

**COMPUTERIZATION IN THAILAND: STRATEGIES AND PROSPECTS\***

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**Introduction**

Thailand has recently come to be regarded as a “newly industrialized country.” This industrialization could be regarded as having developed side by side with computerization. Computerization can in fact play a very important role in the development of a country, especially one “newly industrialized.” Thus, computerized machines and appliances have by now not only invaded the factory floors of heavy industry, but even the family, the smallest unit in the social system.

The rapid development of Thailand’s electronics industry, of which computers, including PC’s and peripherals and industrial and office automative equipment and software from a part, has supported the hope that computerization will expand to meet an overall economic growth rate that has amounted to 9.5 to 10 % over the past three years. There is a certain optimism that Thailand is about to become Asia’s next economic “dragon”, on a par with Japan, Korea, Taiwan, Hong Kong and Singapore as a successful trading nation. There are problems associated with Thailand’s new industrial dynamism - but these, it is hoped, computerization can solve.

**Objectives**

The objectives of this article can be stated as: (1) to summarize the reasons why computerization is necessary to Thailand, (2) to indicate appropriate ways of adopting and adapting computerized technology, and (3) to suggest effective ways of promoting computerization in Thailand.

**The Present Social and Economic Structure of Thailand**

Since the official launching of Thailand’s Sixth Economic and Social Development Plan (1987 – 1991), the dynamics of the Thai economy has significantly altered the original planning parameters. On August 6, 1990, a special meeting was held between the National Economic and Social Development Board (NESDB) and the various ministries concerned, to discuss guidelines for the Seventh Plan (1992 – 1996) which will become effective on October 1, 1991. Approval was given to three major developmental objectives: (1) to sustain economic development at a level consistent with continuity and stability, (2) to redistribute income and decentralize developmental prosperity to the various regions of the country and (3) to optimise the quality of life and to conserve natural resources and the environment.

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\* Winning article at the 1991 International Computerization Essay Contest organized by the Center of the International Cooperation for Computerization (CICC), Tokyo, Japan. The other winning articles were submitted from India, Indonesia, Jordan, Malaysia and Mexico.

It is hoped that, during the Seventh Plan period, Thailand's economy will become much more internationally oriented, which will require an increase in production efficiency in order to maintain competitiveness on world markets. At the same time, production will be decentralized to new regional economic zones. Nine major fields: agriculture, industry, infrastructure, energy, science and technology and the fiscal, monetary and capital markets, have been designated by NESDB for development.

We have recently witnessed the widespread invasion of the lifestyle of Thai people by various kinds of computerized technology. Thus, from the time we are awakened by a computerized alarm clock and get out of bed, we are confronted by a series of computerized household appliances. We arrive to work at an office that makes use of computerized office automation or are involved with computerized factory machinery. To get back home we depend on computerized vehicles and computerized traffic guidance.

It is widely recognised today that the economic system of any one country has interconnections with that of every other country – a situation which has come to be known as “globalization”. The technology that enables the rapid and smooth flow of communication from office to office, town to town, country to country and continent to continent is none other than computerized technology.

Computerization also plays a paramount role in the business structure of newly industrialized countries, in consequence of the fact that competition in the business arena is very tough. Especially is it true that, in every country, every industrial concern is under strong competition to produce high quality goods, in quantity sufficient to meet the demands of the market, and at acceptable prices. Moreover, the quality and quantity of goods must be quickly adjustable to meet changing market requirements. If a manufacturing concern can meet these conditions its position in the industrial arena is firm and sustainable.

In the past, most industry in developing countries depended on the manual labour force. Though the low cost of labour could lower production costs, other expenses, such as transportation and paper work, could be high. In addition, the quality of goods produced was not standardized and the introduction of an effective system of quality control further increased costs. For these reasons, most large-scale industries have now introduced computerized technology in their factories. Though smaller-scale concerns still tend to depend on the labour force, the continual fall in the price of computers of increasingly effective performance is leading these, equally, to adopt computerization.

The main reason for adopting computer-assisted working procedures has been to increase productivity. There are many stages at which computerization can facilitate production and managerial planning: design, process control, the use of industrial robots, quality control and inspection, packaging and finally accounting.

### **Why Computerization is Needed in Thailand**

Since 1988, the Thai government's financial balance has ceased to show a deficit. At the same time, though in this same year growth rate had increased to 11% , a need to give attention to equity of income distribution has seemed to lead to a gradual decrease. The situation is illustrated in the following tables.

**Table-1 National Government Finance (Baht million)**

YEAR	EXPENDITURE	REVENUE	*BALANCE
1983	166,459	143,635	(22,824)
1984	181,262	148,079	(33,183)
1985	199,548	160,570	(38,978)
1986	203,984	169,834	(34,150)
1987	211,225	202,364	(8,861)
1988	222,133	258,231	36,098
1989	262,913	328,248	65,335

SOURCE: Bank of Thailand

NOTE: (Brackets indicate deficit balance)

**Table-2 Thailand's Economic Development**

GROWTH%	1988#	1989#	1990#	1991#	1992#
GDP	11.0	10.5	7.5	7.0	6.0
Private					
Consumption	9.5	6.5	6.5	6.5	6.5
Government					
Consumption	3.7	8.7	10.0	8.0	8.0
Exports	35.0	31.1	10.8	4.6	7.9
Imports	23.5	34.9	22.7	16.4	14.0
Agriculture	8.6	6.0	2.6	2.0	2.0
Industry	12.5	13.0	9.0	9.0	9.0
Services	11.1	10.0	7.8	8.0	8.0

SOURCE: #Bank of Thailand

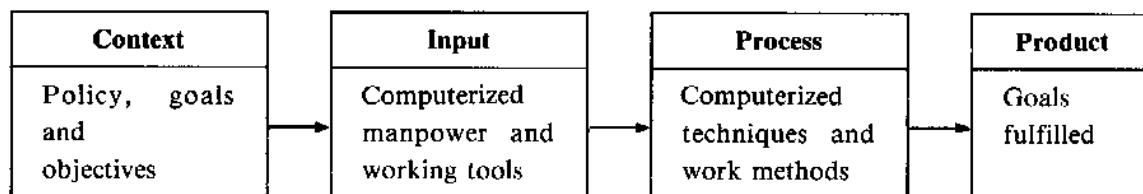
\*Dataquest Bangkok

Following the period of rapid growth and successful financial performance since 1988, Thailand now recognises the need to build up a scientific and technological base, especially in computerized technology, if it is to retain and strengthen its competitive position vis-a-vis the newly industrialized countries of Asia and participate in new world-wide enterprises which will emerge in the 1990's and beyond. Thailand is committed to developing and improving its research and development capability, not only in order to stimulate innovation and cultivate self-reliance, but to more quickly acquire and adapt the latest in modern technology.

Computerization is part of that industrialized, "appropriate" technology that our country must adopt and adjust itself to if its productivity is not to be lower than, and its products more expensive than, those of competing countries. Moreover, computerized technology, in both its hardware and software aspects, can help develop quality at all levels of the economic system.

We may use the CIPP (Context/Input/Process/Product) model to illustrate how computerization can play an important role at each stage in the economy.

**Chart 1 The Importance of Computerization in the National Economic and Social Development Structure**



We can illustrate the importance of the role played by computerization in Thailand under each of the above headings.

Firstly, Context: the formulation of viable policy, goals and objectives requires much data. And the collection and analysis of sufficient data, as for instance in the preparation of a National Economic and Social Development Plan, nowadays means computerization, both hardware and software. The present Sixth Plan (1987-1991) and the forthcoming Seventh Plan (1992-1996) have and do set out policy, goals and objectives for promoting computerization in Thailand. This is suggested, for example, by the list of companies and organizations concerned with computerized technology supported by the Board of Investment (BOI). Numbers of companies or organizations in Thailand concerned with various computer-related applications, according to the Asian Computer Directory 1990, are set out in the table below:

**Table - 3 Companies or Organizations Serving Various Computer-related Applications, Classified According to Fields.**

Serial No.	Field of activity	No. of companies/ organizations
1	Installation	128
2	Additional entries	4
3	Manufacturers	1
4	Computer suppliers	41
5	Peripherals	20
6	Environment	14
7	Media	12
8	Consultancy, software	15
9	Bureaus	4
10	Data preparation	2
11	Training	8
12	Recruitment	2
Total		261

Secondly, Input: most policy-makers, both in the public and private sectors, including the Thai business area, now stress the importance of training their personnel in computer techniques and of computerizing their equipment. Office automation and the use of personal computers have become widely accepted in both public and business circles. However, we have to consider both the merits and demerits of computerization. The country still faces the problems of unemployment and of unequal distribution of income. It seems that, the more we develop, the more it is true that the rich get richer and the poor get poorer. If more attention is not given to this aspect, the effects of the adoption of computerized technology may be negative. So far as the Seventh Plan is concerned, the planners must give more consideration to the appropriateness of introducing computerization at any particular point in the socio-economic structure and set priorities.

Thirdly, as an example of Process, we may cite the recent introduction of computerized equipment onto the factory floors of heavy industry and into the offices of the service sector. In my own view, in the near future, as more computerized machines are introduced into Thailand and manpower is trained in their use, they will come to play a very important role in both the public sector and the Thai business scene. When the public and private sectors alike selectively adopt computerized technology, in the hands of computer-trained personnel, into their working structure, development can be expected to follow rapidly. It is indeed widely held that the slow progress of development in many countries is due to no other reason than the lack of appropriate computerized technology at the successive stages of the CIPP model. The effective introduction of computerized technology however requires personnel well trained in handling it, and in Thailand at present an adequate supply of trained personnel is still lacking.

Fourthly, as to product or output: I would like to forecast that, if a rational and well-considered set of goals and objectives informs the successful implementation of the earlier stages of our scheme here outlined, then computerization will make its contribution to the successful development of Thailand's economy. When one set of goals are attained, others would be set up. As each successive set of goals is achieved, the more naturally will computerized technology assume its place at each stage of the cycle of context, input, process and product.

### **Appropriate Ways of Adopting and Adapting Computerized Technology**

There needs to be a well-prepared National Economic and Social Development Plan for computerization in Thailand. Each stage in the above outlined CIPP scheme, context, input, process and product, needs to be discussed.

Up to date none of these stages has been planned and implemented efficiently and effectively. The reason lies in the lack of research, of reliable facts and figures. Research and development (R&D) management is just as ineffectively organized and implemented. Thailand has neither the human resources nor the budget to train them in the necessary disciplines. The indication clearly is that research and development must first be promoted.

Thailand's weak point is that National Economic and Social Development Plans are still being based on technocratic brain-storming, western theories and research findings obtained in a western context. This lack of local research and of reliable, locally-based statistics must be born in mind by policy-makers trying to adopt and adapt computerization into Thailand.

The fact is, there are many computerized technologies to be considered. The problem is that Thailand still lacks both the budget to purchase equipment and a supply of suitably trained personnel who could be recruited into computer-related jobs.

### **Appropriate Ways of Promoting Computerization in Thailand**

Nowadays many disciplines utilize computers. We may take for example research. In the days before computers, data analysis and statistical calculations consumed much of the time of many research assistants engaged just for that job.

A research worker no longer has this problem. Computers are available to collect, process and calculate statistical data, and packaged programmes such as the Statistical Package for Social Sciences (SPSS) and Statistical Analysis System (SAS) have been devised for the purpose.

As with research, other fields related to national economic and social development have benefited from computerization. Management has its packaged programmes to help managers and administrators do their work smoothly and efficiently.

At the same time, we should be wary of adopting and adapting computerized technology in a way that endangers public welfare and the environment. If we are not aware of this possibility, computerized technology can be used to destroy human beings.

With this consideration in mind, we would aim to promote computerization in fields of positive endeavour in education, business, industry and transport. We would avoid the application of computerization negatively: to weaponry, deforestation and environmental destruction, applications that aim at aggression against the people of other lands as well as the degradation of the quality of life and ethical standards of our own.

### **Computerization in Thailand: Its Problems and Strategies for Solution**

As an approach to the identification, classification, analysis and solution of problems of computerization in Thailand, the Deming Cycle (PDCA = Plan/Do/Check/Action) is suggested. This is one of the Quality Control Cycle techniques which was later adopted, developed and applied into the KAIZEN technique of problem solving.

According to KAIZEN philosophy, where there is no problem, there is no progress. This means that, if a problem is not immediately apparent, one must look for one. When we come to the question of computerization in Thailand, we may approach the situation as follows:

Firstly, at the PLAN stage, one must: (1) identify clearly the existing problems, (2) classify problems according to types, and (3) analyse and determine priorities among them. As examples of problems in the field of computerization we may cite: inadequate knowledge of computerized technology on the part of policy-makers and planners; negative - or conversely, naively overenthusiastic - attitudes towards computerization; lack of sufficient statistical data for decision-making; problems posed by innovation and lack of computer-trained resources.

Secondly, at the DO stage: workers commence to implement plans which have been set up, and supervisors must monitor workers' efficiency and effectiveness in innovative tasks. Problems at this stage may be that workers themselves lack sufficient knowledge of computerized technology or that computerization has not been appropriately applied to the problems in hand.

Thirdly, at the CHECK stage: supervisors must scrutinise how the task has been performed. What obstacles do the workers face? What are the real causes of the problems that arise? A problem with computerization at this stage might be a lack of statistical data against which supervision can grade performance.

Fourthly, at the level of ACTION, attention must be given to standardising performance or implementation of computerized innovations. In this context, ACTION means improvement in the quality of work. It is a principle of the KAIZEN technique that one must never rest satisfied with what one has achieved up to the present, whether as to quality or quantity. One should always strive to improve one's efficiency and effectiveness.

So far as this applies to computerization in Thailand, we can suggest the following measures. Firstly, there need to be seminars and training courses on computer technology for policy-makers, in order to promote a better understanding of this technology. Effective plans for computerization in Thailand cannot be arrived at without adequate knowledge of the subject.

Secondly, training, both locally and abroad, of personnel to be concerned with computerized technology should be intensified. In case of need, top management can hire expertise from abroad - but this should be regarded only as a temporary expedient. A better policy for computerization would encourage innovation within one's own country, not merely dependence on imports from abroad. Otherwise one will always be behind one's competitors and will never stand in the front row of globally-oriented, industrialized countries.

Thirdly, emphasis should be given to computerized techniques in management. There is now much software available to facilitate management. As we have indicated above, this should be introduced circumspectly, so as not to disrupt the employment structure of the country.

Fourthly, one should never remain satisfied with goals or objectives fulfilled. In KAIZEN philosophy there is never a place free from problems - there is always another problem waiting to be solved. One simply sets up the Deming Cycle again to identify and overcome it. This is the kind of strategy for development of a newly industrialized country that we propose.

## **Summary and Suggestions**

Computerized technology should not be imported into Thailand too hastily. Innovation should be stepwise, with a measure of careful selection and introduction into appropriate fields of socio-economic development.

Thailand must not be content merely to import computerized technology from elsewhere, but must develop its own. Dependence on import alone is of no help towards Thailand's status as a newly industrialized country. Thailand must invest in the computer field to become competitive, not only with other newly industrialized, but with long-industrialized countries. Without competition there can be no motivation to come out eventually in the front row of advanced industrial nations.

Thailand has abundant natural resources and a long historical background of which it can be justly proud. The problem of Thailand's socio-economic development is not one of natural or human resources, but of development administration. It is here where computerized technology can especially help. I strongly believe that Thailand has the opportunity now, by adopting, adapting and creating its own appropriate computerized technology, to greatly speed and facilitate its social and economic development in the future.

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