NEW HORIZONS IN AGRICULTURAL INFORMATION MANAGEMENT

PROCEEDINGS

OF AN INTERNATIONAL SYMPOSIUM

MARCH 13-16, 1991

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New Horizons in Agricultural Information Management

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A Study of the Khonkaen University Research Information System

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Abstract

In Thailand, institutions of higher learning conduct research for the socio-economic development of the country. Khonkaen University, a regional academic institution in the northeast, is in the process of setting up a formal research information system, even though its teaching staff has already monitored many research projects as well as many on-going projects. A study of the existing research information systems at Khonkaen University and those of other state universities, government, and non-government agencies was made with a particular focus on data structure, computing equipment and software. A series of interviews with responsible research units, in addition to a study of published and unpublished documents, was used to gain an overview of the research information systems of Khonkaen University as well as those in Bangkok, the capital of the country and the center of education, business, communications, etc. An electronic linkage between the universities and scientific and technological government agencies, is not yet established. This is due mainly to telecommunication costs, technical problems, and a shortage of equipment. However, it is planned, as a first step, to make a link between computer centers in the universities in Bangkok. This should be established by late 1989.

A proposed formal research information system for Khonkaen University, giving better control of research funds, projects, expertise and equipment could be based on existing resources there with some additional computing equipment.

Introduction

In Thailand, the agencies responsible for research are mainly governmental; little research is done by the private sector. Nearly all fourteen ministries are involved in research but the degree of involvement varies from ministry to ministry, depending on subject priorities. Only the Ministry of University Affairs is engaged heavily in research projects. At present, there are sixteen state universities and institutions and eight private universities under the Ministry of University Affairs. Of these, there are three state regional universities, namely Chiangmai University in the north, Khonkaen University in the northeast, and Prince of Songkla University in the south.
Khonkaen University

Khonkaen University was founded in 1964 with one objective of becoming the academic center for the northeast. This region occupies one third of the country's total area. It is densely populated and the land is rather poor. The University offers a wide range of subjects including education, humanities, social science, natural science, medical science, health related subjects, engineering, and agriculture. The student body is about 6,600. Khonkaen University plays a very important role in producing highly-skilled human resources for the development of the country in addition to transferring knowledge and technology to and from the northeast, conducting research for economic growth and for the well-being of the public.

The need for a research information system

The University has proposed setting up a formal research information system although there are informal systems already in existence. Each year the University receives research funds from the government for its research projects. It also receives funds from foundations, international bodies such as the United States Agency for International Development (USAID), the Canadian International Development Agency (CIDA), and the Ford Foundation. The University has good control over government funds but not over funds from the other sources. This is because the external agencies contact the faculty or individuals directly. Until recently the University did not have a formal focal point where the faculty members/researchers could obtain information on on-going, completed, or projected research projects. As a result, information on research projects had to be sought from various faculties or institutions or the libraries.

This situation has greatly concerned the administration as well as researchers. As planners, they need timely and accurate information on all research projects (completed, on-going, and proposed), research expertise, research equipment, research funds, and funding agencies in order to formulate a policy for research activities, to avoid duplication of research and to foresee the directions the University should take. The researchers themselves seem lost because they do not know where to start. Or if they know, they have to spend lots of effort to consolidate information in order to begin a new project.

The Office of the Vice President for Research Affairs which was established in late 1986 and is directly responsible for research has tried to solve these problems by first organizing a seminar entitled *A Management System of Research and Development for Khonkaen University* in 1987. The objectives of the seminar were: 1) to identify a database system which would be used by all participating units of the University; and 2) to use computers in processing, storing and retrieving data. The seminar was very successful and the participants recommended that a computerized database be created containing data on researchers, projects, equipment, funding and proposals. They felt that status data and scientific and technological index files are of lower priority but also recommended, and that the systems should eventually be electronically linked with those of other agencies in the northeast and in other parts of the country.
Data gathering

To implement the above recommendations, the University sought financial assistance from the International Development Research Centre (IDRC), Canada, which engaged two consultants (one local and one foreign) to study the present system and to make recommendations. At Khonkaen University, the study visits were made to the Faculties of Science, Public Health and Agriculture; the Research and Development Institute, the Water Resources and Environment Institute; the Instruction Research Center (Library); and the Computer Center. The visits in Bangkok included the National Research Council of Thailand; Thailand Institute of Scientific and Technological Research (TISTR); Chulalongkorn University; Kasetsart University Library; Asian Institute of Technology Library and its Regional Computer Center; National Electronics and Computer Technology Center; and Thailand Development Research Institute. Some faculties and institutes were chosen for site visits because it was known that they currently had systems in place.

The following are samples of basic questions asked during the visits:

1. Do you have a research information database?
2. If you have one, is it a manual or a computerized database?
3. What research information do you keep? Researchers names or completed projects or on-going projects?
4. What is the size of the database (no. of records)?
5. What hardware do you use?
6. What software do you use? Why did you choose this software?
7. What is the data structure?
8. What are the bibliographic data elements of each record?
9. Does the database contain information other than research?
10. Who is responsible for the input?
11. Is the database accessible to other organizations via electronic linkage?
12. If you do not have a database now, will you be considering one in the future?
Findings

It was found that at Khonkaen University not all places visited have computerized research records although each place has at least one IBM PC or compatible. The principal use of the microcomputer is for research data manipulation. The Faculty of Public Health keeps only titles of research projects along with other data. The Faculty of Science has created a database of completed research projects while the Research and Development Institute while concentrating mainly on rural development also maintains a research projects database. The Library which is one of four components of the Instruction Resource Center has records of research reports of the university together with other records in the book database. On the matter of subject coverage, each faculty has interest in its own projects and except for the library the database is rather small. The Mini/Micro CDS/ISIS software is widely used for this bibliographic database. Since each faculty or institute has created its database independently, there is no common data structure. Furthermore, most PCs are not linked to the University Computer Center which uses a VAX 11/780 (16 Mb). At present only the Research and Development Institute (rural development) is connected to this Computer Center.

A similar situation exists at other universities such as Chulalongkorn University, and Kasetsart University in Bangkok. They both use microcomputers and the Mini/Micro CDS/ISIS program for their research projects’ databases. The only difference is that the former maintains records of completed projects of the university while the latter only on-going projects on agriculture.

Both the National Research Council of Thailand (NRCT) and the Thailand Institute of Scientific and Technological Research (TISTR) which deal directly with research activities, have minicomputers and several PCs. NRCT is the national depository of research reports and on-going research projects. This database contains about 15,000 projects across the country. The three main components of the records are: 1) institutions, 2) researchers, and 3) projects. The software being used on its minicomputer is UNIFY.

The Thai National Documentation Center, a component of TISTR also uses Mini/Micro CDS/ISIS for its bibliographic database in addition to MINISIS on a Hewlett Packard 3000. The Asian Institute of Technology Library has lengthy experience with CDS/ISIS software on its IBM mainframe. Its book database also contains research reports.

However, all government bodies have included the research activities in their annual reports, thus the researchers use these publications as one of their sources.

It may be concluded that there is no one unified research information system at Khonkaen University nor at other institutions of higher learning. Microcomputers are widely used because they are affordable. For the bibliographic databases, the most popular software is Mini/Micro CDS/ISIS which UNESCO distributes free of charge. There is no electronic network as yet.
Recommendations

To quickly improve the research information system at Khonkaen University, will not be too difficult. Since IBM PCs or compatibles and Mini/Micro CDS/ISIS are extensively used, the Office of the Vice President for Research Affairs, as the official focal point, may first be equipped with: 1) One full-time officer whose duties are to collect data on researchers, projects, funds, equipment, and to input data; 2) An IBM PC AT or compatible with a printer; 3) Mini/Micro CDS/ISIS software (latest version). This office may request assistance from the University Computer Center to design the data structure for the research database and to train the officer-in-charge. Certainly the data structure must be agreed upon by the research community before it is implemented. It is also advisable to design the data structure to be exchangeable with those available at other universities/institutions. Once this new database has enough records of projects for different faculties/institutes to be given back their contribution for comments, coordination and cooperation between the responsible units and the researchers will be significantly enhanced. They will definitely realize that coordination among themselves will greatly improve the sharing of information on research activities at the University and eventually across the country. In the early stages, the faculty members or researchers will have to contact this office in person or by telephone but once the machine is linked to the University Computer Center they will be able to access the database online.

If the institutions which now have a manual file of research projects are interested in developing a computerized database, the Khonkaen University Research Information System will be a good case study. In cases where existing databases use programs other than Mini/Micro CDS/ISIS, the experience of this University will still be of benefit. They may decide to convert to CDS/ISIS in order to be part of the network of research systems.

Future

In order to be able to exchange information about research projects among the research community throughout the country, the Ministry of Science, Technology and Energy (MOSTE)/National Electronics and Computer Technology Center (NECTEC) plans to set up a linkage among the science and technology institutions’ databases electronically. The link is definitely planned initially among four institutions in Bangkok and later those in Bangkok and the provinces. As such the Khonkaen University Computer Center will be linked with other institutions’ computer centers, especially the National Research Council of Thailand, across the country.

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