A NEW CHALLENGE FOR THE ESTABLISHMENT OF SIRINDHORN INTERNATIONAL INSTITUTE OF TECHNOLOGY AT THAMMASAT UNIVERSITY, THAILAND

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SUMMARY: The Engineering (English) Program was established at Thammasat University in Thailand in 1992. After two years of operation, the program expanded its activities and was developed to become the "International Institute of Technology" (IIT) by Thammasat University Council. On 1 July, 1996, His Majesty the King graciously granted the name "Sirindhorn International Institute of Technology" to the Institute.

Based on the deregulation of Thai Government for the operation of national universities, the Sirindhorn International Institute of Technology (SIIT) can operate financially under a self-supporting system since its inception as the Engineering (English) Program. Freedom is given to any faculty of a national university to set higher fees as its income and to decide salaries using its own income. Using this freedom, the faculty members lose their status as civil servants and its privileges. The major aim of this deregulation is to establish a faculty similar in academic standards to those at the industrialized countries under limited resources of Thai Government. The Institute follows to attain the aim of this deregulation by training highly qualified engineers who can contribute to developing Thailand's own technology, and contributing to Thai industrial development through research output and through consulting services provided by the faculty members. The media of teaching is English. A major reason for the adoption of English as the media is to accelerate mobility of students and faculty exchange with other countries, to educate foreign students and to advance globalization of trade in engineering services.

1. Introduction

The Sirindhorn International Institute of Technology (SIIT) at Thammasat University is a project undertaken with the cooperation of Thammasat University, the Federation of Thai Industries (FTI), and the Japan Federation of Economic Organizations (KEIDANREN) for the purposes of producing well qualified engineers with international standards and competence in English who would be able to facilitate the rapid industrial development of Thailand and contribute to the industrial development of Thailand by its research output and consulting services of the faculty members. It was established in March 1992 with the first intake of undergraduate students to the Departments of Civil, Electrical and Industrial Engineering in June 1992. The Department of Mechanical Engineering and Information Technology admitted their first batch of students in June 1995 and 1996, respectively.

2. The Establishment of the Sirindhorn International Institute of Technology

2.1 Background

Thailand, being one of the fastest growing economies not only in Asia but also in the world today, has been suffering a serious shortage of technical manpower to support its industrial and economic development for the past decade. More specifically, the shortage of well-qualified engineers has become a bottle-neck of Thailand's economic development through industrialization.

In Thailand, there were 11 national and 10 private universities/institutes which offered undergraduate and postgraduate engineering programs, when the Institute was established in 1992. The number of engineering graduates from those universities was far behind the demand for engineers at the time. Realizing this situation, the Thai government has been encouraging existing universities to open more engineering schools/faculties, and also plans to set up new universities especially in upcountry. The latter aims to solve the income disparity between the rich central zone and the poor upcountry through industrial development in these areas. The shortage in the total number of engineers is expected to be solved with the current governmental efforts to establish engineering faculties/institutes. More than 10 engineering faculties have been established since the establishment of SIIT five years ago. Because of the urgent need to solve the shortage and partially as a result of the tradition in engineering education, most of the above-mentioned faculties/institutes plan their curriculum with the emphasis on more practice and less fundamentals so that the graduates would be able to work in their fields of study immediately after graduation. This raises another question whether the quality of even a few of these graduates is of a level comparable with those at the leading engineering faculties/institutes in the world which possess a strong background in fundamentals. High quality graduates with strong fundamentals are essential for Thailand's own industrial development through the efforts on research and development, though the number of these graduates need not be too many.

Another difficulty that Thailand is facing is the shortage of well qualified faculty members who can assist industrial development through their own research output and their consulting services based on their research activities. As a matter of fact, there are many faculty members who are active in consulting services to the society. Their services are excellent when they finish their postgraduate education at the leading engineering faculties/institutes in the world, but its excellence gradually fades out with the years. This is mostly due to the environment which makes it difficult for them to continue their research activities due to financial problems. One of the main problems is the lack of research funds. The presence and easy access to journals at the library are minimum requirements to sustain and develop their research capability, but even the journals are scarcely available. The availability of research facilities and their running costs are an even greater difficulty.

Another basic and the most important problem is the low salary scale of the faculty members of the national universities. Similar to the most Asian countries, the faculty members of Thai national universities are civil servants and their salary scale is much lower than that in private industries. This low salary scale results in two problems for the engineering faculty. Because of the presence of industries with high salary scales, it is not an easy task to recruit qualified engineers/scholars as faculty members. Even when such recruitment is successfully made, they have to earn extra income through extra activities outside office hours and weekends so

that their total income could be reasonable in terms of their qualifications. Since the private universities have virtually no endowment funds, they have to operate by their own income, which is mostly from tuition. Under this condition, serious research activities cannot be expected at the private universities. This is a phenomenon common in Asia not only in many of the developing countries but also such industrialized countries/economies as Japan, Korea and Taiwan. Those Asian countries aiming at economic development through industrialization are now coming to terms with the necessities of engineering faculties of national universities, not necessarily all of them but at least one or two, with similar academic standards and devotion of faculty members for education and research to that at industrialized countries.

Recognizing the above difficulties, the Ministry of University Affairs of the Thai Government deregulated the operation of Thai national universities and allowed any faculty of national universities to operate financially under a self-supporting system. Freedom is given to any faculty of a national university to set higher fees than the regular ones fixed by the Ministry as the direct income to the faculty, to generate other income such as the overheads of contract research which can be retained in the faculty, and to allow the faculties freedom in deciding salaries of their staff and faculty members. Using this freedom, however, means that the faculty members lose their status as civil servants and its privileges. The government allows the use of already available physical infrastructure free of charge. If a national university wishes to set up a new faculty under this self-supporting system, the land of the university can be used free of charge. This deregulation of the operation of national universities with the basic physical infrastructure being provided by the government is one of the ways to establish a faculty similar to those at the leading engineering faculties/institutes at industrialized countries under limited governmental resources in a developing country. It is also anticipated in the future that a block grant will be allocated for these faculties at the national universities.

There are already a number of faculties operating under this system in Thailand in the field of business administration and economics at the postgraduate level. Most notable among them are the Sasin Graduate School of Business Administration at Chulalongkorn University and the Graduate School of Economics at Thammasat University. The former has employed virtually no faculty members, but education is conducted by faculty members from the Walton School of the University of Pennsylvania. Because of this, the education at Sasin Graduate School is essentially the same as that at Walton, but no research output by Thai faculty members can be expected. Education at the latter is given by the faculty members of the Faculty of Economics of Thammasat University, so that their teaching is an additional assignment similar to teaching at other universities as associate faculty members. They can keep their status as civil servants and, by teaching at the postgraduate school which has a self-supporting system, they can earn extra income which is much larger than the income from teaching at ordinary postgraduate programs. The increased activities at the postgraduate level with reasonable additional income resulted in extra research activities of their own among the faculty members. Both of them are fields where there are many administrators and business managers who are looking forward in higher education. These administrators and managers can expect leave of absence with pay from the office and also partial or whole compensation for tuition. This situation led the way for the two faculties to operate successfully under the self-supporting system.

However, it is not an easy task for existing undergraduate faculties to depart from the system of civil servants. The majority of faculty members, especially those who have spent many

years as civil servants, naturally wish to keep their status as civil servants, under which their positions are secured and their pensions are guaranteed.

Because of this difficulty, the operation of self-supporting undergraduate faculties could be possible only for faculties to be newly established. Even for these faculties, it is not an easy task to be financially sustainable. Compared to a private university, the advantage is only the free use of land and some of the physical infrastructure. Because of this, it is difficult to establish a faculty of high academic standards in education and research unless additional operating funds such as contributions and/or endowments are available. On the other hand, if such a highly competent faculty is successfully established, it would contribute to the reputation of the university. One of these ambitious universities in Thailand was Thammasat University.

2.2 Thammasat University and Its Faculty of Engineering

Founded in 1934, Thammasat University was originally dedicated to the education and research of humanities and social sciences. When the idea of establishing SIIT was conceived, Thammasat University had eleven undergraduate faculties : Law, Commerce and Accountancy, Political Science, Economics, Journalism and Mass Communication, Liberal Arts, Science and Technology, Social Administration, Sociology and Anthropology, Engineering, and Medicine and one Graduate School. It had become one of the most prestigious universities enjoying a national reputation in many areas. Several university alumni have been persons in prominent positions such as, Prime ministers and Ministers, Chairpersons and Members of Parliament, Chairpersons and Members of Senate, Supreme Court judges, solicitors, and successful businessmen. In fact, Thammasat University alumni help serve the country in all working areas, at the local, national and international levels.

Recognizing the problem of the severe shortage of engineers in Thailand, Thammasat University thus established the Faculty of Engineering in 1989. It began to admit students to the Departments of Electrical Engineering and Industrial Engineering in 1990. In 1991, students were admitted to the Department of Civil Engineering. The Department of Chemical Engineering and the Department of Mechanical Engineering will begin to admit students in the near future.

2.3 The Establishment of the Institute

When Thammasat University planned and requested the Ministry of University Affairs of the Thai Government to establish a Faculty of Engineering under the regular system with 1000 student enrollment, the Ministry allocated a budget for the construction of buildings for engineering disciplines to be able to accommodate 2000 students. The expectation was that the extra floor space could be utilized for an independent engineering faculty with high academic standards in education, research and consulting services by hiring qualified faculty members with a reasonably high salary scale and providing the necessary environment for them to be active for these purposes under the self-supporting system. Even if the establishment of this faculty is not realized, the remaining floor space can be easily utilized by increasing the number of students enrolled to the regular Faculty of Engineering.

The necessity of an institute of engineering achieving high standards comparable to the leading institutes of industrialized countries was recognized by Thammasat University and FTI. The

FTI approached KEIDANREN, suggesting a joint effort to establish an institute of technology at Thammasat University by raising the necessary funds. With large private investment and cooperation of Japanese private industries in Thailand, KEIDANREN recognized the shortage of Thai engineers and also the necessity of a higher educational institute of international standards in engineering. With this recognition, it was agreed, by the joint effort of Thammasat University, FTI and KEIDANREN, to establish an institute of technology at Thammasat University, later granted the name "Sirindhorn International Institute of Technology" by His Majesty the King. Thammasat University has overall responsibility for the establishment, while the other two have additional responsibility for fund raising at the initial stage.

2.4 Objectives

The main objectives in establishing the Sirindhorn International Institute of Technology are similar to those of higher educational institutes in industrialized countries and are listed as follows :

1) to produce engineering graduates to overcome the shortage of engineers, thereby promoting further Thai industrial development;
2) to provide short-term training, undergraduate education, and postgraduate education in various engineering fields at the standard of leading international institutes in the industrialized countries;
3) to provide a strong English language background for the graduates who can work at international industries and environments;
4) to offer international students opportunities to pursue engineering degrees; and
5) to contribute to Thai industrial development through research output by and through consulting services provided by the faculty members.

In order to attain the above-mentioned objectives, the administration of the Institute is intended to be carried out by its own system but not by the governmental bureaucratic system in order to improve the efficiency of administrative work and to attract highly qualified faculty members by a high salary scale. Although the Institute is a part of Thammasat University and follows the University's general regulations, the Institute is autonomous in management and financially independent. With the initial funding for operation from FTI and KEIDANREN, the tuition and fees collected from the Institute's students, and additional funds to be raised from private and official organizations, the Institute was expected to become self-sustainable. Since its establishment on 1992, the financial condition of the Institute is reasonably sound.

3. Overview of the Sirindhorn International Institute of Technology

To assist the autonomous operation of the Institute, it has its own Board of Trustees as the highest policy decision making body except the general regulation of the Thammasat University. The Board consists of 14 members; the Rector of Thammasat University, six from representatives and scholars nominated by Thammasat University, three from representatives and scholars nominated by FTI, three from representatives and scholars nominated by KEIDANREN, and the Director of the Institute.

This Board of Trustees consisting of scholars and industrialists is very unique in Thailand. No similar Board is present at the Thai national universities nor any faculty under the regular

system. Further, the members of the Board consist of both Thai and Japanese nationals since its inception to present.

The Rector of Thammasat University takes the responsibility of the Board as the exofficio Chairperson. The daily operation of the Institute is administered based on the policy decision of the Board by the Director of the Institute appointed by the Board.

Experience at many universities in the developing as well as at industrialized countries shows that the qualification of faculty members play the most important role in their development. Because of this, it was decided in the design to establish the Institute that 80 percent of the initially planned number of faculty members were to be appointed by the Board on the recommendation of the Screening Committee of the Faculty of the Board, which consisted of prominent scholars from Thailand and Japan. It was anticipated that, when the initial target was attained, the faculty would consist of academically very strong members. Then the responsibility of appointing new faculty members could be shifted from the Board to the Director and faculty members without any worry for appointing academically weak faculty members.

It was fortunate that there were many Thai members who had been trained at the leading institutes at a variety of leading universities in the world who were willing to come back to Thailand if a reasonable salary was being paid and a reasonably good research environment was provided. So far, only young faculty members have been appointed for this Institute, but all of them are as competitive as assistant or associate professors at leading universities in the world. The appointments of young faculty members have been for financial reasons and also to create a positive working atmosphere among them rather than bringing in the well developed different customs from many universities in the world, which might not be consistent and make the operation difficult. It was recognized, however, that the presence of a few senior faculty members was desirable. Further, it was the understanding of the Board that the presence of these senior faculty members was not necessary on a permanent basis. Advice and guidance for the younger faculty members were the main role of the senior faculty for the faculty development. The Institute has been looking for short term seconded faculty from the leading institutes in the world under official governmental assistance to Thailand and contribution from foundations in industrialized countries.

Because of the importance of English as the common language in the industrial sector, English has been selected as the sole official language of the Institute. It is hoped that sons and daughters of foreign diplomats and staff of international organizations stationed in the Bangkok area would look to the Institute for their undergraduate study. It is also essential to have qualified faculty and physical infrastructure of international standards to attract them. The Board has been making their utmost effort to attain these conditions. Although the tuition is expensive by Thai standards, it is still very cheap by international standards. Living expenses are also cheap in Thailand so that not only sons and daughters of foreign staff stationed in Bangkok, but students from other countries are also expected to enroll. The faculty is working hard so that an international recognition and reputation are established first on undergraduate education at the earliest possibility. Since the language barrier has been removed, it is also expected that the Institute would become a Thai center for regional cooperation in engineering education of such regional programs as University Mobility for Asia and the Pacific.

4. Conclusions

The Sirindhorn International Institute of Technology started for the first time in Thailand at Thammasat University under the financially self-supporting system with the students at undergraduate level. Unlike Sasin Graduate School at Chulalongkorn University and the Graduate school of Economics at Thammasat University, the Institute appointed all faculty and staff members who were not civil servants and hence without life-time guarantee. In this respect, the Institute is really the first faculty established based on the deregulation of Thai national university operation system. The aim of the Institute is to establish a center of excellence in higher education in engineering, which is necessary for the industrial development of the country. Among the ASEAN countries, Singapore has been trying to establish such institutes and has been successful in founding the Faculty of Engineering of the National University of Singapore and Nang Yang Technological University, which are capable of offering education and carrying out research to international standards. Apart from Singapore, the rest of the ASEAN countries are having difficulty in establishing such institutes because of the presence of a large number of national universities with limited resources. With the penetration of the concept of democracy, demand for more or less equal distribution of the available budget is increasing. Heavily concentrated distribution to a few selected institutes is becoming increasingly difficult. Under this environment, this Institute at Thammasat University is a new venture and challenge to create a center of excellence by the combined efforts of the government and the private sector including the foreign private sector as well in a country aiming at economic development through industrialization.

Although the efforts of FTI and KEIDANREN made the Institute start, the funds are not sufficient to assure its future success. The Institute is looking forward to further contributions from foreign governmental official development assistance, and both the domestic and foreign private sectors.

The first author played the key role in the grand design of the Institute by the request of FTI and KEIDANREN, and later by Thammasat University. He felt that the assignment was a great honor to him. The second author was appointed at the very beginning when the Institute was established. He played the most important role together with the present Director of the Institute, Professor Dr. Prida Wibulswas, for the development of the Institute following mostly the grand design made by the senior author.

The authors conclude this short paper with the wish that the Institute will become one of the good examples of an engineering higher educational institute, on which other developing countries with scarce resources can follow and establish their own centers of excellence necessary for their industrial development.

General References

(1) "Annual Report, Ministry of University Affairs, Thailand", Ministry of University Affairs, Thailand, 1995.
(2) "Undergraduate Bulletin 1994, Thammasat University", Thammasat University, Thailand.
(3) "Faculty of Engineering, Thammasat University", Faculty of Engineering, Thammasat University, Thailand, 1992.