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Executive Summary
This study concentrates on the problems of developing information technology (IT) in the cultural context of the Kingdom of Thailand. Having been spared colonization, Thailand has been able to maintain a tight hold on its culture, beliefs, social ideology, and language. While beneficial in many respects, this cultural conservation can also be seen as a barrier to the necessary confluence of Thai culture and modern information technologies. The sources of information used in this study included printed materials and corporate documents in both English and Thai languages. In addition, interviews and questionnaires were used to collect data from employees of all ranks, in public and private sectors in Thailand regarding problems and progress of IT implementation. The first problem identified was the lack of computer skills. This problem can be overcome by offering and enhancing IT courses in public and private schools and by making the public aware of the advantages of modern IT. The second problem, the language barrier, and the third problem, limited resources, are more challenging. As a developing country, Thai companies and the Thai government will need to allocate a larger budget for IT—due to the relatively high cost of IT and the current shortage of funds. Finally, the Thai government must be aware that, in order to enhance the development of IT, copyright laws must be enforced. These problems are directly related to the Thai culture, and prescriptions for progress toward solutions must consider cultural factors.

Introduction
There are countless theories, from disciplines such as anthropology and economics, that attempt to explain why the expansion in use of modern information technologies (IT) has not been equally distributed among all the nation states around the globe. Clearly, some nations are developed, most are still developing, and a fortunate few have been able to attain the status of Newly Industrialized Countries (NICs). The people in these nations differ in their attitudes, their way of life, their pattern of living, and their reactions to technology. This paper considers culture as a factor in the technological advancement of Thailand, a developing country. By being spared colonization, Thailand has been able to maintain a tight hold on culture, beliefs, social ideology, and language. While beneficial in many respects, this cultural conservation can also be seen in as a barrier to the necessary confluence of Thai culture and modern information technologies.

The development of IT in Thailand is relatively new, and is only at a relatively nascent stage when compared with some neighboring Southeast Asian countries such as Singapore and Taiwan. Nevertheless, Ketudat (1990) contends that as more people in Thailand are provided convenient access to important data, information, and knowledge, the total capacity of Thai society to create new, useful knowledge will increase. One key aspect of the Thai culture is a long-standing history of modernization sponsored by its monarchs, rather than being imposed by foreigners. Although Thailand has never been colonized, the traditional rulers were always eager to introduce new technologies and inventions into Thai society. Such an example can be seen during the middle of the 17th century when King Narai imported telescopes and ordered an observatory to be built for astronomical use. The modern monarchs contributed much to create and mold modern social values and attitudes of the Thai people to the extent that they became tolerant and were capable of rationalizing paradoxical situations (Cady 1994)

In present-day Thailand, the people have an elected government, with a parliament and a constitutional monarchy (Haas 1979). Along with this democratic government, the Thai economy is a capitalistic one. Business firms can operate freely under this system, and as Thai companies are very competitive, new

technologies are frequently introduced. This is an auspicious note for the introduction of IT into the Thai business world. Although the application of IT is still in its infancy, it is expected to expand rapidly as more companies find it to be useful. Thus, one finds that various companies and government agencies have plans to introduce IT in their next stage of development. One such example is that Thailand's Research Council has decided to pool its accumulated data on Thai researchers into one system—the Internet. Examples such as these demonstrate the Thai willingness to accept new concepts, knowledge, and technologies. Therefore, it follows that when IT is introduced further into the Thai business world, there is likely to be little resistance based on the newness, but other factors may inhibit acceptance.

Information Technology Inhibitors

This study concentrates on the problems of developing information technology (IT) in Thailand. The sources of information used in this extensive research are printed materials and corporate documents in both English and Thai. For example, the data below are taken from a survey made by Waltham (1994), a journalist working for the *Bangkok Post*. He was trying to find out the problems faced by Thai journalists who cover information technology for newspapers and magazines. There were twenty IT reporters who participated in this survey. While only 40% of the journalists reported difficulty with the English language, 70% of journalists replied that the comprehension of technical IT terms was a "big problem." The explanation to these contrasting answers is that in the general comprehension of the language, the *Bangkok Post* has to make sure that its employees know enough English, forgetting that when they are assigned to a specific job like covering the IT news, the employees need special training. It must be noted also that if technical terms are a problem for journalists, employees of companies and government agencies will also face the same problem. Other relevant findings include: personal computer ownership (only 20%) and lack of formal training (80% never).

Interviews and questionnaires were used in this study to collect data from employees of all ranks, in both the public and private sectors in Thailand. Prior to this primary data collection effort, secondary sources were used, which suggested problems in four categories: lack of computer skills, language barrier, limited resources, and copyright laws. These problems are indirectly related to the Thai culture, and prescriptions for progress toward solutions must consider this factor.

Lack of Computer Skills

Charuvast and Dasanyavaja (1994) have suggested that the Thai IT industry is expected to expand to about 1.1 percent of the country's gross national product, or 77 billion baht, by the year 2000. This will require an IT-skilled work force of about 37,000 computer engineers. Currently, Thailand has only 9,600 engineers, and the country's university system can produce only 2,000 new engineers per year. This means that by the year 2000, there will be a shortage of 15,000 computer engineers. To solve this problem, Thailand should focus on colleges and universities that are working to increase the quality and quantity of computer personnel. Additional computer courses in vocational technical schools and college will be necessary. Moreover, Rathamarit (1994) suggests, as a long term solution, that it is important to improve computer literacy by introducing computer courses at the primary-school level. Sufficient incentives should be provided for computer personnel to teach these courses. The curriculum and core courses in universities should also be related to new developments in computer technology.

A more serious problem is that the Thai computer industry lacks experts who are over 30 years of age, with enough experience to provide leadership and direction. This is especially important in Thai companies, which have well-established patterns and norms for working together in their organizations. Dhiravegin (1978) observed that employees need to act with respect, believe in, and obey their bosses, if they want to be promoted or show any career advancement. They learn how to stand or sit properly when talking and listening to his superiors, normally with their back bent a little with two palms cupped together and suspended at the belly level. This practice may have negative effects on the use of IT because it will not allow experienced IT professionals (who tend to be younger) to serve in higher management positions. Goodman (1991) reminds us that in Thai society, younger people must show respect to older people, or those having a higher social rank. As a result, the computer industry will not have enough experienced thinkers to steer the country in the proper directions for good IT development.

Another way to solve the country's lack of skilled computer people, such as programmers and operators, is for the government to rely on private computer schools. There are many kinds of private schools that can help the state schools to solve the problem of shortage of training personnel. Most of these private computer schools teach basic computer knowledge and use business computer software applications such as word processing and spreadsheets on personal computers (Sutharoj and Pracharoen 1994).

To enhance the development of IT, Sripratum University established an IT faculty in 1992. This faculty teaches mostly computer related subjects. It also has established a center for technology in education, which emphasizes using computers in teaching production, such as designing and working in documents, typing, and material graphics (Kungton 1994). The director of Mahidon University's computer center said that in developing IT in Thailand there is still a lack of budget, facilities, and staff. Compared with universities such as M.I.T. and Stanford in the United States, which spend 10% of their annual budget on computer activities, Thai universities spend only 0.6%. (Charuvast, and Dasaneyavaja 1994).

Language Barrier
Thailand is the only Southeast Asian country where most of the people speak and read only their native language (Hass 1979). The Thai people study English in middle school, but most can only read simple English words. While keyboards are available with Thai characters, programming commands and in-depth work with computers demands fluency in the English language (Intralakhamhaeng 1994). The Thai language, like Chinese, is tonal in character, that is, words that differ in meanings may be identical in sound except for the fundamental pitch of the voice. Thai is also similar structurally to Chinese, but has a different vocabulary and different inflectional systems. Because of the above-mentioned uniqueness, the Thais have become a bit nationalistic in the use of their own language, and naturally try to preserve the language. The medium of instruction in schools at all levels is Thai. In a way it has become a negative influence for acceptance and acquisition of modern ideas and technologies. Because the Thai language is so influential, many people cannot comprehend English well enough to be able to acquire new ideas and knowledge related to IT.

Limited Resources
In developing countries like Thailand, computer equipment and accessories tend to be far more expensive than in more developed countries. In addition, there is also a high cost in the establishing, adapting, developing, and maintaining IT systems. The overhead cost can also double as the overall sale is rather limited. Finally, hiring expert employees can be rather costly. Therefore, only larger business organizations or government agencies can afford these high costs. Although, the problem mentioned is an economic one, it is indirectly related to a cultural aspect. Thailand's development status is a result of her conservatism, therefore, the government needs to spend more money to overcome that during the process of integrating IT into society.

Of course, multinational firms operating in Thailand have ample resources for IT investment. This study will not emphasize foreign based companies, such as American or Japanese companies that have established branches in Thailand. These companies have long introduced IT into their organizations, nearly all of them either employ American or Japanese nationals to control the top and middle level management positions. Therefore, the integration of culture with modern technology is not a problem for them.

Thai government agencies, generally, were the first Thai organizations that introduced the use of IT into their operations. Even so, the government does not have enough money to support IT investment adequately. In 1994, the National Budget Bureau cut the proposed budget for IT training from 35 million Baht to 7 million Baht. The proposal is related to the plan of training around 50,000 government employees. However, with only 7 million Baht available, it will be able to train only 10,000 people instead (Boonruang 1994). The government has not yet approved the 809 million Baht budget requested by the National Information Technology Committee for the purchasing of IT for public offices. The National Budget Bureau had not yet distributed the granted money because a number of agencies have failed to submit proposals on how much they need IT in 1995. The plan of having a minimum level of IT in all public offices will be delayed and will cause a further setback in other plans for pushing IT use among government agencies.

The Thai government has planned to make a special tax break of up to 50% to companies that do research and development (R&D) in the software industry. This is encouraging, since R&D in software will enhance the expansion of the software industry in Thailand. The goal of the government is to promote R&D in the private sector. Also, companies that work in R&D will be able to add 50% to their actual R&D expenses, which can provide another significant reduction in the total amount of taxes. Therefore, for every 100 Baht that is spent on R&D, the company can claim 150 Baht in expenses (Charuvastr, and Dasaneyavaja 1994). This is one of the many ways the government implements an order to increase the expansion of the IT investment in private companies and organizations.

Copyright Laws
Generally, copyright law in Southeast Asia is not considered as important as in North America or Europe. Altbach (1988) explains that third world nations have traditionally been critical of copyrights, correctly pointing out that it is a Western concept that was created to maintain a monopoly over the production and distribution of knowledge and knowledge-based products. Copyrights, historically were not part of the Asian cultural tradition. To some extent, copyrights were imposed on Asian countries by their major Western trading partners, under threat of trade sanctions and other legal actions.

Under the Thai trading law, the only link to the protection of data is a contractual obligation between employees and employers or contractors and subcontractors (Asian Pacific, 1993). The main idea of copyright Law is that owners of software will have an exclusive right to copy, to improve for selling, to show, or to rent. This law enhances technology development in Thai society by protecting software from unlawful study, analysis and research. The copyright law can have many positive effects on Thai society. Thutchai Supaponsiri (1994) pointed out the advantage of copyrights. First, it promotes international trading. Presently, some countries, particularly the United States, do not want to have commercial relations with Thailand because they are afraid of the imitation and copying of their products. In Thailand, there exists a lot of imitation of foreign goods, such as fake Gucci handbags, Polo shirts, Rolex watches, and software. After the copyright law is created, it will benefit the IT business in Thailand. Thailand can gain more foreign investments from the introduction of new technology. It can also expand the software market about 50% to 100% per year. In addition, when there are a lot of companies selling software, end users will have a larger variety to choose from and will be able to buy software at a good price. The copyright law will help decrease software prices, increase the amount of computer software being sold, and will promote a free market for computer devices and services in Thailand (Supaponsiri 1994).

The copyright law can have advantages as well as disadvantages for Thailand. The disadvantage of having a copyright law is that a lot of software needs to be imported from abroad, and therefore a lot of money will be spent on software acquisition. Furthermore, the copyright law can have an impact on the Thai society that will create a great change. The public as well as attorneys and judges and all other concerned parties will have to be knowledgeable of this new law. When it becomes a law, the court needs to set up an Intellectual Property (IP) court. The IP court will consist of two judges and a supplemental judge who will each be an expert in their field, such as software, trademarks, and bio-chemistry (Dasaneyavaja 1994).

This study of IT use in Thai companies focused on Bangkok, the capital of Thailand. Questionnaires were sent to both private and public organizations located there. One hundred responses to the questionnaire were received from Thai companies, government agencies, and educational institutions. Additional data came from three telephone interviews, one from each key sector: government, education, and industry. Supporting research in the United States was done at the Royal Thai Embassy, the Library of Congress, and university libraries.

IT Use in Three Sectors

Government
The Royal Aid-De-Camp Department is a military department that serves the king and the royal family. This agency has had computers for two years. Their goals in using IT are to reduce the expenses of the office and to work on the department's documents. Although interested, employees lack of computer knowledge makes them afraid of the technology. The computers in this department can now be used in

place of general typing. As for secret documents, employees will go back to using typewriters. Even though computers have passwords that protect secret documents, employees do not know how to use passwords and they do not trust them. Also, Computers are very expensive for people to buy. The maintenance and materials are expensive. Furthermore, in Thailand there is no return or refund policy. Once a person buys a product it can not be returned.

The next problem is accepting the new technology by key people in organization. Some employees are afraid to accept the new technology. These concerns are rooted in a lack of appropriate training. Trainers only teach how to turn on the computer, the meaning of some terms, and other basic computer ideas. Additional training is needed, leaving most users confused. Another problem of using a computer in this office is that top management is conservative and will not accept this new technology. For example, this department is a government office, therefore, every piece of paper needs to have the logo of the department. The computer can create this logo in three sizes: small, medium, and large. However, when employees submit work done on computers, some top management will not accept it. They complain about the kind of paper, and the logo that is not the same as the original. This is a problem where top management comes from an older generation and does not want any change. They believe only in the way they used to work. Consequently, people will avoid using computers unless forced to do so. In addition, some software programs in this department are still not effective for tasks assigned, and as a result employees sometimes have problems in using such software (Intralakhamhaeng 1994).

Private Industry

Matrix Telecommunications, a cellular telephone company, is a joint private venture company between Australia and Thailand. While Thailand is responsible for setting up the system and its management, Australia invested in the information and new technology of cellular phones. The company provides services receiving and sending information by ASIASAT satellite. The computer system is the same one the U.S. military used to communicate during Desert Storm (Jarutsriwisit 1994).

This company uses computers in every one of its departments (financial, accounting, personnel, storage, billing on air, customer service, marketing, and sales). It does not have any problem using IT or in establishing IT because it has a large budget; and it has the most modern technology available. However, minor problems with personnel are easily overcome through training and higher wages. These are real advantages for private companies in contrast to government agencies in Thailand (Jarutsriwisit 1994).

Education

The main problem using IT at Rachamonkon Technology Institution is that the computers between each of the departments are not networked. Each department has its own computers and information cannot be shared effectively. They are currently trying to solve this problem by hiring computer engineers from a computer company in the region. However, the college is facing problems with the private computer company selected for this purpose (Srisan 1994).

A Concluding Analysis

The questionnaire data (in Appendix A) provide empirical support for perceptions that both management and employees are satisfied and quite ready to accept IT systems. Although there were some negative responses, the majority found that individuals and organizations can definitely benefit from the application of IT. As Thailand continues the confluence of IT and its culture, it faces many problems. Perhaps due to the dynamic forces of globalization, many of the problems are from a perception of a need to rush to acquire and integrate this new technology into all sectors, including government, education and industry. Such broad, sweeping efforts are doomed to fail as a result of problems such as the lack of computer skills and knowledge, limited resources, language differences and the universal resistance to change.

From this study, it appears that Thailand is well positioned to establish the basic foundation for further IT development. Some experts (e.g., Forester, 1985) have suggested that, developing countries like Thailand can obtain immense benefits from technology if it is applied in the context of a development strategy. This calls for more active policy-making on the part of the government. For example, the

government can create laws especially designed to accommodate IT, or introduce and establish computer courses in both public and private schools.

This preliminary study was a necessary first step but is not sufficient for acquiring an understanding of the problems of developing information technology (IT) in the cultural context of the Kingdom of Thailand. A continuation of this work is already underway, which includes a search for an appropriate research framework to support more detailed analysis. At that time, the questionnaire data will be compared and contrasted with other related findings.

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Appendix A: Questionnaire Data

	Number of Responses	Percent
1. Rank or Position		
a. Top level management	10	27%
b. Middle level	31	73%
c. Senior Operator	40	69%
d. Junior Operator	19	31%

	Management	Operator
2. Gender		
a. Male	37%	47%
b. Female	63%	53%
3. Age		
a. 60-45	8%	0%
b. 44-35	12%	14%
c. 34-25	37%	58%
d. 24-18	43%	28%
4. Highest Level of Education Attained		
a. Ph.D.	5%	0%
b. Master's	61%	10%
c. Bachelor's	32%	56%
d. Higher Vocational	0%	14%
e. Lower Vocational	0%	19%
f. High school	0%	2%
5. Number of Working Years		
a. 35-40	0%	0%
b. 30-34	0%	2%
c. 25-29	17%	2%
d. 20-24	15%	0%
e. 15-19	19%	3%
f. 10-14	22%	8%
g. 5-9	22%	29%
h. 1-4	5%	56%
6. Number of years your Organization has been using IT		
a. 13-15	5%	2%
b. 10-12	17%	0%
c. 7-9	22%	5%
d. 4-6	34%	34%
e. 1-3	15%	36%

7. Number of Employees: 100-500 (26%) 50-99 (29%) 40-49 (7%) 30-39 (5%) 20-29 (5%) 5-19 (17%)

8. Number of the IT users: a. 60-79 (10%) b. 40-59 (5%) c. 20-39 (29%) d. 10-19 (12%) e. 1-9 (39%)

9. What major problems can be solved by IT?	
a. Work volume	78%
b. Slow work	73%
c. Loss	10%
d. Poor customer service	41%
e. Difficult organizational system planning	46%
f. Difficult and confused strategic planning	32%

10. What new problems has IT caused?
- a. Confusion — 17%
- b. Slow work output — 20%
- c. Reorganizing of structure or system — 54%
- d. Expenses increase — 63%
- e. Increase employee — 34%
- f. Lack of supportive communication system — 34%
- g. Lack of experienced personnel — 78%
- h. Difficulty in equipment acquisition — 27%

11. The application of IT has provided what benefits?

	Management	Operators
a. Can work smoothly and easily	54%	64%
b. Increase work volume	78%	51%
c. No working repetition	39%	42%
d. Career advancement	34%	25%
e. New technique acquisition	100%	
f. Developing new idea	63%	47%
g. Good working coordination	32%	
h. More interest in work	41%	30%

12. How well do you accept the application of IT?

	Management	Operators
a. Much	51%	54%
b. Medium	46%	44%
c. Little	3%	2%
d. Refuse to Accept	0%	0%

13. Degree of your IT expansion plan
- a. Much 61%   b. Medium 34%   c. Small 2%   d. No plan 2%

14. Before the application if IT, what negative feeling did you have towards the system?
- a. Not wanting to use — 2%
- b. Believed it was too difficult — 42%
- c. Work volume would be increased — 24%
- f. Working would not convenience — 19%
- g. Apathetic to the system — 40%
- h. Not believe that the organization would benefit — 3%

15. Before the application of IT, what positive feelings did you have towards the system?
- a. Able to learn the new techniques — 86%
- b. Believe the organization would benefit — 69%
- c. Able to get more work done — 44%
- d. Not having to repeat the some work — 46%
- e. Work system would become more interesting — 53%
- f. Positive effects on career advancement — 44%

16. Do you think IT does you any harm?
- a. The system is difficult and confusing — 15%
- b. Time consumed for learning the technique — 36%
- c. Could cause damage to the system — 8%
- d. Might be punished or penalized — 7%
- e. Increase in work volume — 34%
- f. Negative effect on health — 51%

17. How does IT benefit your organization?
- a. Able to increase work volume — 54%
- b. Get work done faster — 49%
- c. More profits earned — 7%
- d. Better customer services — 31%
- e. Better work system planning — 63%
- f. Successful strategic planning — 32%