience
        Citizenship
        Values
        Achievement Motivation

Tangible Attributes of Students:
    Earning Power
    Awards
    Affiliations
    Advocations
    G.P.A.
    Level of Educational Attainment
    Flexibility of Employment
    Areas of Career Interest


## Institutional Environment
## Outputs

Academic Environment Attributes:
    Rate of Student success
    Mean Time to Reach Degree
    Faculty Turnover
    Faculty Availability to Student
    Academic Resources Available
    Quality of Instruction
    Academic Aptitude Mix
    Student Stress
    Faculty Stress

Social Environment Attributes:
    Degree of Social Activity on Campus
    Racial Mix
    Socio-Economic Mix
    Family Attitude Characteristics
    Social Involvement of Student Body
    Percent Resident (on campus) Students
    Rate of Marriage Among Students
    Physical Environment


## Research Outputs

    Reorganization of Knowledge
    New Inventions and Developments
    New Ideas and Concepts
    Personal Involvement of Students and Others


## Public Service Outputs

    Student Involvement in Community
    Faculty Involvement in Community
    Cultural Activities Available

Recreational Activities Available
Continuing Educational Activities
Social Criticism
Personal Services
Indirect Community Benefit
Community Psychic Income
Product Testing

It is important to notice that this proposal is only a draft.

## The Allocation of Resources

Martin and Cheek (30), in 1960, studied the expenditure for state institutions of higher education, particularly in Kentucky. They compared the expenditure for higher education with four variables: general expenditure, personal income, state population, and degree-credit enrollee.

Jamrich (26) studied the incomes and expenditures of the colleges and universities of New York State. He said:

> Four critical factors in any consideration
> of the adequacy of educational opportunity are
> 1) financial resources; 2) appropriateness of
> programs and curricular; 3) availability of
> qualified instructional staff for these programs,
> and; 4) the availability of physical facilities.

Jamrich studied only the financial resources, one of the four factors. He divided institution income into five sources: student fees, endowment, public sources, private gifts, and sales and services and all others. The study was reported in 1960. The report showed that, in 1958-59, the public four-year institutions drew the largest amount

of their income from public sources (84%). Student fees
came second, but accounted for only 13 percent. Sales and
services and all others accounted for 3 percent. No income
was realized from endowment and private gifts. The study
also compared the 1958-59 income with the 1948-49 income.
The percentages showed a variation in income resources.
When income was analyzed in terms of expenditures, the
largest amount of income was spent for instruction with
$1,371 per student. Expenditure for plant operation and
maintenance was $761, and administration was $536 per
student. No expenditures were reported for research.

Broomkin (19), in 1970, studied the diversity in
the post-secondary system. In course offerings by disci-
pline, he found that about 60 percent of all class hours
were offered in the fields of social sciences, business,
law, liberal arts, and humanities. About 17 percent were
offered in the physical sciences including biological and
health professions. Slightly more than 10 percent were
offered in fine and applied arts, including architecture.

By level of instruction, some 58 percent of all
class hours were offered at the first two years of under-
graduate level. An additional 5 percent were vocational
courses at all levels. Upper-diversion undergraduate
students received about 29 percent. Graduate and advanced
professional work accounted for about 8 percent.

After expenditure was determined, Froomkin found the diversity of costs. Roughly 55 percent of all current expenditures are consumed in delivering the primary function of post-secondary institutions: instructional services. Expenditures per student are higher in private than in public institutions. Universities tend to spend more than four-year liberal arts and teachers' colleges. Educational expenditure, according to Froomkin, is defined as the sum of outlays on instruction and departmental research, libraries administration, and plant operating costs.

## Methods of Study

There have been two groups trying to characterize and classify institutions of higher education in the United States. The first group was led by Pace, the second group was led by Astin.

In 1958, Pace and Stern (38) first developed the College Characteristic Index. The test was composed of items which described college environments as a system of pressures, practices, and policies. These environments were believed to influence the development of students toward the attainment of important goals of higher education. The analysis of the test revealed that the test could differentiate the press of different college environments.

In 1959, Thistlethwaite (48) reported that he used the College Characteristic Index developed by Pace and Stern to identify student cultures and faculty characteristics which motivate students to seek doctoral degrees. The test was administered to 916 of the National Merit Scholars and Certificate of Merit Winners at 36 colleges. The findings showed that college faculty and student culture had significant influence of the college press in one field differed from those in other fields.

Astin (1), in 1962, tried to identify the differences between colleges and universities. Instead of looking at college press as Pace and Stern did, he considered the main characteristics of institutions. The characteristics of institutions were institutional type, financial, student, faculty, and miscellaneous characteristics. The sample of his study was composed of 335 institutions. The results of his factor analysis indicated that there were six significatn dimensions of college environments. The first dimension, Affluence, accounted for the largest amount of variance. The highest loading variable on Affluence was operating budget. The other dimensions were Size, Private (vs. Public), Masculinity (vs. Femininity), Realistic (Technical) Emphasis, and Homogeneity.

Richards, Jr; Rand and Rand (40, 41) applied Astin's method to junior colleges in 1966 and to medical colleges in 1969. From the junior college study, they found six factors relating to college characteristics. These six factos were called Cultural Affluence, Technical Specifications, Size, Student Age, Transfer Emphasis, and Business Orientation. From the medical college study they found four factors: Affluence, Canadian vs. U.S. Admissions Practices, Size, and Emphasis on Hospital training.

Astin (3), in 1965, also reported a study of college and university characteristics in terms of freshmen input and environmental factors. The freshmen input factors were characterized as Intellectualism, Estheticism, Status, Leadership, Fragmatism, and Masculinity. Environmental factors were identified as Estimated Selectivity, Size of the Institution, and six Personal Orientations: Realistic, Scientific, Social, Conventional, Enterprising, and Artistic. The study found that student bodies entering various types of institutions vary greatly on some of those six input factors and eight institutional environmental factors.

In 1970, Richards, Jr.; Seligman and Jones (42), tried to identify college environment by using faculty and curriculum as the factors. They followed Astin by using his six types of personal orientations as a classification of environments. By their method, they classified faculty

members and curriculum into the types of orientations and then transformed scores to standard scores. The study showed that faculty and curriculum can be used to identify college environments, and they can be used to reveal the different emphases of colleges to subject matter areas.

The literature show some factors relating to characteristics of college and university environments, and these factors can be used to identify the differences between colleges and universities. The main factors appearing in many studies are Affluence and Size. Affluence is identified as operating budget, and Size as size of student body. Another factor appearing according to type of college, is the emphasized field of study. Faculty and curriculum are also dimensions of college characters.

## Usefulness of This Study

Many ways have been discussed for judging colleges and universities. Some research has suggested classifications of institutions by use of a characteristics scale. Other authorities have sought to relate income and expenditure data to institutional purpose and effectiveness.

This study extends the research to characterize one nation's universities in terms of the emphasis given the fields of study. Four factors are examined. They furnish the basis for a series of profiles, using the

factors of numbers of faculty, number of students, number
of credit hours in course offerings, and operating budgets.

The aim is to profile the individual university.
the whole of higher education is Thailand, and the distri-
bution of resources among nine study groupings or disci-
plines.

Chapter III

THE DESIGN OF THE STUDY

## Introduction

This research study was designed to analyze the
data collected on four characteristics of Thai universities:
number of the faculty members, number of credits the insti-
tutions offer, number of students, and operating budget.
These four characteristics were used to identify the pro-
files of Thai universities.  There was no need for using
questionnaires or tests to collect the data.  All data were
collected from various statistics sources and documents
of each university, and of Thai government offices.

## Population

The population consists of the institutions in
Thailand that have been recognized as universities by the
Thai standard and that have graduated students in or before
1971.  Within this limitation, there were eight institutions
in the whole population.

1. Chiengmai University
2. Chulalongkorn University
3. Kasetsart University
4. Khonkaen University
5. Mahidol University
6. Prince of Songkhla University
7. Silpakorn University
8. Thammasat University.

Only one Thai university was excluded from the population because it did not have students graduated in or before the year 1971. This institution is Ramkamhaeng University.

The statistics of the four characteristics of the eight institutions in the population were collected both for the individual university and for each discipline grouping in the following categories:

1. Number of students enrolled in 1971.

2. Number of graduating students in 1971.

3. Number of faculty.

4. Number of courses offered.

5. Operating budgets in baht.

6. Salaries in baht.

7. Other expenses in baht.

## Procedure

### Sources of Data

The data were gathered from the following sources:

1. Educational Report, Institutions of Higher Education, Thailand: 1971. This report was issued by the Office of the National Educational Council, Office of the Prime Minister. The report contained the most recent statistics concerning students and faculty of the institutions of higher education in Thailand. The statistics of enrollment and of graduating students are of the year 1971.

The statistics of enrollment from the report are categor-
ized by sex, level, fields of study, and institutions.

This report was also used as the source of data of
faculty when the direct information could not be collected.

2. The institution's catalogs. The catalogs which
at least set out curriculum, number of courses and credits
listed, were collected from the institutions and sometimes
from the faculties within the institutions. The following
are catalogs collected:

Chiengmai University: Requirement for Degrees Study
Programs Courses of Instruction, No. 1505, October 1972.

Chulalongkorn University:

a) Faculty of Commerce and Accountancy Curriculum
for 1971 (reprinted 1972).

b) Faculty of Science, Chulalongkorn University
Announcement 1972-1973.

c) Faculty of Engineering, Chulalongkorn University
Announcement 1971-1972.

d) Faculty of Education, Chulalongkorn University
(unprinted material, no date available).

e) Faculty of Social Sciences, Chulalongkorn Univer-
sity, 1971 (unprinted material, no date available).

f) Pharmacy Curriculum, Chulalongkorn University,
(unprinted material, no date available).

g) Faculty of Architecture, Chulalongkorn University,
1967 (unprinted material).

h) Faculty of Arts, Chulalongkorn University 1966.

i) Faculty of Medicine, Chulalongkorn University
(unprinted material, no date available).

j) Faculty of Veterinary Medicine, Chulalongkorn
   University 1973-1974.

k) Faculty of Communication Arts, Chulalongkorn
   University 1973.

Kasetsart University: Bulletin of Kasetsart University 1971.

Khonkaen University: Bulletin for the Academic Year
1972-1974.

Mahidol University: Mahidol University Announcement
1970-1971.

Prince of Songkhla University:

a) Education Curriculum, Prince of Songkhla University 1968.

b) Faculty of Engineering, Prince of Songkhla
   University 1969.

c) Faculty of Sciences, Prince of Songkhla University (unprinted material, no date available).

Silpakorn University:

a) Faculty of Archaeology, Silpakorn University
   (unprinted material, no date available).

b) Faculty of Architecture, Silpakorn University
   1969 (unprinted material).

c) Faculty of Fine Arts, Silpakorn University
   1972 (unprinted material).

d) Faculty of Thai Architecture, Silpakorn
   University (Unprinted material, no date
   available).

Thammasat University: Student Manual 1972, Thammasat
University.

3. The Budget Information. The budgeting data were
gathered from the "Budget for Fiscal Year 1972", Document
Number 3, Volume 2, 1972 (Thai Education). This document
has budgeting statistics of every university in Thailand.
The budgets were categorized by faculty of each institution

under ten types of expenses: salaries, permanent wages,
temporary wages, renumerations, ordinary expenses, materials
and supplies, equipment, land and buildings, subsidies, and
other expenses.

4. Faculty Information. The faculty statistics
were collected from the institution catalogs except those
where faculty lists are not included in the catalogs. The
faculty statistics gathered are:

Chiengmai University:

a) Statistics 1972, Chiengmai University, October
1972.

b) Faculty List, Chiengmai University, 1972
(unprinted material).

Chulalongkorn University:

a) Faculty List of Faculty of Arts, 1972
(unprinted material).

b) Faculty List of Faculty of Communication Arts,
1972 (unprinted material).

c) Faculty List of Faculty of Medicine, 1972
(unprinted material).

d) Faculty List of Faculty of Education, 1972
(unprinted material).

e) Faculty List of Faculty of Pharmacy, 1972
(unprinted material).

f) Faculty List of Faculty of Social Sciences,
1972 (unprinted material).

Prince of Songkhla University: The Faculty List of
Prince of Songkhla University, 1972 (unprinted
material).

## Collecting of Data

From the statistics and materials collected, the data needed were selected and classified into nine categories of discipline groupings: Agriculture, Arts, Business and Management, Engineering, Education, Health Professions, Languages and Literature, Sciences and Mathematics, and Social Sciences.

The enrollment data were drawn from Table 1 of the book, "Educational Report, Institution of Higher Education, Thailand: 1971." Since not all the data in Table 1 are needed, selection was made in order to be within the boundary of the population. The data were selected department by department. The categorization of the data was made by considering the description of that department, not by what faculty that department belongs to. The statistics of the first year students at some institutions were not classified. In case of an overlap between departments within a faculty and discipline grouping, the first year data were manipulated before being classified into discipline groupings. The enrollment data of any faculty which did not have graduating students within and before 1971 were excluded (except for the new Faculty of Engineering at Chiengmai University).

The graduating student data were gathered from Table 3 of the same book--Educational Report, Institution of Higher Education, Thailand: 1971. Table 3 reveals the

number of students graduating by department within an institution and by degree in the academic year 1971. The bachelors degree graduates are the only ones counted.

The curriculum data, number of courses and number of credits within a discipline grouping, were counted from the collected catalogs or bulletins. One weakness found while this process was being done, was the different years of publication. The range of publication is between 1966-1972. This difference was expected since many of the institutions did not have the catalogs printed every year. This study concentrated on current use rather than year of publication.

When the data were tabulated into discipline groupings, the judgment was made on course detail not on course title. The number of courses and credits of the trimester system, when found, was changed to the semester system by multiplying by 2 and dividing by 3. This manipulation was made in very few occasions since every institution in the study had the semester system except one faculty at one university. When one course appeared in the course description in more than one department, only one was counted. When there were no credit hours indicated on any course, a number was assigned by comparing it to comparable course which had the same class meeting hours per week. When there were no indications of credit hours and

and class meeting hours at all, the credit hours were
reassigned as the same as mode of credit hours of courses
in that department. A course with no credit was counted
zero credit. A course with varying credits was counted the
madian credits, for example, a 1-5-credits-course was
counted only 3.

The faculty data were gathered from the lists of
each single institution and of each faculty. Only full-
time teaching members were counted inclusively. Males and
females were not separated.

The budget data were collected by reclassifying the
statistics reported in "budgeting Information". In the
book, the statistics were presented in uniform terms,
faculty by faculty. When a faculty member belonged to
more than one dicipline, the budget was divided according
to the ratio of number of credits in each discipline
grouping. The budgets counted as operating budgets are
those in salaries, permanent wages, temporary wages,
renumerations, ordinary expenses, materials and supplies,
and equipment categories.

For the purpose of comparison within budgeting
information, two other kinds of budgets: salaries and
other expenses were also collected. "Salaries" consists
of the data that appeared in the salary category. "Other
Expenses" consists of data from subsidies and other expenses
categories.

## Statistical Procedures

The processes employed in the study were the procedures of changing the raw scores to T-scores and the process of finding correlation coefficients. The computations were done on the CDC 6500 computer at Michigan State University's Computer Center. The nine discipline groupings were the units of classification of each characteristic. The process of computation was as follows:

1. The arithmetic mean and standard deviation were computed. Mean was the sum of scores across the nine discipline groupings divided by the number of discipline groupings. The standard deviation was computed by the formula:

$$S = \frac{\sqrt{\Sigma (x_i - \bar{x})^2}}{N}$$

when S = standard deviation, $x_i$ = scores in the characteristics, $\bar{x}$ = mean score, and N = number of discipline groupings with scores greater than zero.

2. The scores within each characteristics then were changed to Z-scores by the formula:

$$Z_i = \frac{x_i - \bar{x}}{S}$$

when $Z_i$ = Z-score i.

3. The Z-scores within each characteristic were transformed to T-scores by the formula:

$$T_i = 10Z_i + 50$$

when $T_i$ = T-score i, $Z_i$ = Z-score i. The transformed T-scores have the mean of 50 and the standard deviation of 10. The T-scores makes the comparison of data possible.

4. Finally, the inter-correlation coefficients among characteristics within an institution, and within the entire Thai higher education system were computed by the formula:

$$r = \frac{Zx_i \cdot Zy_i}{N}$$

when r = correlation coefficient, $Z_{y_i}$ = Z-score i of set x,

$Z_{x_i}$ = Z-score i of set y, N = number of discipline groupings

the Z-scores presented.

Chapter IV

ANALYSIS OF DATA


The data that had been collected as reported in
Chapter III were assembled in raw form in several series
of tables set out in the Appendix. The figures that repre-
sent the four resource-use categories are tabulated for
each discipline in each university. Summary tables have
been accumulated in various combinations to show relation-
ships among disciplines in a single university, among the
universities in each discipline, and among the four
resource-use factors.

These tables, and the refined data that are
derived from them, are the material from which answers
are found to the three principal questions posed in
Chapter I.

1. In the eight universities taken as a whole, what
are the differences in the amount of resources of faculty,
course offerings, students, and operating budgets currently
used in the nine discipline groupings?

2. In each of the eight Thai universities, what are
the differences in the amount of resources of faculty,

course offerings, students, and operating budgets currently
used in the nine discipline groupings?

3. Comparing each university with each other university
and with the eight taken as a whole, what are the differ-
ences in the amount of resources of faculty, course
offerings, students, and operating budgets currently used
in the nine discipline groupings?

## Profile of Thai Higher Education

The raw data are gathered in one summary for all of
Thai higher education that are presented in Table 1. The
numbers of faculty, of course offerings, of students, and
of thousands of baht in operating budgets are listed for
each of the nine discipline groupings in all of the
universities.

The computations of raw scores indicated a mean
and standard deviation of faculty members of 487 and 341
respectively. These figures showed that there were great
variation among the discipline groupings when measured by
the number of faculty. Business and Management had the
smallest number of faculty while Health Professions had
the most. The range was between 177 and 1234. Sciences
and Mathematics had the second highest number of faculty.
The rest did not differ greatly.

The mean of the number of credits offered was 2119

and the standard deviation was 1292. The figures also indicated great variation among discipline groupings. Unlike the situation with faculty members, Sciences and Mathematics offered the largest number of credits and Education offered the least. The range was between 730-5137.

TABLE 1.--The Distribution of Faculty, Course Offerings, Students, and Operating Budgets by Discipline Groupings in Thai Higher Education in 1971.

| Character-istics | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc. | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Faculty | 332 | 220 | 177 | 377 | 303 | 1231 | 313 | 955 | 468 | 4379 |
| Courses | 1625 | 1656 | 768 | 730 | 1568 | 3126 | 1806 | 5137 | 2658 | 19074 |
| Students | 2526 | 2120 | 3686 | 3081 | 2348 | 4463 | 1536 | 3357 | 14073 | 37190 |
| Budgets | 26669 | 17868 | 11610 | 24415 | 36758 | 188000 | 19394 | 73943 | 26539 | 424696 |

Faculty = Number of Full-time Faculty Members

Courses = Number of Courses Offered in Terms of Course Credits

Students = Number of Students Enrolled

Budgets = Number of Thousands of Bahts Budgeted for Operating Expenses

For the number of students in each discipline groupings, the mean was 4,132 with a standard deviation of 3612. The size of the standard deviation was effected mainly from Social Sciences which had 14,073 students while the rest enrolled between 1,536 and 4,132.

The mean of the operating budgets was 46,688 thousand baht and the standard deviation was 52,933 thousands. The Health Professions deviated from the other groups the most. Its score was 188,000 thousands baht. The lowest score was in Business and Management with 11,610 thousands. Outside the Health Professions, there were no considerable variations among discipline groupings.

Among the four characteristics, Health Professions led the score in numbers of faculty and operating budgets. The Sciences and Mathematics led in the number of course offerings. Social Sciences led in the number of students. The least were Business and Management in number of faculty and operating budgets; Education in number of course offerings; and Languages and Literature in number of students.

The T-Scores of Thai
Higher Education

The raw data were converted first to Z-scores and then to T-scores to make the comparisons more meaningful by reducing the figures to the same scale--that is, all have the same mean and the same standard deviation.

In Table 2 are set out the same data as in Table 1, but converted to T-scores.

TABLE 2.--T-Scores of Thai Higher Education.

| Factors | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc* |
|---------|-----|------|-----|------|-----|------|------|-----|---------|
| Faculty | 45 | 42 | 41 | 47 | 45 | 72 | 45 | 64 | 49 |
| Courses | 46 | 46 | 40 | 39 | 46 | 58 | 48 | 73 | 54 |
| Students | 46 | 44 | 49 | 47 | 45 | 51 | 43 | 48 | 78 |
| Budgets | 46 | 45 | 43 | 46 | 48 | 77 | 44 | 55 | 46 |
| Average | 46 | 44 | 43 | 45 | 46 | 65 | 45 | 60 | 57 |

```
*Agr    = Agriculture
Arts    = Arts
Bus     = Business and Management
Educ    = Education
En      = Engineering
Hlth    = Health Professions
Lang    = Languages and Literature
Sc      = Sciences and Mathematics
Soc.Sc  = Social Sciences
```

The T-Scores Across Discipline Groupings.--When the T-scores across the nine discipline groupings were examined, the figures showed significant findings.

The T-scores of faculty members were dominated by the Health Professions, and Sciences and Mathematics groupings. The Health Professions were two standard deviations above the mean (50) at 72. Sciences and Mathematics

T-scores were 64, 1.4 standard deviation above the mean.
The rest were lower than the mean. The lowest T-score
was 41, one standard deviation below the mean. Social
Sciences T-score was about the average. The discipline
groupings, when rearranged by the order of T-scores of
faculty numbers appeared as follows:

TABLE 3.--The Ranked T-Scores of Faculty Numbers of Thai
Higher Education.

|  | Bus | Arts | Lang | En | Agr | Educ | Soc.Sc | Sc | Hlth |
|---|---|---|---|---|---|---|---|---|---|
| T-Scores | 41 | 42 | 45 | 45 | 45 | 47 | 49 | 64 | 72 |
| Ranks | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

The T-scores of <u>courses</u> offered differed from those
of faculty characteristics. Sciences and Mathematics
T-score was the highest at 73, 2.3 standard deviation
above the mean. The Health Professions T-score was almost
one standard deviation above the mean. Education had the
lowest T-score (39).

The order of discipline groupings in terms of T-
scores are as follows:

TABLE 4.--The Ranked T-Scores of Course Offerings of Thai Higher Education.

| | Educ | Bus | En | Agr | Arts | Lang | Soc.Sc | Hlth | Sc |
|---|---|---|---|---|---|---|---|---|---|
| T-Scores | 39 | 40 | 46 | 46 | 46 | 48 | 54 | 58 | 73 |
| Ranks | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

The students T-scores differed from the two others set out above. The T-score of Social Sciences was the highest at 78, 2.8 standard deviations above the mean. Except for Health Professions, all the other discipline groupings had T-scores lower than the mean, and did not differ much among each others. The order of discipline groupings and their T-scores are in Table 5.

TABLE 5.--The Ranked T-Scores of Students of Thai Higher Education.

| | Lang | Arts | En | Agr | Educ | Sc | Bus | Hlth | Soc.Sc |
|---|---|---|---|---|---|---|---|---|---|
| T-Scores | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 51 | 78 |
| Ranks | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

The T-scores, when the operating budget data were used, distributed very closely except for Health Professions which was far apart from the rest. The Health Professions T-scores was 77, 2.7 standard deviation above the mean.

Sciences and Mathematics were second at 55, 2.2 standard
deviations below Health Professions. The others were not
much different from each other. The discipline groupings
ranked by the order of T-scores are in Table 6.

TABLE 6.--The Ranked T-Scores of Operating Budgets of
Thai Higher Education.

|          | Bus | Lang | Arts | Educ | Agr | Soc.Sc | En | Sc | Hlth |
|----------|-----|------|------|------|-----|--------|----|----|------|
| T-Scores | 43  | 44   | 45   | 46   | 46  | 46     | 48 | 55 | 77   |
| Ranks    | 9   | 8    | 7    | 6    | 5   | 4      | 3  | 2  | 1    |

When the averages of T-scores for the four charac-
teristics were made within each discipline grouping, Health
Professions still led with the T-score of 65. Sciences
and Mathematics T-score was 60, and 57 for Social Sciences.
These three discipling groupings were above the average
T-score. Agriculture, Arts, Business and Management,
Education, Engineering, and Languages and Literature T-
scores were lower than the average, and did not differ from
each other much. The T-scores of the lower groups were
between 43-46. The ranked T-scores of the discipline
groupings are presented in Table 7.

TABLE 7.--The Ranked T-Scores of the Average of Thai
          Higher Education.

|         | Bus | Arts | Educ | Lang | En | Agr | Soc.Sc | Sc | Hlth |
|---------|-----|------|------|------|----|-----|--------|----|------|
| T-Scores | 43 | 44 | 44 | 45 | 46 | 46 | 57 | 60 | 65 |
| Ranks | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

The profiles of Thai Higher Education presented in graphic form in terms of T-scores across discipline groupings are set out in separate charts in the Appendix.

The T-Scores Within Discipline Groupings.--The T-scores revealed clear pictures of differences between the four characteristics within a discipline grouping.

The Agriculture groupings had very uniform T-scores across the four characteristics (45, 46, 46, 46).

The Arts groupings had a little variation across the four characteristics (42, 46, 44, 45) with its lowest T-score (42) in number of faculty members.

The Business and Management T-scores were almost uniform (41, 40, 49, 43) except the students T-score was comparatively high with 49, although still slightly below the mean.

The Education T-scores were uniform between faculty, students, and operating budgets characteristics with scores of 47, 47, and 46 respectively. Its course offerings T-score was the lowest single T-score in the table, at 39.

The Engineering T-scores were almost equal in three characteristics at 45-46. The T-score for operating budget deviated from the group, to 48.

The Health Professions T-scores varied from 51 to 77. The faculty, course offerings, students, and operating budgets had T-scores of 72, 58, 51, and 77 respectively. Its students T-score was the lowest, yet it was above the mean.

The Languages and Literature T-scores were 48, 48, 43, and 44 within the four characteristics. Its only comparatively high T-score was in the course characteristic, where it was 2 below the mean.

The Sciences and Mathematics T-scores were varied. The highest T-score was 73 in course offerings and the lowest T-score was 48 in student numbers. The four T-scores were 64, 73, 48, and 55.

The Social Sciences T-scores showed variation among the different characteristics. Its T-scores were 49, 54, 78, and 46 with the highest at student and the lowest at operating budget characteristics.

Agriculture, Arts, Engineering, and Languages and Literature showed the least variation among the T-scores across the four characteristics. The highest range among these three discipline groupings was 4.

Business and Management, and Education showed the medium variation of T-scores across the four characteristics. Their range was 9 and 8 respectively.

Health Professions, Sciences and Mathematics, and Social Sciences showed the most variation of T-scores of the four characteristics. The ranges were 26 in Health Professions, 25 in Sciences and Mathematics, and 29 in Social Sciences.

The profiles of distribution of the four characteristics among the nine discipline groupings in all Thai higher education in graphic form are found in the Appendix.

The Relationships Between the Four Characteristics Across Discipline Groupings.--The Pearson Product Moment Correlation was used in others to find the relationships between characteristics. The correlation are presented in Table 8.

TABLE 8.--Correlation Coefficients Between the Four
Characteristics of Thai Higher Education.

|          | Courses | Students | Budgets |
|----------|---------|----------|---------|
| Faculty  | .78     | .14      | .93     |
| Courses  |         | .21      | .54     |
| Students |         |          | .03     |

The correlation coefficients showed very low relationships between students and the other characteristics: faculty, course offerings, and operating budgets; the indices were .14, .21, and .03 respectively. The faculty characteristic was highly related with course offerings and operating budgets, with the indices of .78, and .93 respectively. The index of correlation between course offerings and operating budgets was moderate (.54).

Some Factors Within the
Characteristics

1. Graduating Students.--The number of graduating students related closely with the number of students enrolled, which was the number used as student characteristic. The correlation coefficient index between them was .93. When graduating students were put into a profile of Thai higher eudcation and this profile was compared with the profile based on student characteristic, the two profiles were very similar in shape (see profiles of total

enrollment and graduating students in Appendix). The only
two major points of difference between these two profiles
were at the Business and Management, and Health Professions.
The T-score for numbers of graduating students in these
discipline groups were higher than those for the enrolled
students. The T-scores of other discipline groupings stayed
close together. The comparison of the T-scores based on
graduating students and the student characteristic is
shown in Table 9.

TABLE 9.--The Student Enrollment T-Scores and Graduating
Students T-Scores of Thai Higher Education.

| Factors | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|---------|-----|------|-----|------|-----|------|------|----|--------|
| Enroll-ment | 46 | 44 | 49 | 47 | 45 | 51 | 43 | 48 | 78 |
| Graduat-ing | 45 | 44 | 55 | 45 | 43 | 58 | 41 | 44 | 74 |

When the graduating students were used as a substitute for
the student characteristic, the relationships between
graduating students and faculty numbers, course offerings,
and operating budgets were somewhat changed but not signi-
ficantly. The correlation coefficients between graduating
students and other characteristics were still low as were
the indices of the student characteristic and others. The
substitution of graduating students for the student charac-
teristic, generally did not improve the predictions of other
characteristics.

The correlation ceofficient indices are presented in Table 10.

TABLE 10.--The Correlation Coefficient Indices Between Enrollment Students and Graduating Students and the Other Characteristics of Thai Higher Education.

| Factors | Faculty | Courses | Budgets |
|---|---|---|---|
| Enrollment | .15 | .21 | .03 |
| Graduating | .23 | .12 | .22 |

2. Number of Courses.--Number of courses was analyzed along with number of credits. It appeared that these two factors were highly related. The correlation index between them was .99; an almost perfect correlation. The number of courses T-scores and the number of credits T-scores were almost identical, which can seen in Table 11.

TABLE 11.--The Number of Courses and Number of Credits T-Scores of Thai Higher Education.

| Factors* | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|---|---|---|---|---|---|---|---|---|---|
| Courses | 46 | 48 | 38 | 39 | 44 | 57 | 49 | 72 | 56 |
| Credits | 46 | 46 | 40 | 39 | 46 | 58 | 48 | 73 | 54 |

*Courses = Number of Courses
 Credits = Number of Credits

The graphs of the number of courses T-scores and number of credits T-scores included in the Appendix clearly demonstrate the close relationship between these two factors.

When number of scourses was used as a curriculum characteristic instead of number of credits, the relation-ships between curriculum and the other characteristics were not improved. The correlation indices, as shown in Table 12, were somewhat lower than those of number of credits as a curriculum characteristics.

TABLE 12.--The Correlation Coefficient Indices Between the Number of Courses and Number of Credits, and the Other Characteristics of Thai Higher Education.

| Factors | Students Enrolled | Graduating Students | Faculty | Budgets |
|---------|-------------------|---------------------|---------|---------|
| Courses | .25 | .12 | .75 | .51 |
| Credits | .21 | .22 | .77 | .54 |

3. <u>Salary and Other Expenses</u>.--Salary factor is one part of the total operating budget, while other expenses factor is the budgets in subsidies and other expenses categories. Both salary and other expenses related well with Operating Budget. The correlation coefficient indices are shown in Table 13. The correlation coefficient indices between the three characteristics were as high as .995 for

operating budgets and salary. The lowest coefficient
index was .977 between salary and other expenses.


TABLE 13.--The Correlation Coefficient Indices Between
         Salary, Operating Budgets, and Other Expenses
         of Thai Higher Education.

| Factors | Operating Budgets | Other Expenses |
|---|---|---|
| Salary | .995 | .977 |
| Operating Budgets | | .993 |


The T-scores of these three factors are shown in
Table 14. Their graphs based on the T-scores (which can be
seen in the Appendix) were very much similar in shape. The
only slight differences were the T-scores in Engineering w
which had a range of 5 T-scores, and in Sciences and
Mathematics, and Social Sciences which had ranges of 2 and
4 T-scores.


TABLE 14.--The T-Scores of Salary, Operating Budgets, and
         Other Expenses of Thai Higher Education.

| Factors | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|---|---|---|---|---|---|---|---|---|---|
| Salary | 46 | 45 | 43 | 46 | 46 | 77 | 44 | 54 | 48 |
| Opt.Bud.* | 46 | 45 | 43 | 46 | 48 | 77 | 44 | 55 | 46 |
| Other Ex.** | 47 | 44 | 43 | 45 | 51 | 76 | 44 | 56 | 44 |

*Opt. Bud.  = Operating Budgets
**Other Ex. = Other Expenses

When salary and other expenses were correlated with
faculty, course offerings, and students, the indices were
close to those when correlated to operating budgets.  The
indices are shown in Table 15.


TABLE 15.--Correlation Coefficients Between Salary and
          Other Expenses, and the Other Characteristics
          of Thai Higher Education.

| Budgets | Faculty | Students Enrolled | Students Graduating | Courses | Credits |
|---------|---------|-------------------|---------------------|---------|---------|
| Salary | .91 | .08 | .28 | .50 | .52 |
| Opt.Bud. | .93 | .03 | .22 | .51 | .53 |
| Oth.Ex. | .92 | -.04 | .15 | .52 | .55 |


### Profiles of Individual
### Thai Universities

So far the data have been grouped as though all
the eight universities studied were really one.  That method
of summarizing gave data for Thai higher education taken as
a whole.  In this section each university is looked at in
turn.

### Chiengmai University

Chiengmai was the only university in Thailand which
had a program leading to at least a bachelor's degree in

every discipline grouping at the time of this study. Its engineering program, however, was recently developed and there were no graduating students at Chiengmai in this discipline grouping.

The raw data of Chiengmai University were manipulated as presented in Table 16 (the Z-scores are to be found in the Appendix).

TABLE 16.--The T-Scores of Chiengmai University.

| Factors | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|---------|-----|------|-----|------|-----|------|------|-----|--------|
| Faculty | 47 | 44 | 43 | 46 | 42 | 76 | 46 | 57 | 49 |
| Courses | 52 | 46 | 41 | 43 | 36 | 54 | 48 | 71 | 60 |
| Students | 40 | 40 | 54 | 58 | 32 | 59 | 48 | 54 | 64 |
| Budgets | 47 | 45 | 44 | 46 | 48 | 78 | 45 | 52 | 46 |
| Average | 47 | 44 | 46 | 48 | 40 | 67 | 47 | 59 | 55 |

The T-Scores Across Discipline Groupings.--The T-scores of Chiengmai University on faculty numbers showed a low profile in the Engineering and in the Business and Management groupings, and high in the Health Professions. The lowest T-score was 42 and the highest was 76. The T-Score range was 34 or 3.4 standard deviations. This wide range was affected by the high T-score of Health Professions which was 2.6 standard deviations above the mean

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T-score.   Sciences and Mathematics grouping was the only
other group in which T-scores were above the mean.   T-
scores for the seven other discipline groupings were below
the mean, ranging from 42 to 49.   The ranked T-scores of
faculty numbers are shown in Table 17.

TABLE 17.--The Ranked T-Scores of Faculty Numbers of
          Chiengmai University.

|          | En | Bus | Arts | Lang | Educ | Agr | Soc.Sc | Sc | Hlth |
|----------|----|----|----|----|----|----|----|----|----|
| T-Scores | 42 | 43 | 44 | 46 | 46 | 47 | 49 | 57 | 76 |
| Ranks    | 9  | 8  | 7  | 6  | 5  | 4  | 3  | 2  | 1  |

The T-scores on <u>courses</u> differed from the set of
T-scores on faculty.   The Engineering grouping was still
low and fell further behind the rest of the group at 36.
Unlike faculty T-scores, four courses T-scores: Sciences
and Mathematics, Social Sciences, Health Professions, and
Agriculture, were above the mean.   Engineering, Business
and Management, Education, Arts, and Languages and Litera-
ture T-scores were below the mean.   The range of T-scores
was 35.   The ranked T-scores of courses are shown in
Table 18.

TABLE 18.--The Ranked T-Scores of Courses of Chiengmai
          University.

|            | En | Bus | Educ | Arts | Lang | Agr | Hlth | Soc.Sc | Sc |
|------------|----|-----|------|------|------|-----|------|--------|----|
| T.-Scores  | 36 | 41  | 43   | 46   | 48   | 52  | 54   | 60     | 71 |
| Ranks      | 9  | 8   | 7    | 6    | 5    | 4   | 3    | 2      | 1  |

The students T-scores across discipline groupings
were well over the mean in Business and Management, Educa-
tion, Health Professions, Sciences and Mathematics, and
Social Sciences; and far below the mean in Agriculture,
Arts, Engineering, and Languages and Literature. Engineer-
ing was still the lowest in the T-score profile at 32,
while Social Sciences was the highest at 64. The ranked
discipline grouping according to their T-scores are shown
in Table 19.

TABLE 19.--The Ranked T-Scores of Students of Chiengmai
          University.

|           | En | Arts | Agr | Lang | Bus | Sc | Educ | Hlth | Soc.Sc |
|-----------|----|------|-----|------|-----|----|------|------|--------|
| T-Scores  | 32 | 40   | 40  | 48   | 54  | 54 | 58   | 59   | 64     |
| Ranks     | 9  | 8    | 7   | 6    | 5   | 4  | 3    | 2    | 1      |

The operating budgets T-scores differed in the over-
all picture from the other characteristics T-Scores. Health

Professions was the highest group and deviated away from the rest at 78. The other eight discipline groupings clustered together in a range of 44 to 52. Seven groups: Agriculture, Arts, Business and Management, Education, Engineering, and Languages and Literature had scores within the 44 to 48 range. The lowest was Business and Management which had the T-score of 44. The ranking of discipline groupings are presented in Table 20.

TABLE 20.--The Ranked T-Scores of Operating Budgets of Chiengmai University.

|  | Bus | Arts | Lang | Educ | Soc.Sc | Agr | En | Sc | Hlth |
|---|---|---|---|---|---|---|---|---|---|
| T-Scores | 44 | 45 | 45 | 46 | 46 | 47 | 48 | 52 | 78 |
| Ranks | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

The averaged T-scores are revealed in the overall profile of Chiengmai University in the Appendix. It appeared that the highest score was in Health Professions which was influenced by very high scores in faculty and operating budgets. Sciences and Mathematics were the second highest at 59. Social Sciences with high scores in courses and students, had a score of 55. Engineering was the lowest in overall profile, scored at 40. Agriculture, Arts, Business and Management, Education, and Languages and

Literature had scores within the 44 to 48 range. The
ranking T-scores of the average are presented in Table 21.


TABLE 21.--The Ranked T-Scores of the Average of Chiengmai
University.

|  | En | Arts | Bus | Agr | Lang | Educ | Soc.Sc | Sc | Hlth |
|---|---|---|---|---|---|---|---|---|---|
| T-Scores | 40 | 44 | 46 | 47 | 47 | 48 | 55 | 59 | 67 |
| Ranks | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |


The T-Scores Within the Discipline Groupings.--
When T-scores of the four characteristics within disci-
pline groupings were compared, the findings were as
follows:

Agriculture was high on courses (52), low on
students (40).

Arts was about the same on every characteristic,
but low on students.

Business and Management was high on students (54),
low on courses (41).

Education was high on students (58), low on courses
(43).

Engineering was high on operating budgets (48), low
on students (32).

Health Professions were high on operating budgets
(78) and faculty (75), low on courses (54).

Languages and Literature were about the same in every characteristic.

Sciences and Mathematics was high on courses (71), low on operating budgets (52).

Social Sciences was high on students (64), low on operating budgets (46).

The Relationships Between the Four Characteristics. --The correlation coefficient indices, based on Pearson Product Moment method, among the four characteristics: faculty, courses, students, and operating budgets are presented in Table 22.

TABLE 22.--The Correlation Coefficients Between the Four Characteristics of Chiengmai University.

| Factors | Courses | Students | Budgets |
|---------|---------|----------|---------|
| Faculty | .51 | .47 | .96 |
| Courses | | .49 | .26 |
| Students | | | .31 |

Faculty highly related with operating budgets, but related considerably lower with courses and students. The coefficient indices of courses and students with any characteristics were generally low.

The correlation coefficient indices showed that faculty and operating budgets might be used as predictors of one another.

## Chulalongkorn University

Chulalongkorn did not have a program leading to a degree in the Agriculture grouping area. However, there was one two-credit-course which can be categorized in the agriculture group. T-scores of Chulalongkorn University are presented in Table 23.

TABLE 23.--The T-Scores of Chulalongkorn University.

| Factors | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|---------|-----|------|-----|------|-----|------|------|-----|--------|
| Faculty | 35 | 42 | 44 | 58 | 49 | 67 | 48 | 64 | 45 |
| Courses | 38 | 49 | 46 | 39 | 57 | 50 | 49 | 74 | 48 |
| Students | 28 | 47 | 57 | 59 | 60 | 43 | 43 | 59 | 53 |
| Budgets | 38 | 47 | 44 | 49 | 51 | 68 | 43 | 67 | 44 |
| Average | 35 | 46 | 48 | 51 | 54 | 57 | 46 | 66 | 48 |

The Chulalongkorn faculty T-scores were highest in the Health Professions at 67. Sciences and Mathematics came close at 64. The other discipline group placed over the mean was Education at 58. The very slight attention to the field of Agriculture led to the lowest T-score for faculty in that discipline group. Arts had the next

lowest T-score at 42. When discipline groupings were ranked according to their T-scores, the result appeared as in Table 24.

TABLE 24.--The Ranked T-Scores of Faculty of Chulalongkorn University.

|  | Arts | Bus | Soc.Sc | Lang | En | Educ | Sc | Hlth |
|---|---|---|---|---|---|---|---|---|
| T.-Scores | 42 | 44 | 45 | 48 | 49 | 58 | 64 | 67 |
| Ranks | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

The courses T-scores of Chulalongkorn were high in the Sciences and Mathematics at 74. Engineering was also high (57) but far below Sciences and Mathematics. Because only one course was assigned to Agriculture, its T-score was only 38- the lowest. Education was also low at 39. The rest of the discipline groupings did not differ much. The ranking of the discipline groupings according to their T-scores are presented in Table 25.

TABLE 25.--The Ranked T-Scores of Courses of Chulalongkorn University.

|  | Agr | Educ | Bus | Soc.Sc | Lang | Arts | Hlth | En | So |
|---|---|---|---|---|---|---|---|---|---|
| T-Scores | 38 | 39 | 46 | 48 | 49 | 49 | 50 | 57 | 74 |
| Ranks | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

The students T-scores showed different figures from faculty and courses T-scores. Except for the Agriculture grouping, the T-scores stayed comparatively close together. Health Professions and Languages and Literature were low at 43. There were five groups above the means. Engineering's T-score was the highest at 60, but this is only one T-score above Education, and Sciences and Mathematics. When discipline groupings were ranked according to their T-scores, the result appeared as in Table 26.

TABLE 26.--The Ranked T-Scores of Students of Chulalongkorn University.

|          | Hlth | Lang | Arts | Soc.Sc | Bus | Sc | Educ | En |
|----------|------|------|------|--------|-----|----|------|----|
| T-Scores | 43   | 43   | 47   | 53     | 57  | 59 | 59   | 60 |
| Ranks    | 8    | 7    | 6    | 5      | 4   | 3  | 2    | 1  |

The operating budgets T-scores were high in the Health Professions, and Sciences and Mathematics at 68 and 67 respectively. The Engineering and Education T-scores were about the mean. Besides the Agriculture grouping for which there was no data on this characteristic, Languages and Literature T-score was the lowest at 43. Social Sciences, and Business and Management T-scores were close at 44. When the discipline groupings were ranked according to their T-scores, they appeared as in Table 27.

TABLE 27.--The Ranked T-Scores of Operating Budgets of
         Chulalongkorn University.

|          | Lang | Bus | Soc.Sc | Arts | Educ | En | Sc | Hlth |
|----------|------|-----|--------|------|------|-----|-----|------|
| T-Scores | 43   | 44  | 44     | 47   | 49   | 51  | 67  | 68   |
| Ranks    | 8    | 7   | 6      | 5    | 4    | 3   | 2   | 1    |

The averaged T-scores of all four characteristics
was high in the Sciences and Mathematics at 66.  Health
Professions was also high but 9 points lower than Sciences
and Mathematics.  Education and Engineering were the
other two groups which T-scores higher than mean score.
Arts, and Languages and Literature were the lowest groups
besides Agriculture.  When the discipline groupings were
ranked according to their T-scores, they appeared as in
Table 28.

TABLE 28.--The Ranked T-Scores of the Average of Chulalong-
         korn University.

|          | Agr | Lang | Arts | Soc.Sc | Bus | Educ | En | Hlth | Sc |
|----------|-----|------|------|--------|-----|------|-----|------|-----|
| T-Scores | 35  | 46   | 46   | 48     | 48  | 51   | 54  | 57   | 66 |
| Ranks    | 9   | 8    | 7    | 6      | 5   | 4    | 3   | 2    | 1  |

When all the T-scores within each discipline group-
ing were considered, they revealed:

Arts T-scores were low in faculty, but the other characteristics were nearly equal, just below the mean.

Business and Management T-scores were high in students, while in the other characteristics they were four to six points below the mean.

Education T-scores were high in faculty and students, low in courses and about average in operating budgets.

Engineering T-scores were high in students, low in faculty.

Health Professions T-scores were low in students, high in faculty and operating budgets.

Languages and Literature were high in courses and faculty, low in students and operating budgets.

Sciences and Mathematics T-scores were high in courses, low in students.

Social Sciences were high in students, low in operating budgets and faculty.

The Relationships Between the Four Characteristics. --The coefficients of correlation between the combination of faculty, courses, students, and operating budgets are presented in Table 29.

TABLE 29.--The Correlation Coefficients Between the Four
           Characteristics of Chulongkorn University.

| Factors | Courses | Students | Budgets |
| --- | --- | --- | --- |
| Faculty | .52 | .42 | .92 |
| Courses | | .45 | .67 |
| Students | | | .32 |

Number of faculty highly related with operating budgets but moderately related with courses and was low in relationship with students.

Courses showed low relationship with students, but was moderately related with operating budgets.

Students showed low relationships with every characteristic.

The only high relationship was between faculty and operating budgets. Faculty might be valuable to be used as a predictor of operating budgets.

Kasetsart University

Just like the Agriculture data at Chulalongkorn University, the Kasetsart data on Arts grouping were found only in the courses characteristic. When T-scores of each characteristic were calculated from the data, they appeared as in Table 30.

TABLE 30.--The T-Scores of Kasetsart University.

| Factors | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|---------|-----|------|-----|------|-----|------|------|-----|--------|
| Faculty | 72 | 38 | 42 | 46 | 46 | 45 | 45 | 54 | 62 |
| Courses | 70 | 42 | 43 | 44 | 49 | 42 | 42 | 65 | 53 |
| Students | 77 | 42 | 48 | 46 | 48 | 45 | 45 | 51 | 48 |
| Budgets | 75 | 40 | 42 | 46 | 46 | 47 | 48 | 58 | 48 |
| Average | 74 | 41 | 44 | 46 | 47 | 45 | 45 | 57 | 53 |

The T-Scores Across Discipline Groupings.--The T-scores of faculty across discipline groupings showed high scores in Agriculture at 72, Social Sciences at 62, and Sciences and Mathematics at 54. Business and Management was the lowest score among the disciplines for which data existed. Education, Engineering, Health Professions, and Languages and Literature T-scores were very close to each other at 45-46. The ranking of discipline groupings according to their T-scores were as in Table 31.

TABLE 31.--The Ranked T-Scores of Faculty of Kasetsart University.

| | Bus | Lang | Hlth | Educ | En | Sc | Soc.Sc | Agr |
|---------|-----|------|------|------|-----|-----|--------|-----|
| T-Scores | 42 | 45 | 45 | 46 | 46 | 54 | 62 | 72 |
| Ranks | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

The T-scores of <u>courses</u> across discipline groupings appeared high in Agriculture at 70. Sciences and Mathematics at 65, and Social Sciences at 53. Engineering T-score was at about the mean. In the low T-score groups were Arts, Health Professions, and Languages and Literature at 42. The ranking of discipline groupings according to their T-scores are presented in Table 32.

TABLE 32.--The Ranked T-Scores of Courses of Kasetsart University.

|          | Arts | Hlth | Lang | Educ | Bus | En | Soc.Sc | Sc | Agr |
|----------|------|------|------|------|-----|-----|--------|-----|-----|
| T-Scores | 42   | 42   | 42   | 43   | 44  | 49  | 53     | 65  | 70  |
| Ranks    | 9    | 8    | 7    | 6    | 5   | 4   | 3      | 2   | 1   |

The T-scores of <u>students</u> across discipline groupings were high at 77 in Agriculture: 2.7 standard deviations above the mean. Sciences and Mathematics T-scores were about at the mean. In the other discipline groupings, except Arts, the scores were not much different. Health Professions, and Languages and Literature were low at 45. The discipline groupings, when ranked according to T-scores, appeared as in Table 33.

TABLE 33.—The Ranked T-scores of Students of Kasetsart University.

|  | Hlth | Lang | Educ | Bus | En | Soc.Sc | Sc | Agr |
|---|---|---|---|---|---|---|---|---|
| T-Scores | 45 | 45 | 46 | 48 | 48 | 48 | 51 | 77 |
| Ranks | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

The T-scores of operating budgets were also highest in Agriculture at 75. Sciences and Mathematics was the only other group in which the T-score was above the mean at 58. There were no data in Arts. Business and Management T-score was the lowest at 42. The scores in Education, Engineering, Health Professions, Languages and Literature, and Social Sciences were in a cluster between 46 and 48. The ranking discipline groupings according to their T-scores appeared as in Table 34.

TABLE 34.—The Ranked T-Scores of Operating Budgets of Kasetsart University.

|  | Bus | Educ | En | Hlth | Soc.Sc | Lang | Sc | Agr |
|---|---|---|---|---|---|---|---|---|
| T-Scores | 42 | 46 | 46 | 47 | 48 | 48 | 58 | 75 |
| Ranks | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

The averaged T-scores of all characteristics still revealed the highest in the Agriculture group at 76.

Sciences and Mathematics which generally had high scores on every characteristic were also high but 17 points lower than the Agriculture T-score. The Arts T-score was obviously low. Except Arts, Business and Management averaged T-score was the lowest at 44. Health Professions, and Languages and Literature scores were low at 45. The ranking of discipline groupings according to their T-scores are presented in Table 35.

TABLE 35.--The Ranked T-Scores of the Average of Kasetsart University.

|          | Arts | Bus | Hlth | Lang | Educ | En | Soc.Sc | Sc | Agr |
|----------|------|-----|------|------|------|----|--------|----|----|
| T-Scores | 41   | 44  | 45   | 45   | 46   | 47 | 53     | 57 | 74 |
| Ranks    | 9    | 8   | 7    | 6    | 5    | 4  | 3      | 2  | 1  |

The T-Scores Within the Discipline Groupings.-- When the T-scores within each discipline groupings were compared, they appeared as follows:

Agriculture T-scores were high on students, low on courses. All Agriculture T-scores were the highest when compared with other groups.

Arts T-scores were meaningless to be compared.

Business and Management T-scores were high on students, low on other characteristics.

Education T-scores were close on every character-
istic.

Engineering T-scores were relatively close, but
high on courses.

Health Professions T-scores were high on operating
budgets, low on courses.

Languages and Literature T-scores were high on
operating budgets, low on courses.

Sciences and Mathematics T-scores were high on
courses, low on students.

Social Sciences T-scores were high on faculty, low
on students and operating budgets.

The Relationships Between the Four Characteristics.
--The coefficients of correlation between faculty, courses,
students, and operating budgets are presented in Table 36.

TABLE 36.--The Coefficients of Correlation Between Four
Characteristics of Kasetsart University.

| Factors | Courses | Students | Budgets |
|---------|---------|----------|---------|
| Faculty | .86 | .84 | .87 |
| Courses |  | .82 | .90 |
| Students |  |  | .95 |

The correlations at Kasetsart were generally high.

Courses were highly related with the other charac-
teristics.

Students were highly related with operating budgets,
and related moderately high with others.

Operating budgets were related with all other
characteristics higher than did any of the remaining com-
binations.

Operating budgets were the best predictor of the
other characteristics.

## Khonkaen University

At the time this study was made, Khonkaen University
had programs leading to degrees in Agriculture, Education,
and Engineering. Sciences and Mathematics, and Languages
and Literature (English) were offered for the completion
of those degrees. But some courses could be classified
into Arts, Health Professions, and Social Sciences group-
ings. Because of this set up, student data were found only
in Agriculture, Education, and Engineering, and the faculty
and operating budgets data were found in Agriculture,
Education, Engineering, Languages and Literature, and
Sciences and Mathematics. Courses data were presented in
every discipline grouping, except Business and Management.
The T-scores of every characteristic, in order to make them

comparable, were calculated across eight discipline group-
ings omitting Business and Management.  The T-scores
represented in Khonkaen University are in Table 37.


TABLE 37.--The T-Scores of Khonkaen University.

| Factors | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|---------|-----|------|-----|------|-----|------|------|-----|--------|
| Faculty | 60 | 39 | - | 56 | 65 | 39 | 47 | 56 | 39 |
| Courses | 71 | 41 | - | 47 | 57 | 40 | 45 | 55 | 43 |
| Students | 63 | 43 | - | 55 | 69 | 43 | 43 | 43 | 43 |
| Budgets | 59 | 40 | - | 51 | 68 | 40 | 43 | 58 | 40 |
| Average | 63 | 41 | - | 52 | 65 | 41 | 45 | 53 | 41 |


The <u>faculty</u> T-scores across discipline groupings
showed that Engineering had the most faculty: 65 in terms
of T-score.  The Agriculture T-score was 60, Education and
Sciences and Mathematics T-scores were tied at 56, and
Languages and Literature T-score was the lowest among the
disciplines which the data presented, at 47.  Only Lang-
uages and Literature were below the mean because many
discipline groupings had zero data.  The ranked discipline
groupings among those where the data were presented are
shown in Table 38.

TABLE 38.--The Ranked T-Scores of Faculty of Khonkaen
          University.

|           | Lang | Educ | Sc | Agr | En |
|-----------|------|------|-----|-----|-----|
| T-Scores  | 47   | 56   | 56  | 60  | 65  |
| Ranks     | 5    | 4    | 3   | 2   | 1   |

The <u>courses</u> T-scores across discipline groupings
were high in the Agriculture at 71.  Engineering and
Sciences and Mathematics were next at 57 and 55 respec-
tively.  The courses T-scores in Health Professions was
the lowest at 40 (only one two-credit-course was presented).
Arts T-score was also low at 41.  The ranked discipline
groupings according to their T-scores are presented in
Table 39.

TABLE 39.--The Ranked T-Scores of Courses of Khonkaen
          University.

|           | Hlth | Arts | Soc.Sc | Lang | Educ | Sc | En | Agr |
|-----------|------|------|--------|------|------|-----|-----|-----|
| T-Scores  | 40   | 41   | 43     | 45   | 47   | 55  | 57  | 71  |
| Ranks     | 8    | 7    | 6      | 5    | 4    | 3   | 2   | 1   |

The <u>students</u> T-scores across discipline groupings
were meaningful only in Agriculture, Education, and Engine-
ering.  Among these three discipline groupings, Engineering

showed the highest T-score at 65, Agriculture was second at 63, and Education was the last at 55. The ranking of the three discipline groupings are presented in Table 40.

TABLE 40.--The Ranked T-Scores of Students of Khonkaen University.

|  | Educ | Agr | En |
|---|---|---|---|
| T-Scores | 55 | 63 | 65 |
| Ranks | 3 | 2 | 1 |

The operating budgets, like the faculty T-scores, had data in five discipline groupings. Among these five groups, Engineering T-score was the highest at 68. Agriculture and Sciences and Mathematics were close together at 59 and 58, respectively. The Languages and Literature T-score was low at 43. When the discipline groupings were ranked according to their T-scores, they appeared as presented in Table 41.

TABLE 41.--The Ranked T-Scores of Operating Budgets of Khonkaen University.

|  | Lang | Educ | Sc | Agr | En |
|---|---|---|---|---|---|
| T-Scores | 43 | 51 | 58 | 59 | 68 |
| Ranks | 5 | 4 | 3 | 2 | 1 |

The averaged T-scores of all characteristics across eight discipline groupings revealed the highest T-score in Engineering at 65 with Agriculture close at 63. Arts, Health Professions and Social Sciences T-scores were equal at 41. These three groups had only course data. The ranking of discipline groupings based on averaged T-scores are presented in Table 42.

TABLE 42.--The Ranked T-Scores of The Average of Khonkaen University.

|  | Arts | Hlth | Soc.Sc | Lang | Educ | Sc | Agr | En |
|---|---|---|---|---|---|---|---|---|
| T-Scores | 41 | 41 | 41 | 45 | 52 | 53 | 63 | 65 |
| Ranks | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

The T-Scores Within the Discipline Groupings.-- Agriculture T-scores were high in courses, low in the other characteristics.

Education T-scores were high in students, low in courses.

Engineering T-scores were low in courses, high in the other characteristics.

Languages and Literature T-scores were high in faculty, low in operating budgets.

Sciences and Mathematics T-scores did not vary much except for the students T-score which is not meaningful.

The Relationships Between the Four Characteristics.
--The Coefficients of correlation between faculty, courses,
students, and operating budgets are presented in Table 43.

TABLE 43.--The Coefficients of Correlation Between the Four
Characteristics of Khonkaen University.

| Factors | Courses | Students | Budgets |
|---------|---------|----------|---------|
| Faculty | .88 | .83 | .96 |
| Courses | | .78 | .91 |
| Students | | | .83 |

The indices were generally high for any combination.
These high correlations might have been effected by lack
of data in many discipline groupings. Except for course
offerings, the data were presented for only five discipline
groupings: Agriculture, Education, Engineering, Languages
and Literature, and Sciences and Mathematics. The inter-
pretation of the above indices is less meaningful.

Mahidol University

At Mahidol University, there were only three groups
of programs leading to a degree: Health Professions, Scien-
ces and Mathematics, and Education. The courses which
were classified in Education groupings were in Health
Education, and many of the courses in the Sciences and

Mathematics were offered as part of the Health Professions programs. Although Education and Sciences and Mathematics programs were presented in the study, they were associated tightly with Health Professions. However, the transformation of data to T-scores had to be done across all discipline groupings except Agriculture because of the occurence of data on course offerings characteristics in other categories. The transformed T-scores of the data at Mahidol University are presented in Table 44.

TABLE 44.--The T-Scores of Mahidol University.

| Factors | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|---------|-----|------|-----|------|-----|------|------|-----|--------|
| Faculty | – | 44 | 44 | 45 | 45 | 73 | 45 | 60 | 44 |
| Courses | – | 44 | 44 | 45 | 44 | 73 | 45 | 60 | 45 |
| Students | – | 46 | 46 | 46 | 46 | 76 | 46 | 47 | 46 |
| Budgets | – | 46 | 46 | 46 | 46 | 76 | 46 | 50 | 46 |
| Average | – | 45 | 45 | 46 | 45 | 75 | 46 | 54 | 45 |

The T-scores of <u>faculty</u> across the disciplines the data presented: Education, Engineering, Health Professions, Languages and Literature, and Sciences and Mathematics, showed a very high score in Health Professions. Sciences and Mathematics T-score was next at 60. Education, Engineering, and Languages and Literature accounted for very

little with T-scores of 45 each. The ranked discipline
groupings where the data were presented are shown in
Table 45.

TABLE 45.--The Ranked T-Scores of Faculty of Mahidol
University.

|  | Educ | En | Lang | Sc | Hlth |
|---|---|---|---|---|---|
| T-Scores | 45 | 45 | 45 | 60 | 73 |
| Ranks | 5 | 4 | 3 | 2 | 1 |

On courses, the T-scores were very much the same
distribution as on faculty. Health Professions T-score
was still high at the same level, at 73. Sciences and
Mathematics T-score was also 60. Arts, Business and
Management, and Engineering scores 44, and Education,
Social Sciences, and Languages and Literature scored 45
each. The ranking discipline groupings according to their
T-scores are presented in Table 46.

TABLE 46.--The Ranked T-Scores of Courses of Mahidol
University.

|  | Arts | Bus | En | Educ | Lang | Soc.Sc | Sc | Hlth |
|---|---|---|---|---|---|---|---|---|
| T-Scores | 44 | 44 | 44 | 45 | 45 | 45 | 60 | 73 |
| Ranks | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

The students T-scores for which the data appeared in only Education, Health Professions and Sciences and Mathematics, also showed high T-scores on Health Professions. Sciences and Mathematics, and Education T-scores were equal at 47, 2.9 standard deviations away from Health Professions. The ranked T-scores of these three discipline groupings are presented in Table 47.

TABLE 47.--The Ranked T-Scores of Students of Mahidol University.

|           | Educ | Sc | Hlth |
|-----------|------|-----|------|
| T-Scores  | 47   | 47  | 76   |
| Ranks     | 3    | 2   | 1    |

The operating budgets data also appeared on only Education, Health Professions, and Sciences and Mathematics. The T-scores of these three groups showed a very high T-score on Health Professions at 76, the Sciences and Mathematics T-scores was next at 50, and the Education T-score was 46.

The ranked T-scores of the three discipline groupings are presented in Table 48.

TABLE 48.--The Ranked T-Scores of Operating Budgets of
          Mahidol University.

|           | Educ | Sc | Hlth |
|-----------|------|----|------|
| T-Scores  | 46   | 50 | 76   |
| Ranks     | 3    | 2  | 1    |

The averaged T-scores of all characteristics across
dicipline groupings still had the same distribution as
individual characteristics.  Health Professions T-score
was the highest at 75.  Sciences and Mathematics T-score
was next at 54.  Education, and Languages and Literature
came third in an averaged T-score of 46.  The rest, which
had a few data on courses scored the lowest at 45.  The
ranked discipline groupings according to their T-scores
are presented in Table 49.

TABLE 49.--The Ranked T-Scores of Average of Mahidol
          University.

|           | Arts | Bus | En | Soc.Sc | Educ | Lang | Sc | Hlth |
|-----------|------|-----|----|--------|------|------|----|------|
| T-Scores  | 45   | 45  | 45 | 45     | 46   | 46   | 54 | 75   |
| Ranks     | 8    | 7   | 6  | 5      | 4    | 3    | 2  | 1    |

The T-Scores Within the Discipline Groupings.--When
T-scores within Education, Health Professions, and Sciences

and Mathematics were compared across characteristics:

Education T-scores were about the same on all characteristics.

Health Professions T-scores were high on all characteristics.

Languages and Literature T-scores were about the same on every characteristic.

Sciences and Mathematics T-scores were high on faculty and courses, low on students.

The Relationships Between the Four Characteristics. --The correlation coefficients between faculty, courses, students, and operating budgets are presented in Table 50.

TABLE 50.--The Coefficients of Correlation of the Four Characteristics of Mahidol University.

| Factors | Courses | Students | Budgets |
|---------|---------|----------|---------|
| Faculty | .998 | .87 | .92 |
| Courses | | .86 | .91 |
| Students | | | .99 |

The interpretation of the correlations will not be made since there were so small a number of discipline groupings.

## Prince of Songkhla University

Prince of Songkhla University had three main programs leading to degrees: Education, Engineering, and Sciences and Mathematics, in the year 1972. The data on students and operating budgets were found and categorized into these three discipline groupings. However, faculty data were presented in Languages and Literature, and Social Sciences beside those three groupings. Course offernings data were found within all the discipline groupings except Agriculture, and Health Professions. In order to make all data comparable between disciplines and characteristics, they were transformed to T-scores across seven discipline groupings, namely Arts, Business and Management, Education, Engineering, Languages and Literature, Sciences and Mathematics, and Social Sciences. The T-scores of Prince of Songkhla University across seven discipline groupings appeared as in Table 51.

TABLE 51.--The T-Scores of Prince of Songkhla University.

| Factors | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|---------|-----|------|-----|------|-----|------|------|-----|--------|
| Faculty | – | 39 | 39 | 51 | 62 | – | 48 | 67 | 43 |
| Courses | – | 44 | 43 | 45 | 53 | – | 50 | 73 | 44 |
| Students | – | 43 | 43 | 59 | 50 | – | 43 | 70 | 43 |
| Budgets | – | 42 | 42 | 54 | 65 | – | 42 | 64 | 42 |
| Average | – | 42 | 42 | 52 | 58 | – | 46 | 69 | 43 |

Based on _faculty_ data appearing in the five dis-
cipline groupings: Education, Engineering, Languages and
Literature, Sciences and Mathematics, and Social Sciences,
showed the highest T-score at 67. The Engineering T-score
was next at 62, and the Education T-score was 51. Lang-
uages and Literature had the score of 48, while Social
Sciences T-score was the lowest at 43. The ranked disci-
pline groupings according to their T-scores are presented
in Table 52.

TABLE 52.--The Ranked T-Scores of Faculty of Prince of
         Songkhla University.

|          | Soc.Sc | Lang | Educ | En | Sc |
|----------|--------|------|------|----|----|
| T-Scores | 43     | 48   | 51   | 62 | 67 |
| Ranks    | 5      | 4    | 3    | 2  | 1  |

The _courses_ T-scores across the seven discipline
groupings revealed the highest score at 73 in the Sciences
and Mathematics. Languages and Literature T-score came
third at 50 behind the Engineering T-score. Education T-
score was low at 45. The T-scores of Business and Manage-
ment, Arts, and Social Sciences were low at 43, 44, and
44 respectively. The ranked discipline groupings according
to their T-scores are presented in Table 53.

TABLE 53.--The Ranked T-Scores of Courses of Prince of
         Songkhla University.

|            | Bus | Arts | Soc.Sc | Educ | Lang | En | Sc |
|------------|-----|------|--------|------|------|----|----|
| T-Scores   | 43  | 44   | 44     | 45   | 50   | 53 | 73 |
| Ranks      | 7   | 6    | 5      | 4    | 3    | 2  | 1  |

The students T-scores among Education, Engineering,
and Sciences and Mathematics groups showed the high score
in the Sciences and Mathematics at 70. Three of them were
about one standard deviation away from the others. The
ranked among the three discipline groupings are presented
in Table 54.

TABLE 54.--The Ranked T-Scores of Students of Prince of
         Songkhla University.

|            | En  | Educ | Sc |
|------------|-----|------|----|
| T-Scores   | 50  | 59   | 70 |
| Ranks      | 3   | 2    | 1  |

The operating budgets T-scores were vastly differ-
ent from those of other characteristics. The Engineering
T-score was high at 65. Sciences and Mathematics T-score
came close at 64. Education T-score was below the others
at 54. The ranking of the three discipline groupings
appeared as presented in Table 55.

TABLE 55.--The Ranked T-Scores of Operating Budgets of
        Prince of Songkhla University.

|           | Educ | Sc | En |
|-----------|------|----|----|
| T-Scores  | 54   | 64 | 65 |
| Ranks     | 3    | 2  | 1  |

On the average of all four characteristics, the
score was still the highest in the Sciences and Mathe-
matics, at 69. Engineering T-score was 11 points lower
at 58. Education T-score was 52, and Languages and Liter-
ature T-score was the lowest at 46. The Arts, Business
and Management, and Social Sciences T-scores were very
low. The ranked of the seven discipline groupings
according to their T-scores are presented in Table 56.

TABLE 56.--The Ranked T-Scores of Average of Prince of
        Songkhla University.

|           | Bus | Arts | Soc.Sc | Lang | Educ | En | Sc |
|-----------|-----|------|--------|------|------|----|----|
| T-Scores  | 42  | 42   | 43     | 46   | 52   | 58 | 69 |
| Ranks     | 7   | 6    | 5      | 4    | 3    | 2  | 1  |

The T-Scores Within the Discipline Groupings.--When
the T-scores within the discipline groupings: Education,
Engineering, and Sciences and Mathematics were compared, the

findings were:

Education T-scores were high on students, low on courses.

Engineering T-scores were high on operating budgets and faculty, low on students and courses.

Sciences and Mathematics T-scores were high on courses and students, relatively low on operating budgets.

The Relationships Between the Four Characteristics. --The coefficients of correlations were computed and presented in Table 57.

TABLE 57.--The Coefficients of Correlation Between the Four Characteristics of Prince of Songkhla University.

| Factors | Courses | Students | Budgets |
|---------|---------|----------|---------|
| Faculty | .86 | .81 | .94 |
| Courses | | .80 | .73 |
| Students | | | .80 |

The number of units measured was low. The interpretations of correlations indices were less meaningful, so they are not done in this study.

Silpakorn University

Silpakorn University has two campuses: one is in the Bangkok area, the other campus is at Nakorn Pathom

province.  Since the Nakorn Pathom campus did not have any
graduating students by the time of this study, this campus
was excluded form the study.  The Bangkok campus had
programs in Painting, Archeology, and Architecture which
all were classified as Arts.  All students were only in
the Arts groupings and this was true with faculty and
operating budgets.  The courses data appeared on seven
discipline groupings: Agriculture (one course in Agricul-
tural Economics), Arts, Business and Management, Engin-
eering (as a part of the program in Architecture), Lang-
uages and Literature, and Sciences and Mathematics, and
Social Sciences.  Because of the lack of data in many
discipline groupings, the transformed T-scores were not
attempted.  The presented data obviously indicated that
the Silpakorn University at Bangkok campus was an Arts
institution.

Thammasat University

Thammasat University offered programs leading to
degrees in five discipline groupings: Arts, Business and
Management, Languages and Literature, Sciences and Mathe-
matics, and Social Sciences.  The students, faculty, and
operating budgets data appeared in these five discipline
groupings, but the courses data appeared across the nine
discipline groupings.  The other four discipline group-
ings where the courses data presented were Agriculture,

Education, Engineering, and Health Professions. The
courses in these four discipline groupings were fewer
in number. The T-scores were made across the nine dis-
cipline groupings because of the presence of courses data
as mentioned above. The T-scores are shown in Table 58.

TABLE 58.--The T-Scores of Thammasat University.

| Factors | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|---------|-----|------|-----|------|-----|------|------|-----|--------|
| Faculty | 42 | 51 | 55 | 42 | 42 | 42 | 55 | 48 | 74 |
| Courses | 42 | 53 | 46 | 44 | 43 | 43 | 56 | 48 | 75 |
| Students | 46 | 47 | 50 | 46 | 46 | 46 | 46 | 46 | 78 |
| Budgets | 43 | 52 | 53 | 43 | 43 | 43 | 50 | 47 | 76 |
| Average | 43 | 51 | 51 | 44 | 44 | 44 | 52 | 47 | 76 |

The T-Scores Across the Discipline Groupings.--The
T-scores of faculty characteristic across nine discipline
groupings revealed Social Sciences was much the highest,
at 74. Social Sciences T-scores was 19 points higher than
the second leading T-score in the Business and Management,
and Languages and Literature. Sciences and Mathematics
T-score was low at 48. The T-scores in Agriculture, Edu-
cation, Engineering, and Health Professions are meaning-
less, for reasons given above. The ranked discipline
groupings according to their T-scores are presented in
Table 59.

TABLE 59.--The Ranked T-Scores of Faculty of Thammasat
          University.

|           | Sc  | Arts | Bus | Lang | Soc.Sc |
|-----------|-----|------|-----|------|--------|
| T-Scores  | 48  | 51   | 55  | 55   | 74     |
| Ranks     | 5   | 4    | 3   | 2    | 1      |

The T-scores of <u>courses</u> characteristic still showed
the highest T-score in Social Sciences at 75.  Languages
and Literature T-score was 56, 19 points below Social
Sciences T-score.  Arts came next to Languages and Litera-
ture at 53.  Agriculture, Education, Engineering, and
Health Professions T-scores were low and very close to-
gether.  The ranked discipline groupings according to
their T-scores are presented in Table 60.

TABLE 60.--The Ranked T-Scores of Courses of Thammasat
          University.

|           | Agr | En  | Hlth | Educ | Bus | Sc  | Arts | Lang | Soc.Sc |
|-----------|-----|-----|------|------|-----|-----|------|------|--------|
| T-Scores  | 42  | 43  | 43   | 44   | 46  | 48  | 53   | 56   | 75     |
| Ranks     | 9   | 8   | 7    | 6    | 5   | 4   | 3    | 2    | 1      |

The T-scores of <u>students</u> characteristic were domin-
ated by Social Sciences T-score with the score of 78.  The
next score was 50 in the Business and Management.  Arts,

Languages and Literature, and Sciences and Mathematics
accounted very little.  The ranked discipline groupings
according to their T-scores appeared as in Table 61.

TABLE 61.--The Ranked T-Scores of Students of Thannasat
           University.

|  | Sc | Lang | Arts | Bus | Soc.Sc |
|---|---|---|---|---|---|
| T-Scores | 46 | 46 | 47 | 50 | 78 |
| Ranks | 5 | 4 | 3 | 2 | 1 |

The T-scores of operating budgets characteristic
also indicated the highest in the Social Sciences at 76.
The T-score of Business and Management was next but low
at 53.  Arts T-score was close to that of Business and
Management at 52.  Languages and Literature T-score was
about the mean, and Sciences and Mathematics T-score was
47, the lowest.  The ranked discipline groupings according
to their T-scores appeared as in Table 62.

TABLE 62.--The Ranked T-Scores of Operating Budgets of
           Thammasat University.

|  | Sc | Lang | Arts | Bus | Soc.Sc |
|---|---|---|---|---|---|
| T-Scores | 47 | 50 | 52 | 53 | 76 |
| Ranks | 5 | 4 | 3 | 2 | 1 |

When the T-scores were <u>averaged</u> across the four
characteristics within each discipline grouping, Social
Sciences T-score was highly dominating of the others with
the score of 76.  Arts, Business and Management, and
Languages and Literature were scored very close together
at 51-52.  Sciences and Mathematics T-score was low at 47.
Agriculture, Education, Engineering, and Health Professions
which had the data only in the courses category, were
scored low and away from the five others.  The ranks of
discipline groupings according to the averaged T-scores
are presented in Table 63.

TABLE 63.--The Ranked T-Scores of the Average of Thammasat
University.

|  | Agr | En | Hlth | Educ | Sc | Arts | Bus | Lang | Soc.Sc |
|---|---|---|---|---|---|---|---|---|---|
| T-Scores | 43 | 44 | 44 | 44 | 47 | 51 | 51 | 52 | 76 |
| Ranks | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

<u>The T-Scores Within the Discipline Groupings</u>.--Con-
sidering the T-scores within each discipline grouping found
that:

Arts T-scores were very much the same except that
they were low in the students.

Business and Management T-scores were high in
faculty, low in courses.

Languages and Literature T-scores were high in courses, low in students.

Sciences and Mathematics T-scores were about the same in every characteristic.

Social Sciences T-scores were the highest compared to any discipline groupings T-scores and were about the same in every characteristic.

The Relationships Between the Four Characteristics. --The coefficients of correlation between faculty, courses, students, and operating budgets are presented in Table 64.

TABLE 64.--The Coefficients of Correlation Between the Four Characteristics of Thammasat University.

| Factors | Courses | Students | Budgets |
|---------|---------|----------|---------|
| Faculty | .95 | .89 | .97 |
| Courses | | .89 | .95 |
| Students | | | .96 |

The coefficients of correlation were high among any combination of the four characteristics. Any characteristics may be used as predictors of others. But one caution must be made that the number of measured units was only five among the characteristics except for courses. This high incidence might be effected by the low number of the units of measurement.

### The Comparisons of Profiles of Each
### of the Universities With the
### Eight Universities Taken
### as a Whole

Chiengmai University, as mentioned before, was the only university in Thailand which had programs in all of the nine discipline groupings.  Chulalongkorn University did not have a program in Agriculture, while Kasetsart University lacked an Arts program.  Thammasat University had five programs.  The other four Thai Universities had programs in three discipline groupings or less.  For the purposes of this study the profile comparisons will be restricted to the four universities that offer work in all or nearly all of the discipline groupings.  These are: Chiengmai, Chulalongkorn, Kasetsart, and Thammasat.  This restriction gives T-scores that are more validly comparable.

### The Averaged T-Scores and
### Ranks

The averaged T-scores of Thai Higher Education, and of Chiengmai, Chulalongkorn, Kasetsart, and Thammasat Universities are set out in Table 65.  Each discipline grouping is given a rank in the averaged T-scores in Table 66.

TABLE 65.--The Averaged T-Scores of Thai Higher Education, Chiengmai, Chulalongkorn, Kasetsart, and Thammasat Universities.

| Inst.* | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|--------|-----|------|-----|------|-----|------|------|-----|--------|
| Thai   | 46  | 44   | 43  | 45   | 46  | 65   | 45   | 60  | 57     |
| Chieng | 47  | 44   | 46  | 48   | 40  | 67   | 47   | 59  | 55     |
| Chula  | 35  | 46   | 48  | 51   | 54  | 57   | 46   | 66  | 48     |
| Kaset  | 74  | 41   | 44  | 46   | 47  | 45   | 45   | 57  | 53     |
| Tham   | 43  | 51   | 51  | 44   | 44  | 44   | 52   | 47  | 76     |

Inst.*    = Institution
Thai      = Thai Higher Education
Chieng    = Chiengmai University
Chula     = Chulalongkorn University
Kaset     = Kasetsart University
Tham      = Thammasat University

TABLE 66.--The Ranks of Discipline Groupings Based on the Averaged T-Scores of Thai Higher Education, Chiengmai, Chulalongkorn, Kasetsart, and Thammasat University.

| Inst.  | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|--------|-----|------|-----|------|-----|------|------|-----|--------|
| Thai   | 4   | 8    | 9   | 7    | 5   | 1    | 6    | 2   | 3      |
| Chieng | 6   | 8    | 7   | 4    | 9   | 1    | 5    | 2   | 3      |
| Chula  | 9   | 7    | 5   | 4    | 3   | 2    | 8    | 1   | 6      |
| Kaset  | 1   | 9    | 8   | 5    | 4   | 7    | 6    | 2   | 3      |
| Tham   | 9   | 4    | 3   | 6    | 8   | 7    | 2    | 5   | 1      |

The scores and ranks showed that in Thai higher education as a whole, the heaviest emphasis was given to the Health Professions, Sciences and Mathematics, and Social Sciences with T-scores of 65, 60, 57, and ranks of 1, 2, and 3, respectively. Chiengmai University's T-scores and ranks for the discipline groupings nearly matched Thai higher education. The T-scores were very close, and the three highest ranked discipline groupings were ranked the same. Chulalongkorn also showed Health Professions, and Sciences and Mathematics as the two top scores, but here the third rank was held by Engineering instead of Social Sciences. At Kasetsart, the highly emphasized discipline groupings were Agriculture, while the other two top ranks were Sciences and Mathematics, and Social Sciences. Thammasat was highly concentrated on Social Sciences, with a T-score of 76 and first rank. It differed from the other universities. There was no Health Professions program at Thammasat, and it did not emphasize Sciences and Mathematics either. The other two discipline groupings which ranked second and third were Languages and Literature, and Business and Management.

The group of disciplines which ranked 4, 5, and 6 were considered to be moderately emphasized. The moderate emphases in Thai higher education were Agriculture, Engineering, and Languages and Literature. At Chiengmai, they

were Education, Languages and Literature, and Agriculture. Chulalongkorn put the moderate emphasis on Education, Business and Management, and Social Sciences. Kasetsart had Engineering, Education, and Languages and Literature in this category, while Thammasat had Arts, and Sciences and Mathematics. Although Education was ranked sixth at Thammasat, that score was closer to the lower group than to the moderate group.

The less emphasized discipline groupings in Thai higher education were Education, Arts, and Business and Management. Chiengmai also had Arts, and Business and Management as its less emphasized discipline groupings, but its least emphasis was on Engineering. Chulalongkorn had less emphasizing on Arts, Languages and Literature, and Agriculture. Chulalongkorn did not have a full program in Agriculture. Thammasat had no program in Agriculture, Education, Engineering, or Health Professions.

When the T-scores and ranks within each discipline grouping was considered, they showed that:

Agriculture was highly emphasized at Kasetsart, and had not emphasis at Chulalongkorn and Thammasat. The T-scores were generally low except at Kasetsart.

Arts were moderately emphasized at Thammasat, less emphasized and low T-scores at the other universities and in Thai higher education.

Business and Management was highly emphasized at
Thammasat, moderately so at Chulalongkorn, and less empha-
sized in Thai higher education and Chiengmai.

Education was moderately emphasized at Chiengmai,
Chulalongkorn, and Kasetsart, less emphasized at Thai
higher education, and there was no program at Thammasat.

Engineering was highly emphasized at Chulalongkorn,
moderately emphasized at Kasetsart and Thai higher educa-
tion, less emphasized at Chiengmai, and no program at
Thammasat.

Health Professions were highly emphasized at Thai
higher education, Chiengmai, and Chulalongkorn, less em-
phasized at Kasetsart, and there was no program at Thamma-
sat.

Languages and Literature was highly emphasized at
Thammasat although the T-score is not very high, moderately
emphasized at Thai higher education, at Chiengmai, and at
Kasetsart, and less emphasized at Chulalongkorn.

Sciences and Mathematics were highly emphasized
at Thai higher education, at Chiengmai, at Chulalongkorn,
and at Kasetsart, and moderately emphasized at Thammasat.

Social Sciences was highly emphasized at Thai
higher education, at Kasetsart, and at Thammasat, and
moderately emphasized at Chulalongkorn.

The Faculty T-Scores
and Ranks

The faculty T-scores and ranks of Thai higher education, Chiengmai, Chulalongkorn, Kasetsart, and Thammasat Universities are presented in Table 67 and Table 68 respectively.

TABLE 67.--The Faculty T-Scores of Thai Higher Education, Chiengmai, Chulalongkorn, Kasetsart, and Thammasat Universities.

| Inst. | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|-------|-----|------|-----|------|----|------|------|----|--------|
| Thai  | 45  | 42   | 41  | 47   | 45 | 72   | 45   | 64 | 49     |
| Chieng| 47  | 44   | 43  | 46   | 42 | 76   | 46   | 57 | 49     |
| Chula | 35  | 42   | 44  | 58   | 49 | 67   | 48   | 64 | 45     |
| Kaset | 72  | 38   | 42  | 46   | 46 | 45   | 45   | 54 | 62     |
| Tham  | 42  | 51   | 55  | 42   | 42 | 42   | 55   | 48 | 74     |

TABLE 68.--The Ranks of Discipline Groupings Based on the Faculty T-Scores of Thai Higher Education, Chiengmai, Chulalongkorn, Kasetsart, and Thammasat Universities.

| Inst. | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|-------|-----|------|-----|------|----|------|------|----|--------|
| Thai  | 5   | 8    | 9   | 4    | 6  | 1    | 7    | 2  | 3      |
| Chieng| 4   | 7    | 8   | 5    | 9  | 1    | 6    | 2  | 3      |
| Chula | -   | 8    | 7   | 3    | 4  | 1    | 5    | 2  | 6      |
| Kaset | 1   | -    | 8   | 5    | 4  | 6    | 7    | 3  | 2      |
| Tham  | -   | 4    | 3   | -    | -  | -    | 2    | 5  | 1      |

Generally, the faculty T-scores distribution were close to the averaged T-scores distribution.

The highly emphasized discipline groupings at Thai higher education and at Chiengmai were Health Professions, Sciences and Mathematics, and Social Sciences. They were Health Professions, Sciences and Mathematics, and Education at Chulalongkorn; Agriculture, Social Sciences, and Sciences and Mathematics at Kasetsart; and Social Sciences , Languages and Literature, and Business and Management at Thammasat.

The moderately emphasized discipline groupings were Education, Engineering, and Agriculture at Thai higher education; Agriculture, Education, and Languages and Literature at Chiengmai; Engineering, Languages and Literature, and Social Sciences at Chulalongkorn; Engineering, Education, and Health Professions at Kasetsart; and Arts and Sciences and Mathematics at Thammasat.

The less emphasized discipline groupings were Languages and Literature, Arts, and Business and Management at Thai higher education; Arts, Business and Management, and Engineering at Chiengmai; Business and Management, and Arts at Chulalongkorn; and Languages and Literature, and Business and Management at Kasetsart.

When T-scores and ranks were considered within each discipline grouping, they showed that:

Agriculture was placed the highest at Kasetsart, moderate ranks but low T-scores at Thai higher education and at Chiengmai.

Arts was moderately emphasized at Thammasat, less emphasized at Thai higher education, at Chiengmai, and at Chulalongkorn.

Business and Management was highly emphasized at Thammasat, less emphasized at the others.

Education was highly emphasized at Chulalongkorn, moderately emphasized at Thai higher education, at Chiengmai, and at Kasetsart.

Engineering was moderately emphasized at Thai higher education, at Chulalongkorn, and at Kasetsart, least emphasized at Chiengmai.

Health Professions was highly emphasized at Thai higher education, at Chiengmai, and at Chulalongkorn, and moderately emphasized at Kasetsart.

Languages and Literature was highly emphasized at Thammasat, and ranked 5 to 7 at other institutions.

Sciences and Mathematics was highly emphasized at Thai higher education, at Chiengmai, at Chulalongkorn, and at Kasetsart; and moderately emphasized at Thammasat.

Social Sciences was ranked first at Thammasat, highly emphasized but moderately socre at Thai higher

education, at Chiengmai, and at Kasetsart; and moderately
emphasized at Chulalongkorn.

## The Courses T-Scores
## and Ranks

The courses T-scores are presented in Table 69, and
their ranks are presented in Table 70.

TABLE 69.--The Courses T-Scores of Thai Higher Education,
Chiengmai, Chulalongkorn, Kasetsart, and
Thammasat Universities.

| Inst. | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|-------|-----|------|-----|------|----|------|------|----|--------|
| Thai | 46 | 46 | 40 | 39 | 46 | 58 | 48 | 73 | 54 |
| Chieng | 52 | 46 | 41 | 43 | 36 | 54 | 48 | 71 | 60 |
| Chula | 38 | 49 | 46 | 39 | 57 | 50 | 49 | 74 | 48 |
| Kaset | 70 | 42 | 43 | 44 | 49 | 42 | 42 | 65 | 53 |
| Tham | 42 | 53 | 46 | 44 | 43 | 43 | 56 | 48 | 75 |

TABLE 70.--The Ranks of Discipline Groupings Based on the
Courses T-Scores of Thai Higher Education,
Chiengmai, Chulalongkorn, Kasetsart, and Thamma-
sat Universities.

| Inst. | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|-------|-----|------|-----|------|----|------|------|----|--------|
| Thai | 6 | 5 | 8 | 9 | 7 | 2 | 4 | 1 | 3 |
| Chieng | 4 | 6 | 8 | 7 | 9 | 3 | 5 | 1 | 2 |
| Chula | 9 | 4 | 7 | 8 | 2 | 3 | 5 | 1 | 6 |
| Kaset | 1 | 8 | 6 | 5 | 4 | 7 | 9 | 2 | 1 |
| Tham | 9 | 3 | 5 | 6 | 8 | 7 | 2 | 4 | 1 |

The highly emphasized discipline groupings based on courses T-scores and ranks were Sciences and Mathematics, Health Professions, and Sciences and Mathematics at Thai higher education; Sciences and Mathematics, Social Sciences, and Health Professions at Chiengmai; Sciences and Mathematics, Engineering, and Health Professions at Chulalongkorn; Agriculture, Sciences and Mathematics, and Social Sciences at Kasetsart; and Social Sciences, Languages and Literature and Arts at Thammasat.

The moderately emphasized discipline groupings were Languages and Literature, Arts, and Agriculture at Thai higher education and Chiengmai; Arts, Languages and Literature, and Social Sciences at Chulalongkorn; Engineering, Education, and Business and Management at Kasetsart; and Sciences and Mathematics, and Business and Management at Thammasat.

The less emphasized discipline groupings based on courses T-scores and ranks were Engineering, Business and Management, and Education at Thai higher education and Chiengmai; Business and Management, Education, and Agriculture at Chulalongkorn; Health Professions, Arts and Languages and Literature at Kasetsart; and Education, Health Professions, Engineering, and Agriculture at Thammasat.

Within the discipline groupings, the courses T-scores and ranks showed the following results:

Agriculture was heavily emphasized at Kasetsart; moderately emphasized at Chiengmai and Thai higher education; and less emphasized at Chulalongkorn and Thammasat.

Arts was highly emphasized at Thammasat; moderately emphasized at Thai higher education, Chiengmai, and Chulalongkorn; and less emphasized at Kasetsart.

Business and Management was moderately emphasized at Thammasat and Kasetsart; and less emphasized at Thai higher education, Chiengmai, and Chulalongkorn.

Education was moderately emphasized at Kasetsart, and less emphasized at the others.

Engineering was highly emphasized at Chulalongkorn; moderately emphasized at Kasetsart; and less emphasized at Thai higher education, Chiengmai, and Thammasat.

Health Professions was highly emphasized at Thai higher education, Chiengmai, and Chulalongkorn; and less emphasized at Kasetsart and Thammasat.

Languages and Literature was highly emphasized at Thammasat; moderately emphasized at Thai higher education, Chiengmai, and Chulalongkorn; and less emphasized at Kasetsart.

Sciences and Mathematics was highly emphasized at every institution except at Thammasat which the score was moderate.

Social Sciences was most heavily emphasized at
Thammasat; highly emphasized at Thai higher education,
Chiengmai, and Kasesart; and moderately emphasized at
Chulalongkorn.

## The Students T-Scores and Ranks

The students T-scores and ranks of Thai higher
education, Chiengmai, Chulalongkorn, Kasetsart, and
Thammasat Universities are presented in Table 71 and
Table 72, respectively.

TABLE 71.--The Students T-Scores of Thai Higher Education,
Chiengmai, Chulalongkorn, Kasetsart, and
Thammasat Universities.

| Inst. | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|-------|-----|------|-----|------|-----|------|------|-----|--------|
| Thai | 46 | 44 | 49 | 47 | 45 | 51 | 43 | 48 | 78 |
| Chieng | 40 | 40 | 54 | 58 | 32 | 59 | 48 | 53 | 64 |
| Chula | 28 | 47 | 57 | 59 | 60 | 43 | 43 | 59 | 53 |
| Kaset | 77 | 42 | 48 | 46 | 48 | 45 | 45 | 51 | 48 |
| Tham | 46 | 47 | 50 | 46 | 46 | 46 | 46 | 46 | 78 |

TABLE 72.--The Ranks of Discipline Groupings Based on the
Students T-Scores of Thai Higher Education,
Chiengmai, Chulalongkorn, Kasetsart, and
Thammasat Universities.

| Inst. | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|-------|-----|------|-----|------|-----|------|------|-----|--------|
| Thai  | 6   | 8    | 3   | 5    | 7   | 2    | 9    | 4   | 1      |
| Chieng| 7   | 8    | 5   | 3    | 9   | 2    | 6    | 4   | 1      |
| Chula | -   | 6    | 4   | 2    | 1   | 8    | 7    | 3   | 5      |
| Kaset | 1   | -    | 5   | 6    | 4   | 8    | 7    | 2   | 3      |
| Tham  | -   | 3    | 2   | -    | -   | -    | 4    | 5   | 1      |

The students T-scores and ranks revealed that Social
Sciences, Health Professions, and Business and Management
were highly emphasized at Thai higher education; Chiengmai
highly emphasized Social Sciences, Health Professions, and
Education; Chulalongkorn highly emphasized Engineering,
Education, and Sciences and Mathematics; Kasetsart highly
emphasized Agriculture, Sciences and Mathematics, and Social
Sciences; and Thammasat highly emphasized Social Sciences,
and Business and Management.

The moderately emphasized discipline groupings were
Sciences and Mathematics, Education, and Agriculture at
Thai higher education; Sciences and Mathematics, Business
and Management, and Languages and Literature at Chiengmai;
Business and Management, Social Sciences, and Arts at

Chulalongkorn; Engineering, Business and Management, and Education at Kasetsart; and Languages and Literature, Sciences and Mathematics, and Arts at Thammasat.

The less emphasized discipline groupings were Engineering, Arts, and Languages and Literature at Thai higher education; Agriculture, Arts, and Engineering at Chiengmai; Languages and Literature, and Health Professions at Chulalongkorn and Kasetsart.

Within the discipline groupings, the T-scores and ranks showed that:

Agriculture was heavily emphasized at Kasetsart, with low T-scores at Thai higher education and at Chiengmai.

Arts was moderately emphasized at Thammasat and Chulalongkorn, and less emphasized at Thai higher education and at Chiengmai.

Business and Management was highly emphasized at Thai higher education and at Thammasat, and moderately emphasized at the others.

Education was highly emphasized at Chulalongkorn and at Chiengmai, and moderately emphasized at Thai higher education and at Kasetsart.

Engineering was highly emphasized at Chulalongkorn, moderately emphasized at Kasetsart, and less emphasized at Thai higher education and at Chiengmai.

Health Professions was highly emphasized at Thai higher education and at Chiengmai, less emphasized at Chulalongkorn and at Kasetsart.

Languages and Literature was moderately emphasized at Thammasat and at Chiengmai; less emphasized at Chulalongkorn, at Kasetsart, and at Thai higher education.

Sciences and Mathematics was highly emphasized at Kasetsart and at Chulalongkorn; and moderately emphasized at Thai higher education, at Chiengmai, and at Thammasat.

Social Sciences was highly emphasized at Thai higher education, at Chiengmai, at Kasetsart, and at Thammasat; and modertely emphasized at Chulalongkorn.

## The Operating Budgets T-Scores and Ranks

The comparison of operating budgets T-scores and ranks are presented in Table 73 and Table 74, respectively.

TABLE 73.--The Operating Budgets T-Scores of Thai Higher Education, Chiengmai, Chulalongkorn, Kasetsart, and Thammasat Universities.

| Inst. | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|-------|-----|------|-----|------|-----|------|------|-----|--------|
| Thai | 46 | 45 | 43 | 46 | 48 | 77 | 44 | 55 | 46 |
| Chieng | 47 | 45 | 44 | 46 | 48 | 78 | 45 | 52 | 46 |
| Chula | 38 | 47 | 44 | 49 | 51 | 68 | 43 | 67 | 44 |
| Kaset | 75 | 40 | 42 | 46 | 46 | 47 | 48 | 58 | 48 |
| Tham | 43 | 52 | 53 | 43 | 43 | 43 | 50 | 47 | 76 |

TABLE 74.--The Ranks of the Discipline Groupings Based on Operating Budgets T-Scores of Thai Higher Education, Chiengmai, Chulalongkorn, Kasetsart, and Thammasat Universities.

| Inst. | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc |
|-------|-----|------|-----|------|----|----- |------|----|--------|
| Thai  | 5   | 7    | 9   | 6    | 3  | 1    | 8    | 2  | 4      |
| Chieng| 4   | 8    | 9   | 6    | 3  | 1    | 7    | 2  | 5      |
| Chula | -   | 5    | 7   | 4    | 3  | 1    | 8    | 2  | 6      |
| Kaset | 1   | -    | 8   | 7    | 6  | 5    | 3    | 2  | 4      |
| Tham  | -   | 3    | 2   | -    | -  | -    | 4    | 5  | 1      |

The scores and ranks showed that the highly emphasized discipline groupings were Health Professions, Sciences and Mathematics, and Engineering at Thai higher education, Chiengmai, and Chulalongkorn; Agriculture, Sciences and Mathematics, and Languages and Literature at Kasetsart; and Social Sciences and Business and Management at Thammasat.

The moderately emphasized discipline groupings were Social Sciences, Agriculture, and Education at Thai higher education and Chiengmai; Education, Arts, and Social Sciences at Chulalongkorn; Social Sciences, Health Professions, and Engineering at Kasetsart; and Arts, Languages and Literature and Sciences and Mathematics at Thammasat.

The less emphasized discipline groupings were Arts, Languages and Literature, and Business and Management at Thai higher education and Chiengmai; Business and

Management, and Languages and Literature at Chulalongkorn; Education and Business and Management at Kasetsart.

Within each discipline grouping, the T-scores and ranks also showed that:

Agriculture was heavily emphasized at Kasetsart and moderately emphasized at Thai higher education and at Chiengmai.

Arts was moderately emphasized at Thammasat and at Chulalongkorn, and was less emphasized at Thai higher education and at Chiengmai.

Business and Management was highly emphasized at Thammasat, with less emphasis at the others.

Education was moderately emphasized at Thai higher education, at Chiengmai, and at Chulalongkorn; and less emphasized at Kasetsart.

Engineering was highly emphasized at Thai higher education, at Chiengmai, and at Chulalongkorn; and moderately emphasized at Kasetsart.

Health Professions was heavily emphasized at Thai higher education, at Chiengmai, and at Chulalongkorn; and moderately emphasized at Kasetsart.

Languages and Literature was high ranked but low score at Kasetsart; moderately emphasized at Thammasat; and less emphasized at Thai higher education, at Chiengmai, and at Chulalongkorn.

Sciences and Mathematics was highly emphasized at Thai higher education, at Chiengmai, at Chulalongkorn, and at Kasetsart; but moderately emphasized at Thammasat.

Social Sciences was heavily emphasized at Thammasat, moderately emphasized at the others.

## Discussion of the Findings

### The Thai Higher Education

Among the nine discipline groupings, there were only three groups with averaged T-scores above the mean, while six groups had scores below the mean. The above average T-score groups had scores ranging from 57 to 65, while the scores for the low T-scores groups were from 43 to 46. It was more likely that overall efforts in Thai higher education was concentrated on those three groups: Health Professions, Sciences and Mathematics, and Social Sciences. Less effort was spent on Agriculture, Arts, Business and Management, Education, Engineering, and Languages and Literature.

A close look at the three above average discipline groupings found that they showed high variation of scores between the different characteristics. Health Professions showed only average scores on students, not high on courses, but very high on faculty and operating budgets. This might imply that resources (faculty and operating budgets) were put into it heavily, while productivity (students) was low.

Social Sciences showed an opposite picture to Health Professions. Social Sciences scores were low on faculty and operating budgets, but high on students. This results in the implication that there can be high student production with low resources.

Sciences and Mathematics' picture differed from the other two discipline groupings. Sciences and Mathematics T-scores were high on faculty and courses, not quite high on operating budgets, but low on students. The apparent low productivity with high consumption of resources (faculty) may relate to the fact that this discipline grouping served a dual role to the institutions: a service function and a productive function. Sciences and Mathematics at Chulalongkorn, in addition to serving its own students, was provided as a service program to medical students in what was called the pre-medical program. At Kasetsart, Sciences and Mathematics was also a service to the Agricultural program. The whole Sciences and Mathematics at Khonkaen University was provided for Engineering and Agriculture at that university, which means there was no productivity for itself at all. Another possible cause of law productivity for Sciences and Mathematics was the hidden Sciences and Mathematics program within other departments. It was found within the curriculum of Agriculture, Health Professions, Education, Engineering, Business and Management, and Social Sciences.

Among the low T-score groups, Languages and Liter-
ature show the same picture as Sciences and Mathematics.
Languages and Literature was considerably high on courses,
but low on operating budgets, faculty and students.  Lang-
uages and Literature (actually Thai and English), was found
within other curricula, too.  It was either a service course
offering by language departments, or hidden courses operat-
ing within other departments.

Education revealed still another picture.  Education
was low on courses, but in other characteristics, T-scores
were comparable.  This phenomenon was easily explained.
The Education curriculum, generally elementary and secondary
education, consisted of general education, education and
one or two major fields besides education.  This implied
that Education production was serviced from many depart-
ments, having hidden faculty and operating budgets.

Business and Management, with a relatively high
student score, but low on the other characteristics, implied
that less resources were needed for a high student produc-
tion rate.

The Arts T-score for faculty number was low when
compared with the T-scores for other characteristics.  This
low T-score was hard to explain.  There might be two reasons:
first, the relationship between the other characteristics
and faculty were in fact low; or secondly, that they seem

low as contrasted with the scores in Health Professions, and Sciences and Mathematics.

Some conclusions are possible based on the T-scores.

1. Health Professions served fewer students with high cost and resources.

2 Social Sciences and Business and Management served more students with low cost and resources.

3. Sciences and Mathematics, and Languages and Literature had comparatively high number of courses with low number of students.

4. Education had fewer courses compared to students, faculty, and operating budgets.

5. Arts had less faculty compared with students, courses, and operating budgets.

6. Agriculture was balanced in productions, cost and resources.

Other conclusions are possible when based upon the four characteristics studied.

1. The most productive (in terms of students served) discipline groupings was Social Sciences.

2. The highest cost of operation was in the Health Professions.

3. The highest number of faculty was in the Health Professions.

4. The highest number of credits offered was in Sciences and Mathematics.

The Relationships Between
the Characteristics

The correlation coefficient indices showed two important results.

First, the relationships between number of students and other characteristics were low to no relationship at all. This means that the student variable varied almost freely from faculty, courses, and operating budgets. High spending in operating budgets did not depend on the number of students, the larger or smaller number of courses or credits was not based on students, and more or less faculty also was not related to the number of students. The independent variation of student characteristic may be caused by the fact that a single program is not composed only of courses of one discipline grouping. General education and supporting subjects are pulled from various disciplines. Each discipline has its own operating budget, and the faculty members are assigned according to the field they teach. So they are not directly related to students in a specific program. Another reason for high and low cost of operation was largely related to discipline groupings. Health Professions, Sciences and Mathematics, and Engineering were high in cost per student. Social Sciences and Business Management were low in cost per student. The combination of high costs and low costs per students in

these disciplines leads to a low overall relationship between number of students and operating budgets.

Secondly, the relationship between faculty and operating budgets was high. The operating budgets factor was made up of items of salary, permanent wages, temporary wages, remunerations, ordinary expenses, material and supplies, and equipment. Salary weighed over half the total operating budgets. Salary alone also related closely to faculty. So the close relationship between faculty and operating budgets was explainable.

It is important to call attention again to this point that the Thai higher education in this study was limited to cover only the universities in Thailand, except for Ramkamhaeng University. The College of Education and its branches, and the Institute of Technology were not included. The College of Education produced most of the teachers and related occupations for the country. If these two institutions were added the entire profile of Thai higher education would be changed.

## The Individual Universities

Generally, the following conclusions can be made, based on the averaged T-scores:

1. Chiengmai University was dominated by Health Professions; Engineering was the least emphasized.

2. Chulalongkorn University was dominated by Sciences and Mathematics, and by the Applied Sciences except Agriculture.

3. Kasetsart University was heavily dominated by Agriculture.

4. Khonkaen University was dominated by Engineering and Agriculture.

5. Mahidol University was almost entirely devoted to Health Professions.

6. Prince of Songkhla University was dominated by Sciences and Mathematics.

7. Silpakorn University at Bangkok campus was devoted entirely to Arts.

8. Thammasat University was heavily dominated by Social Sciences.

In the case of Chiengmai University, although Health Professions was scored higher than any other discipline groupings in terms of average, it did not dominate every aspect. Health Professions T-scores were very high in faculty and operating budgets, but somewhat low in students and courses. The heavy scores of Health Professions might be due to the fact that the School of Medicine had been founded long before the University itself was established.

Chiengmai's profiles are much closer to the entire Thai higher education than are those of any other university. Its highest scores were in Health Professions, Sciences and Mathematics was second, and Social Sciences was third. Though the fourth to nineth ranked disciplines differed from those of the entire Thai higher education, the scores were close. If the Thai higher education profiles reflected the typical Thai university, Chiengmai was like that.

Chulalongkorn, the oldest university in Thailand, scored high in Sciences and Mathematics, and in Applied Sciences: the Engineering and Health Professions. Generally, the Chulalongkorn T-scores did not differ much among the discipline groupings, or, in the other words, the T-scores range was small when Agriculture was not counted. All three high-score-discipline-groupings were in the faculties when the university was first founded. Social Sciences was the only discipline of those found in the early university that did not score well above the mean score.

It is interesting further, to note that the T-scores within the discipline groupings at Chulalongkorn fluctuated from characteristic to characteristic. There was no consistancy in any set of scores. In Engineering, for example, the highest T-score was 60, while the lowest was 49 with the range of 11 compared to 3 in Thai higher education.

Kasetsart University showed heavy scores in Agriculture. The second leading score was in Sciences and Mathematics which was found largely in terms of courses, within Agriculture programs. Some programs at Kasetsart were considerably close to Agriculture. Entomology and Plant Pathology, for example, were counted as Sciences, but were offered by the Faculty of Agriculture. This finding was not surprising since Kasetsart was originally founded to be a college of Agriculture. The name "Kasetsart" itself means Agriculture.

T-scores within discipline groupings at Kasetsart, generally, did not fluctuate much. Except in Sciences and Mathematics, and Social Sciences, the differences between high and low T-scores within one discipline grouping was low. This less fluctuating T-score reflected the considerably high correlation coefficient indices between the four characteristics.

Mahidol University, although it showed programs of study in fields of Education and Sciences and Mathematics, along with Health Professions, they were actually Health Professions related programs. Education was Health Education. A large number of Sciences and Mathematics courses were to be found within the Health Professions programs.

Thammasat University, one of the earliest founded, was largely dominated by Social Sciences. This was

generally known since the University's full name is
"Thammasat University--A Center for Social Studies."  But
Sciences and Mathematics, and Arts were found along with
Business and Management at this University.

In short, a Thai university, as data revealed, was
likely to be a center of one certain discipline of study,
with exceptions at Chulalongkorn and Chiengmai.  Kasetsart
was a center for agricultural  studies; Mahidol was a
center of Health Professions; Silpakorn was a center of
Arts (mainly Fine Arts); Thammasat was a center of Social
Sciences.  These universities had not changed much from
the way each was originally founded.  Those early programs
still dominate the profiles of their institutions.  The
universities that were founded later at the time of this
study, conducted programs in only three discipline group-
ings and did not account much in the total figures of the
Thai higher education system.

Chapter V

SUMMARY, CONCLUSION, AND
RECOMMENDATION

## Summary

This study was planned to discover the distribution
of resources and students among nine discipline groupings
and among eight multi-purpose Thai universities, and to
summarize and compare the distribution of faculty members,
students, course offerings, and operating budgets both
among the disciplines and among the universities in such
form as will furnish hard data upon which long range plan-
ning may be based.

The study aimed to answer the following questions:

1. In the eight universities taken as a whole, what are
   the differences in the amount of resources of faculty,
   course offerings, students, and operating budgets
   currently used in the nine discipline groupings?

2. In each of the eight Thai universities, what are the
   differences in the amount of resources of faculty,
   course offerings, students, and operating budgets
   currently used in the nine discipline groupings?

3. Comparing each university with each other university
   and with the eight taken as a whole, what are the
   differences in the amount of resources of faculty,
   course offerings, students, and operating budgets
   currently used in the nine discipline groupings?

All the characteristics measured in the eight
universities were assigned to the nine discipline groupings:
Agriculture, Arts, Business and Management, Education,
Engineering, Health Professions, Languages and Literature,
Sciences and Mathematics, and Social Sciences. The faculty
counted here were the full-time members assigned to teach
in a discipline. The students are all regular undergraduate
students allocated to the discipline grouping in which
they are expected to get their degree. The course offer-
ings are the courses that belong to a discipline grouping.
When they are accumulated, the number of credit hours for
each was taken into account. The operating budget is that
amount of money allocated to pay salaries, wages, remuner-
ations, materials and supplies, ordinary expenses and equip-
ment in the discipline groupings.

Student data were collected from Education Report,
Institutions of Higher Education, Thailand 1971. Course
offering and faculty data were gathered from the Insitu-
tion's bulletins and catalogs, and faculty lists. Operating
budget data were obtained from the higher education sections
of Budgeting Bureau's, Budget for Fiscal Year 1972.

The data were counted and distributed among nine
discipline groupings within each university. The data
for the total Thai higher education was the summation of
data of all the eight universities. Then means and
standard deviations were calculated, and the data were
converted to Z-scores and T-scores. Profiles are T-scores
across the nine discipline groupings.

## Conclusions

### The Profiles of Thai
### Higher Education

Analysis of the T-scores revealed that:

1. The profile of Thai higher education was high in
   Health Professions, Sciences and Mathematics, and
   Social Sciences; and low in Business and Manage-
   ment, Arts, Education, and Languages and Litera-
   ture when measured by combining the T-scores for
   faculty, course offering, students, and operating
   budgets.

2. The profile of Thai higher education was high in
   Health Professions, and Sciences and Mathematics;
   and low in Business and Management and Arts when
   measured by faculty.

3. The profile of Thai higher education was high in
   Sciences and Mathematics, and Health Professions;
   and low in Education and Business and Management
   when measured by courses.

4. The profile of Thai higher education was high in Social Sciences and low in Arts, Languages and Literature, Agriculture, and Engineering when measured by students.

5. The profile of Thai higher education was high in Health Professions, and low in Business and Management, and Languages and Literature when measured by operating budgets.

6. The profiles of Thai higher education showed the most variation among the T-scores for the four characteristics in Health Professions, Sciences and Mathematics, and Social Sciences; and varied the least in Agriculture, Arts, Engineering, and Languages and Literature.

7. The profile of Thai higher education as measured by faculty was highly related with the profile of Thai higher education as measured by operating budgets.

## The Profiles of Individual Universities

When the profiles were measured by faculty, courses, students, and operating budgets; the findings are:

1. Chiengmai University profile was high in Health Professions and was low in Engineering.

2. Chulalongkorn University profile was high in Sciences and Mathematics and Applied Sciences except Agriculture, and was low in Arts and Languages and Literature.

3. Kasetsart University profile was high in Agriculture and was low in Business and Management, Health Professions and Languages and Literature.

4. Khonkaen University profile was high in Engineering and Agriculture.

5. Mahidol University profile was high in Health Professions.

6. Prince of Songkhla University profile was high in Sciences and Mathematics.

7. Silpakorn University profile was high in Arts.

8. Thammasat University profile was high in Social Sciences.

9. The profile of any one university as measured by faculty related highly with the profiles of that university when measured by operating budgets.

Comparisons Between the Pro-
files of the Individual
Universities and of the
Thai Higher Education

1. No individual university profile closely matched the profile of the total Thai higher education system.

2. The profile of Chiengmai University most nearly matched that of the total Thai higher education system.

## Recommendations

This study attempted to measure Thai universities and Thai higher education by using available basic data and converting them to comparable figures. There had been no such kind of study employed for any higher education institution in Thailand, so it is hard to evaluate the effectiveness of this tudy. Its usefulness is largely in that it introduces a new approach to the study of the Thai higher education system. By itself it does not have clear implications of a practical nature, other than as setting a direction to the gathering and treatment of significant data. Its usefulness is in the extent to which it helps to understand the present situation in comparative terms. For futher use and development of the method of study, the following recommendations are made.

1. Try to use other factors related to or within the characteristics used. A single characteristic may not give a good profile of an institution. For example, for the curriculum characteristic, a better representative may be the sum of other characteristics related or within the curriculum at large, such

as number of courses offered each year, number
of credits offered each year, measurable non-
academic curriculum, and activities. The averaged
T-scores of each factor relating to curriculum
may represent a better profile than using the
number of credits alone. The same sort of en-
largement may be helpful with the faculty, students,
and operating budget characteristics.

2. Seek out other independent characteristics that
   can add to the profile of institutions. Some
   other characteristics involved in the picture
   of the institution are student background (both
   academic and non-academic), library size, class-
   rooms, laboratories, space, administrators, and
   non-teaching staff. Adding these characteristics
   may improve the effectiveness of this method of
   study.

3. Seek better ways to group the data. Classifying
   the data into nine discipline groupings may not
   yield the best results. Better results may be
   achieved from regrouping the disciplines into
   more or less than nine groups. Another point,
   the groupings may be based on other factors.
   Holland (24) grouped them according to the types
   of personality of those in the related occupations.

For further studies, the following recommendations
are made:

1. To study the differences and similarities of the
   goals and practices of each university. It is clear
   from this study that different Thai universities
   emphasized the different disciplines. If there is
   any study finding out whether goals and their
   practices are different or the same, it will be
   valuable for future planning of those universities.

2. To study the causes of fluctuating scores in Health
   Professions, Sciences and Mathematics, and Social
   Sciences. At these three discipline groupings, the
   discrepancies of T-scores between different charac-
   teristics are large. It may be significant to find
   out what causes them.

3. To find the variation within a discipline grouping
   when it is measured by characteristics. One dis-
   advantage of this study is it does not show what
   accounts the most and/or the least for variation
   within a discipline grouping. One discipline
   grouping consists of a variety of similar disci-
   plines. Each discipline does not count the same
   amount in the total. Furthermore, each of the
   disciplines grouped here in a discipline grouping
   differs from one characteristic to another. A study

of these variations within a discipline grouping
may lead to more understanding of the profile of
institutions.

4. To study the manpower needs of the nation for
people trained at college level and to compare them
with the profile of the Thai higher education
system. This study will be useful in planning
higher education for the nation. A new study
should include the college of Education, the
Institute of Technology, and the Ramkamhaeng
University.

5. To study the quality and effectiveness of the
teaching staff. Such a study may provide more
useful picture than can these profiles and will
bring more understanding of the nature of Thai
universities.

6. To study the curriculum practices of Thai
universities.

7. To study the nature of students at Thai univer-
sities.

To those who may use the results of this study, it
is recommended:

Judgement should not be made as to whether one
university is better than another. The findings do not
lead to that kind of judgement and the study does not
intend to make it. A high Health Professions score at
Mahidol does not imply that Mahidol is better than
Thammasat, which had no Health Professions program.

APPENDICES

APPENDIX A


TABLES OF DATA GATHERED FROM THE

EIGHT THAI UNIVERSITIES


RAW DATA

MEANS AND STANDARD DEVIATIONS

Z-SCORES

T-SCORES

CORRELATION INDICES

TABLE 75.--Sum of Data from Eight Universities.

| Character-istics | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Raw Data of Thai Higher Education | | | | | | |
| Enrollment | 2526 | 2120 | 3686 | 3081 | 2348 | 4463 | 1536 | 3357 | 14073 | 37190 |
| Graduating | 541 | 469 | 1112 | 551 | 444 | 1259 | 339 | 491 | 2111 | 7317 |
| Faculty | 316 | 220 | 177 | 377 | 303 | 1250 | 313 | 955 | 468 | 4379 |
| No. of Courses | 620 | 683 | 276 | 340 | 527 | 1074 | 728 | 1680 | 1001 | 6929 |
| No. of Credits | 1625 | 1656 | 768 | 730 | 1568 | 3126 | 1806 | 5137 | 2658 | 19074 |
| *Operating Budgets | 26669 | 17868 | 11610 | 24415 | 36758 | 188000 | 14394 | 73943 | 26539 | 420196 |
| *Salary | 16668 | 15209 | 9572 | 17847 | 17835 | 104640 | 11593 | 39429 | 22026 | 254917 |
| *Expenses | 10002 | 2659 | 2038 | 6569 | 19967 | 83360 | 2701 | 34514 | 4513 | 166323 |
| | | | | Raw Data of Chiengmai University | | | | | | |
| Enrollment | 273 | 269 | 653 | 761 | 51 | 778 | 470 | 653 | 919 | 4827 |
| Graduating | 73 | 50 | 82 | 115 | 0 | 146 | 83 | 109 | 201 | 859 |
| Faculty | 58 | 30 | 18 | 50 | 12 | 304 | 45 | 141 | 73 | 731 |
| No. of Courses | 171 | 115 | 70 | 84 | 29 | 185 | 125 | 253 | 226 | 1258 |
| No. of Credits | 468 | 343 | 210 | 248 | 90 | 515 | 373 | 939 | 678 | 3864 |
| *Operating Budgets | 4153 | 1734 | 1182 | 2833 | 4906 | 39728 | 2569 | 9643 | 3234 | 69981 |
| *Salary | 2590 | 1446 | 997 | 2033 | 731 | 21257 | 2142 | 4730 | 2718 | 38644 |
| *Expenses | 1562 | 288 | 185 | 801 | 4175 | 18470 | 427 | 4913 | 515 | 31337 |

TABLE 75.—Continued

| Characteristics | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Raw Data of Chulalongkorn University | | | | | | | | | | |
| Enrollment | 0 | 795 | 1246 | 1332 | 1360 | 642 | 626 | 1295 | 1035 | 8331 |
| Graduating | 0 | 178 | 350 | 345 | 309 | 292 | 145 | 279 | 396 | 1174 |
| Faculty | 0 | 66 | 80 | 202 | 122 | 281 | 115 | 255 | 88 | 1209 |
| No. of Courses | 1 | 168 | 103 | 23 | 230 | 87 | 223 | 475 | 169 | 1479 |
| No. of Credits | 2 | 368 | 285 | 43 | 646 | 413 | 399 | 1242 | 365 | 3763 |
| *Operating Budgets | 0 | 7495 | 5026 | 9418 | 11608 | 26253 | 4229 | 24673 | 5122 | 93823 |
| *Salary | 0 | 6731 | 4103 | 8690 | 7439 | 18080 | 3991 | 14729 | 4436 | 68198 |
| *Expenses | 0 | 764 | 923 | 728 | 4169 | 8173 | 238 | 9944 | 686 | 25625 |
| Raw Data of Kasetsart University | | | | | | | | | | |
| Enrollment | 1936 | 0 | 326 | 243 | 326 | 162 | 198 | 509 | 332 | 4035 |
| Graduating | 422 | 0 | 33 | 21 | 56 | 4 | 15 | 80 | 43 | 674 |
| Faculty | 210 | 0 | 20 | 51 | 48 | 44 | 42 | 96 | 150 | 661 |
| No. of Courses | 346 | 48 | 53 | 118 | 110 | 46 | 43 | 268 | 154 | 1186 |
| No. of Credits | 860 | 122 | 144 | 172 | 293 | 130 | 116 | 733 | 417 | 2987 |
| *Operating Budgets | 17638 | 0 | 1326 | 3030 | 3120 | 3466 | 4200 | 8912 | 4128 | 45819 |
| *Salary | 11477 | 0 | 1035 | 2011 | 2425 | 1605 | 2736 | 5819 | 2808 | 29916 |
| *Expenses | 6160 | 0 | 292 | 1019 | 695 | 1862 | 1464 | 3093 | 1319 | 15903 |

TABLE 75.--Continued

| Character-istics | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Raw Data of Khonkaen University | | | | | | |
| Enrollment | 314 | 0 | 0 | 191 | 406 | 0 | 0 | 0 | 0 | 911 |
| Graduating | 46 | 0 | 0 | 0 | 66 | 0 | 0 | 0 | 0 | 112 |
| Faculty | 48 | 0 | 0 | 38 | 60 | 0 | 18 | 40 | 0 | 204 |
| No. of Courses | 98 | 4 | 0 | 24 | 54 | 1 | 17 | 48 | 12 | 258 |
| No. of Credits | 284 | 8 | 0 | 49 | 231 | 2 | 34 | 167 | 24 | 799 |
| *Operating Budgets | 4379 | 0 | 0 | 2615 | 7219 | 0 | 614 | 4444 | 0 | 19771 |
| *Salary | 2600 | 0 | 0 | 1571 | 2921 | 0 | 309 | 2232 | 0 | 9632 |
| *Expenses | 2280 | 0 | 0 | 1044 | 5342 | 0 | 306 | 2212 | 0 | 11184 |
| | | | | Raw Data of Mahidol University | | | | | | |
| Enrollment | 0 | 0 | 0 | 122 | 0 | 2881 | 0 | 62 | 0 | 3065 |
| Graduating | 0 | 0 | 0 | 70 | 0 | 817 | 0 | 7 | 0 | 894 |
| Faculty | 0 | 0 | 0 | 12 | 12 | 621 | 12 | 336 | 0 | 993 |
| No. of Courses | 0 | 11 | 9 | 58 | 15 | 750 | 62 | 336 | 62 | 1303 |
| No. of Credits | 0 | 14 | 12 | 134 | 29 | 2051 | 145 | 1192 | 121 | 3698 |
| *Operating Budgets | 0 | 0 | 0 | 1485 | 0 | 118553 | 0 | 14965 | 0 | 135004 |
| *Salary | 0 | 0 | 0 | 1111 | 0 | 63698 | 0 | 6875 | 0 | 71685 |
| *Expenses | 0 | 0 | 0 | 374 | 0 | 54855 | 0 | 8090 | 0 | 63319 |

TABLE 75.—Continued

| Characteristics | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Raw Data of Prince of Songkhla University | | | | | | | | | | |
| Enrollment | 0 | 0 | 0 | 432 | 205 | 0 | 0 | 723 | 0 | 1360 |
| Graduating | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 13 |
| Faculty | 0 | 0 | 0 | 24 | 49 | 0 | 19 | 59 | 8 | 159 |
| No. of Courses | 0 | 12 | 1 | 20 | 73 | 0 | 67 | 218 | 19 | 410 |
| No. of Credits | 0 | 23 | 3 | 44 | 212 | 0 | 149 | 645 | 36 | 1112 |
| *Operating Budgets | 0 | 0 | 0 | 5035 | 9906 | 0 | 0 | 9525 | 0 | 24466 |
| *Salary | 0 | 0 | 0 | 2432 | 4319 | 0 | 0 | 3434 | 0 | 10185 |
| *Expenses | 0 | 0 | 0 | 2603 | 5587 | 0 | 0 | 6092 | 0 | 14282 |
| Raw Data of Silpakorn University | | | | | | | | | | |
| Enrollment | 0 | 572 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 572 |
| Graduating | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 103 |
| Faculty | 0 | 84 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 84 |
| No. of Courses | 2 | 204 | 3 | 0 | 12 | 0 | 48 | 20 | 8 | 204 |
| No. of Credits | 5 | 445 | 3 | 0 | 55 | 0 | 169 | 34 | 10 | 445 |
| *Operating Budgets | 0 | 4787 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4787 |
| *Salary | 0 | 3762 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3762 |
| *Expenses | 0 | 1026 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1026 |

TABLE 75.--Continued

Raw Data of Thammasat University

| Character-istics | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc.Sc | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Enrollment | 0 | 484 | 1461 | 0 | 0 | 0 | 242 | 115 | 11787 | 14089 |
| Graduating | 0 | 138 | 647 | 0 | 0 | 0 | 96 | 16 | 1471 | 2368 |
| Faculty | 0 | 40 | 59 | 0 | 0 | 0 | 62 | 28 | 149 | 338 |
| No. of Courses | 2 | 121 | 37 | 13 | 4 | 5 | 143 | 62 | 351 | 738 |
| No. of Credits | 6 | 333 | 111 | 40 | 12 | 15 | 421 | 185 | 1007 | 2130 |
| *Operating Budgets | 0 | 3852 | 4076 | 0 | 0 | 0 | 2781 | 1780 | 14056 | 26545 |
| *Salary | 0 | 3271 | 3438 | 0 | 0 | 0 | 2515 | 1610 | 12063 | 22897 |
| *Expenses | 0 | 581 | 638 | 0 | 0 | 0 | 266 | 170 | 1992 | 3648 |

* in thousands of bahts

TABLE 76.--Means and Standard Deviation.

| Institutions and Characteristics | Means | Standard Deviations |
|---|---|---|
| Total Thai Higher Education | | |
| Enrollment | 4132.22 | 3611.50 |
| Graduating | 813.00 | 547.58 |
| Faculty | 486.56 | 340.76 |
| No. of Courses | 769.89 | 407.39 |
| No. of Credits | 2119.33 | 1292.17 |
| Operating Budget | 46688.46 | 52933.25 |
| Salary | 28324.16 | 28172.11 |
| Expenses | 18480.31 | 25049.30 |
| Chiengmai University | | |
| Enrollment | 536.33 | 271.48 |
| Graduating | 95.44 | 54.04 |
| Faculty | 81.02 | 86.61 |
| No. of Courses | 139.78 | 70.20 |
| No. of Credits | 429.33 | 244.31 |
| Operating Budget | 7775.61 | 11536.96 |
| Salary | 4293.73 | 6098.72 |
| Expenses | 3481.88 | 5550.31 |
| Chulalongkorn University | | |
| Enrollment | 925.67 | 428.04 |
| Graduating | 254.89 | 117.81 |
| Faculty | 134.33 | 87.55 |
| No. of Courses | 164.33 | 133.62 |
| No. of Credits | 418.11 | 344.48 |
| Operating Budget | 10424.81 | 8620.87 |
| Salary | 7577.60 | 5329.53 |
| Expenses | 2847.21 | 3537.05 |

TABLE 76.--Continued

| Institutions and Characteristics | Means | Standard Deviations |
|---|---|---|
| Kasetsart University | | |
| Enrollment | 448.33 | 543.35 |
| Graduating | 74.89 | 125.06 |
| Faculty | 73.44 | 63.49 |
| No. of Courses | 131.78 | 102.24 |
| No. of Credits | 331.89 | 266.84 |
| Operating Budget | 5091.03 | 4995.66 |
| Salary | 3324.01 | 3250.55 |
| Expenses | 1767.02 | 1775.42 |
| Khonkaen University | | |
| Enrollment | 113.87 | 156.59 |
| Graduating | 14.00 | 24.76 |
| Faculty | 25.50 | 22.56 |
| No. of Courses | 32.25 | 30.68 |
| No. of Credits | 99.87 | 103.87 |
| Operating Budget | 2471.38 | 2598.45 |
| Salary | 1203.96 | 1185.17 |
| Expenses | 1397.96 | 1738.39 |
| Mahidol University | | |
| Enrollment | 383.12 | 945.03 |
| Graduating | 111.75 | 267.52 |
| Faculty | 124.12 | 216.71 |
| No. of Courses | 162.87 | 243.58 |
| No. of Credits | 462.25 | 704.70 |
| Operating Budget | 16875.45 | 38734.41 |
| Salary | 8960.58 | 20807.62 |
| Expenses | 7914.88 | 17935.65 |

TABLE 76.--Continued

| Institutions and Characteristics | Means | Standard Deviations |
|---|---|---|
| Prince of Songkhla University | | |
| Enrollment | 194.29 | 263.80 |
| Graduating | 1.86 | 4.55 |
| Faculty | 22.71 | 21.62 |
| No. of Courses | 58.57 | 69.93 |
| No. of Credits | 158.86 | 210.54 |
| Operating Budget | 3495.20 | 4287.85 |
| Salary | 1454.97 | 1754.28 |
| Expenses | 2040.23 | 2562.30 |
| Thammasat University | | |
| Enrollment | 1565.44 | 3641.10 |
| Graduating | 263.11 | 469.98 |
| Faculty | 37.56 | 46.21 |
| No. of Courses | 82.00 | 107.08 |
| No. of Credits | 236.67 | 306.71 |
| Operating Budget | 2949.42 | 4237.76 |
| Salary | 2544.06 | 3631.78 |
| Expenses | 405.37 | 608.77 |

(NOTE: All budget, salary, and expense figures are in Thousands of Bahts).

TABLE 77.—Z-Scores.

| Character-istics | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc. Sc |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total Thai Higher Education | | | | | | |
| Enrollment | -.44 | -.56 | -.12 | -.29 | -.49 | .09 | -.72 | -.21 | 2.75 |
| Graduating | -.50 | -.63 | .55 | -.48 | -.67 | .81 | -.87 | -.59 | 2.37 |
| Faculty | -.45 | -.78 | -.91 | -.32 | -.54 | 2.19 | -.51 | 1.37 | -.05 |
| No. of Courses | -.37 | -.21 | -1.21 | -1.06 | -.60 | .75 | -.10 | 2.23 | .57 |
| No. of Credits | -.38 | -.36 | -1.05 | -1.08 | -.43 | .78 | -.24 | 2.34 | .42 |
| Operating Budget | -.38 | -.54 | -.66 | -.42 | -.19 | 2.67 | -.61 | .51 | -.38 |
| Salary | -.41 | -.47 | -.67 | -.37 | -.37 | 2.71 | -.59 | .39 | -.22 |
| Expenses | -.34 | -.63 | -.66 | -.48 | .06 | 2.59 | -.63 | .64 | -.56 |
| | | | Chiengmai University | | | | | | |
| Enrollment | -.97 | -.98 | .43 | .83 | -1.79 | .89 | -.24 | .43 | 1.41 |
| Graduating | -.42 | -.84 | -.25 | .36 | -1.77 | .94 | -.23 | .25 | 1.95 |
| Faculty | -.27 | -.59 | -.73 | -.36 | -.80 | 2.57 | -.42 | .69 | -.09 |
| No. of Courses | .44 | -.35 | -.99 | -.79 | -1.58 | .64 | -.21 | 1.61 | 1.23 |
| No. of Credits | .16 | -.35 | -.90 | -.74 | -1.39 | .35 | -.23 | 2.09 | 1.02 |
| Operating Budget | -.31 | -.52 | -.57 | -.43 | -.25 | 2.77 | -.45 | .16 | -.39 |
| Salary | -.28 | -.47 | -.54 | -.37 | -.58 | 2.78 | -.35 | .07 | -.26 |
| Expenses | -.35 | -.58 | -.59 | -.48 | .12 | 2.70 | -.55 | .26 | -.53 |
| | | | Chulalongkorn University | | | | | | |
| Enrollment | -2.16 | -.31 | .75 | .95 | 1.01 | -.66 | -.70 | .86 | .26 |
| Graduating | -2.16 | -.65 | .81 | .76 | .46 | .31 | -.93 | .20 | 1.20 |
| Faculty | -1.53 | -.78 | -.62 | .77 | -.14 | 1.68 | -.22 | 1.38 | -.53 |
| No. of Courses | -1.22 | .03 | -.46 | -1.06 | .49 | -.58 | .44 | 2.32 | .03 |
| No. of Credits | -1.21 | -.15 | -.39 | -1.09 | .66 | -.01 | -.06 | 2.39 | -.15 |
| Operating Budget | -1.21 | -.34 | -.63 | -.12 | .14 | 1.84 | -.72 | 1.65 | -.62 |
| Salary | -1.42 | -.16 | -.65 | .21 | -.03 | 1.97 | -.67 | 1.34 | -.59 |
| Expenses | -.80 | -.59 | -.54 | -.60 | .37 | 1.51 | -.74 | 2.01 | -.61 |

TABLE 77.--Continued

| Character-istics | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc Sc |
|---|---|---|---|---|---|---|---|---|---|
| Kasetsart University | | | | | | | | | |
| Enrollment | 2.74 | -.83 | -.23 | -.38 | -.23 | -.53 | -.46 | .11 | -.21 |
| Graduating | 2.78 | -.60 | -.33 | -.43 | -.15 | -.57 | -.48 | .04 | -.25 |
| Faculty | 2.15 | -1.16 | -.84 | -.35 | -.40 | -.46 | -.50 | .36 | 1.21 |
| No. of Courses | 2.10 | -.82 | -.77 | -.13 | -.21 | -.84 | -.87 | 1.33 | .22 |
| No. of Credits | 1.98 | -.79 | -.70 | -.60 | -.15 | -.76 | -.81 | 1.50 | .32 |
| Operating Budget | 2.51 | -1.02 | -.75 | -.41 | -.39 | -.33 | -.18 | .76 | -.19 |
| Salary | 2.51 | -1.02 | -.70 | -.40 | -.28 | -.53 | -.18 | .77 | -.16 |
| Expenses | 2.47 | -1.00 | -.83 | -.42 | -.60 | .05 | -.17 | .75 | -.25 |
| Khonkaen University | | | | | | | | | |
| Enrollment | 1.28 | -.73 | — | .49 | 1.87 | -.73 | -.73 | -.73 | -.73 |
| Graduating | 1.29 | -.57 | — | -.57 | 2.10 | -.57 | -.57 | -.57 | -.57 |
| Faculty | 1.00 | -1.13 | — | .55 | 1.53 | -1.13 | -.33 | .64 | -1.13 |
| No. of Courses | 2.14 | -.92 | — | -.27 | .71 | -1.02 | -.50 | .51 | -.66 |
| No. of Credits | 1.77 | -.88 | — | -.49 | 1.26 | -.94 | -.63 | .65 | -.73 |
| Operating Budget | .93 | -.95 | — | .06 | 1.83 | -.95 | -.71 | .76 | -.95 |
| Salary | 1.18 | -1.02 | — | .31 | 1.45 | -1.02 | -.76 | .87 | -1.02 |
| Expenses | .51 | -.80 | — | -.20 | 2.27 | -.80 | -.63 | .47 | -.80 |
| Mahidol University | | | | | | | | | |
| Enrollment | — | -.41 | -.41 | -.28 | -.41 | 2.64 | -.41 | -.34 | -.41 |
| Graduating | — | -.42 | -.42 | -.16 | -.42 | 2.64 | -.42 | -.39 | -.42 |
| Faculty | — | -.57 | -.57 | -.52 | -.52 | 2.29 | -.52 | .98 | -.57 |
| No. of Courses | — | -.62 | -.63 | -.43 | -.61 | 2.41 | -.41 | .71 | -.41 |
| No. of Credits | — | -.64 | -.64 | -.47 | -.61 | 2.25 | -.45 | 1.04 | -.48 |
| Operating Budget | — | -.44 | -.44 | -.40 | -.44 | 2.63 | -.44 | -.05 | -.44 |
| Salary | — | -.43 | -.43 | -.38 | -.43 | 2.63 | -.43 | -.10 | -.43 |
| Expenses | — | -.44 | -.44 | -.42 | -.44 | 2.62 | -.44 | -.01 | -.44 |

TABLE 77.—Continued

| Character-istics | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc | Soc Sc |
|---|---|---|---|---|---|---|---|---|---|
| Prince of Songkhla University | | | | | | | | | |
| Enrollment | – | –.74 | –.74 | .90 | .04 | – | –.74 | 2.00 | –.74 |
| Graduating | – | –.41 | –.41 | –.41 | 2.45 | – | –.41 | –.41 | –.41 |
| Faculty | – | –1.05 | –1.05 | .06 | 1.22 | – | –.17 | 1.68 | –.68 |
| No. of Courses | – | –.67 | –.82 | –.55 | .21 | – | .12 | 2.28 | –.57 |
| No. of Credits | – | –.65 | –.74 | –.55 | .25 | – | –.05 | 2.31 | –.58 |
| Operating Budget | – | –.82 | –.82 | .36 | 1.50 | – | –.82 | 1.41 | –.82 |
| Salary | – | –.83 | –.83 | .56 | 1.63 | – | –.83 | 1.13 | –.83 |
| Expenses | – | –.80 | –.80 | .22 | 1.38 | – | –.80 | 1.58 | –.80 |
| Thammasat University | | | | | | | | | |
| Enrollment | –.43 | –.30 | –.03 | –.43 | –.43 | –.43 | –.36 | –.40 | 2.81 |
| Graduating | –.56 | –.27 | .82 | –.56 | –.56 | –.56 | –.36 | –.53 | 2.57 |
| Faculty | –.81 | .05 | .46 | –.81 | –.81 | –.81 | .53 | –.21 | 2.41 |
| No. of Courses | –.75 | .36 | –.42 | –.64 | –.73 | –.72 | .57 | –.19 | 2.51 |
| No. of Credits | –.75 | .31 | –.41 | –.64 | –.73 | –.72 | .60 | –.17 | 2.51 |
| Operating Budget | –.70 | .21 | .27 | –.70 | –.70 | –.70 | –.04 | –.28 | 2.62 |
| Salary | –.70 | .20 | .25 | –.70 | –.70 | –.70 | –.01 | –.26 | 2.62 |
| Expenses | –.67 | .29 | –.38 | .67 | –.67 | –.67 | –.23 | –.39 | 2.61 |

TABLE 78.—T-Scores .

| Character-istics | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc. | Soc.Sc. |
|---|---|---|---|---|---|---|---|---|---|
| Total Thai Higher Education | | | | | | | | | |
| Enrollment | 46 | 44 | 49 | 47 | 45 | 51 | 43 | 48 | 78 |
| Graduating | 45 | 44 | 55 | 45 | 43 | 58 | 41 | 44 | 74 |
| Faculty | 45 | 42 | 41 | 47 | 45 | 72 | 45 | 64 | 49 |
| No. of Courses | 46 | 48 | 38 | 39 | 44 | 57 | 49 | 72 | 56 |
| No. of Credits | 46 | 46 | 40 | 39 | 46 | 58 | 48 | 73 | 54 |
| Operating Budget | 56 | 45 | 43 | 46 | 48 | 77 | 44 | 55 | 46 |
| Salary | 46 | 45 | 43 | 46 | 46 | 77 | 44 | 54 | 48 |
| Expenses | 47 | 44 | 43 | 45 | 51 | 76 | 44 | 56 | 44 |
| Chiengmai University | | | | | | | | | |
| Enrollment | 40 | 40 | 54 | 58 | 32 | 59 | 48 | 54 | 64 |
| Graduating | 46 | 42 | 48 | 54 | 32 | 59 | 48 | 53 | 70 |
| Faculty | 47 | 44 | 43 | 46 | 42 | 76 | 46 | 57 | 49 |
| No. of Courses | 54 | 46 | 40 | 42 | 34 | 56 | 48 | 66 | 62 |
| No. of Credits | 52 | 46 | 41 | 43 | 36 | 54 | 48 | 71 | 60 |
| Operating Budget | 47 | 45 | 44 | 46 | 48 | 78 | 45 | 52 | 46 |
| Salary | 47 | 45 | 45 | 46 | 44 | 78 | 46 | 51 | 47 |
| Expenses | 47 | 44 | 44 | 45 | 51 | 77 | 44 | 53 | 45 |
| Chulalongkorn University | | | | | | | | | |
| Enrollment | 28 | 47 | 57 | 59 | 60 | 43 | 43 | 59 | 53 |
| Graduating | 28 | 43 | 58 | 58 | 55 | 53 | 41 | 52 | 62 |
| Faculty | 35 | 42 | 44 | 58 | 49 | 67 | 48 | 64 | 45 |
| No. of Courses | 38 | 50 | 45 | 39 | 55 | 44 | 54 | 73 | 50 |
| No. of Credits | 38 | 49 | 46 | 39 | 57 | 50 | 49 | 74 | 48 |
| Operating Budget | 38 | 47 | 44 | 49 | 51 | 68 | 43 | 67 | 44 |
| Salary | 36 | 48 | 43 | 52 | 50 | 70 | 43 | 63 | 44 |
| Expenses | 42 | 44 | 45 | 44 | 54 | 65 | 43 | 70 | 44 |

TABLE 78.--Continued

| Character-istics | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc. | Soc.Sc |
|---|---|---|---|---|---|---|---|---|---|
| Kasetsart University | | | | | | | | | |
| Enrollment | 77 | 42 | 48 | 46 | 48 | 45 | 45 | 51 | 48 |
| Graduating | 78 | 44 | 47 | 46 | 48 | 44 | 45 | 50 | 47 |
| Faculty | 72 | 38 | 42 | 46 | 46 | 45 | 45 | 54 | 62 |
| No. of Courses | 71 | 42 | 42 | 49 | 48 | 42 | 41 | 63 | 52 |
| No. of Credits | 70 | 42 | 43 | 44 | 49 | 42 | 42 | 65 | 53 |
| Operating Budget | 75 | 40 | 42 | 46 | 46 | 47 | 48 | 58 | 48 |
| Salary | 75 | 40 | 43 | 46 | 47 | 45 | 48 | 58 | 48 |
| Expenses | 75 | 40 | 42 | 46 | 44 | 51 | 48 | 57 | 47 |
| Khonkaen University | | | | | | | | | |
| Enrollment | 63 | 43 | – | 55 | 69 | 43 | 43 | 43 | 43 |
| Graduating | 63 | 44 | – | 44 | 71 | 44 | 44 | 44 | 44 |
| Faculty | 60 | 39 | – | 56 | 65 | 39 | 47 | 56 | 39 |
| No. of Courses | 71 | 41 | – | 47 | 57 | 40 | 45 | 55 | 43 |
| No. of Credits | 68 | 41 | – | 45 | 63 | 41 | 44 | 56 | 43 |
| Operating Budget | 59 | 40 | – | 51 | 68 | 40 | 43 | 58 | 40 |
| Salary | 62 | 40 | – | 53 | 64 | 40 | 42 | 59 | 40 |
| Expenses | 55 | 42 | – | 48 | 73 | 42 | 44 | 55 | 42 |
| Mahidol University | | | | | | | | | |
| Enrollment | – | 46 | 46 | 47 | 46 | 76 | 46 | 47 | 46 |
| Graduating | – | 46 | 46 | 48 | 46 | 76 | 46 | 46 | 46 |
| Faculty | – | 44 | 44 | 45 | 45 | 73 | 45 | 60 | 44 |
| No. of Courses | – | 44 | 44 | 46 | 44 | 74 | 46 | 57 | 46 |
| No. of Credits | – | 44 | 44 | 45 | 44 | 73 | 45 | 60 | 45 |
| Operating Budget | – | 46 | 46 | 46 | 46 | 76 | 46 | 50 | 46 |
| Salary | – | 46 | 46 | 46 | 46 | 76 | 46 | 49 | 46 |
| Expenses | – | 46 | 46 | 46 | 46 | 76 | 46 | 50 | 46 |

TABLE 78.--Continued

| Character-istics | Agr | Arts | Bus | Educ | En | Hlth | Lang | Sc. | Soc.Sc |
|---|---|---|---|---|---|---|---|---|---|
| Prince of Songkhla University | | | | | | | | | |
| Enrollment | – | 43 | 43 | 59 | 50 | – | 43 | 70 | 43 |
| Graduating | – | 46 | 46 | 46 | 74 | – | 46 | 46 | 46 |
| Faculty | – | 39 | 39 | 51 | 62 | – | 48 | 67 | 43 |
| No. of Courses | – | 43 | 42 | 44 | 52 | – | 51 | 73 | 44 |
| No. of Credits | – | 44 | 43 | 45 | 53 | – | 50 | 73 | 44 |
| Operating Budget | – | 42 | 42 | 54 | 65 | – | 42 | 64 | 42 |
| Salary | – | 42 | 42 | 56 | 66 | – | 42 | 61 | 42 |
| Expenses | – | 42 | 42 | 52 | 64 | – | 42 | 66 | 42 |
| Thammasat University | | | | | | | | | |
| Enrollment | 46 | 47 | 50 | 46 | 46 | 46 | 46 | 46 | 78 |
| Graduating | 44 | 47 | 58 | 44 | 44 | 44 | 46 | 45 | 76 |
| Faculty | 42 | 51 | 55 | 42 | 42 | 42 | 55 | 48 | 74 |
| No. of Courses | 43 | 54 | 46 | 44 | 43 | 43 | 56 | 48 | 75 |
| No. of Credits | 42 | 53 | 46 | 44 | 43 | 43 | 56 | 48 | 75 |
| Operating Budget | 43 | 52 | 53 | 43 | 43 | 43 | 50 | 47 | 76 |
| Salary | 43 | 52 | 52 | 43 | 43 | 43 | 50 | 47 | 76 |
| Expenses | 43 | 53 | 54 | 43 | 43 | 43 | 48 | 46 | 76 |

TABLE 79.--Correlation Coefficient Indices .

| Characteristics | I | II | III | IV | V | VI | VII | VIII |
|---|---|---|---|---|---|---|---|---|
| Total Thai Higher Education | | | | | | | | |
| Enrollment | 1.00 | .93 | .14 | .25 | .21 | .03 | .08 | -.04 |
| Graduating | | 1.00 | .23 | .14 | .12 | .22 | .28 | .15 |
| Faculty | | | 1.00 | .76 | .78 | .93 | .92 | .92 |
| No. of Courses | | | | 1.00 | .99 | .51 | .50 | .52 |
| No. of Credits | | | | | 1.00 | .54 | .52 | .55 |
| Operating Budget | | | | | | 1.00 | 1.00 | .99 |
| Salary | | | | | | | 1.00 | .98 |
| Expenses | | | | | | | | 1.00 |
| Chiengmai University | | | | | | | | |
| Enrollment | 1.00 | .93 | .47 | .52 | .49 | .31 | .39 | .21 |
| Graduating | | 1.00 | .51 | .70 | .62 | .33 | .42 | .23 |
| Faculty | | | 1.00 | .57 | .51 | .96 | .97 | .93 |
| No. of Courses | | | | 1.00 | .97 | .33 | .38 | .27 |
| No. of Credits | | | | | 1.00 | .26 | .29 | .22 |
| Operating Budget | | | | | | 1.00 | .99 | .99 |
| Salary | | | | | | | 1.00 | .96 |
| Expenses | | | | | | | | 1.00 |
| Chulalongkorn University | | | | | | | | |
| Enrollment | 1.00 | .85 | .42 | .43 | .45 | .32 | .33 | .27 |
| Graduating | | 1.00 | .47 | .18 | .25 | .35 | .40 | .25 |
| Faculty | | | 1.00 | .38 | .52 | .92 | .94 | .81 |
| No. of Courses | | | | 1.00 | .96 | .49 | .39 | .61 |
| No. of Credits | | | | | 1.00 | .67 | .56 | .79 |
| Operating Budget | | | | | | 1.00 | .98 | .96 |
| Salary | | | | | | | 1.00 | .89 |
| Expenses | | | | | | | | 1.00 |

TABLE 79.--Continued

| Characteristics | I | II | III | IV | V | VI | VII | VIII |
|---|---|---|---|---|---|---|---|---|
| Kasetsart University | | | | | | | | |
| Enrollment | 1.00 | 1.00 | .84 | .85 | .82 | .95 | .95 | .92 |
| Graduating | | 1.00 | .82 | .84 | .81 | .94 | .94 | .91 |
| Faculty | | | 1.00 | .87 | .86 | .87 | .87 | .84 |
| No. of Courses | | | | 1.00 | .98 | .91 | .93 | .87 |
| No. of Credits | | | | | 1.00 | .90 | .91 | .86 |
| Operating Budget | | | | | | 1.00 | 1.00 | .99 |
| Salary | | | | | | | 1.00 | .97 |
| Expenses | | | | | | | | 1.00 |
| Khonkaen University | | | | | | | | |
| Enrollment | 1.00 | .92 | .83 | .73 | .78 | .83 | .81 | .83 |
| Graduating | | 1.00 | .74 | .73 | .83 | .82 | .76 | .87 |
| Faculty | | | 1.00 | .81 | .87 | .96 | .98 | .89 |
| No. of Courses | | | | 1.00 | .97 | .81 | .87 | .67 |
| No. of Credits | | | | | 1.00 | .91 | .93 | .83 |
| Operating Budget | | | | | | 1.00 | .98 | .96 |
| Salary | | | | | | | 1.00 | .89 |
| Expenses | | | | | | | | 1.00 |
| Mahidol University | | | | | | | | |
| Enrollment | 1.00 | 1.00 | .87 | .92 | .86 | .99 | 1.00 | .99 |
| Graduating | | 1.00 | .86 | .91 | .85 | .99 | .99 | .99 |
| Faculty | | | 1.00 | .99 | 1.00 | .92 | .91 | .93 |
| No. of Courses | | | | 1.00 | .99 | .95 | .95 | .96 |
| No. of Credits | | | | | 1.00 | .91 | .90 | .92 |
| Operating Budget | | | | | | 1.00 | 1.00 | 1.00 |
| Salary | | | | | | | 1.00 | 1.00 |
| Expenses | | | | | | | | 1.00 |

TABLE 79.—Continued

| Characteristics | I | II | III | IV | V | VI | VII | VIII |
|---|---|---|---|---|---|---|---|---|
| Prince of Songkhla University | | | | | | | | |
| Enrollment | 1.00 | .02 | .81 | .79 | .80 | .80 | .75 | .82 |
| Graduating | | 1.00 | .50 | .08 | .10 | .61 | .67 | .57 |
| Faculty | | | 1.00 | .85 | .86 | .94 | .91 | .96 |
| No. of Courses | | | | 1.00 | 1.00 | .70 | .60 | .76 |
| No. of Credits | | | | | 1.00 | .73 | .63 | .78 |
| Operating Budget | | | | | | 1.00 | .99 | 1.00 |
| Salary | | | | | | | 1.00 | .97 |
| Expenses | | | | | | | | 1.00 |
| Thammasat University | | | | | | | | |
| Enrollment | 1.00 | .95 | .89 | .89 | .89 | .96 | .96 | .96 |
| Graduating | | 1.00 | .92 | .83 | .83 | .96 | .96 | .97 |
| Faculty | | | 1.00 | .95 | .95 | .97 | .98 | .96 |
| No. of Courses | | | | 1.00 | 1.00 | .95 | .95 | .93 |
| No. of Credits | | | | | 1.00 | .95 | .95 | .92 |
| Operating Budget | | | | | | 1.00 | 1.00 | 1.00 |
| Salary | | | | | | | 1.00 | 1.00 |
| Expenses | | | | | | | | 1.00 |

APPENDIX B


PROFILES OF THAI HIGHER EDUCATION
AND OF THE EIGHT THAI UNIVERSITIES
IN TERMS OF T-SCORES ACROSS NINE
DISCIPLINE GROUPINGS

Profile of Thai Higher Education

A. Distribution of Faculty among the Discipline
   Groupings, on a T-score Scale



Discipline Groupings
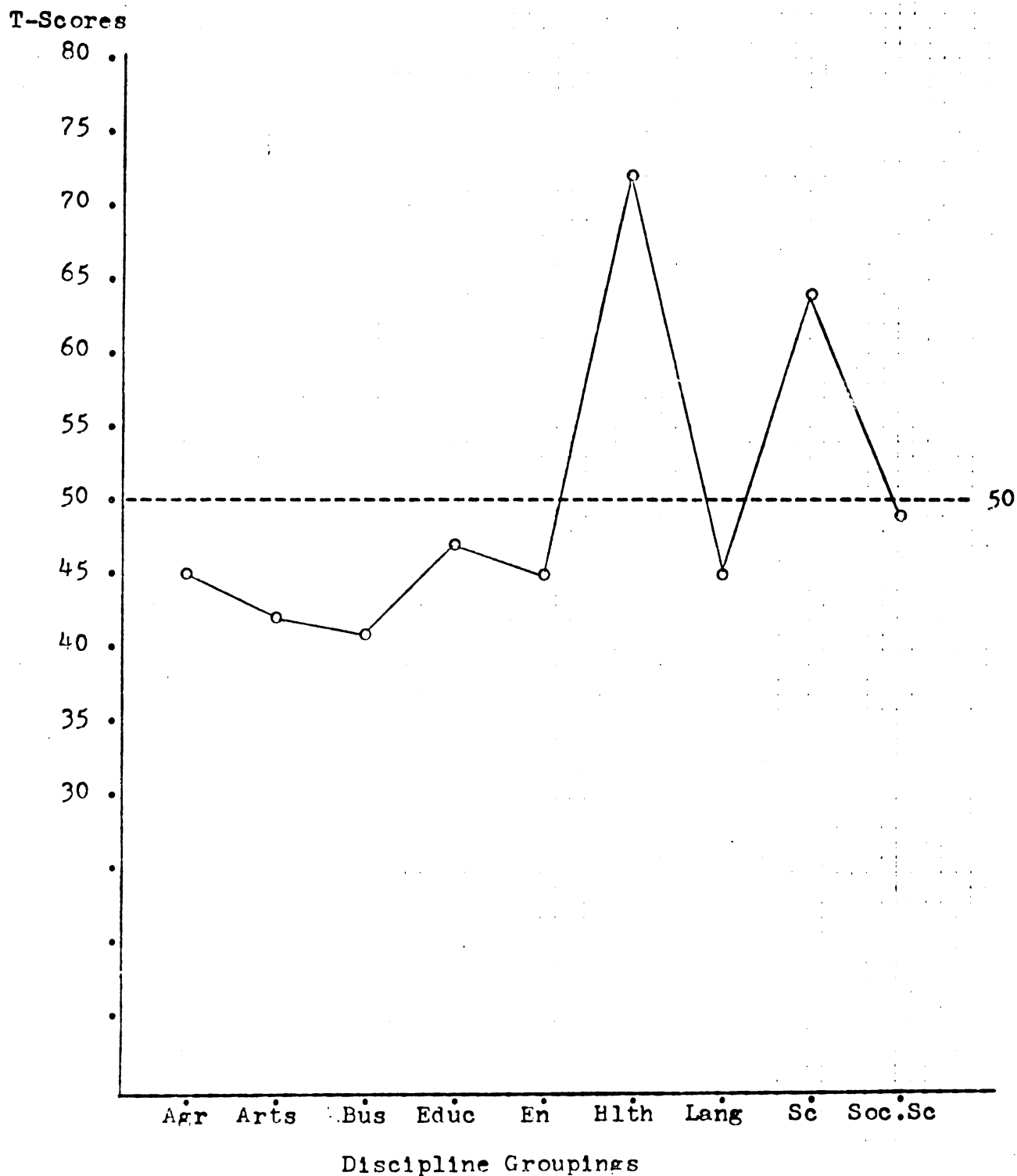
Profile of Thai Higher Education

B. Distribution of Course Offerings among the
   Discipline Groupings, on a T-Score Scale.
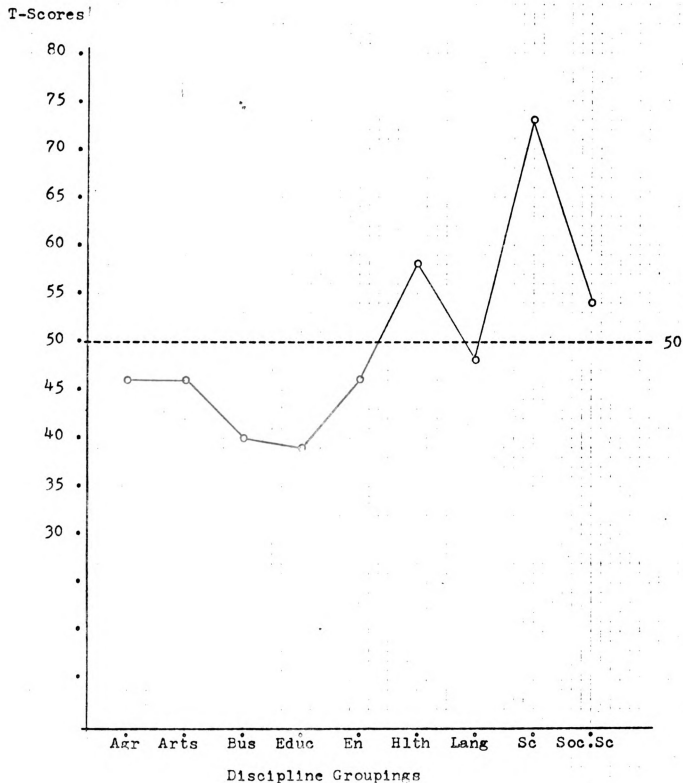
Profile of Thai Higher Education

C. Distribution of Students among the Discipline
   Groupings, on a T-Score Scale.



T-Scores

Discipline Groupings
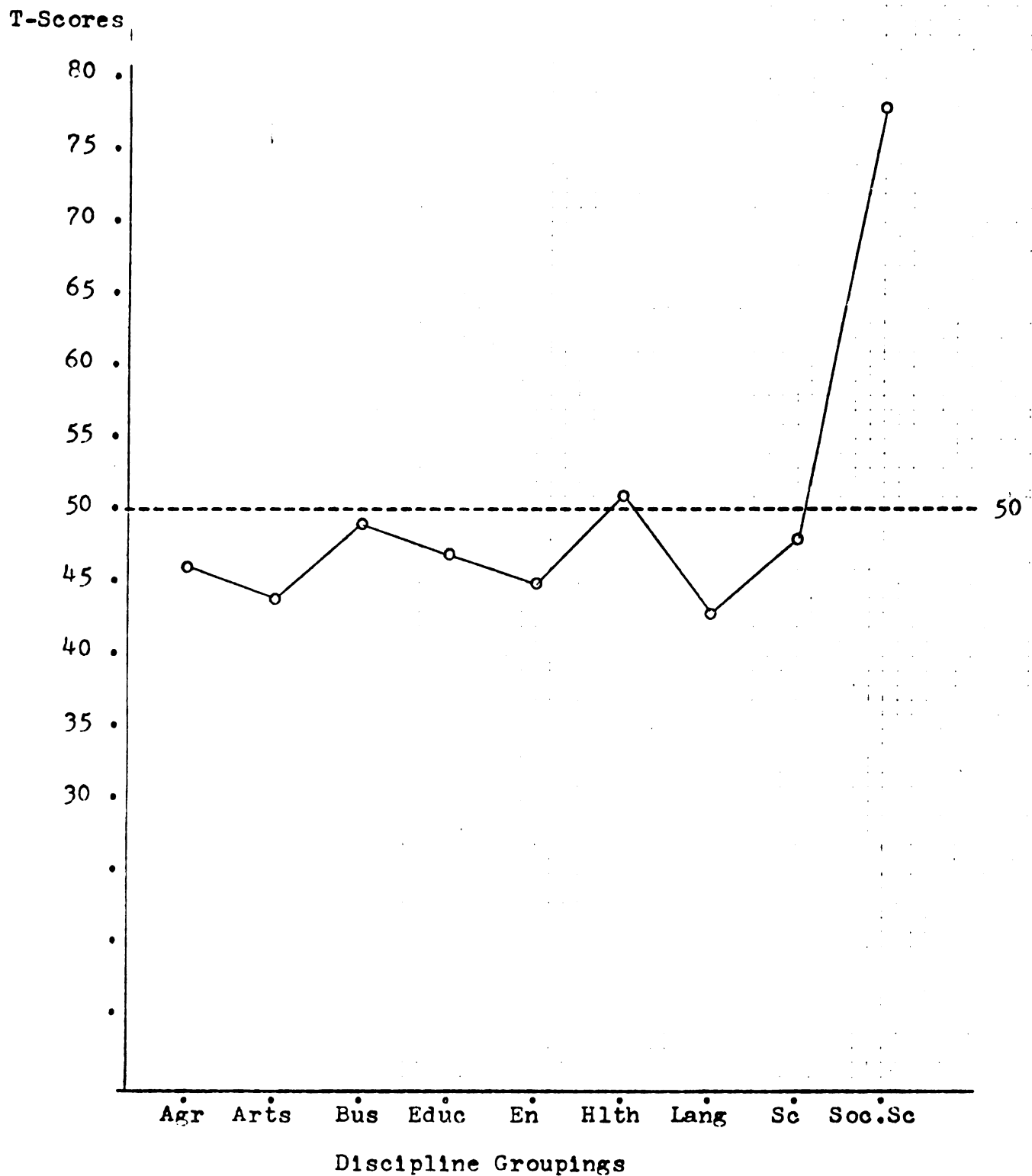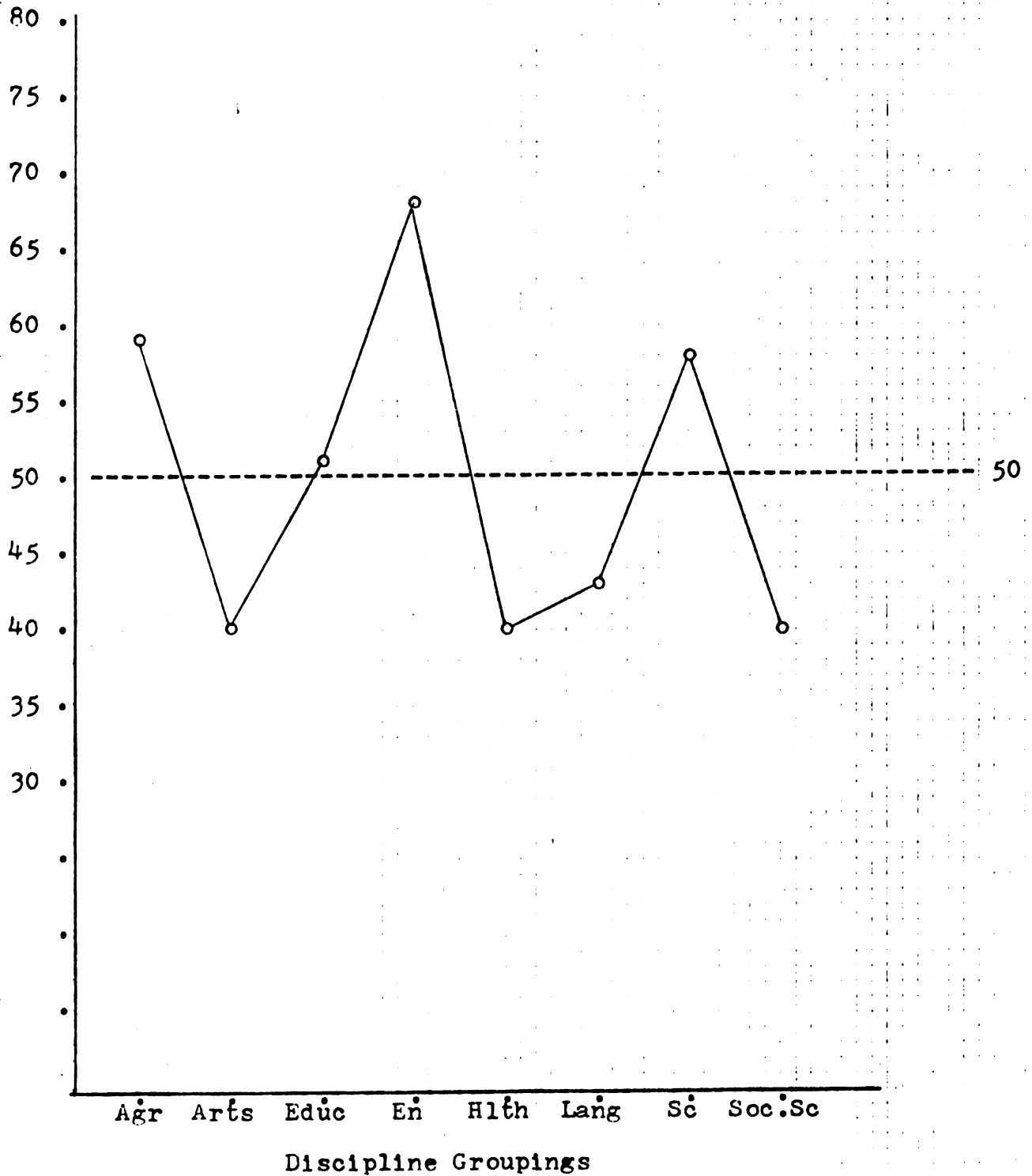
# Profile of Thai Higher Education

### D. Distribution of Operating Budgets among the Discipline Groupings, on a T-Score Scale.
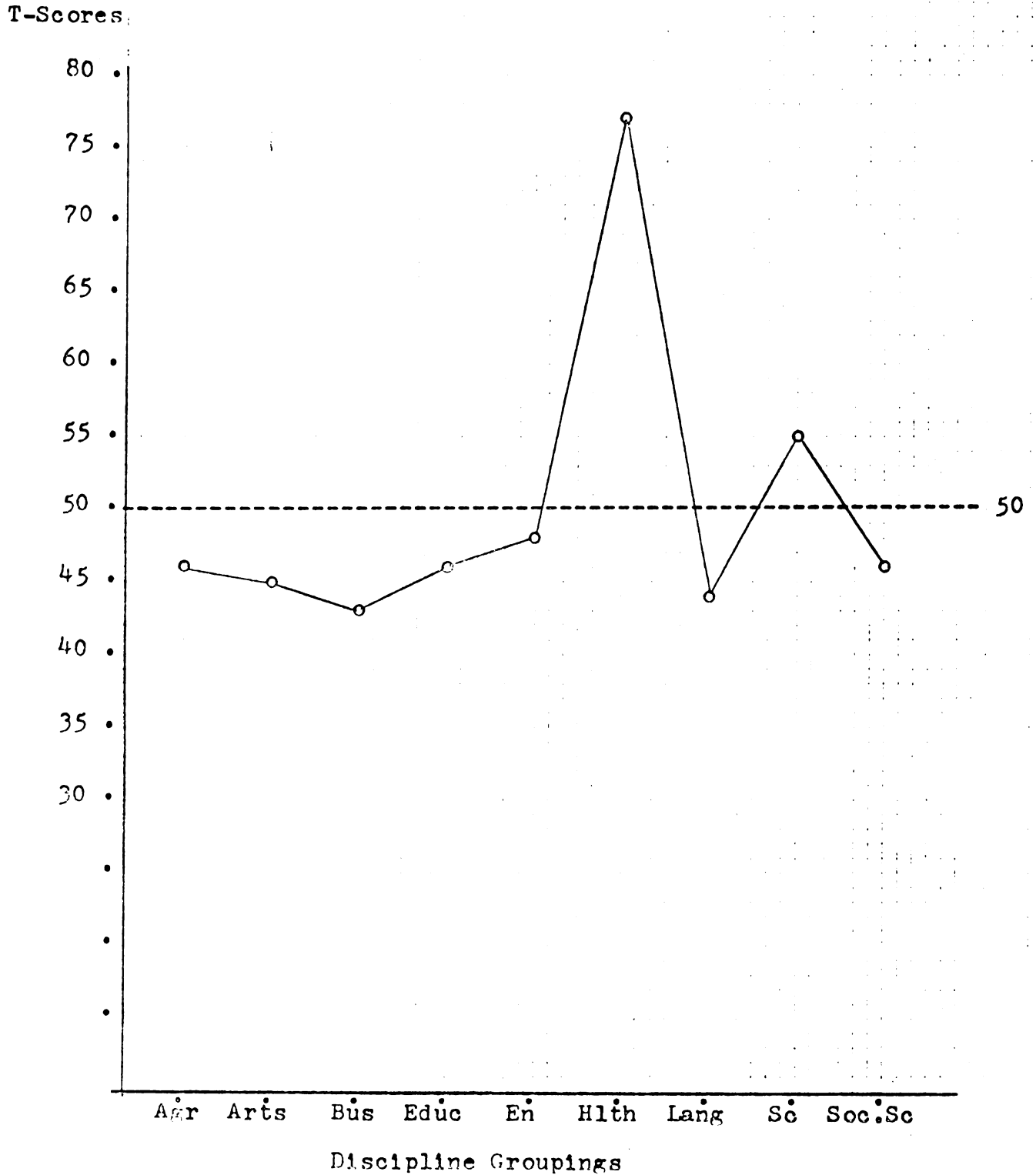
Profile of Thai Higher Education

E. The Average of the Four T-Scores in Each
   Discipline Grouping.



Discipline Groupings
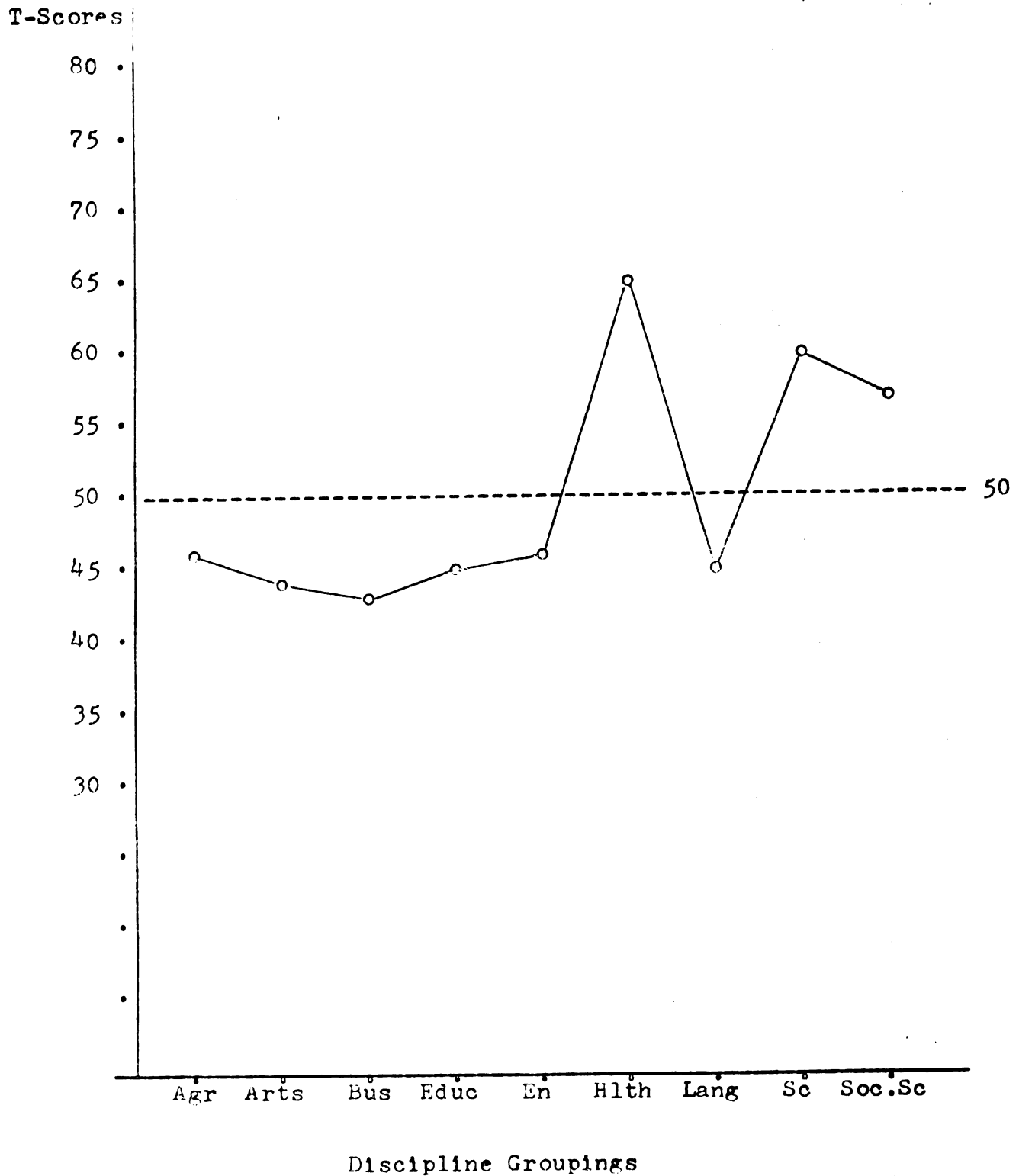
Profile of Thai Higher Education

F. Comparison of the Four T-Scores in Each
   Discipline Grouping.



Discipline Groupings
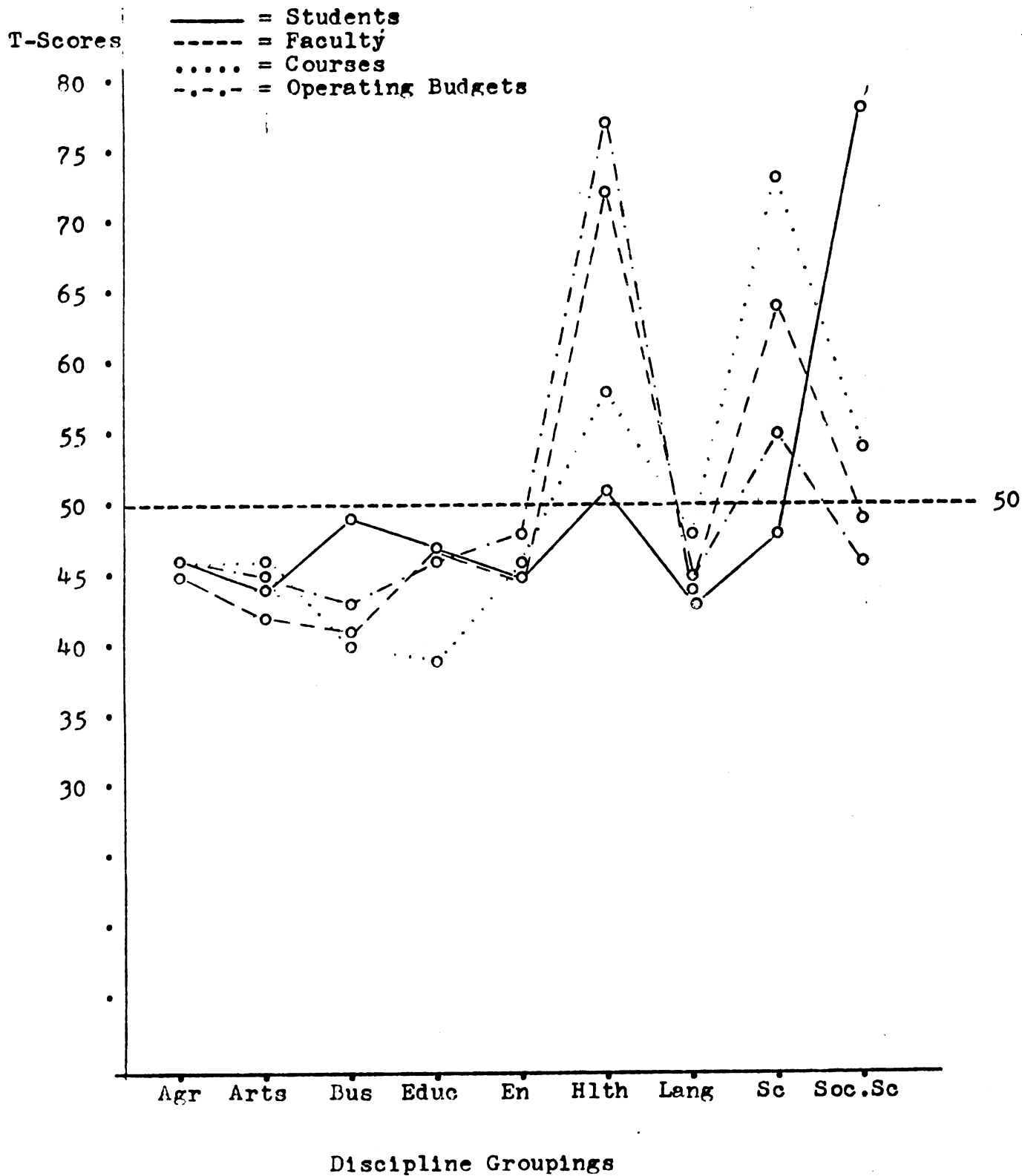
Profile of Thai Higher Education

G. Comparison of T-Scores for Number of Students
   Enrolled and Number of Graduating Students.
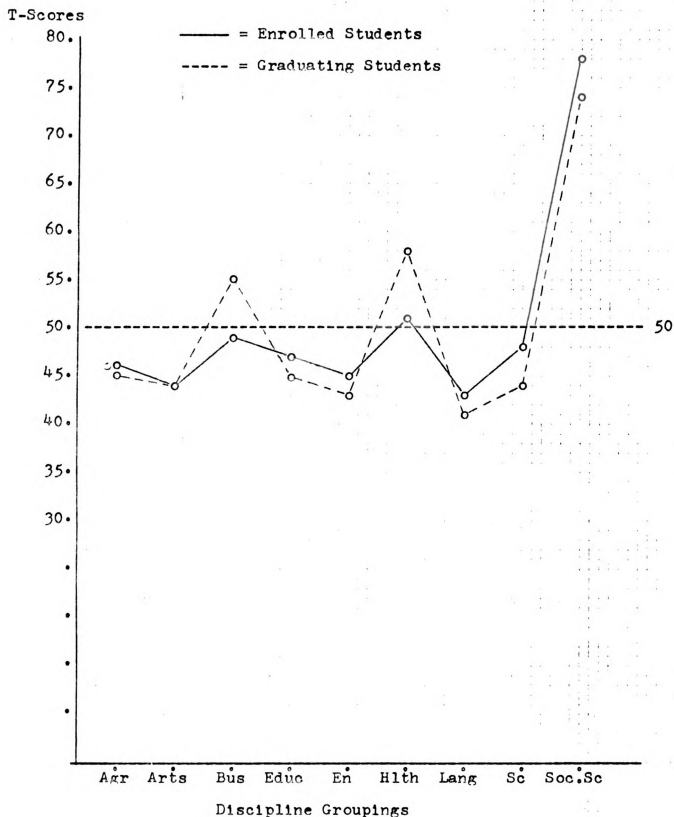
Profile of Thai Higher Education

H. Comparison of T-Scores for Number of Courses
Offered and Number of Course Credits Offered.



Discipline Groupings
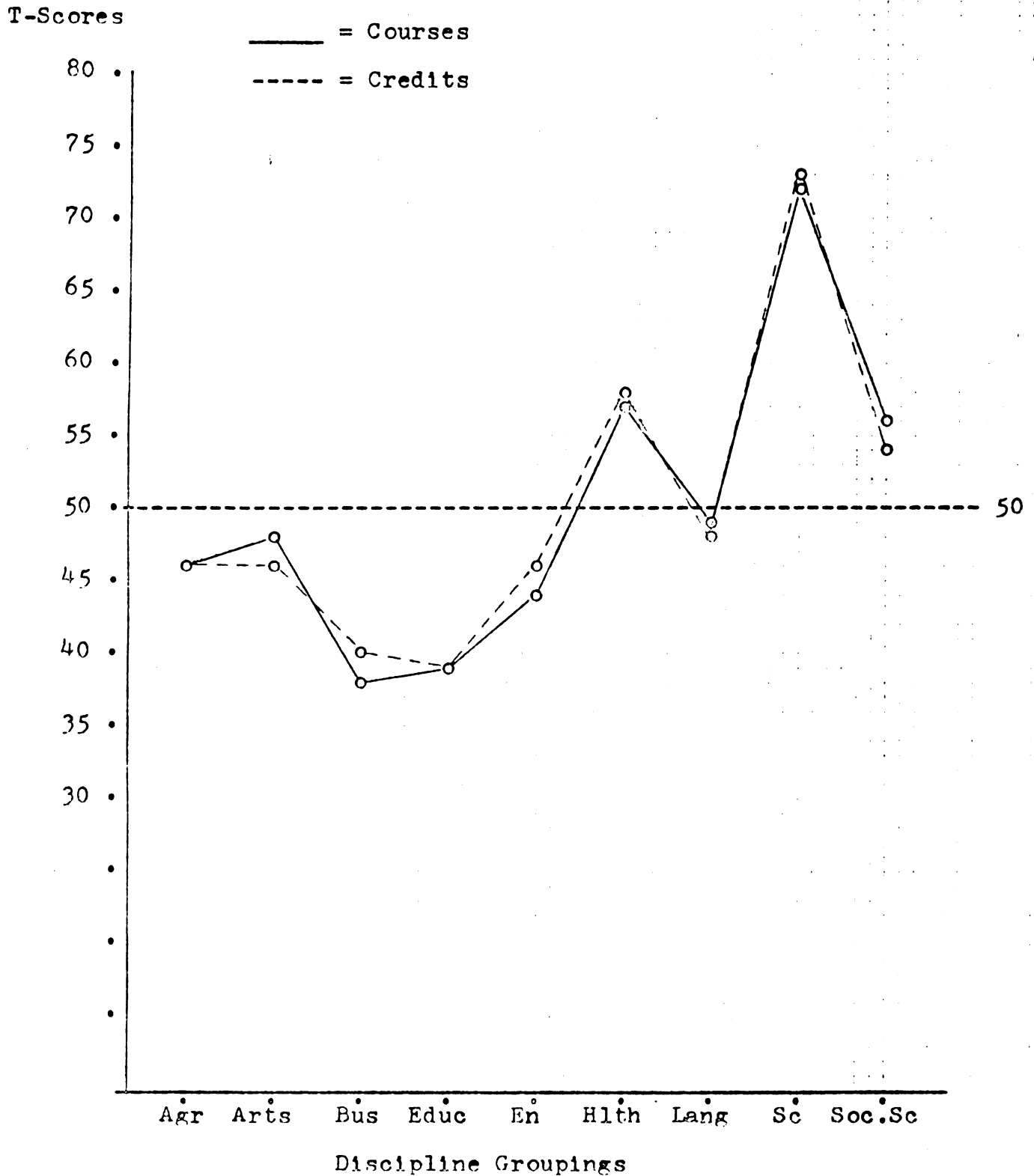
Profile of Thai Higher Education

I. Comparison of T-Scores for Operating Budgets,
Salary, and Other Expenses.
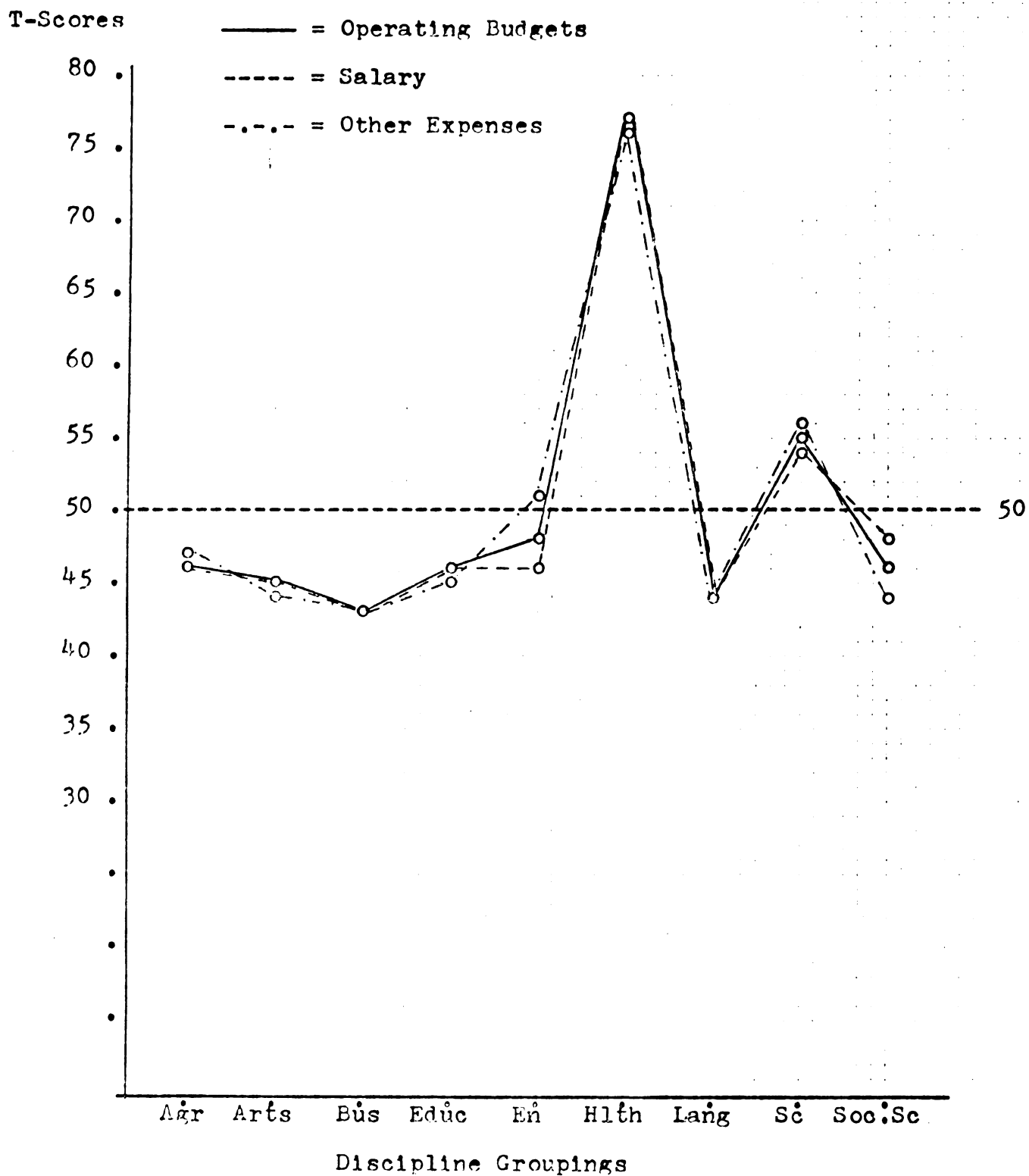


T-Scores

——— = Operating Budgets

----- = Salary

-.-.- = Other Expenses

Discipline Groupings

Profile of Chiengmai University

A. Distribution of Faculty among the Discipline
   Groupings, on a T-Score Scale.



Discipline Groupings

163
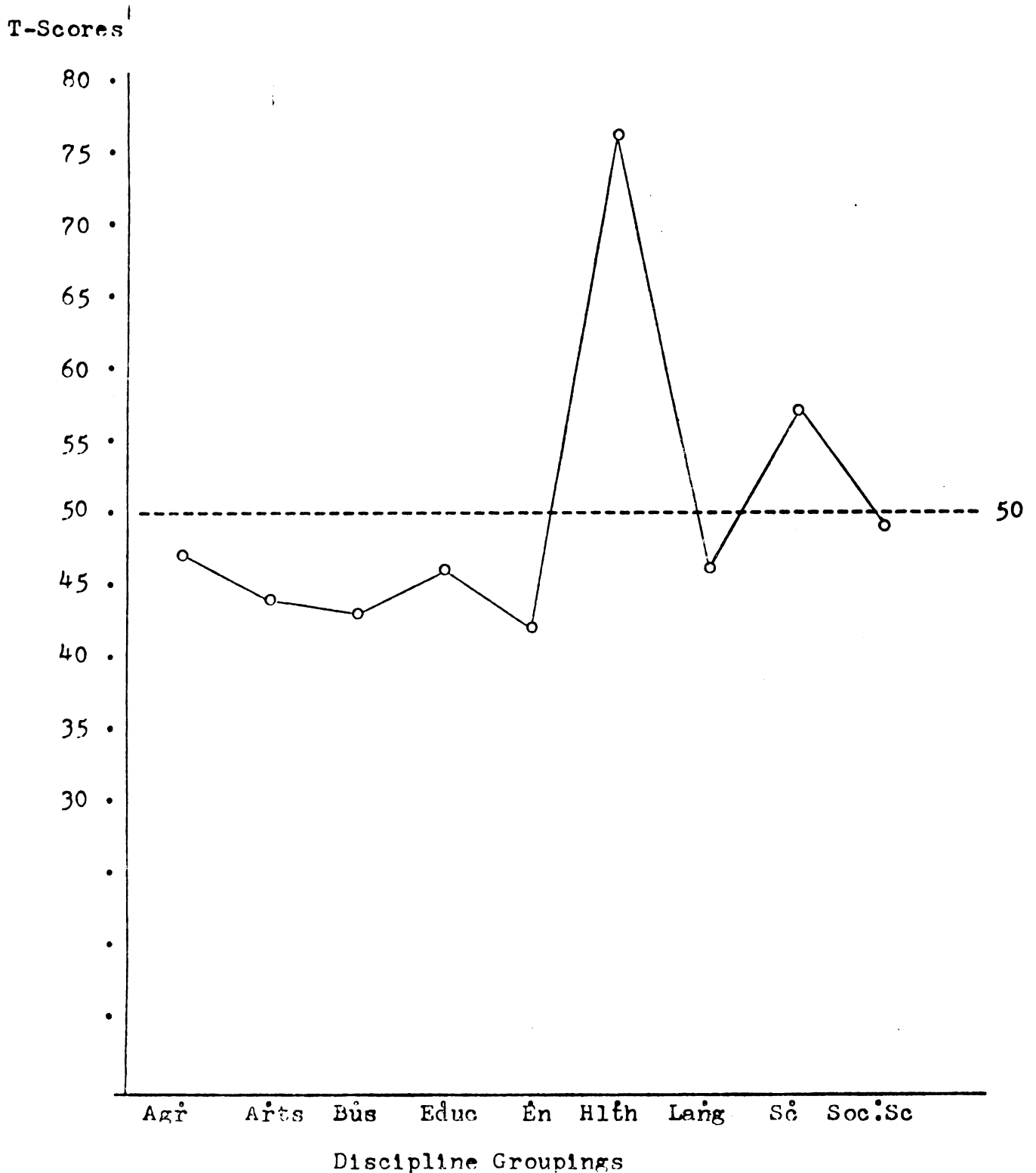
Profile of Chiengmai University

B. Distribution of Course Offerings among the
   Discipline Groupings, on a T-Score Scale.

T-Scores



Discipline Groupings
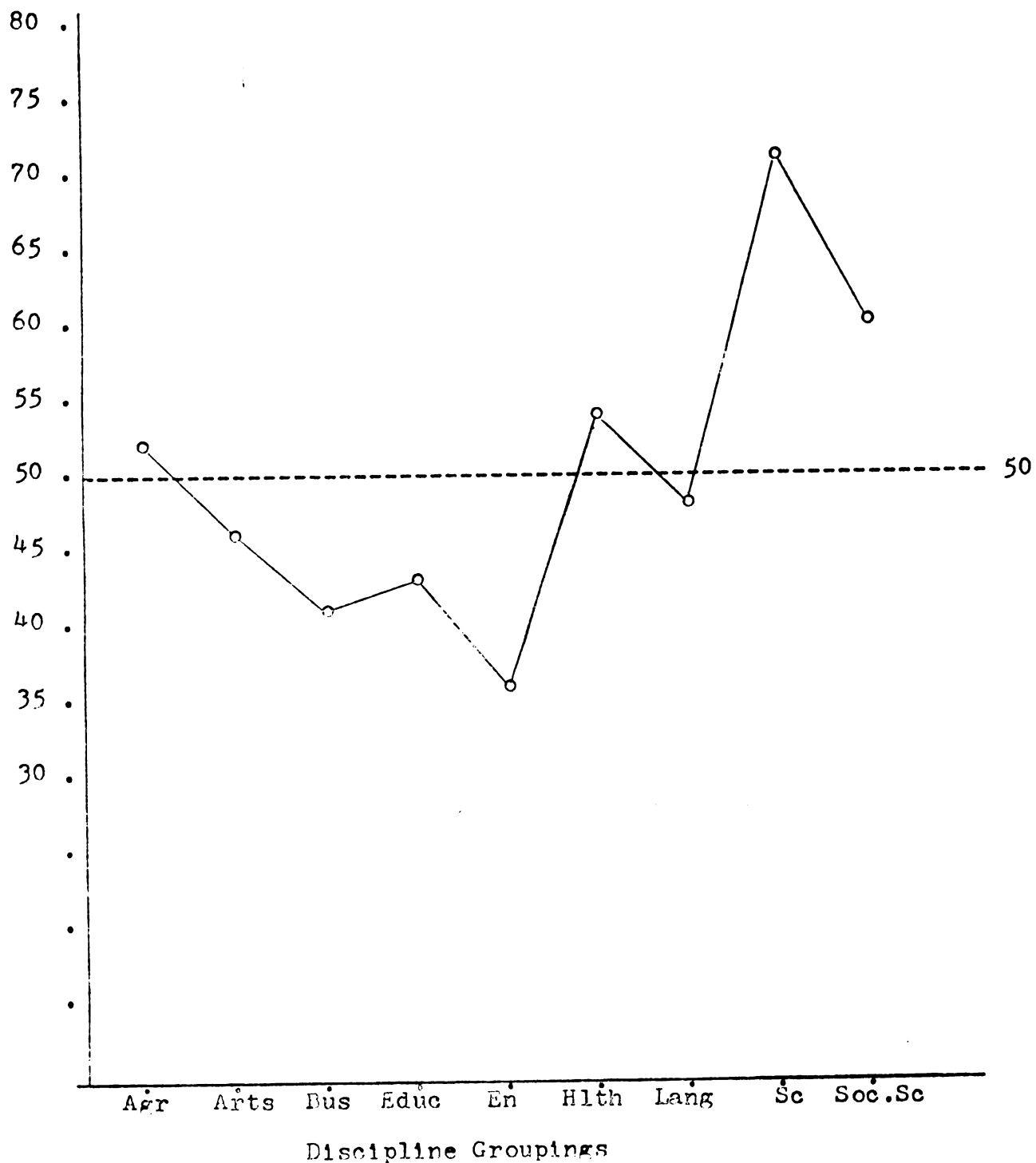
Profile of Chiengmai University

C. Distribution of Students among the Discipline
   Groupings, on a T-Score Scale.



T-Scores

Discipline Groupings
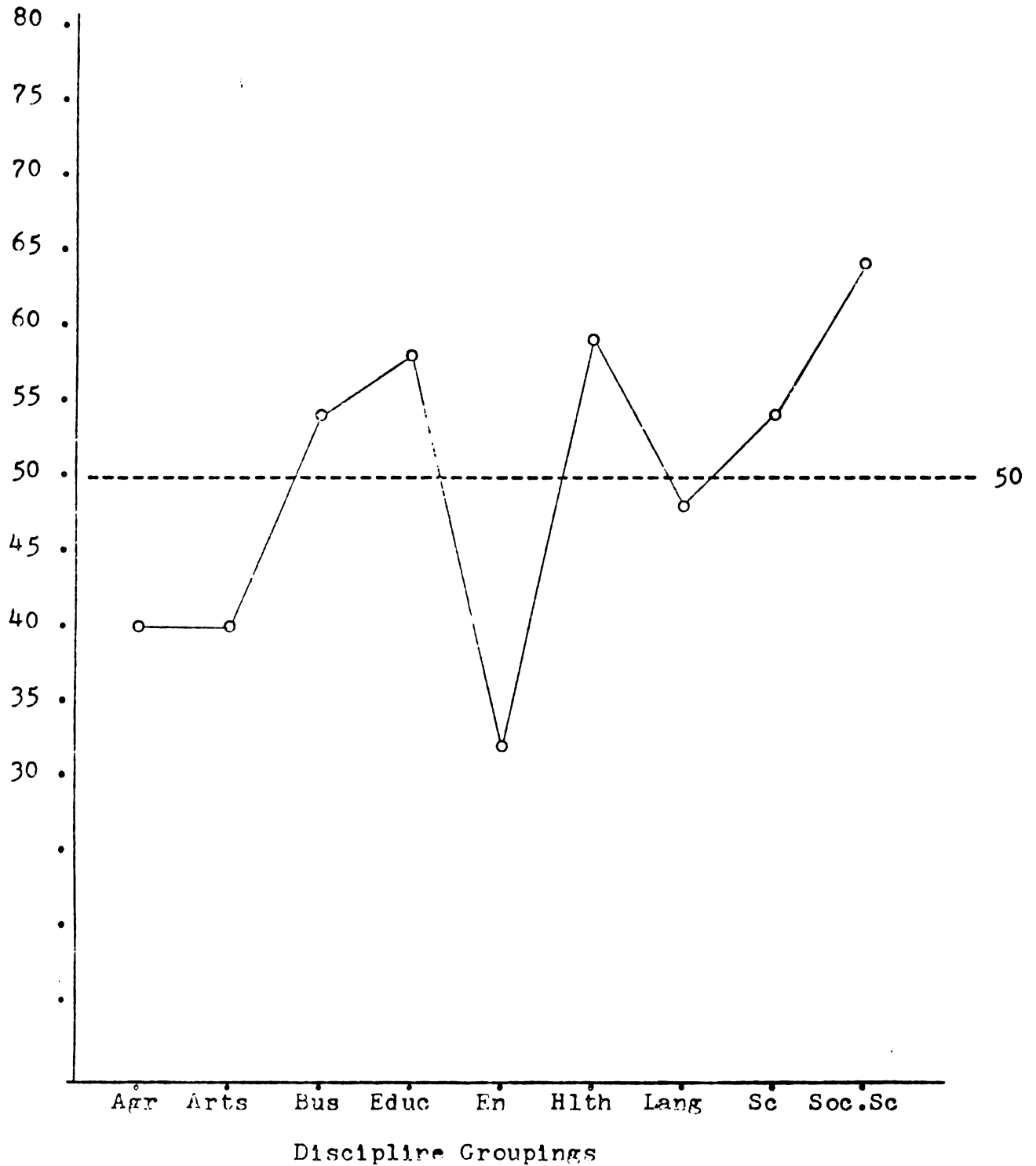
Profile of Chiengmai University

D. Distribution of Operating Budgets among the
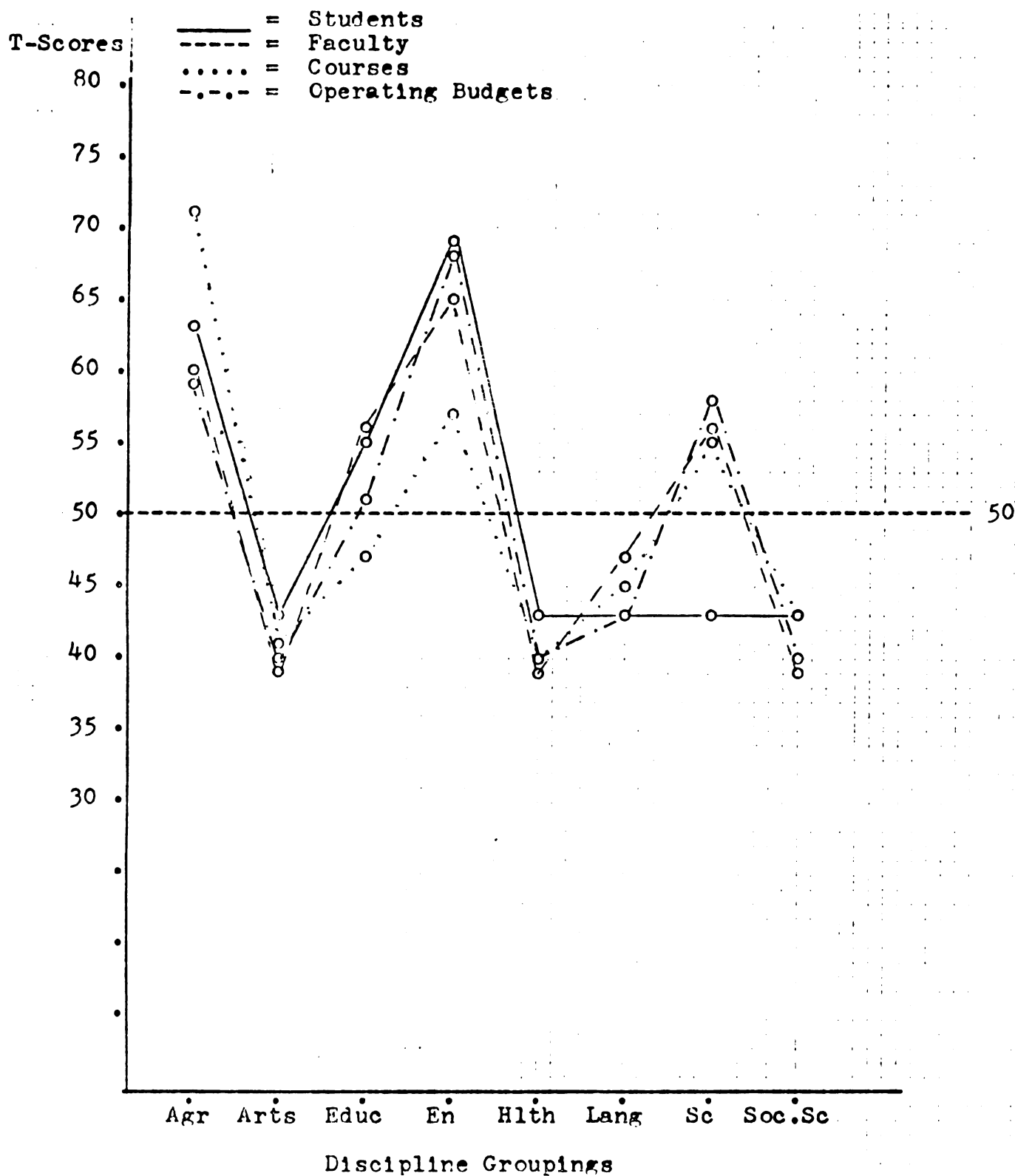   Discipline Groupings, on a T-Score Scale.

Profile of Chiengmai University

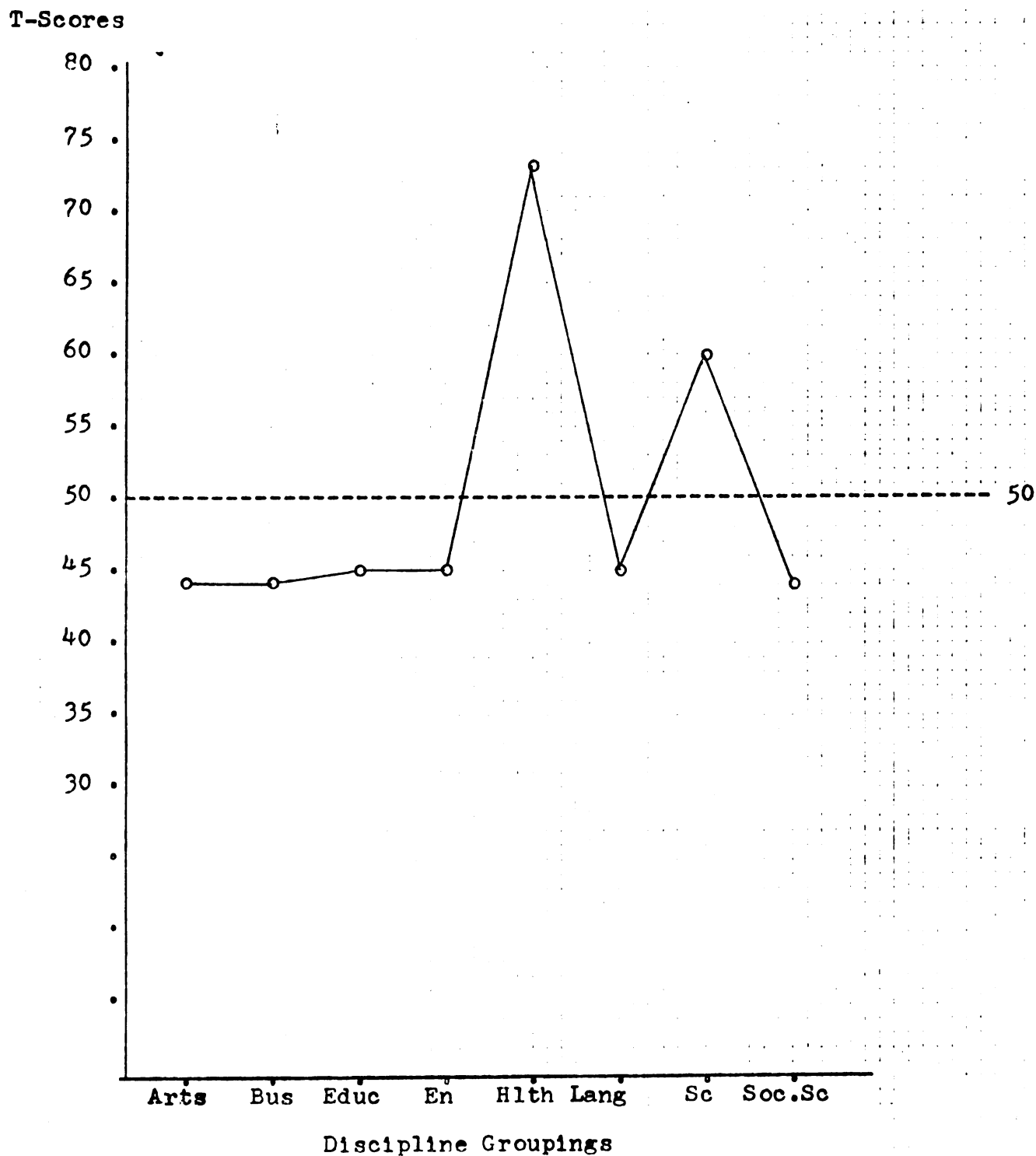E. The Average of the Four T-Scores in Each
   Discipline Grouping.
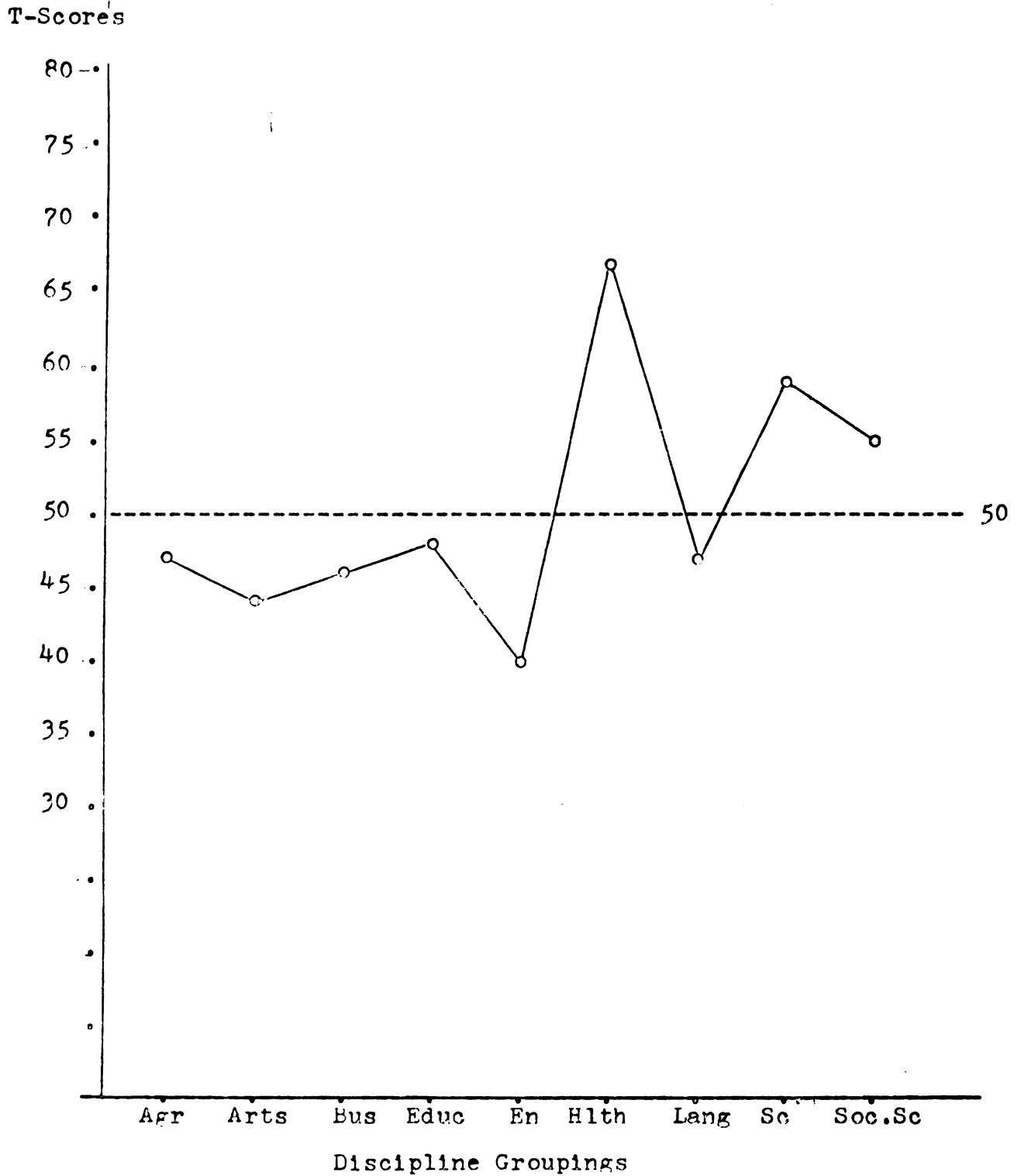


T-Scores

Discipline Groupings

Profile of Chiengmai University

F. Comparison of the Four T-Scores in Each
   Discipline Grouping.



T-Scores

_____ = Students
------- = Faculty
..... = Courses
-.-.- = Operating Budgets

Discipline Groupings
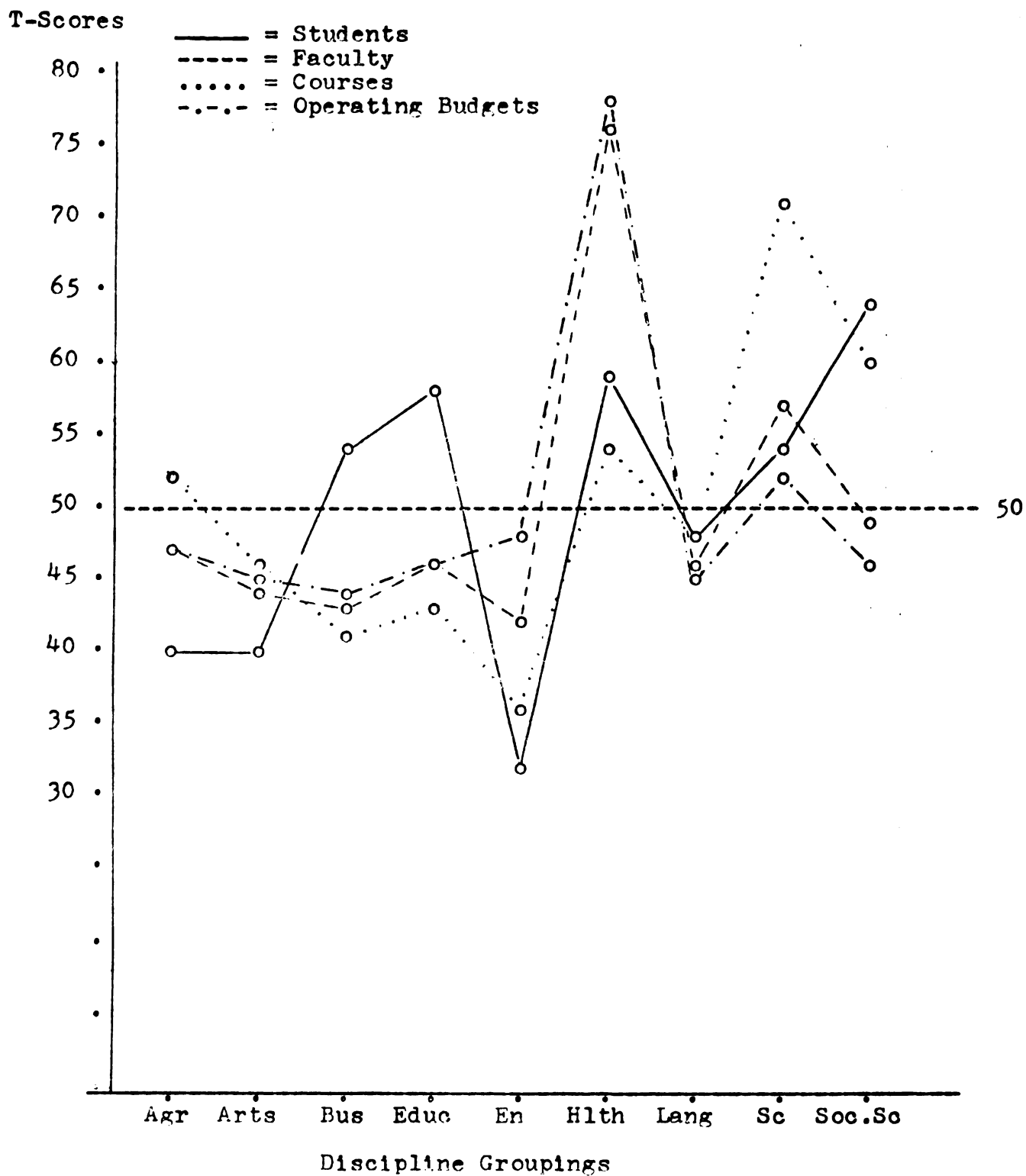
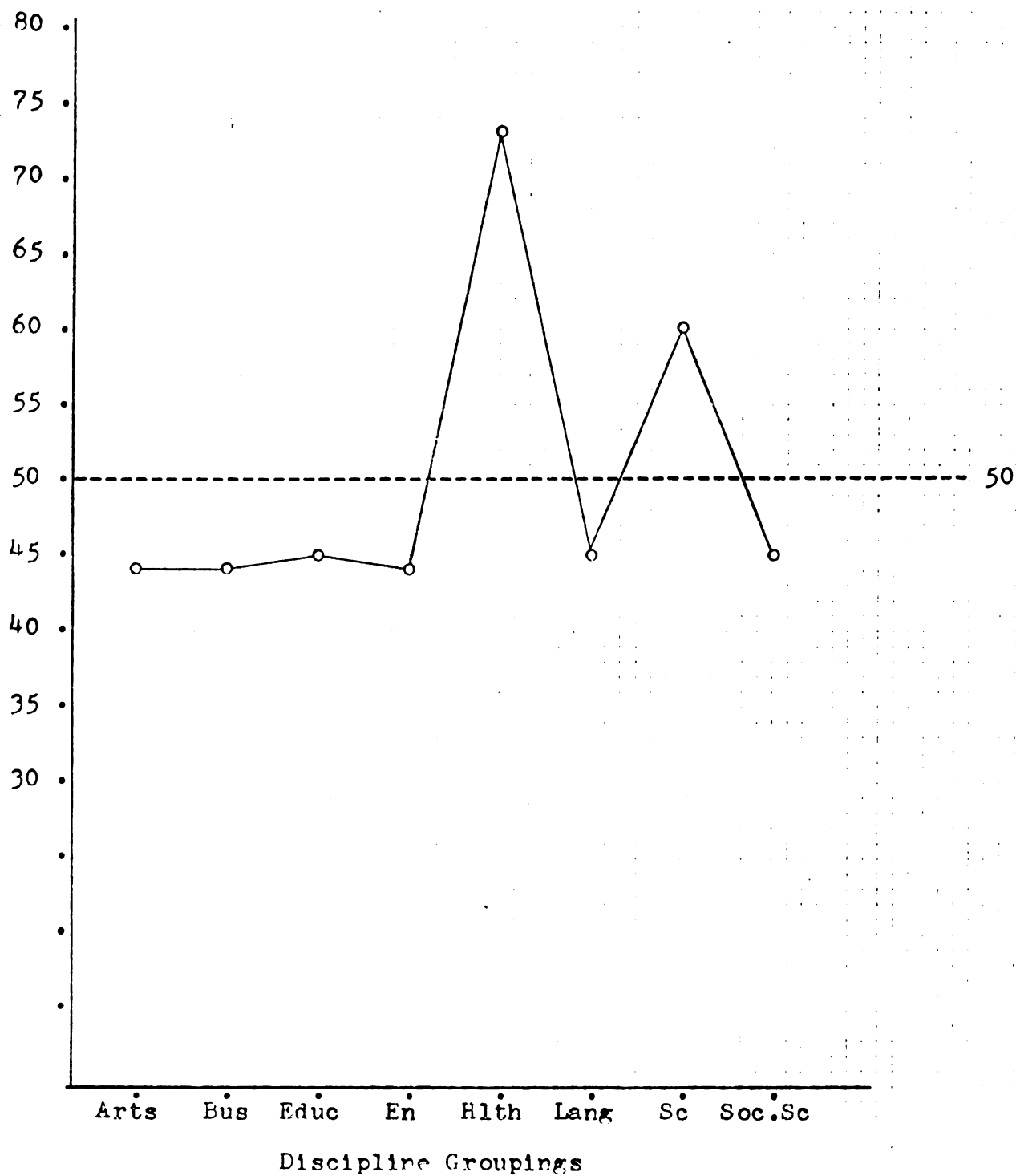Profile of Chulalongkorn University

A. Distribution of Faculty among the Discipline
   Groupings, on a T-Score Scale.
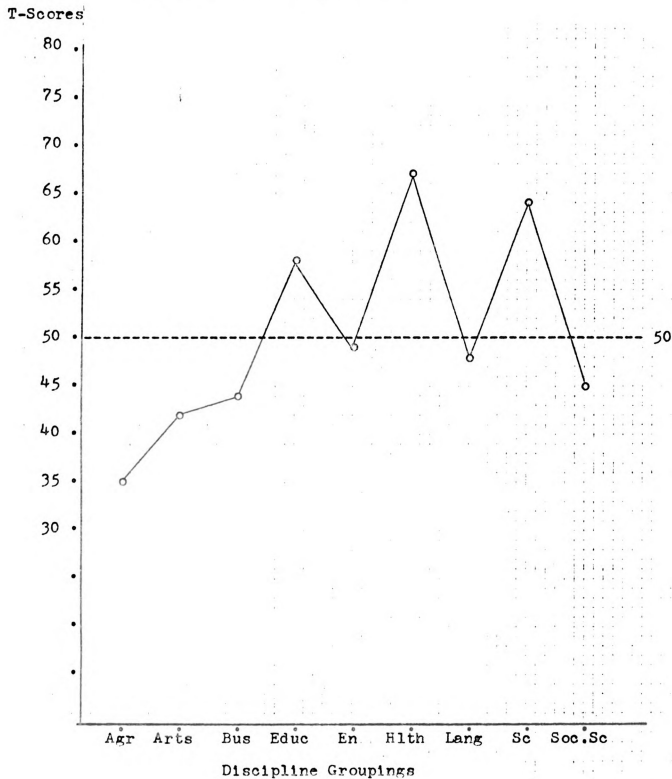
Profile of Chulalongkorn University

B. Distribution of Course Offerings among the
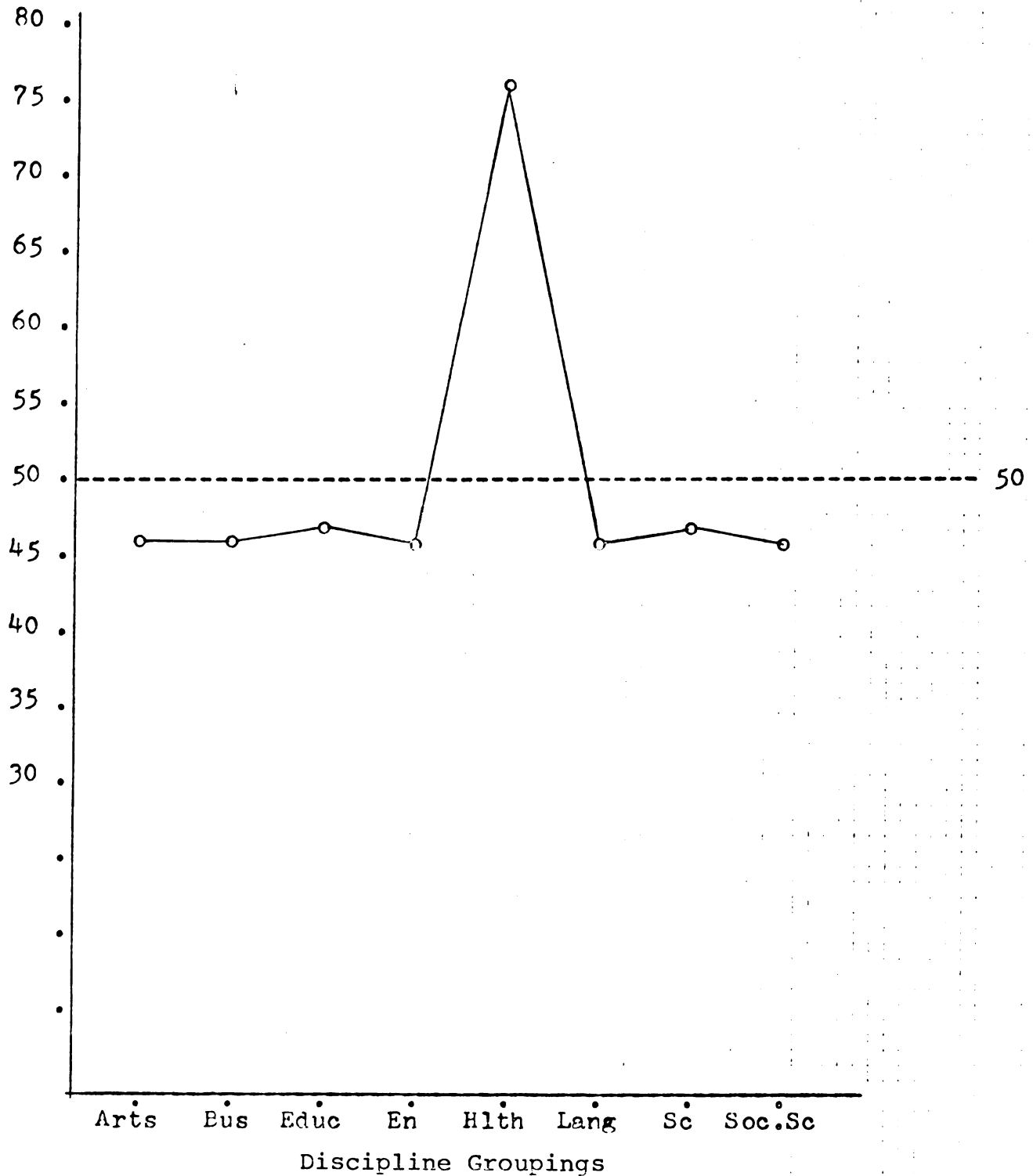Discipline Groupings, on a T-Score Scale.



Discipline Groupings
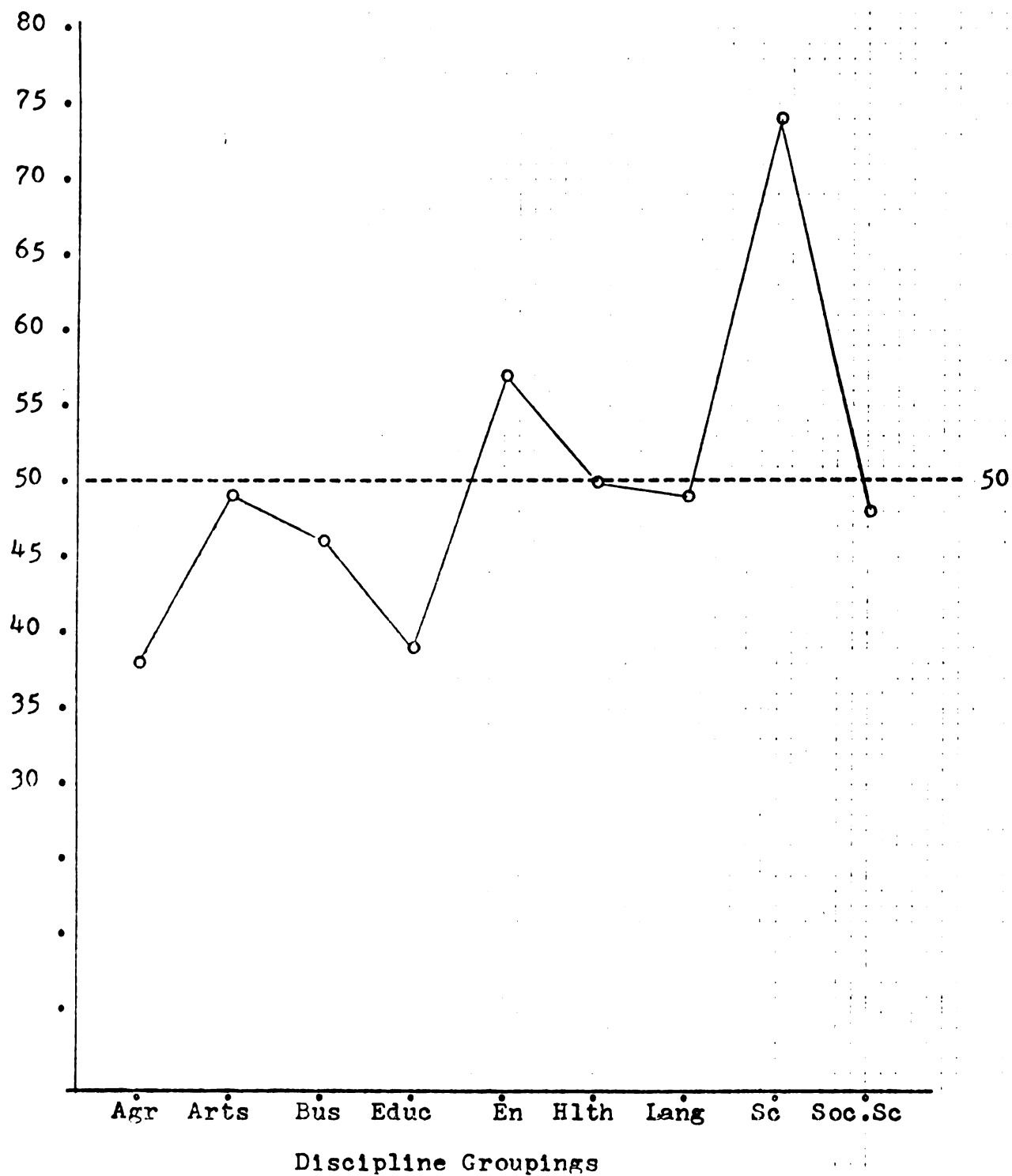
Profile of Chulalongkorn University

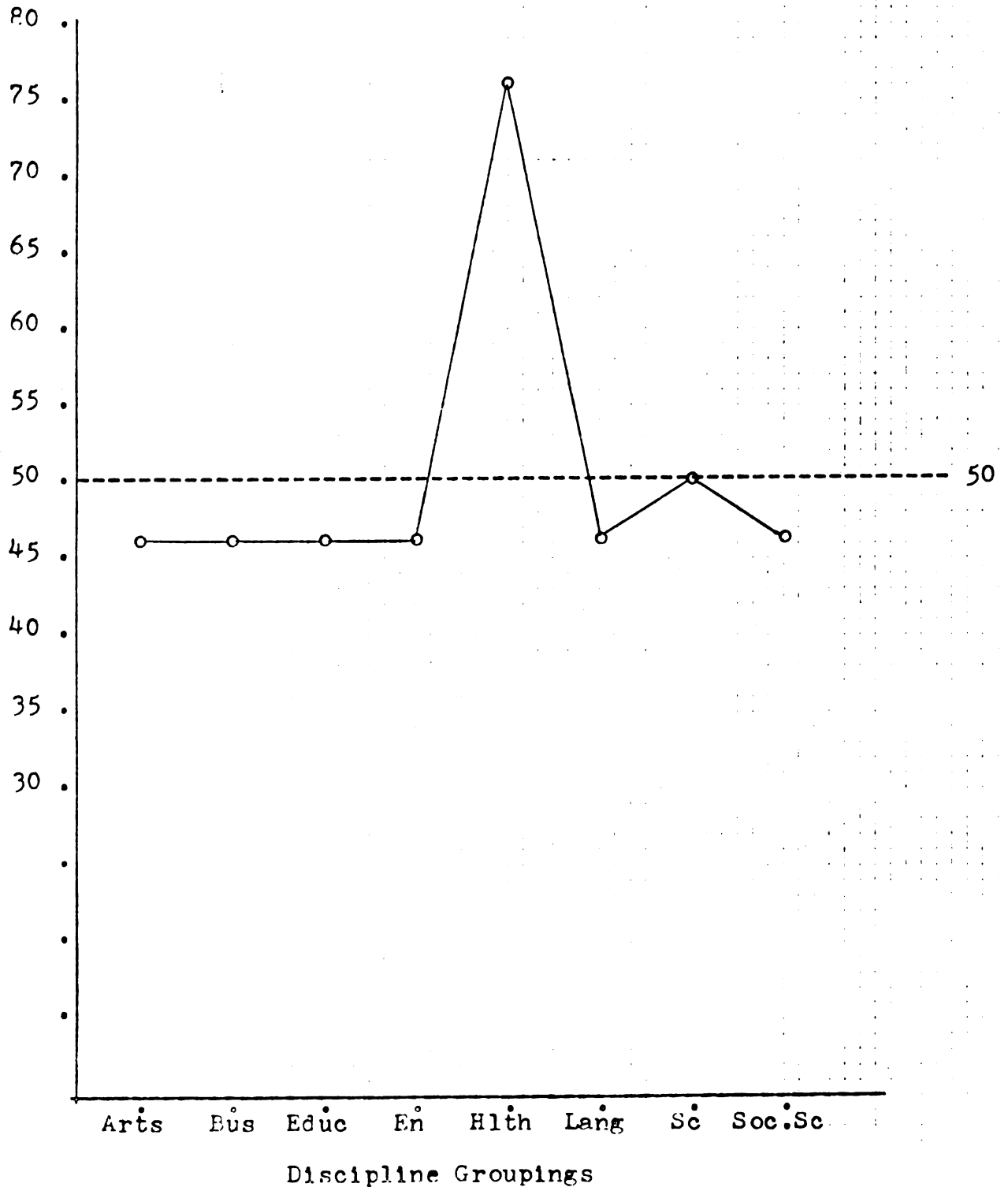C. Distribution of Students among the Discipline
   Groupings, on a T-Score Scale.
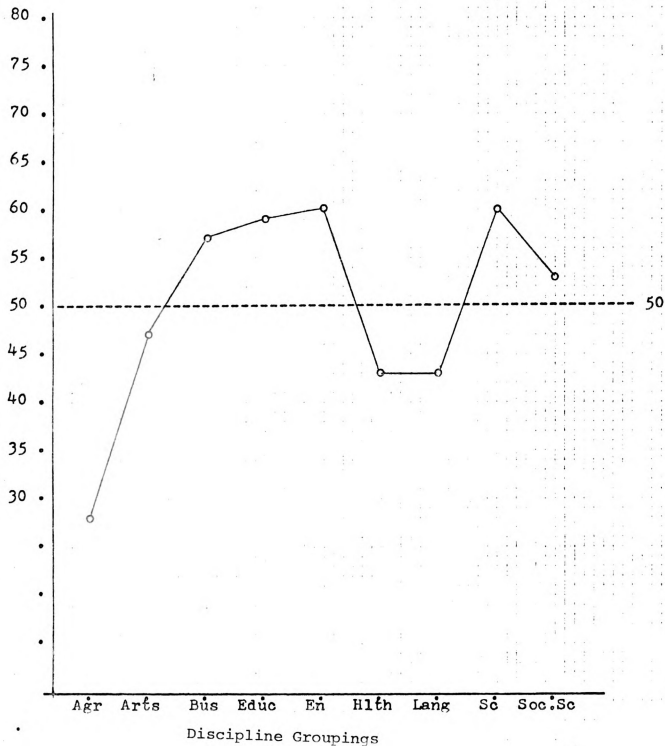
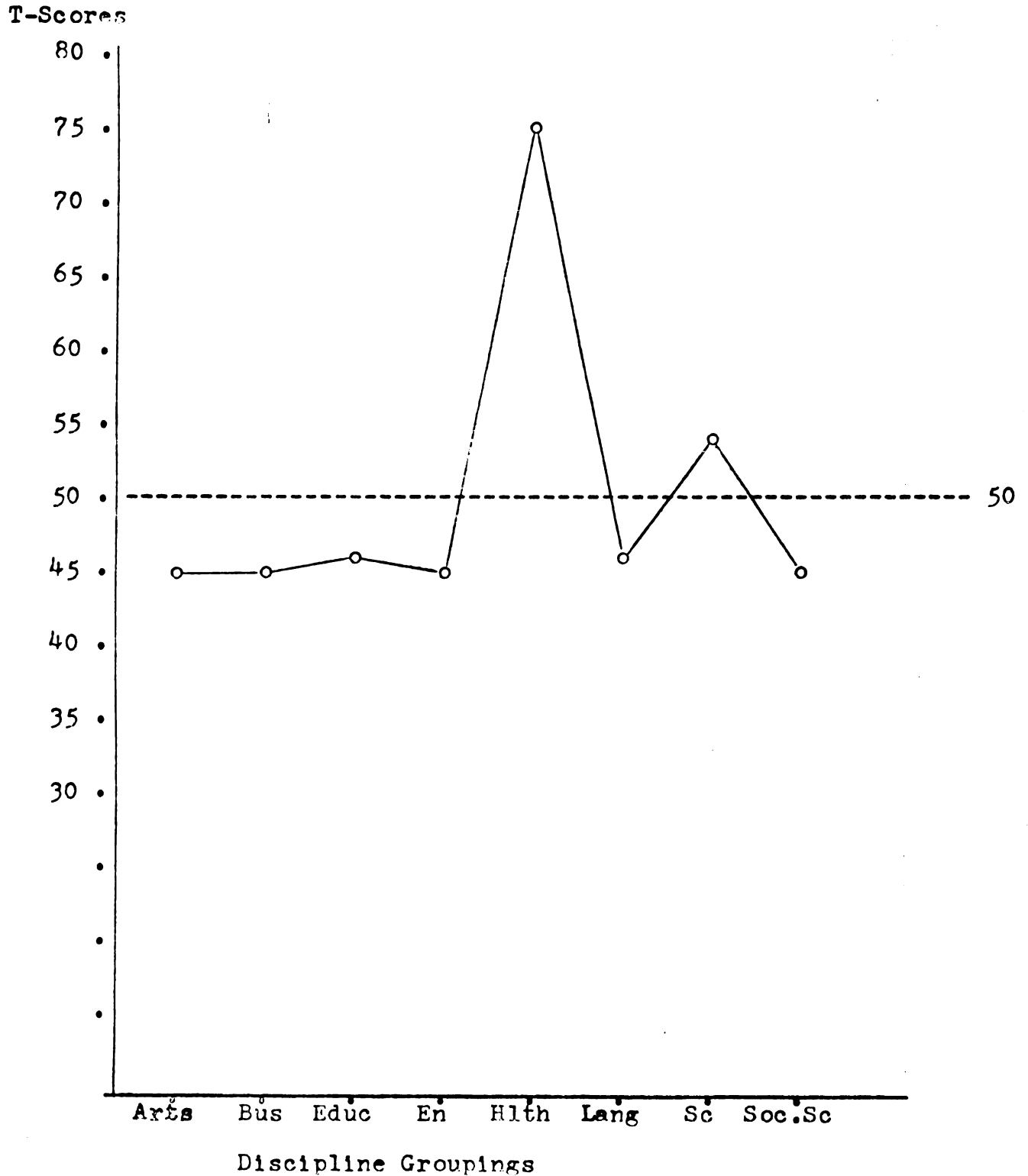Profile of Chulalongkorn University

D. Distribution of Operating Budgets among the
Discipline Groupings, on a T-Score Scale.
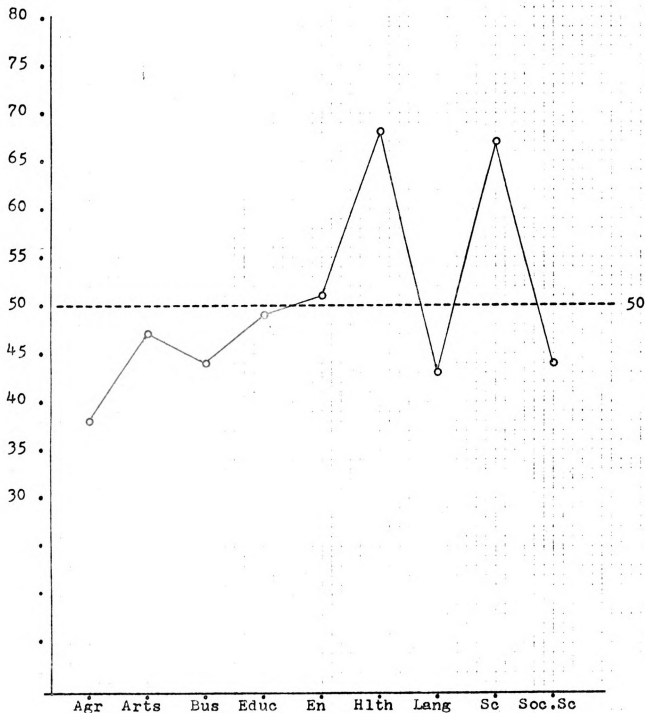


T-Scores

Profile of Chulalongkorn University
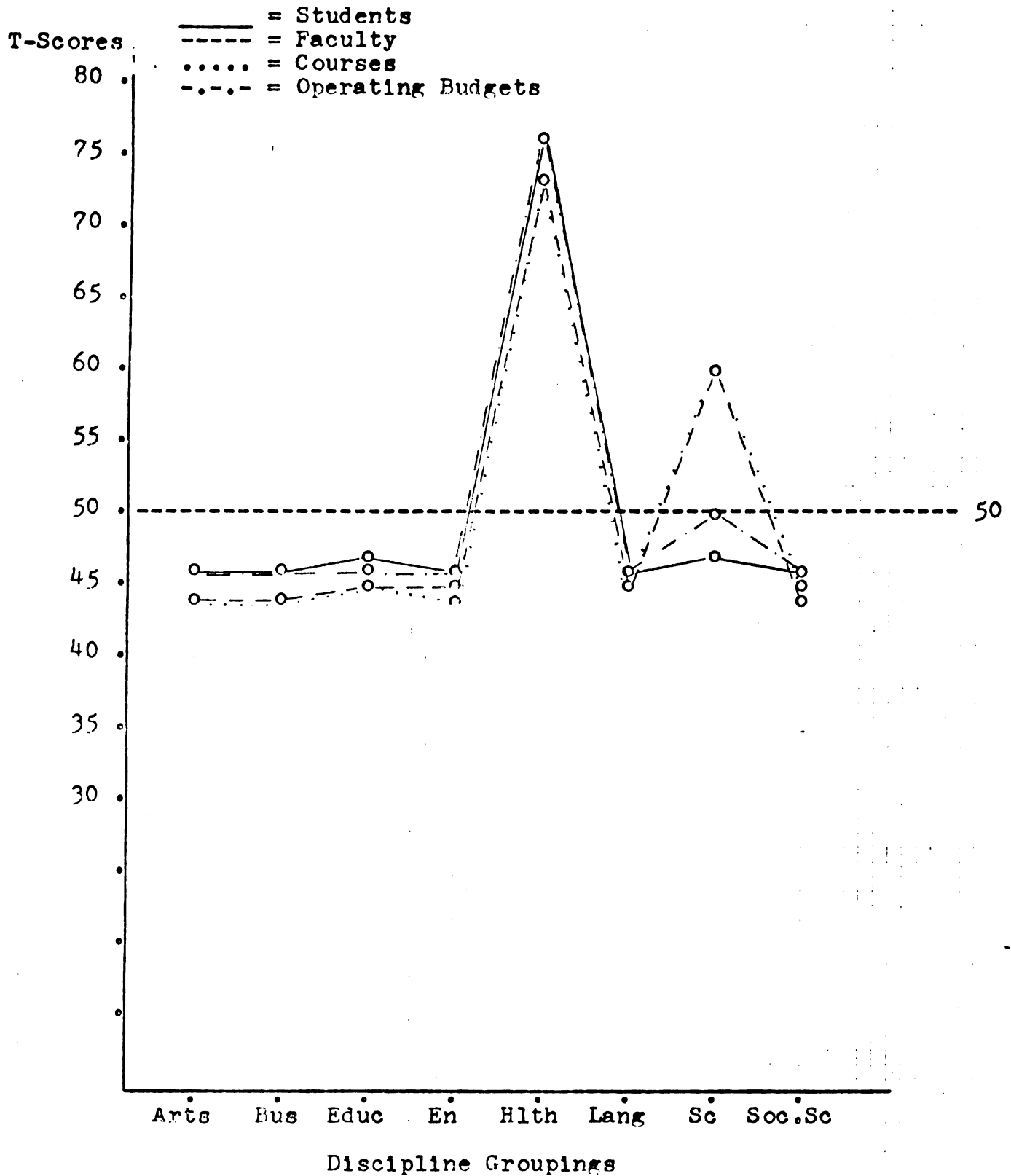
E. The Average of the Four T-Scores in Each
   Discipline Grouping.



Discipline Groupings
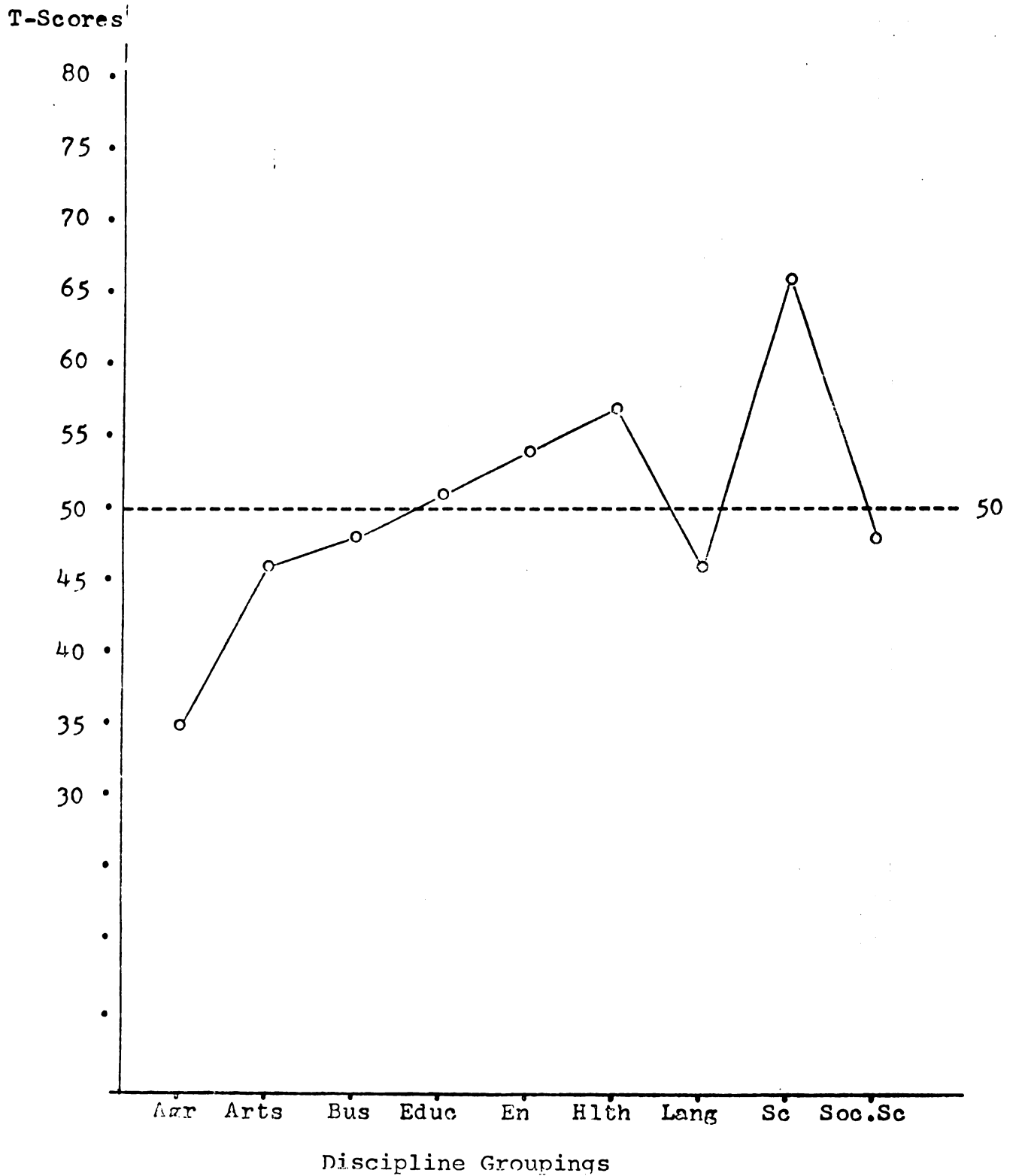
Profile of Chulalongkorn University

F. Comparison of the Four T-Scores in Each
   Discipline Grouping.



Discipline Groupings
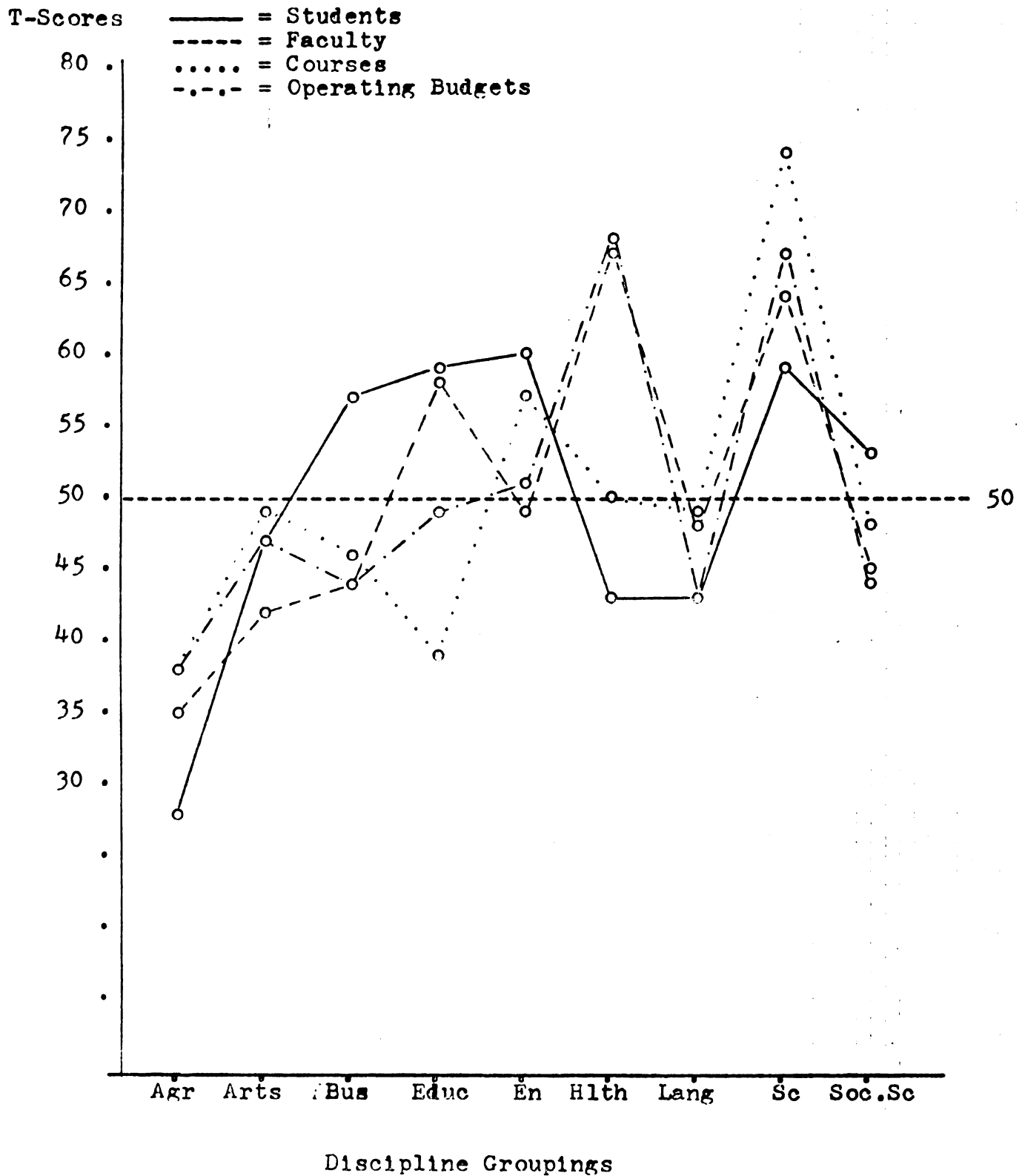
Profile of Kasetsart University

A. Distribution of Faculty among the Discipline
   Groupings, on a T-Score Scale.



Discipline Groupings
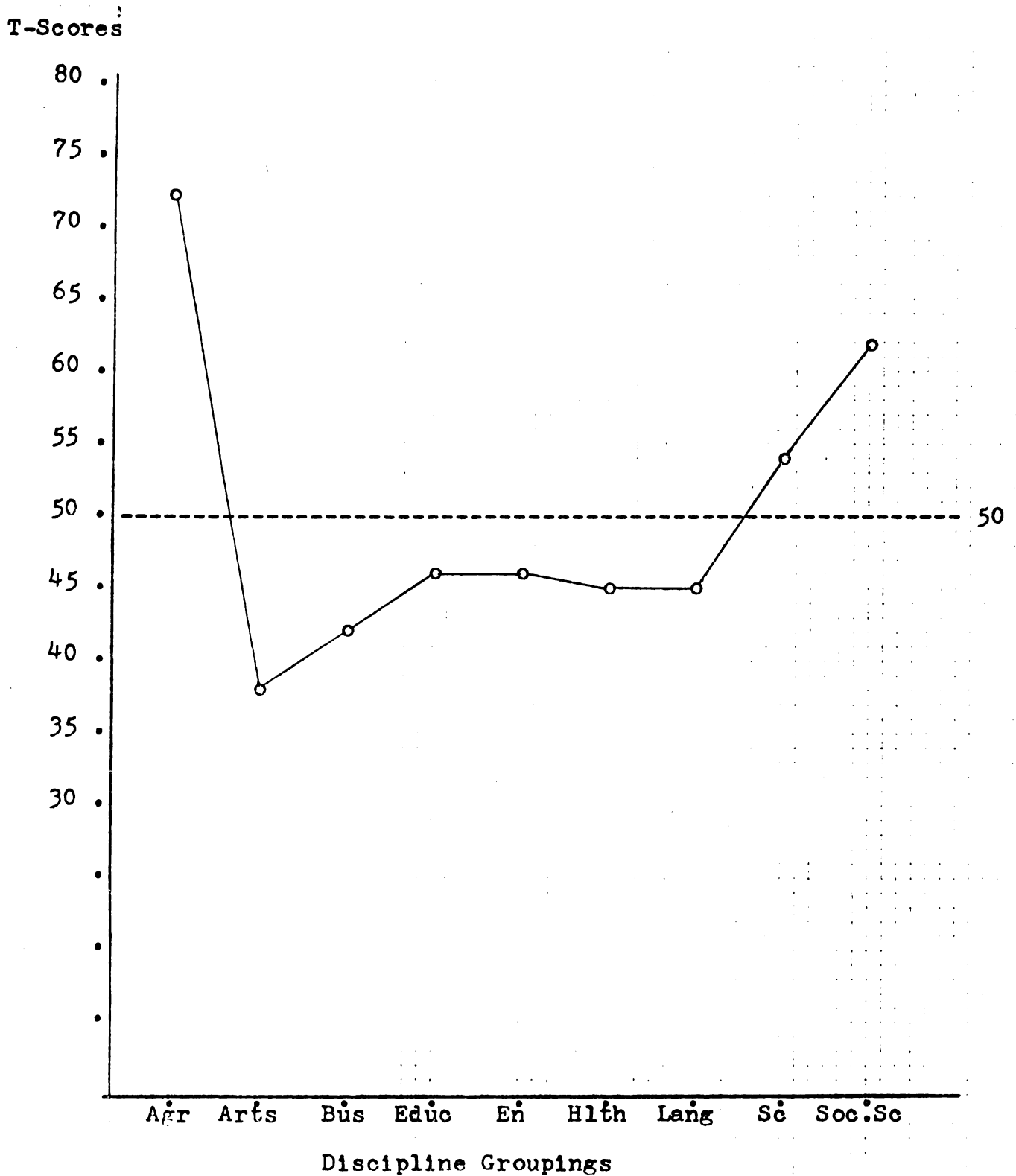
Profile of Kasetsart University

B. Distribution of Course Offerings among the
Discipline Groupings, on a T-Score Scale.
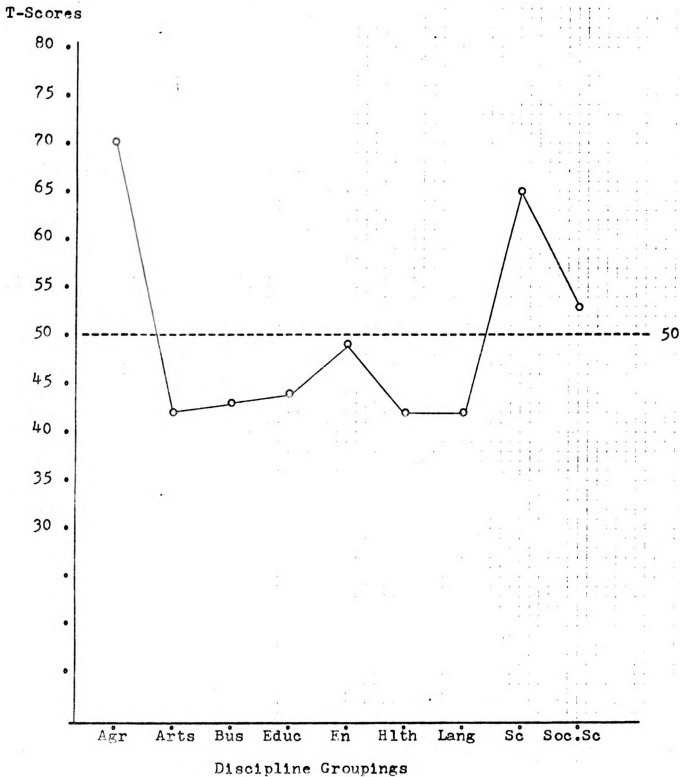


T-Scores

Profile of Kasetsart University

C. Distribution of Students among the Discipline
Groupings, on a T-Score Scale.
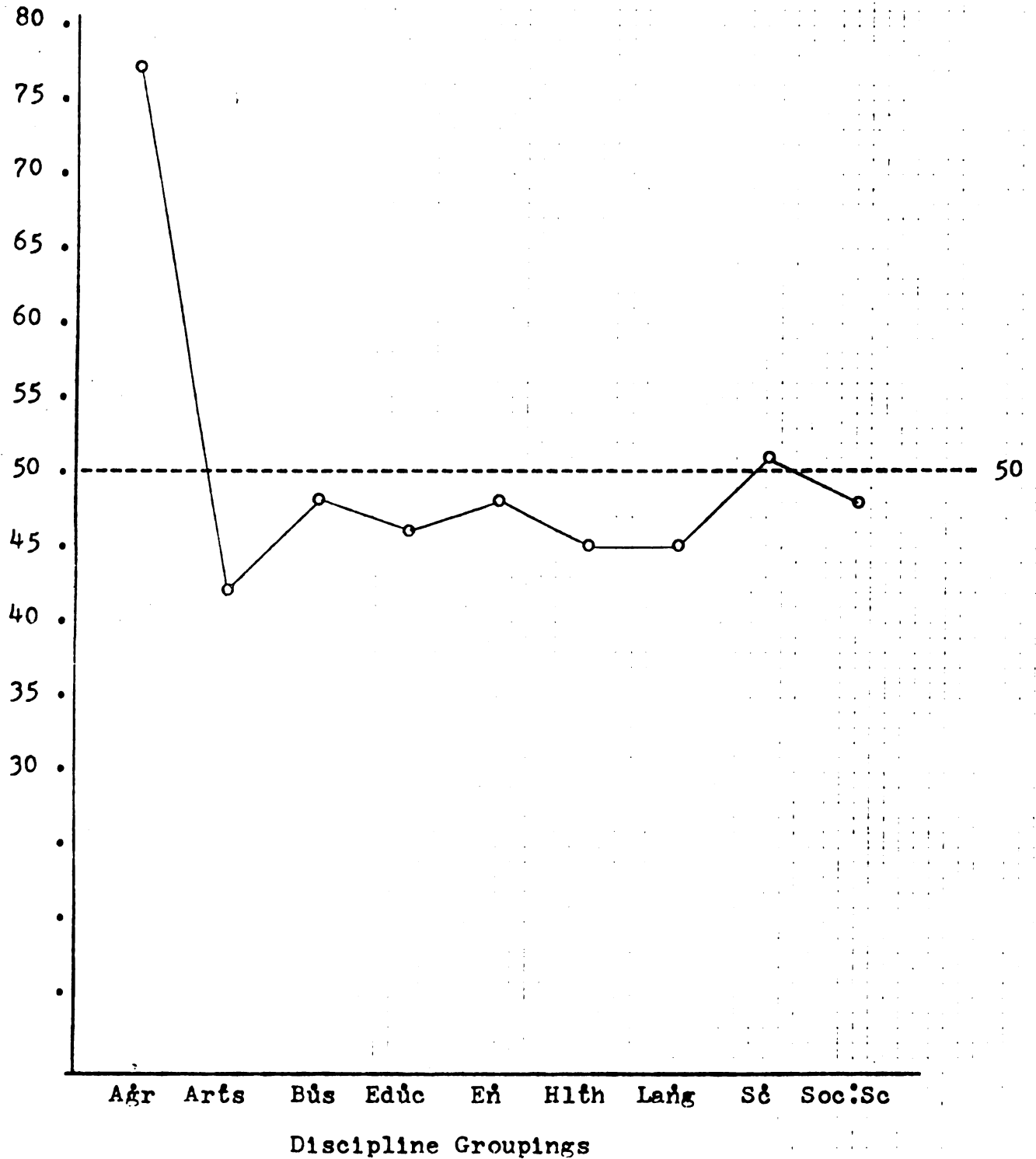


T-Scores

Profile of Kasetsart University

D. Distribution of Operating Budgets among the
Discipline Groupings, on a T-Score Scale.



Discipline Groupings
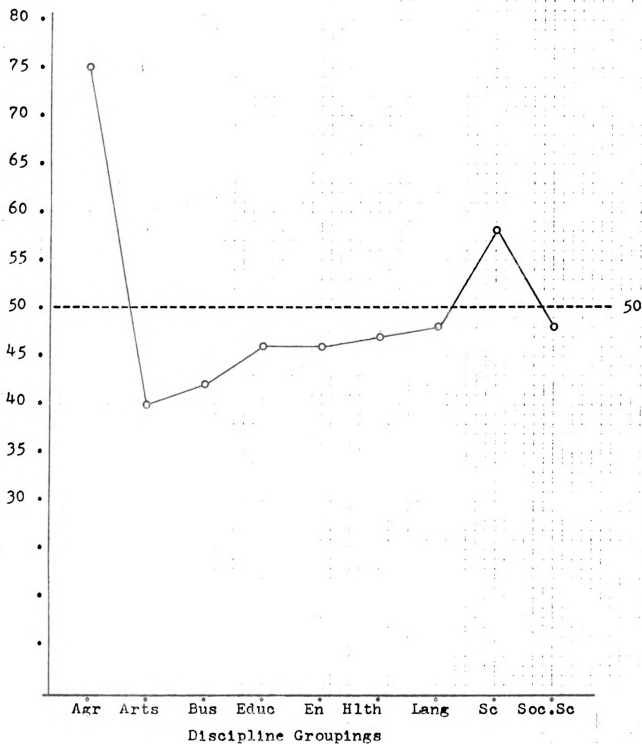
Profile of Kasetsart University

E. The Average of the Four T-Scores in Each
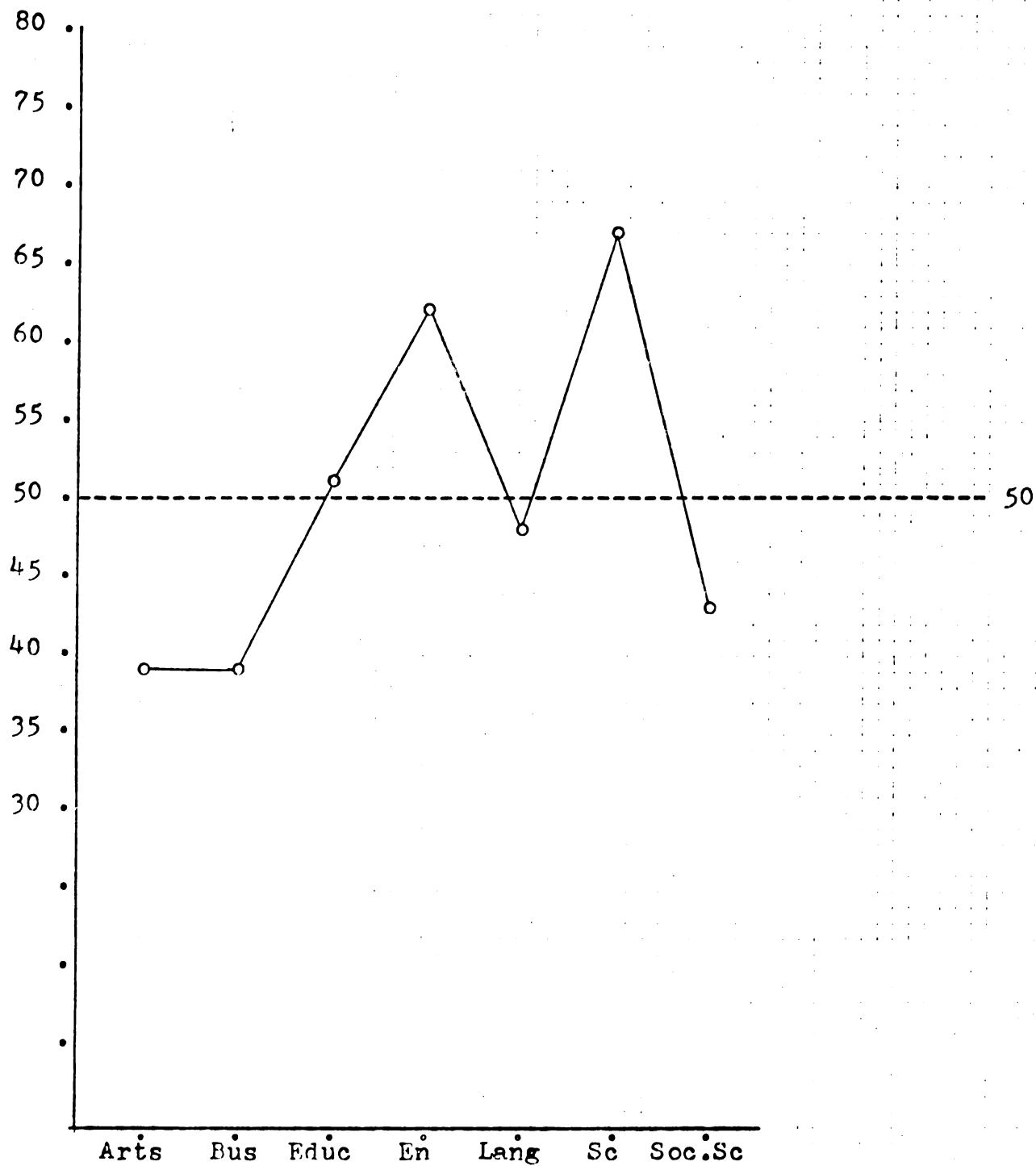   Discipline Grouping.



Discipline Groupings
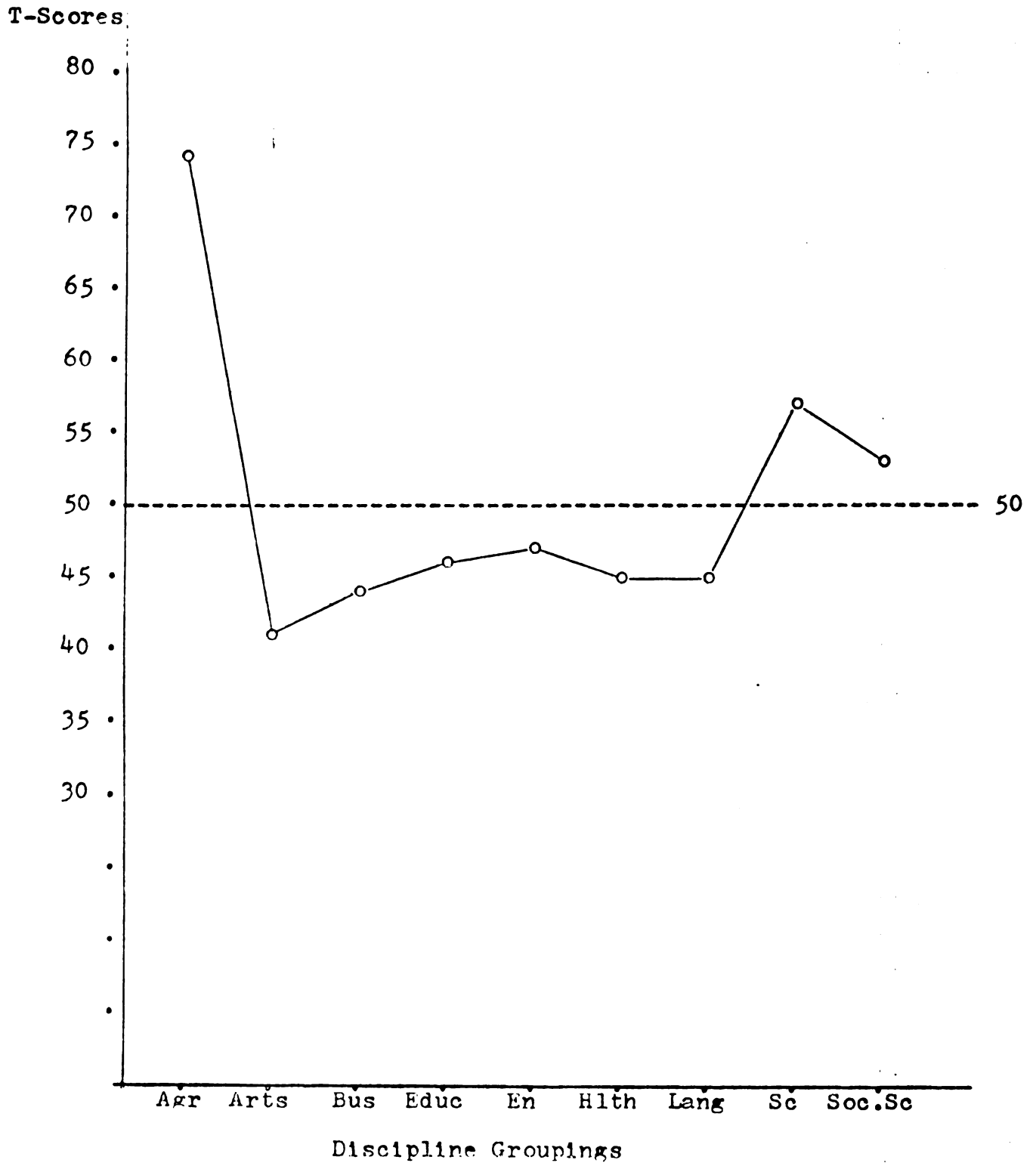
Profile of Kasetsart University

F. Comparison of the Four T-Scores in Each
   Discipline Grouping.
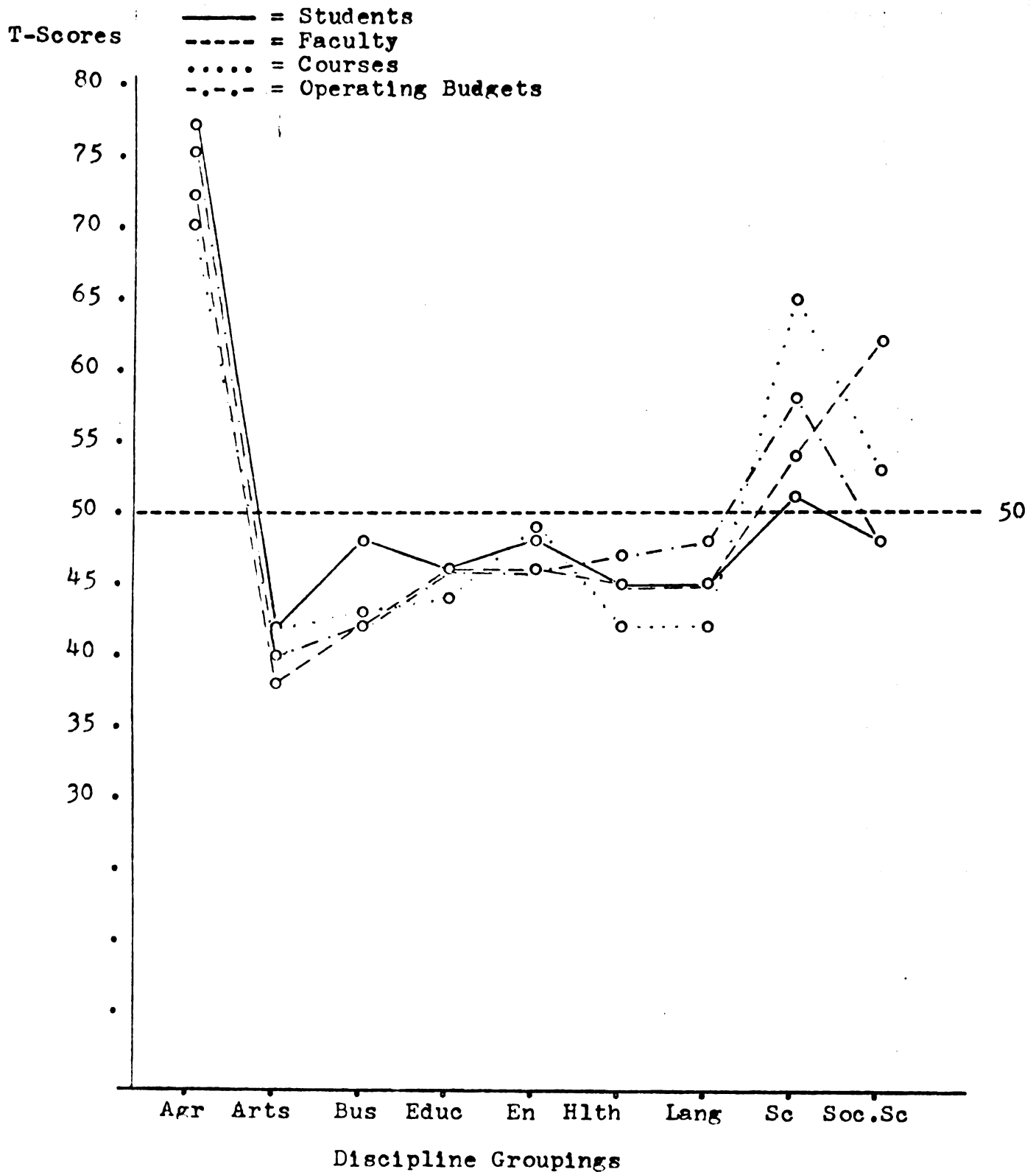
Profile of Khonkaen University

A. Distribution of Faculty among the Discipline
   Groupings, on a T-Score Scale.
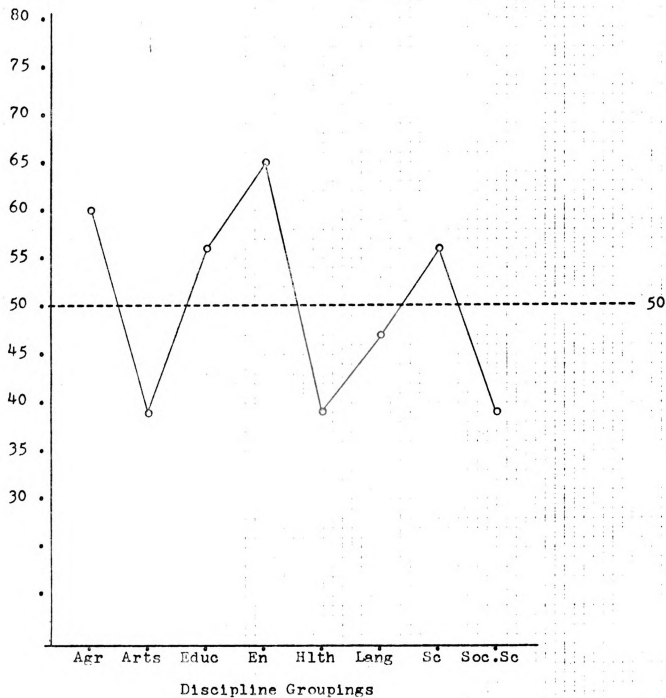
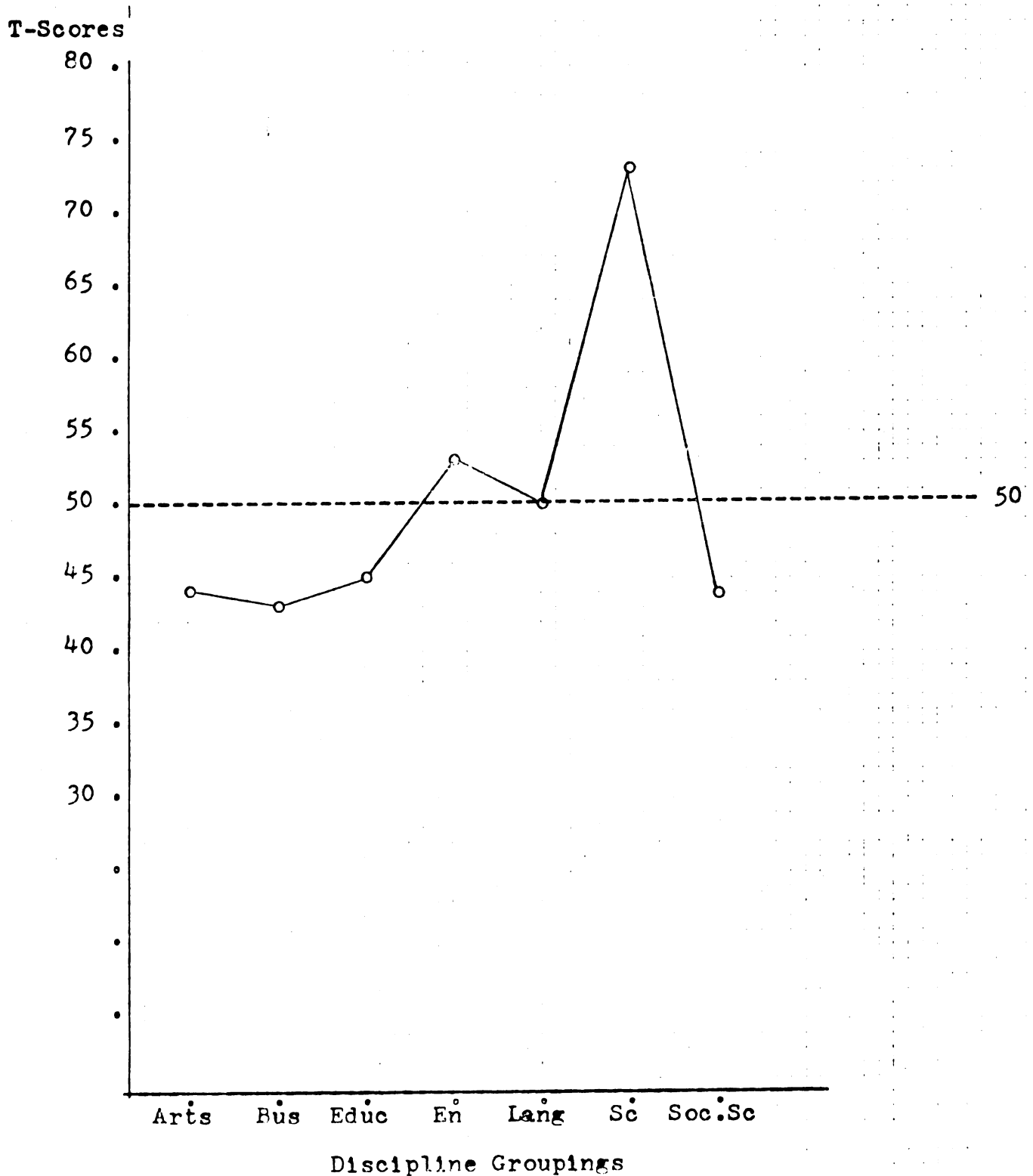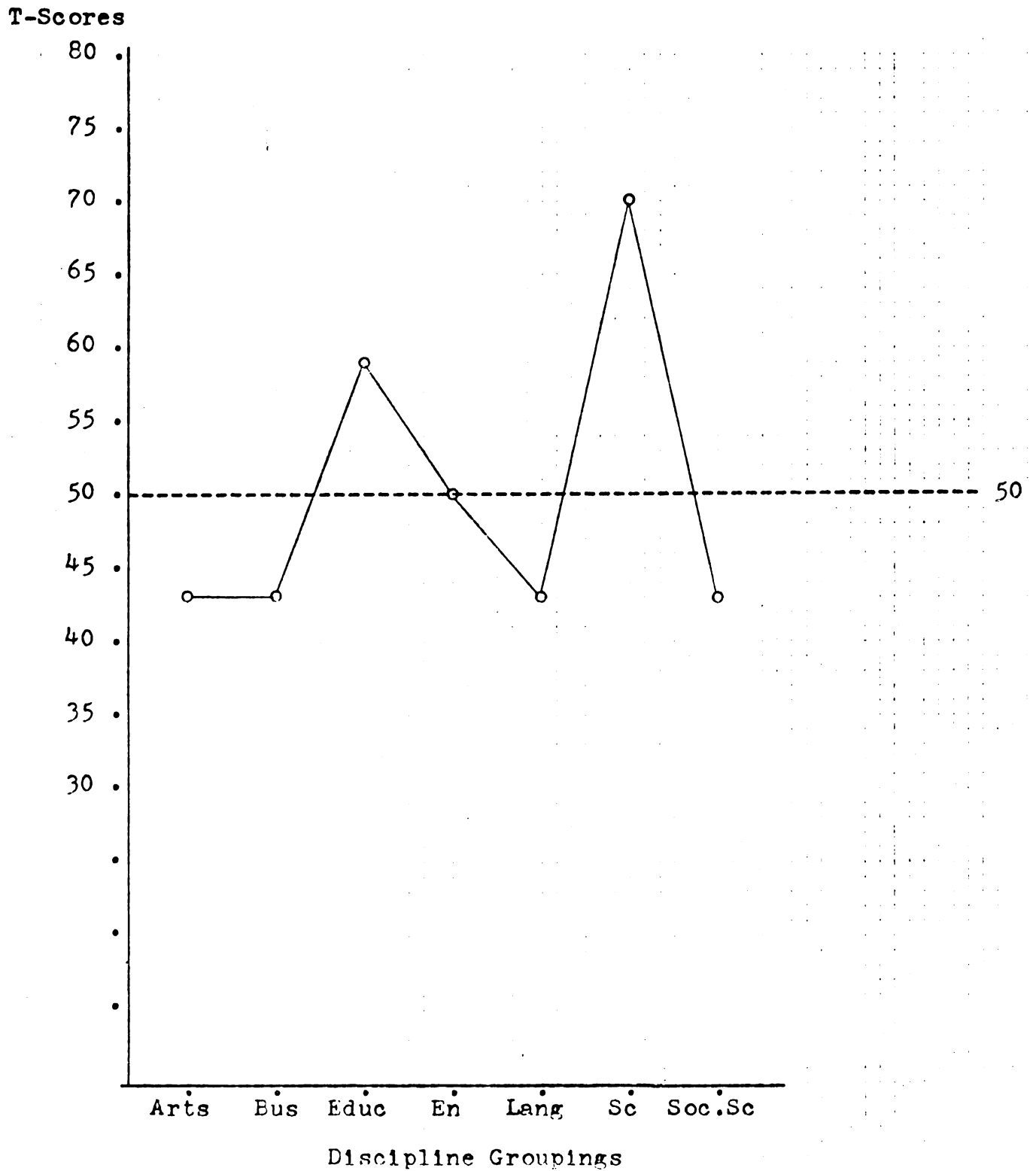Profile of Khonkaen University

B. Distribution of Course Offerings among the
   Discipline Groupings, on a T-Score Scale.



Discipline Groupings
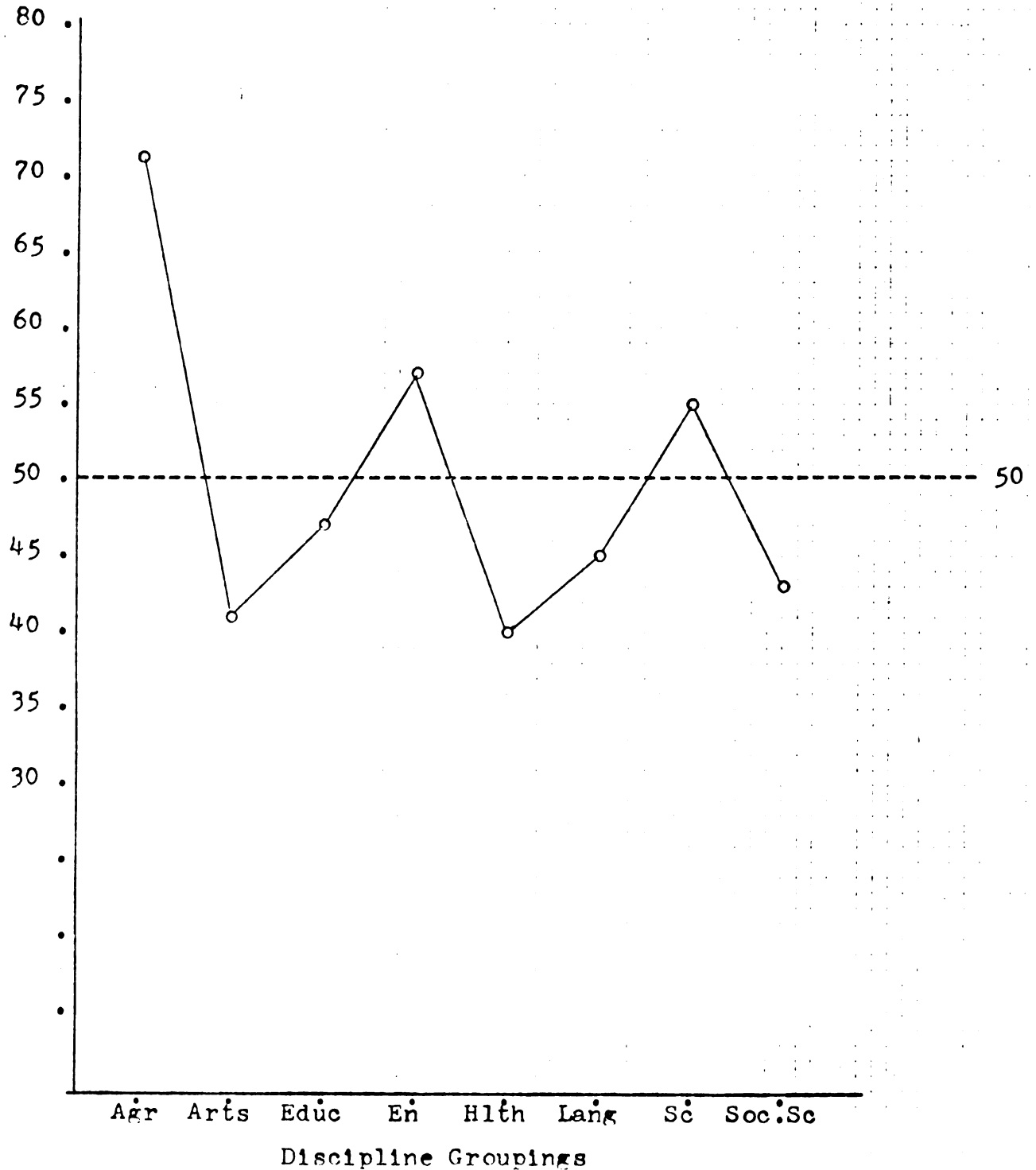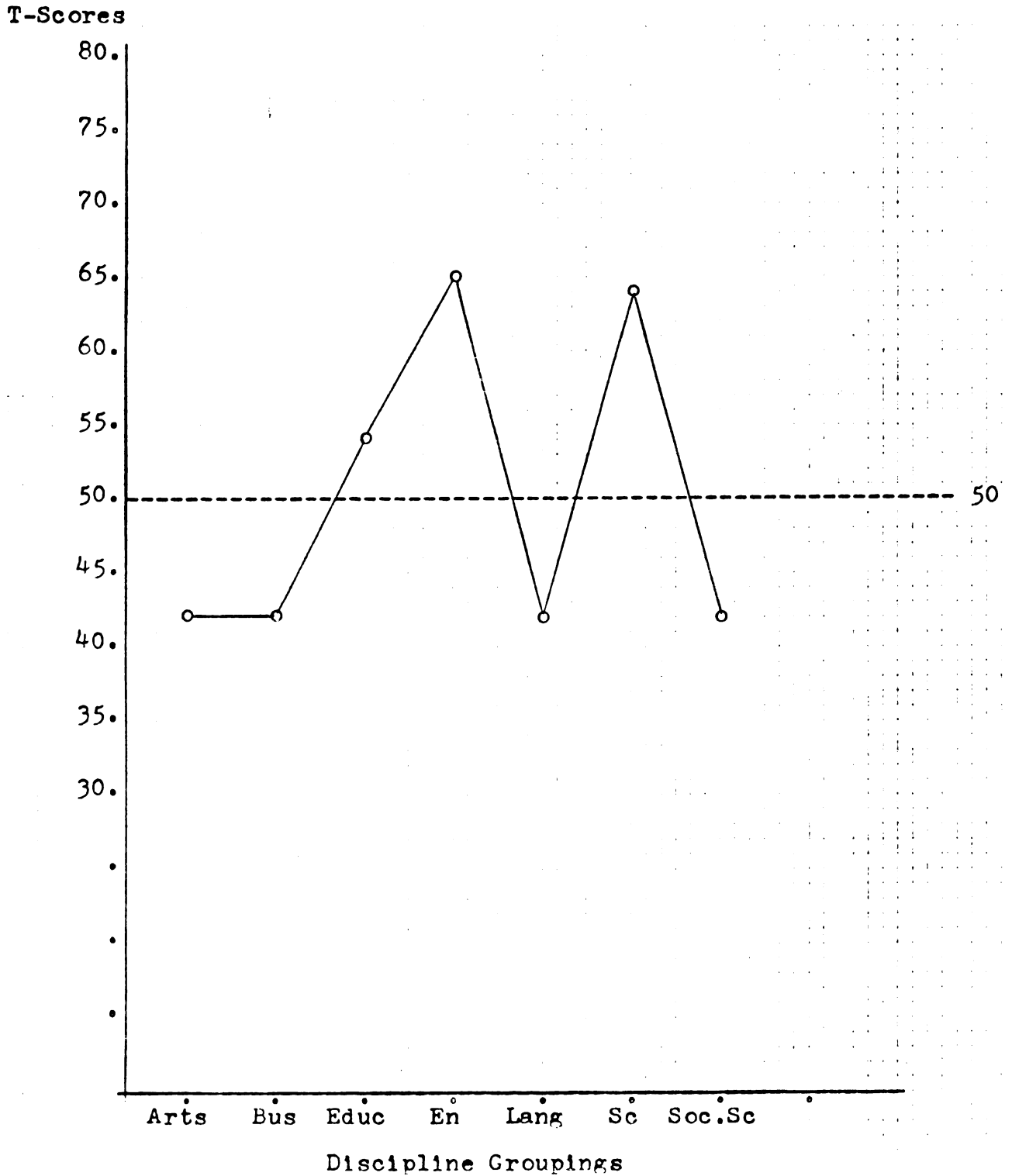
Profile of Khonkaen University

C. Distribution of Students among the Discipline
Groupings, on a T-Score Scale.
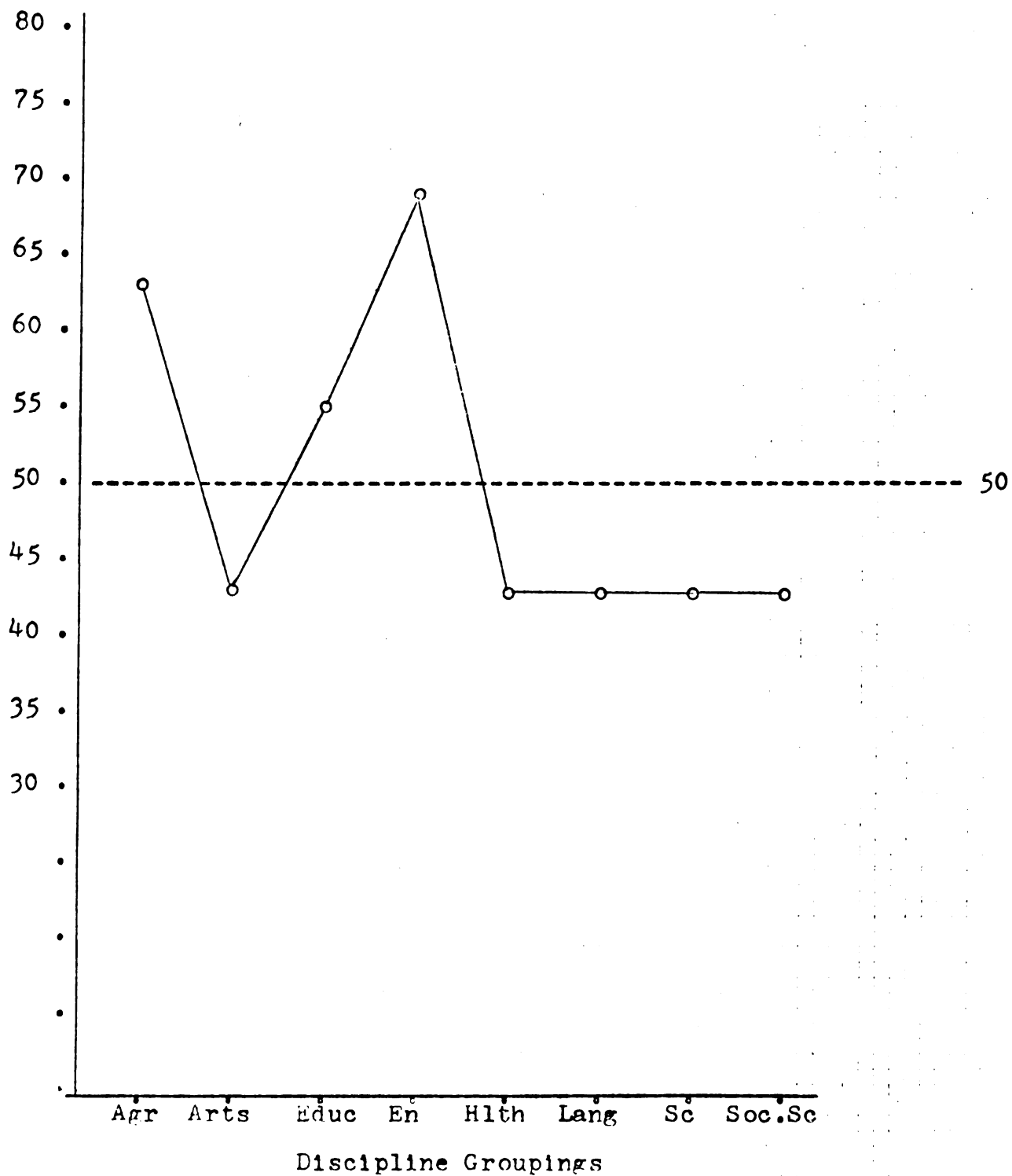


**T-Scores**

Profile of Khonkaen University

D. Distribution of Operating Budgets among the
   Discipline Groupings, on a T-Score Scale.

**T-Scores**



Discipline Groupings

Profile of Khonkaen University

E. The Average of the Four T-Scores in Each
Discipline Grouping.



Discipline Groupings

Profile of Khonkaen University

F. Comparison of the Four T-Scores in Each
   Discipline Grouping.



_____ = Students
------- = Faculty
....... = Courses
-.-.-.- = Operating Budgets

Discipline Groupings

Profile of Mahidol University

A. Distribution of Faculty among the Discipline
   Groupings, on a T-Score Scale.



Discipline Groupings

Profile of Mahidol University

B. Distribution of Course Offerings among the
   Discipline Groupings, on a T-Score Scale.

Profile of Mahidol University

C. Distribution of Students among the Discipline
   Groupings, on a T-Score Scale.

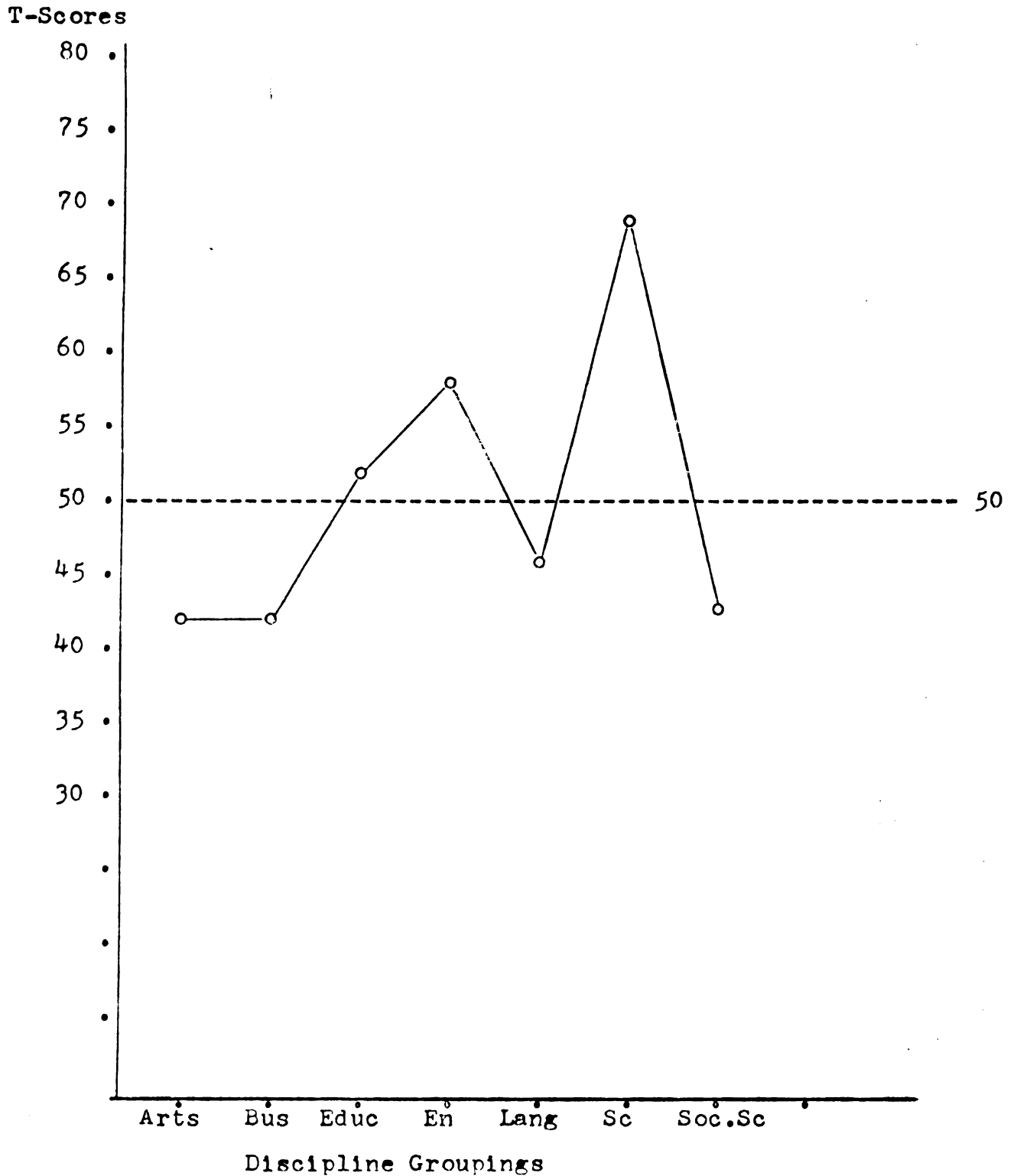Profile of Mahidol University

D. Distribution of Operating Budgets among the
   Discipline Groupings, on a T-Score Scale.

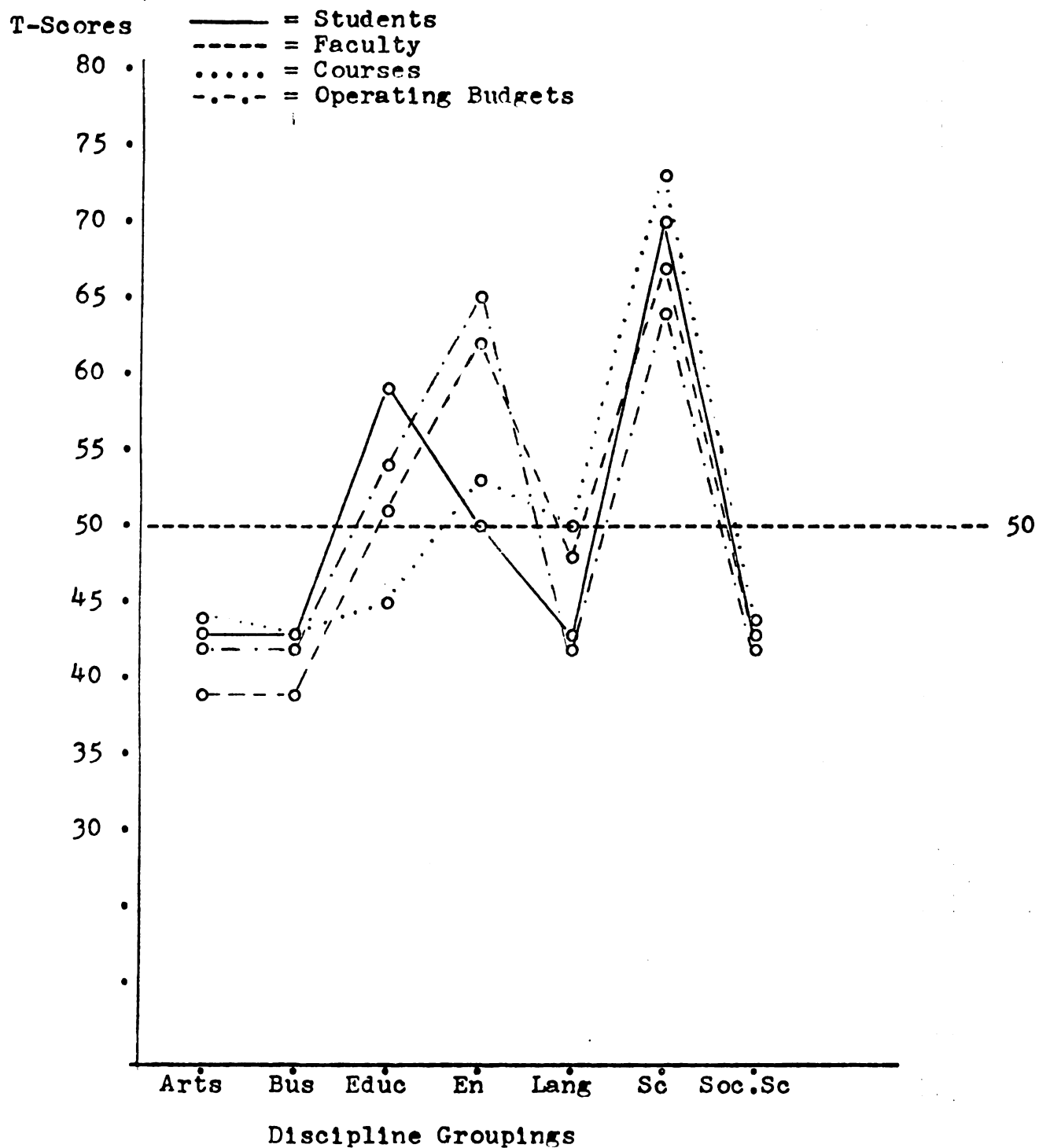Profile of Mahidol University

E. The Average of the Four T-Scores in Each
   Discipline Grouping.

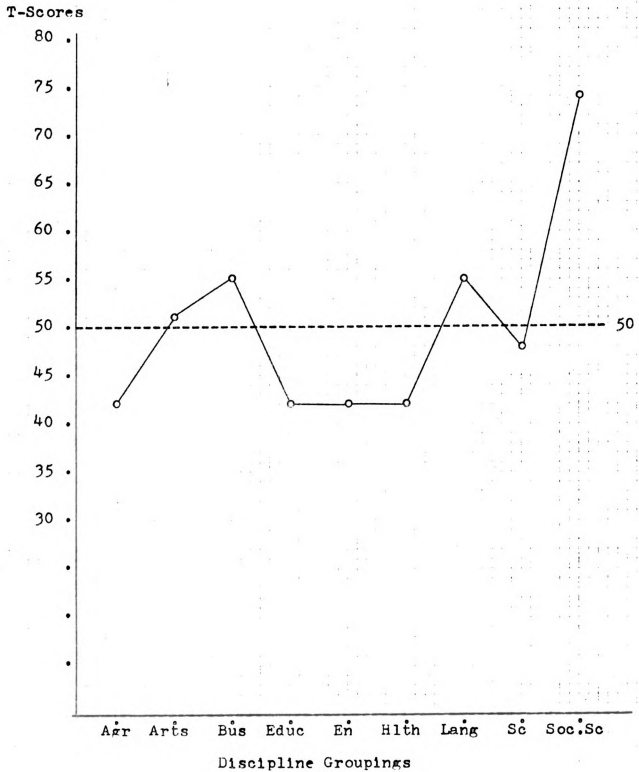Profile of Mahidol University

F. Comparison of the Four T-Scores in Each
   Discipline Grouping.

Profile of Prince of Songkhla University

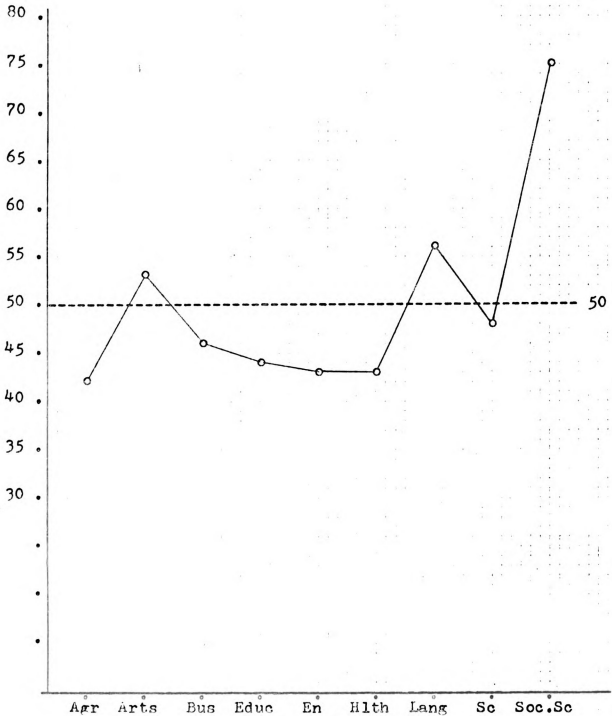A. Distribution of Faculty among the Discipline
   Groupings, on a T-Score Scale.

**T-Scores**



Discipline Groupings

Profile of Prince of Songkhla University

B. Distribution of Course Offerings among the
   Discipline Groupings, on a T-Score Scale.



Discipline Groupings

Profile of Prince of Songkhla University

C. Distribution of Students among the Discipline
   Groupings, on a T-Score Scale.

Profile of Prince of Songkhla University

D. Distribution of Operating Budgets among the
Discipline Groupings, on a T-Score Scale.



Discipline Groupings

Profile of Prince of Songkhla University

E. The Average of the Four T-Scores in Each
   Discipline Grouping.



T-Scores

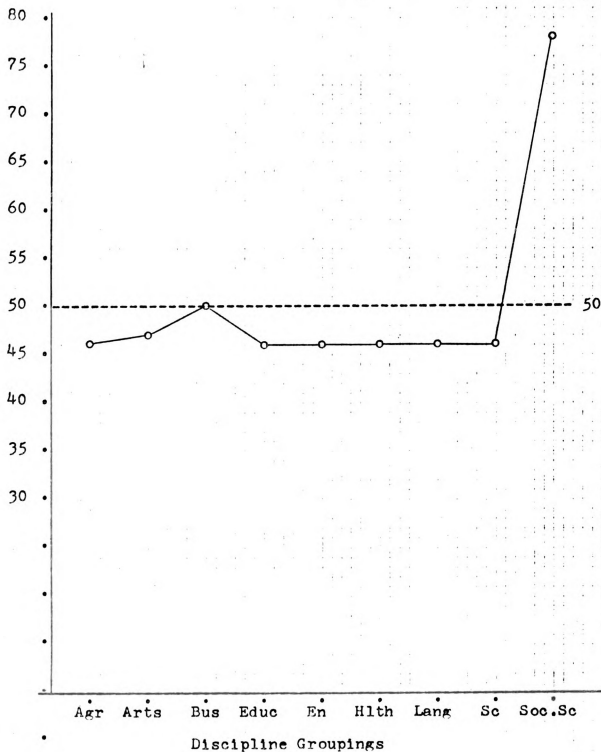Profile of Prince of Songkhla University

F. Comparison of the Four T-Scores in Each
   Discipline Grouping.

Profile of Thammasat University

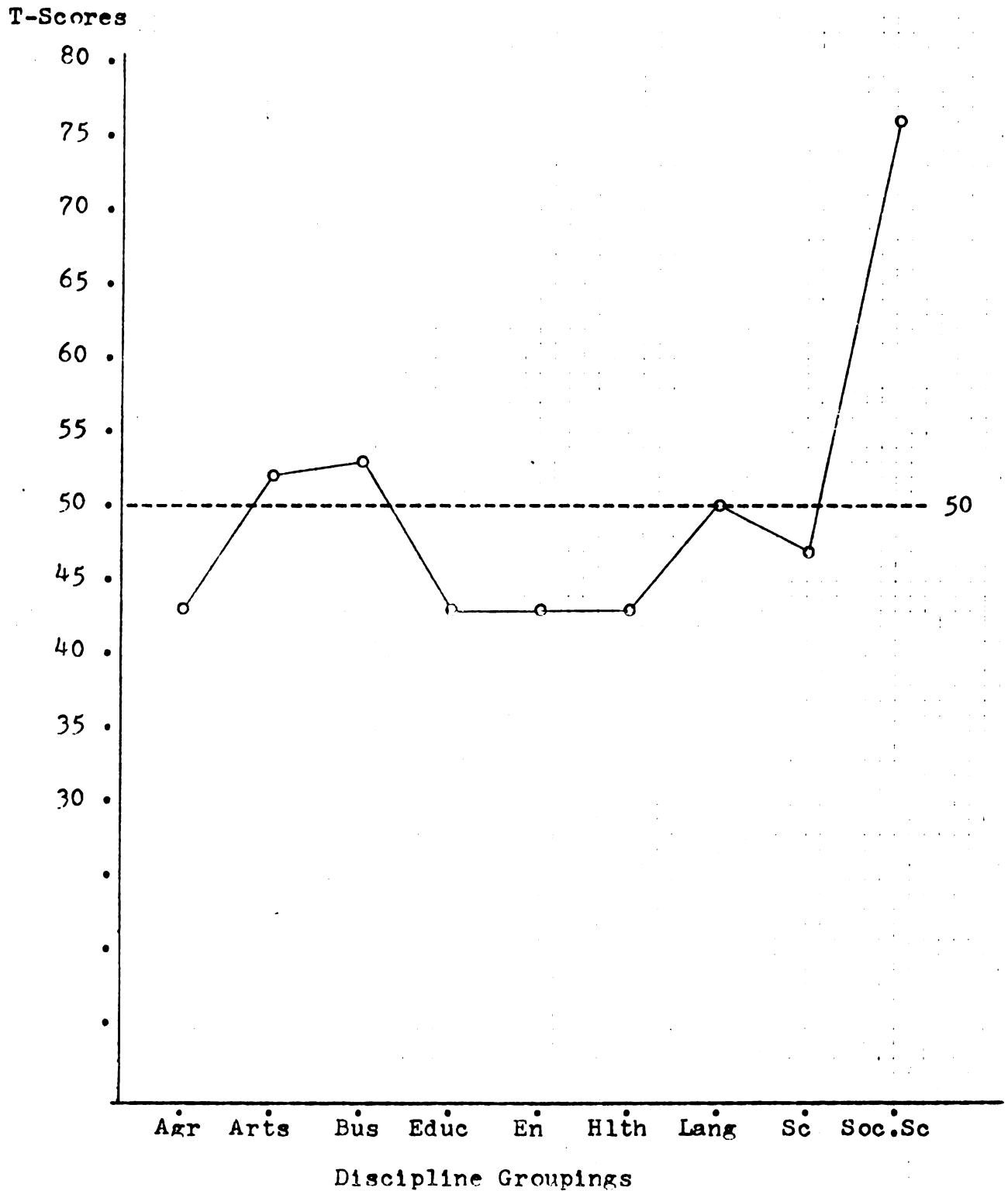A. Distribution of Faculty among the Discipline
   Groupings, on a T-Score Scale.

Profile of Thammasat University

B. Distribution of Course Offerings among the
   Discipline Groupings, on a T-Score Scale.



T-Scores

| | |
|---|---|
| 80 | |

Discipline Groupings

Profile of Thammasat University

C. Distribution of Students among the Discipline
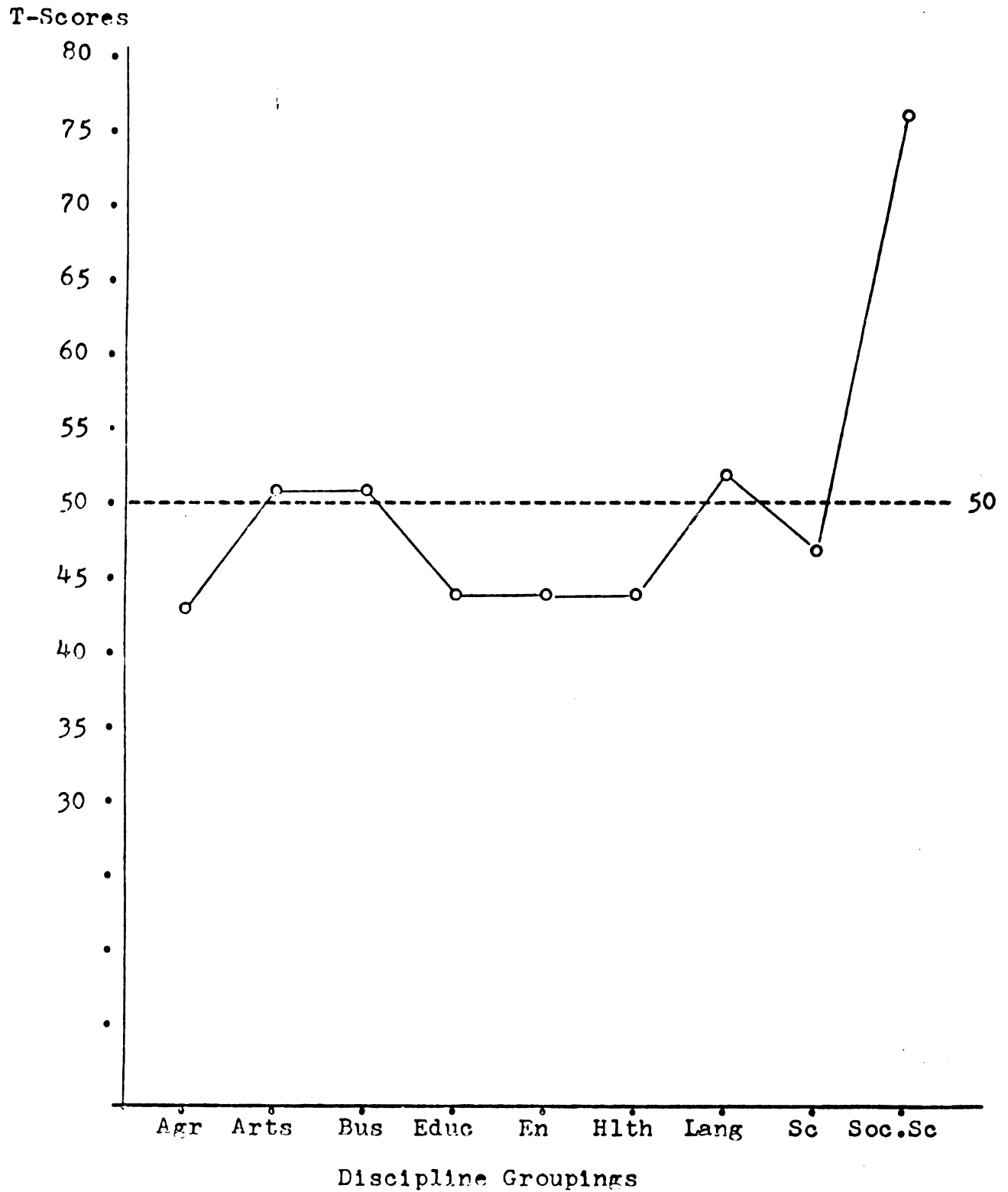   Groupings, on a T-Score Scale.



T-Scores

Profile of Thammasat University

D. Distribution of Operating Budgets among the
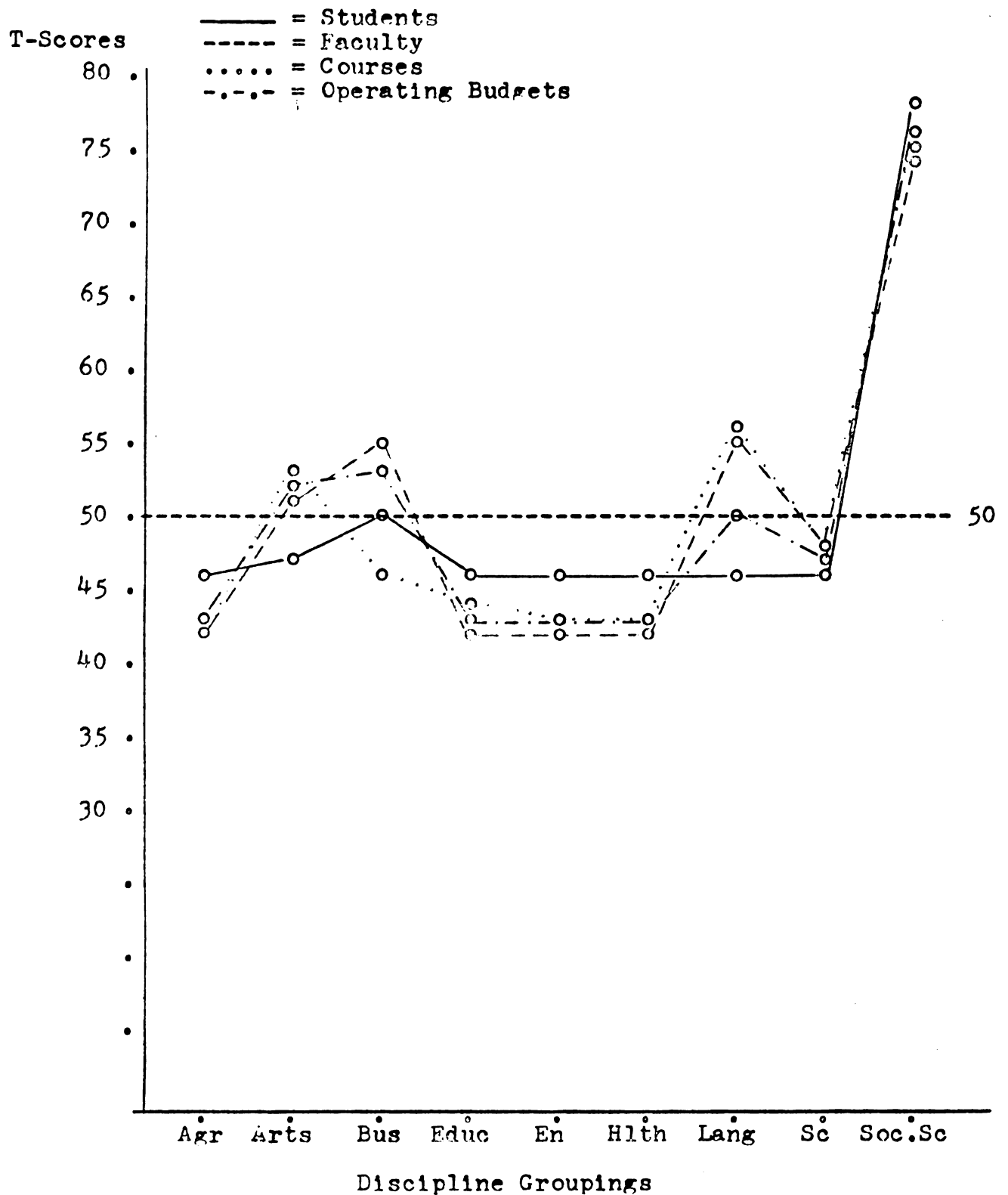Discipline Groupings, on a T-Score Scale.



**T-Scores**

Discipline Groupings

Profile of Thammasat University

E. The Average of the Four T-Scores in Each
   Discipline Grouping.



**T-Scores**

Discipline Groupings

Profile of Thammasat University

F. Comparison of the Four T-Scores in Each
Discipline Grouping.



Discipline Groupings

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