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APPENDICES

APPENDIX A
QUESTIONNAIRE FORM

QuestionnaireDate / / 2544

Your Name _____ Position _____

Company Name _____

Company Address _____

Type of product _____

Directions: Please read each question carefully. Answer the question by filling in the appropriate box

by using or filling in the blank answer.

1. Do you have another branch or not?

[] There are one factory no branch.

[] There are some branch that located at _____

(Province)

2. Would you look at each choice and answer which is the important reason for you to making decision for plant location selection? (Can select more than one choice)

[] You have own land at here.

[] Availability and capacity of transportation facilities.

[] Availability and capacity of utilities (electricity, water supply, telephone)

[] Nearness the labour force and low of labour cost.

[] Nearness to the market and easily to distribute product to the customer.

[] Nearness to the raw material and easily to transport it into factory.

[] This site is promote from the government (Industrial location).

[] Low of land cost.

[] Low of construction cost

[] Others _____

3. From question 2, please select or assign the relative priority of importance for factors influencing your choice to making decision for plant location selection about five answers.

(Assign 5 = very important, 4 = important, 3 = neutral, 2 = poor, and 1 = very poor)

- You have own land at here.
- Availability and capacity of transportation facilities.
- Availability and capacity of utilities (electricity, water supply, telephone)
- Neanness the labour force and low of labour cost.
- Neanness to the market and easily to distribute product to the customer.
- Neanness to the raw material and easily to transport it into factory.
- This site is promote from the government (Industrial location).
- Low of land cost.
- Low of construction cost
- Others _____

4. Which is important of your raw material type that used in production.

4.1 _____ location source _____

(Supplier name and its location)

4.2 _____ location source _____

(Supplier name and its location)

4.3 _____ location source _____

(Supplier name and its location)

5. What is transportation type that you select to distribute the product or raw material in and outside company? (Can select more than one choice)

Air transportation.

Truck transportation.

Water transportation

Train transportation.

6. What is your market place? (Can select more than one choice)

located at same factory location.

located at closely province.

located at Bangkok.

located at aboard.

7. What is most degree of employee education?

Primary education

Lower secondary education (M 1- M3)

Upper secondary education (M 4 – M6)

Bachelor degree

More than Bachelor

8. Which you would like to expand or change your plant location in the future?

[] Yes, I will planning to expand or change plant location to other site.

[] No, I do not want to expand or change plant location.

This questionnaire is one part of study for doing thesis of my master degree in the topic Development of a decision support system for plant location selection: case study plastic industry and concrete industry. The data will be collected secretly and using for doing the thesis. Please answer each question and sent it as address as following.

Thank you very much for your participate.

(Ms. Juthamas Choomlucksana)

APPENDIX B
PROVINCES INFORMATION

In this research, we are collecting a province information about 18 provinces in six regions of Thailand (Central Region, Northeastern Region, Northern Region, Western Region, Eastern Region and Southern Region). It helps us to know each province information that relates to any factor to making decision for plant location selection such as land cost, wage rate, in each province. And it allows us to assign and provide the score of each factor to find the best or suitable plant location when compare to other location in Thailand. After collected information, we will analyze all information by using location factor rating evaluation technique to find the suitable plant location. It is benefit both for evaluate a given alternative and for compare alternatives. This technique that help us to compare from one location to other location by using factors.

Any information that influencing for plant location selection can be got from many sources that show as below:

- The National Statistical Office.
- Office of Electricity Authority in each province.
- Department of Local Administration, Ministry of Interior.
- National Statistical Office, Office of the Prime Minister.
- Provincial Office of Waterworks Authority.
- Provincial Land Office.
- Central Valuation Authority.
- Ministry of Industry.
- Industrial Estate Authority of Thailand.
- BOI Investment Organization.
- Questionnaires.
- Text book (it will provides a list of textbook in reference page)

1. Central Region : Samut Prakabm, Nakhon Pathom, Samut Sakhon
 2. Eastern Region: Chonburi, Rayong, Trat, Chachoengsao.
 3. Western Region : Samut Songkhram
 4. Northern Region : Chiang Mai, Lampang, Lamphun, Chiang Rai.
 5. Northeastern Region : Nakhon Ratchasima, Ubon Ratchathani, Khon Kaen, Udon Thani,
- Southern Region : Pattani, Songkhla, Nakhon Si Thammarat, Phuket, Surat Thani, Trang,

For this research, we are shows the example of provinces information about one province in Region.

Eastern Region¹⁹

Chonburi

ChonBuri province is located on the eastern seacoast of Gulf of Thailand, about 80 kilometers from Bangkok along Bang-Na - Trad Highway. With the total land areas of 4,363 square kilometers or 2,985,107 rai, the province has its temtory close to the following nearby provinces:

Gross Provincial Product

Chonburi province is one of the major provinces for both regional and national economic levels. The gross eastern regional product (GRP) was worth of about 533,281 million Baht or 43.06% of GRP and 4.86% of Thailand gross domestic product (GDP) dunnig 1998. It is expected that Chonburi province will increase higher role in the economic system because the average growth of its GRP increased at the rate of 12.43% (CAGR) per year during 1981-1998 compared with the

eastern region, which maintained an average GPP growth rate of 13.49% (CAGR), or about the same rate.

Transportation

The outstanding point of transportation in ChonBuri province is that the province maintains the transportation systems that are thorough and convenient in every way, not only land transportation but also waterway and airway transportation. Besides, ChonBuri province maintains pipeline transportation for liquid goods such as oil and chemicals. Although at present land transportation is the most common one of Chonburi province, waterway and airway transportation will maintain high potentiality in the future if receiving supports from state sector.

1) Land Transportation Land transportation of Chonburi province includes rail and road transportation as follows:

Rail Transportation The rail transportation to Chonburi province uses the eastern rail route, starting from Bangkok - Chachoengsao province - Si Racha district. When the government planned on the Eastern Seaboard Development Project, State Railway Authority of Thailand then started the construction of this railroad to support cargo transportation from Sattahip deep seaport, Laem Chabang deep seaport, and Laem Chabang Industrial Estate, as well as the cargo transportation from Mabtaphut deep seaport and Mabtaphut Industrial Estate, with 3 projects of railroad construction as follows : The route Chachoengsao-Sattahip is the railroad along the eastern seaboard, starting from Chachoengsao province through Phan Thong, Si Racha, Bang Lamung districts to Sattahip deep seaport, with the total distance of 134 kilometers. The route Si Racha-Laem Chabang is the railroad separated from the route Chachoengsao-Sattahip at Si Racha district heading for Laem Chabang deep seaport and Laem Chabang Industrial Estate, with the total distance of 9.3 kilometers. The route Sattahip-Mabtaphut is the railroad separated from the route Chachoengsao-Sattahip at Kao Cheejan Station (before Pluta-Luang Station about 4 kilometers)

through Mabthaphut Industrial Estate to Mabthaphut deep seaport with the total distance of 24.07 kilometers

2) **Automobile Transportation** It is the most important transportation system of Chonburi province, which becomes more and more popular. The network is under responsibility of Highway Department and Construction Works Department. Chonburi province maintains the total road network of 759.12 kilometers after the construction is completed, or 385.06 kilometers of which will be the inter-highways and the other 374.06 kilometers will be provincial highways.

There are 6 inter-highways including: **Highway Number 3 (Sukhumvit)** - It is the first highway of the eastern part through Muang district of Chonburi province, as well as Si Racha, Bang Lamung and Sattahip districts to Rayong province, with the total distance of 146.52 kilometers in Chonburi province. **Highway Number 36** - It is the route separated from the Highway Number 3 at Bang Lamung district of Chonburi province merging with Highway Number 3 in Muang district of Rayong province which will link Laem Chabang main industrial areas and Pattaya City with Laem Chabang and Mabthaphut industrial areas as well as Muang district of Rayong province, with the total distance of 52 kilometers in Chonburi province. **Highway Number 315 (Sukprayoon)** - It starts from Muang district of Chonburi province through Phanat Nikhom district to Muang district of Chachoengsao province with the total distance of 22.32 kilometers in Chonburi province.

Highway Number 331 (Strategic road) - It will pass Chonburi province at Phanat Nikhom-Bo Thong-Ban Bueng-Si Racha-Bang Lamung districts to Sattahip district with the total distance of 62.62 kilometers. **Highway Number 332** - It starts from Highway Number 3 at Sattahip district and intersects Highway Number 331 before merging to Highway Number 3 again at Ban Chang district of Rayong province. It is also the bypass of Sattahip subdistrict, with the total distance of 13.00 kilometers.

Highway Number 334 - It is the bypass to reduce the distance to Rayong province, Chanthaburi province and Trad province, which starts from Muang district of Chonburi province through Ban

Bueng-Nong Yai districts to Klaeng district of Rayong province with the total distance of 88.60 kilometers.

Waterway Transportation Chonburi province maintains proper geographic feature that supports waterway or sea transportation. The eastern part of the province is the long range of seacoasts with the length of many hundreds kilometers. Some seacoasts maintain beautiful beaches; meanwhile, others are suitable for seaports. Therefore, there are various seaports to support fishery and cargo ships along the seacoasts of the province, which are not only private seaports but also commercial seaports for cargo transportation to overseas or along the eastern seacoasts to Bangkok ports. The main seaports in the areas of Si Racha district, which are of the private firms, include oil transportation seaports of Thai Oil Refinery Co., Ltd., Esso Co., Ltd. and Petroleum Authority of Thailand to support the transportation of crude oil and refined oil as well as cassavas. Besides, there are Padaeng seaport of Si Racha Harbor Co., Ltd. to mainly support metal or steel transportation.

3) **Airway Transportation** There are 2 airports in Chonburi province: Bang Pra Training Airfield and U-Tapao Airport. Bang Pra Training Airfield is located in Si Racha district. It is the training airfield for small airplanes, which does not open for general commercial transportation services. Meanwhile, U-Tapao Airport is located in the areas of 2 provinces including Sattahip district of Chonburi province and Banchang district of Rayong province, and it is now under the responsibility of the Navy force due to its close to the areas of the navy. As a result, it is not convenient for U-Tapao Airport to be beneficially used.

However, it still can provide airway transportation service to the public in Chonburi province. It is also only 45 kilometers from Muang Pattaya, and acts as a commercial airport, with Bangkok Airway opening passenger transportation service to Samui Island. In the meantime, there is a cooperation between state and private sectors to hurriedly develop U-Tapao Airport for full type of a commercial airport by dividing the airport areas into 2 parts : the eastern side with the lands of 6,000 rai for commercial purposes and the western side under the responsibility of the Navy Force. In the

future, the airway transportation in Chonburi province will be more convenient when the second Bangkok International Airport II or Nong-Ngu-Hao Airport, which is in Bangplee district of Samut Prakarn province and about 35-40 kilometers from Chonburi province with less than half an hour drive, is completed.

Telephone The telecommunication of Chonburi province is under responsibility of Telephone Organization of Thailand and Communication Authority of Thailand. The Telephone Organization of Thailand is responsible for the services of telephone systems under wireless data communication and general telephone systems within the country. Meanwhile, the Communication Authority of Thailand will be responsible for international long distance calls. The mobile phones are under the responsibility of both the Telephone Organization of Thailand and the Communication Authority of Thailand. Chonburi province maintains the total of 35 telephone networks. During 1999, there were 104,784 phone numbers in the province with the overall users of 85,521 persons, or the ratio of 81.62%, which was an increase from 41,712 numbers with 32,513 users under the ratio of 77.95% in the year 1980.

Telegraph There are the total of 20 post offices in different districts including Muang, Phanat Nikhom, Ban Bueng, Si Racha, Bang Lamung, Phan Thong, Sattahip, Nong Yai, Boa Thong districts, Sichang Island, and Ko Chan minor districts. The district with the most post & telegraph offices is Si Racha district, or the total of 6 offices, followed by Sattahip district with the total of 5 offices.

Electricity Provincial Electricity Authority of Chonburi is responsible for electricity supply to the people in every district, except Sattahip district, which is under the responsibility of the Navy Force. Chonburi province maintains the total of 6 Electricity Authority offices, 4 Transmission stations, with the total supply units of 3,430,377,267 kilowatts/hour for the overall users of 270,509 persons in every district, except Sattahip district. Beside the electricity supply from Electricity Generating Authority of Thailand, the Provincial Electricity Authority also maintains diesel machine plants on Sichang and Lan Islands for the supplement of electricity supply and production. During 1999, the numbers of

electricity users in Chonburi province were increased; meanwhile, the amounts of electricity were decreased. According to the statistics of Provincial Electricity Authority Region 2, Central Part, the numbers of electricity users were increased from 258,038 persons in 1998 to 270,509 persons in 1999; meanwhile, the amounts of electricity were decreased from 3,721,296,517 kilowatts/hour to 3,430,377,267 kilowatts/hour.

Water Works At present, the waterworks system in Chonburi province is under responsibility of many units including : Nong Yai Municipal Waterworks which is responsible for water supply to Nong Yai district The Navy Force which is responsible for water supply to Sattahip district Ko Sichang minor district which gets fresh water from the rain - The government has built the total of 46 water containers. If the water is not enough, it can be asked for from fresh water transport ships/boats in Si Racha district. Besides, there are other sources of fresh water such as in the areas of ancient royal palace with the reservoir under the capacity size of 90,000 cubic meters. Provincial Water Works which is responsible for water supply to the rest of districts - However, due to very little natural water sources as well as inappropriate geology characteristics to keep underground water, the crude water sources for tapped water production are mainly the man made reservoirs to keep rain water and running water which is changeable in accordance with the amounts of rains to the ground.

Number of Population

The total populations of Chonburi province in 1999 were 1,059,756 persons: 533,981 males and 525,775 females. When considering the population numbers in each district, it was found that Muang district maintained the highest population, followed by Si Racha and Bang Lamung districts, respectively. If considering the intensity of population per area, it was found that the area with the highest intensity of population is Muang district, or 1,084.49 persons/square kilometers, with an average intensity of about 242.90 persons/square kilometers. Also, most population would mainly stayed in the municipal areas.

Employment and Unemployment

In 1999, the workforce in Chonburi province was increased from 547,034 persons to 564,034 persons because the employment was increased after the decrease during 1997 from 564,129 persons the year before to 546,860 persons, which was caused by the economic crisis. In 1998, the employment was a little increased from 546,860 persons the year before to 547,34 persons.

Minimum Wages

Office of the Wages Commission, Ministry of Labor and Social Welfare has announced new minimum wages, effective on January 1, 2001, of 143 Baht/day, or an increase from 140 Baht/day in 1998.

Overall Real Estate Prices

The real estate industry has been sluggish since 1991 due to the warning by Bank of Thailand about the careful provision of credit loans among commercial banks, together with the Persian Gulf War crisis and the political unrest in the country. As a result, the real estate businesses have been continually sluggish until the year 1992. Some of those businesses had to face with the problem of over supplies. As well, other projects like industrial estates, office buildings, home buildings, shopping centers and golf courts were very expensive. Then, in 1996, the government announced the policy of free bath floating, which had great effects to the production of construction materials within the country as well as the purchase power among consumers. Finally, there has been the continual crisis within real estate industry until the year 2000. The appraisal prices of housing and building structures for the registered rights and legal acts in real estate businesses, which Subcommittee of Chonburi province has imposed and received an approval from Committee for Capital Fund Pricing Appraisal are as follows:

TABLE A-1 LAND APPRAISAL		
District	Minimum	Maximum
Muang district		
1. Rayong municipal	3,00	70,000
2. Muang Pattaya	2,000	100,000
3. Non-municipal	200	40,000
Si Racha district		
1. Si Racha municipal	4,000	70,000
2. Non-municipal	200	20,000
Phanat Nikhom district		
1. Phanat Nikhom Municipal	1,000	35,000
2. Non-municipal	100	4,500
Nong Yai district	125	1,250
Bo Thong district	100	4,000
Phan Thong district	125	6,250
Ban Bueng district	75	10,000
Ko Chan district	100	10,500
Bang Lamung district	250	15,000
Sattahip district	500	15,000
Source : Central Valuation Authority		

Establishment Prices - The prices of Industrial factory in Chonburi is about 4,550 prices per m2.

Northern Region

Chiang Mai

Chiang Mai province is located in the north of Thailand, about 1,027 feet (310 meters) from the sea level. The width from the west to the east is about 138 kilometers. The length from the north to the south is about 320 kilometers. The province is about 750 kilometers from Bangkok by train, and about 720 kilometers by car along the northern highway.

Gross Provincial Product

According to the survey and synopsis of the overall economic in every province countrywide during 1997 by Office of National Economic and Social Development Committee, it was found that Chiang Mai province maintained its gross provincial product of 82,375 million Baht. Most of the provincial incomes were from service sector worth of 18,305 million Baht or 22.22%, followed by industrial sector worth of 13,523 million Baht or 16.42%, and agricultural sector worth of 11,212 million Baht or 13.61%. Also, from the fundamental or temporary figures during 1998, the gross provincial product was decreased to 81,617 million Baht. Meanwhile, the first 3 sectors creating highest incomes to Chiang Mai province were still the same, or worth of 19,552 million Baht (service sector), 13,443 million Baht (industrial sector), and 11,978 million Baht (agricultural sector), respectively. In 1998, the income per head is about 56,287 Baht/year.

Transportation

Land Transportation By Train At present, there is only one train route from Bangkok to Chiang Mai province, which also passes Ayutthaya, Lop Buri, Nakhon Sawan, Phitsanulok, Uttaradit, Lampang, and Lamphun provinces, with 14 trips/day by rapid/express/special express trains or air condition diesel trains from Bangkok to Chiang Mai province, as well as 2 trips/day from Nakhon Sawan

province to Chiang Mai province. Chiang Mai province maintains the train route to link with Bangkok, which is the end of the route to the north part of Thailand under the total distance of 751 kilometers. At present, there are many trains from Bangkok to Chiang Mai Station such as Nakhon Pink express train, Sprinter express train, and other express/rapid trains, with 7 trips/day. During 1999, there were the total of 386,320 passengers, or a decrease of 15.11% from the year before. Meanwhile, the total income fares were 161.02 million Baht, or an increase of 12.41% from the year 1998. In addition, there were about 2,189 tons of cargo being transported by the trains, or a decrease of 64.38% from the year before, with the transport incomes worth of 8.38 million Baht, or an increase of 82.97 from the year 1998.

Chiang Mai province is the transportation center of the upper north region, as well as some areas close to Myanmar border, with many important highways that link to nearby provinces and the provinces in central region as follows :

Air Transportation Chiang Mai International Airport is the second largest from Don Muang International Airport. At present, it is the center for short air route to link the provinces in the north region and between the north region with other regions, under the capacity to support 16,219 flights of large size airplanes during the year 1999, or an increase of 7.89% from the year before. Meanwhile, there were the total of 2,105,881 passengers, or an increase of 1.64% from the year 1998. In addition, there were the total of 18,453 tons of cargo being transport through airway, or an increase of 12.92% from the year before.

Telephone There are the total of 220,087 telephone lines in Chiang Mai province, which can be classified as follows: From the total 93,211 telephone lines of Telephone Organization of Thailand, there are 74,897 subscribers. There are totally 32 phone exchanges in Chiang Mai province. 2. From the total 126,876 telephone lines of Thai Telephone & Telecommunication Public Company Limited, there are 108,297 subscribers, with overall 37 phone exchanges.

Post and Telegraph Regional Postal Bureau (Region 5) is located at 8/17, Moo 3, Mahidol Road, Suthep Community, Muang district, Chiang Mai province. The office offers the services to overall 9 provinces, including Chiang Mai, Chiang Rai, Phayao, Lamphun, Lampang, Prae, Nan, Mae Hong Son, and Uttaradit provinces. In 1999, there were totally 36 post offices in Chiang Mai province. Among these offices, about 26 of them were for sending post & telegraph services; meanwhile, the other 10 offices were for receiving post & telegraph services. Also, there are 82 private licensed post offices. During 1999, there are the overall services for 21,145,243 regular posts, followed by 1,737,119 special service, 276,392 postal parcels, and 63,055 telegraphs.

Electricity The electricity service is under the responsibility of Electric Administration Area 1 (North) of the Provincial Electrical Authority, Chiang Mai province, by purchasing the electricity from Electricity Generating Authority of Thailand, Mae Mo station. There are the total of 5 control power transmission stations, with overall 400,838 users in 1999, under the current electricity of 1,173,620,732 units, which cover the service to 198 communities, and 1,630 villages or the total of 89.46%. Meanwhile, the service to the rest areas could not be expanded because they are in the areas of forest reserves, head-water origins, river basins, forest conservation, and national parks.

Waterworks There are the total of 6 Office of Waterworks Authority in Chiang Mai province, including Chiang Mai Waterworks Authority, Hod Waterworks Authority, San Kamphaeng Waterworks Authority, Fang Waterworks Authority, Mae Rim Waterworks Authority, and Mae Taeng Waterworks Authority, with the production capacity of about 82,560 cubic meters/day for the total of 57,944 users. During 1999, Chiang Mai Waterworks Authority maintained the highest of 40,650 users or about 70.15% of the overall users in the province, with the highest tap water quantity in use of 11,640,126 cubic meters/day, followed by Mae Rim Waterworks Authority for the total of 6,501 users, with the tap water quantity in use of 2,243,490 cubic meters/day.



Population Structure and Workforce

Total Population

According to the data from Provincial Administration Department of Interior Ministry, Chiang Mai province maintained the total of 1,587,465 population during 1999 : 787,608 males (49.6%) and 799,857 females (50.4%). The district with highest population was Muang Chiang Mai followed by Fang, San Sai, and Mae Taeng districts, respectively. Besides, Chiang Mai province maintained the total land areas of 20,107.057 square kilometers during 1999, with the average population density of 78.95 persons/ square kilometer. The district with highest population density was Muang district or 1,541.00 persons/square kilometer, followed by 774.18 persons/square kilometer in Saraphi district, and 448.38 persons/square kilometer in San Pa Tong district. Meanwhile, the districts with lowest population density were Mae Chaem district or 19.14 persons/square kilometer, followed by 22.19 persons/square kilometer in Omkoi district, and 25.46 persons/square kilometers in Samoeng district, respectively. In addition, most population were Thai people from northern, central, and northeastern parts who migrated for settlement in Chiang Mai province. Meanwhile, the languages mostly used would be northern and central languages. Moreover, some parts of the population in the province were hill tribe groups. According to the survey by Hill Tribe Aid and Development Center of Chiang Mai province during 1999, there were the total of 190,795 hill tribes under 39,919 households in every district of Chiang Mai province. The two districts with highest numbers of hill tribes were Omkoi district (35,276 persons) and Mae Chaem district (34,327 persons), respectively. However, when adding up together, the numbers of hill tribes in these 2 districts accounted for one-third of the total hill tribes in Chiang Mai province, including Karen, Mu Zer, Maew, Li Saw, Lua, E-Ko, and Yao. The main professions of these hill tribes were agricultural careers and employed jobs.

Employment and Unemployment

As of 1999, Chiang Mai province maintained the total of 10,919 job applicants: 4,414 males (40.42%) and 6,505 females (59.58%), or an increase of 12.31% from the year before. There were the total of 17,360 vacancy positions: 3,854 male positions (22.20%), 5,682 female positions (32.73%), and 7,824 positions no sex identified (45.07%), or an increase of 63.96% from the year 1998. Meanwhile, there were the total of 4,541 hired applicants (41.59% of overall applicants and 26.16% of vacancy positions) : 2,043 males (44.99%) and 2,498 females (55.01%), or a decrease of 9.29% from the year before.

Minimum Wages

During 1999, about 43.54% of the overall employed population in Chiang Mai province maintained the careers outside agricultural sector such as services, handicrafts, commercials, constructions, and repair/demolition, with the minimum wages of 140 Baht/day. Meanwhile, Wages Committee of Ministry of Labor and Social Welfare has approved to increase the minimum wages from 140 Baht/day to 143 Baht/day in Chiang Mai province, effective January 1, 2001.

Real Estate Prices

Land Appraisal - The lands with high prices in Chiang Mai province are mostly in the municipal areas. Especially, in Muang Chiang Mai Municipality, the prices are the highest of 250,000 Baht/square wah. Meanwhile, the lands with lowest prices are in Mae Chaem.

TABLE A-2 LAND APPRAISAL		
District	Minimum	Maximum
Muang Chiang Mai		
Chom Thong	5,000	50
San Kamphaeng	25,000	300
Mae Rim	20,000	250
San Sai	20,000	400
Doi Saket	5,000	200
Mae Taeng	5,000	75
Fang	5,000	75
Phrao	5,000	150
Mae Chaem	1,250	10
Chiang Dao	3,000	75
Samoeng	3,300	30
Saraphi	12,500	375
Hod	2,500	50
Omkoï	625	25
Mae Ai	3,000	65
Doi Tao	1,250	10
Wiang Haeng	800	50
Chai Prakan	6,250	150
Mae Wang	3,000	150
Mae On Minor district	20,000	400
Doi Law Minor district	1,500	10
Mae Rim Minor district	20,000	350
<i>Source : Chiang Mai Provincial Land Office</i>		

Establishment Prices - The prices of detached houses are at the average of 46,875.50 Baht/square meter, followed by 4,500 Baht/square meter for townhouses, and 4,552.22 Baht/square meter for building shophouses. Meanwhile, the prices for factories are at the average of 4,550 Baht/square meter, which are not much different from housing establishments. The prices of office buildings and warehouses are at the average of 5,050.00 Baht/square meter and 3,600.00 Baht/square meter, respectively. The prices of Industrial factory 4,550 price per m2.

Northeastern Region

NakhonRatchasima

Nakhon Ratchasima province is located in the northeastern region of Thailand, on Korat highland, about the height of 100-200 meters above the medium sea level. It is about 445 kilometers from Bangkok by car along Highway Number 2 (Mitraparb road), or about 450 kilometers by train (Bangkok-Nong Khai). The province maintains the total areas of 20,493.964 square kilometers, or 12,808,728 rai, which is about 12.12% of the overall lands in northeastern region, with its territory close to nearby provinces as follows :

Infrastructure

Transportation The transportation within Nakhon Ratchasima province is very convenient both by car and by train, as the province is the transport center in northeastern region. Also, Nakhon Ratchasima province is the gateway to northeastern region, with only about 45 minutes by plane.

1) Land Transportation

- a. **Railroad Transportation** There are 2 northeastern trains passing Nakhon Ratchasima province, including :
 - Bangkok-Ubon Ratchathani province
 - Bangkok-Nong Khai province
 These two trains are passed at Chira railroad junction, Muang

Nakhon Ratchasima District. Besides, there is another train, which is passed at Kaeng Khoi railroad junction, in Kaeng Khoi District of Saraburi province to Bua Yai District of Nakhon Ratchasima province. There are the totals of 40 train stations in Nakhon Ratchasima province: 38 big stations and 2 railroad junctions. However, the main stations for passenger and cargo transportation are Nakhon Ratchasima station, and Bua Yai junction.

b. Automobile Transportation

The transportation could be from Bangkok along Highway Number 1 (Phaholyothin road), then turn into Highway Number 2 at Saraburi province and go straight until Nakhon Ratchasima province, about the total distance of 255 kilometers. Or, the transportation could be through Highway Number 304 (Nakhon Ratchasima-Pak Thong Chai) from Bangkok which will pass Min Buri District, Chachoengsao province, Phanom Sarakham District, Kabin Buri District, Wang Nam Khiao District, Pak Thong Chai District, into Muang Nakhon Ratchasima, about the total distance of 273 kilometers. The transportation by bus is also convenient, as there are both air-conditioned and regular buses for 24-hour service. The passengers from Bangkok can take the buses at Northeastern Transport Station (Mor Chit 2) on Kamphaeng Petch road. Meanwhile, the passengers from Nakhon Ratchasima province can take the buses at Nakhon Ratchasima Transport Station I on Burin road, and Nakhon Ratchasima Transport Station II on Mitraparp road, Nai Muang Sub-district, Muang District, Nakhon Ratchasima province. However, the main road of the province is Mitraparp road, starting from Saraburi province through Nakhon Ratchasima, Khon Kaen, Udon Thani, and Nong Khai provinces. Besides, there are other 17-secondary/state highways or bypass roads from the province to various districts. At present, Nakhon Ratchasima province maintains many roads to link between districts and provinces, both laterite and concrete roads, under responsibility of Highways Department, with the total distance of 1,332.584 kilometers.

2) **Airway Transportation** Airway transportation is another mean to serve transport demands of Nakhon Ratchasima province and nearby provinces. Nakhon Ratchasima Airport is located at Shalom Pra Kiat District, Nakhon Ratchasima province, or about 26 kilometers from the city along the way to Chakkarat District. At present, there are 2 flights per day by 65 seat-ATR planes of Thai Airways International Public Co.,Ltd. from Bangkok to Nakhon Ratchasima province. In 1998, there were the overall of 98,475 passengers, or a decrease of 9% from 1997. The government has planned to support airway transportation through the traffic expansion from the city to the airport into 4 lanes for more convenient and faster transportation. After completion, it is expected that the traffic numbers would be more increased than during the past years. Meanwhile, the numbers of air cargo are still low. However, Nakhon Ratchasima Airport has been announced to be the custom airport since February 23, 1999, which would lead to more international flights into this airport.

Telephone Fundamental Phones They are operated by Telephone Organization of Thailand, under overall services of 42 phone exchanges, for the line capacity of 64,689 telephone lines, with 49,172 main telephone stations. They are joint-operated with Thai Telephone & Telecommunication Public Co.,Ltd, under overall of 44 phone exchanges, for the line capacity of 49,480 telephone lines, with 40,547 main telephone stations.

Public Telephones There are public phones for services to communities and rural areas as follows : Community areas, total of 1,272 numbers and Rural areas, total of 3,028 numbers During 1999, there were the line capacities of 113,273 telephone lines, of which 93,163 are subscribed. The ratio of numbers of phones to 1,000 population was 36:76.

Post and Telegraph The post & telegraph services in the areas of Nakhon Ratchasima province can be divided as followed : Post Offices under Postal Communication Office Zone III in Nakhon Ratchasima province Private post offices under permit in Nakhon Ratchasima province

Electricity There are the totals of 44 Offices of Electricity Authority, for the overall users of 465,911 persons.

Waterworks There are 10 offices of waterworks authority under responsibility of Office of Waterworks Authority Area 6, Khon Kaen province, which would provide services to the overall of 49,899 users, under water production capacity of 13,366,073 cubic meters, for water generating of about 7,031,815 cubic meters. The waterworks under responsibility of Metropolitan Waterworks Authority, Nakhon Ratchasima province would provide water generating only in the areas of Metropolitan Municipality, Nakhon Ratchasima, and nearby areas, with the overall of 36,391 users, under the production of 29,218,462 cubic meters/year by the water source from Lam Ta Khong Reservoir.

Total Population

Nakhon Ratchasima province maintains the total population of 2,540,662 persons: 1,261,626 males and 1,279,036 females. The districts with highest population include Muang, Pak Chong, and Phimai Districts, respectively. Meanwhile, Nakhon Ratchasima metropolitan municipality alone maintains the population of 173,321 persons: 83,090 males and 90,231 females.

Employment and Unemployment

During 1999 (January-December), there were the total of 20,427 job applicants in Nakhon Ratchasima province, including 9,708 males (47.53%) and 10,719 females (52.47%). The period with highest job applicants was in April or about 8,108 applicants (39.69%). Meanwhile, the period with lowest job applicants was in December or about 171 applicants (0.84%). In addition, there was the total of 43,425 vacancy jobs: 14,569 male jobs (33.55%), 12,262 female jobs (28.24%), and 16,594 job no sex identified (38.21%). The period with highest job recruitment was in October or about 24,020 jobs (55.31%). Meanwhile, the period with lowest job recruitment was in May or about 471 jobs (1.08%). Furthermore, the overall job hiring was 5,364 persons: 2,324 male's (43.33%) and

3,040 females (56.67%). Also, the ratio of job hiring was 12.35% of the total vacancy posts. The period with highest job hiring was in April or 2,270 persons. Meanwhile, the period with lowest job hiring was in May or 54 persons. Beside the domestic employment, there were some people registering for overseas employment, or about 2,157 persons. The period with highest registration was in October or about 361 persons (16.74%). Meanwhile, the period with lowest registration was in January or about 68 persons (3.15%). In the meantime, there was the total of 6,982 persons traveling for overseas employment by themselves. The period with highest travel was in February or about 1,090 persons (15.61%). Meanwhile, the period with lowest travel was in June or about 419 persons (6%).

Job Applicants, Vacancy Jobs, and Job Hiring During 1999, there was the total of 10,411 job applicants in Nakhon Ratchasima province: 4,542 male's (43.62%) and 5,869 females (56.37%), a decrease of 13.82% from 1998. In addition, there were the totals of 8,014 vacancy posts: 3,713 male post (46.33%) and 4,301 female posts (53.67%), or a decrease of 54.01% from 1998. Besides, there were the total job hiring of 2,899 persons: 1,328 males (45.81%) and 1,571 females (54.19%), or a decrease of 38.30% from 1998, with the job hiring ratio of 27.84% of the overall job applicants and 36.17% of the overall vacancy posts.

Minimum wage

The meeting of Wages Committee, Ministry of Labor and Social Welfare has approved to increase the minimum wages of 3 Baht more in every areas countrywide, effective from January 1, 2001. As a result, the minimum wages in Nakhon Ratchasima province have been increased from 140 Baht/day to 143 Baht/day.

Overall Real Estate Prices

Land Prices The areas with highest land prices of Nakhon Ratchasima province would be mainly in the municipality. Meanwhile, the areas with lowest land prices would be in Ban Lueam District or about 15 Baht/square wah.

Prices of Establishments The prices of detached houses in Nakhon Ratchasima province were approximately 4,588 Baht/square meter, followed by 4,300 Baht/square meter for townhouses, and 4,333 Baht/square meter for shophouses. Meanwhile, the prices of industrial factories were approximately 4,450 Baht/square meter, or not much different from the prices of housing establishments. The prices of offices and warehouses would be about 4,950 Baht/square meter, and 3,900 Baht/square meter, respectively. The prices of Industrial factory in Nakhon Ratchasima is about 4,450, price per m²

Southern Region

Pattani

Pattani province is at the border of the southern region. It is located at the eastern seacoast of southern region close to Gulf of Thailand which is about 1,100 kilometers from Bangkok. This province is the only one among the 5 provinces located at the border of southern region, which has no borderline close to any other neighbour countries.

Pattani province maintains a total land area of about 1,940,357 square kilometers or 1,212,723 rai, which is about 27% of the total land area in southern region and 0.4% of the total land area in Thailand. The province is also the second smallest province of southern region from Phuket province. Kok Pho District has the highest area of 316,314 square kilometers. Mai Kaen District maintains the lowest areas of 55,201 square kilometers. Pattani province has its territory close to the following nearby provinces:

Transportation

1. **Railroad Transportation** There are 4 train stations in Pattani province, with the train routes going through Kok Pho and Mae Lan Districts covering a total distance of 28 kilometers. The main train stations of Pattani province are Pattani Train Station in Kok Pho District, which is about 27 kilometers from the city. There are both rapid and express trains for service, making about 6 trips/days. During the budget year of 1999, there were 307,105 passengers amounting to the total income of Baht 25,708,304 by way of fares, and an overall cargo of 494.757 tons with the total transport incomes of Baht 626,583.

2. **Automobile Transportation** Automobile transportation on Pattani province has many routes:

State Highways Highway Number 42 linking Songkhla and Narathiwat provinces through Ban Klong Ngae along Highway Number 4 to Sadao District into Malaysia at Chang Loan custom checkpoint, Highway Number 43 linking Songkhla province through Thepa District, Highway Number 409 through Ban Na Ket, Kok Pho District, or Highway Number 410 through Ya Rang District for transport to Yala province

Provincial Highways Highway Number 4061 linking Yaling-Mayo-Panare-Sai Buri Districts of Pattani province, Highway Number 4157 linking Panare-Sai Buri-Mai Kaen Districts of Pattani province, Highway Number 4075 linking Mayo-Panare-Sai Buri Districts of Pattani province, Highway Number 4092 linking Mayo-Kapho Districts of Pattani province, Highway Number 4060 linking Sai Buri-Mai Kaen Districts of Pattani province and Si Sakhon District of Nakhon Si Thammarat province

Besides, there are also local state routes linking districts, communities, and villages. These routes are under the Public Works Department, The Office of Accelerated Rural Development, and Pattani Provincial Administration Organization, with an overall distance of 400 kilometers.

Pattani province maintains a total completed road construction under the responsibility of The Office

of Accelerated Rural Development and Public Works Department of 249.427 kilometers, which could be classified as 15.692 kilometers under The Office of Accelerated Rural Development, and 249.427 kilometers under Public Works Department. They are mainly asphalt roads covering about 204.296 kilometers, as well as laterite roads or about 3.89 kilometers, and 41.241 kilometers of concrete roads.

3. **Waterway Transportation** There are 2 important seaports in Pattani province. The first one is Fish Market Organization. The other one is the seaport at Pattani seacoast. However, Provincial Administration Organization of Pattani province has allowed Pattani Fishery Development Co., Ltd. and S. Kamol Wattana Partnership Ltd. to rent these 2 ports, with cargo warehouses and cargo loading yards covering not less than 4,400 square meters for a rental of Baht 65,000 per month for 20 years starting from August 1, 1993.

4. **Airway Transportation** There is an airport in Pattani province at Bo Thong Subdistrict, Nong Chik District, opposite to Eng Ka Yuth Administration Camp, or about 15 kilometers from Muang Pattani, with a runway of 40 x 1,400 meters. At present, Commercial Aviation Department has temporarily stopped the service of this airport to renovate the runway. The province has also planned to expand the runway to 2,000 meters, as well as install lights at the runway to serve the night flights. The plan is now under the survey, and is currently used for military purpose only.

Telephone During 1999, Pattani province maintained a total of 6 phone exchanges, with an overall 16,698 phone numbers, and 12,137 numbers of which were rented. In addition, residential phones maintained the highest rented numbers, followed by business phones, governmental phones, public phones, and Telephone Organization of Thailand, respectively.

Post & Telegraph During the budget year 1999, Pattani maintained a total of 13 post offices (excluding private licensed post offices and others). Regular posts maintained the highest numbers of service, followed by special services. In addition, the districts with highest service to customers were Muang Pattani District (total of 2 post offices), followed by Sai Buri, and Kok Pho Districts.

Electricity There is 1 Transmission substation for electricity generating to Pattani province, or High Power Electricity Station of Pattani province, located at Ta Lu Bo Subdistrict, Muang Pattani, with 3 phases of 3 electric transformers under the system of 115-33 kilowatts, or 25 megawatts/one transformer, under the capacity to generate electricity of 40,000 kilowatts. At present, Pattani province maintains the electricity use of only 80%. For the electric circuit stability, Electricity Generating Authority has provided 2 circuits of electricity (115 kilowatts) from Hat Yai, and 1 circuit from Yala province, which could increase the efficiency of electricity distribution. Provincial Electricity Authority of Pattani province currently maintains a reserved power of 8 kilowatts, with 1 more transmission substation of 20 kilowatts to distributes electricity to Industrial Area of Pattani province. During the budget year 1999, there were a total of 106,717 electricity users, with an overall electricity generation of 278.70 million kilowatts/hour, mostly to business and industrial enterprises. The district that maintained the highest electricity usage was Muang Pattani District. About 99.8% of the overall villages in Pattani province maintained electricity for usage; meanwhile, there was only village in Thung Yang Daeng District with no electricity for usage.

Waterworks Pattani province maintains the provincial waterworks service system from Provincial Waterworks Authority Sai Buri, with the service areas in Ta Lu Ban, and Pa Se Ya Wo Subdistrict Municipalities, with a productivity of 3,120 cubic meters/day. The service is from Provincial Waterworks Authority Pattani Municipality and nearby sub-districts, operated by Muang Pattani Municipality, with a productivity of 19,200 cubic meters/day. The supply amounts to the users of 16,200 cubic meters/day, under the reserved amounts of 3,000 cubic meters/day. The average requests for waterworks usage was 477-users/ year during 3 years period. Besides, there are waterworks offices in different villages and communities, operated by village committees, sub-district council committees, sub-district administration organizations, and public health areas. About 71.4% of the total villages in Pattani province maintain the tapped water for use. During 1999,

there were a total of 14,444 users, under a productivity of 9,100,000 cubic meters, with a production of 6,227,820 cubic meters, for supply to about 4,524,092 cubic meters.

Overall Population

As of September 30, 2000, Pattani province had a total population of 611,946 persons, which include 301,760 males and 310,186 females. The district with highest population was Muang District or 113,919 persons. The district with lowest population was Mai Kaen District or 10,491 persons. The district with highest population density was Muang District or 1,176 persons/square kilometer, and the district with lowest population density was Mae Lan District.

Minimum Wages

The meeting of Wages Committee, Ministry of Labor and Social Welfare has approved to increase the minimum wages of Baht 3 more in every areas countrywide, effective from January 1, 2001. As a result, the minimum wages in Pattani province has increased from Baht 130 per day to Baht 133 per day.

Overall Real Estate Prices

Land Prices :The highest land prices in Pattani province is 45,000 Baht/square wah in Muang District. The lowest land prices would be in Yaring District, or 25 Baht/square wah.

TABLE A-3 LAND APPRAISAL		
District	Minimum	Maximum
Muang pattani	30	45,000
Chokpho	75	5,500
Nong Chik	50	3,750
Panare	50	8,000
District	Minimum	Maximum
Mayo	50	3,500
Thung Yang Dang	45	250
Sai Buri	75	14,000
Mai Kaen	60	1,125
Yaring	25	975
Yarang	75	1,200
Kapho	50	625
Maelan	62.50	375
<i>Source : Central Valuation Authorit</i>		

Prices of Establishments The average prices of detached houses are 4,475 Baht/square meter, followed by the townhouses of 4,000 Baht/square meter, and building shop houses of 4,072 Baht/square meter. Meanwhile, the average prices of industrial factories are 4,500 Baht/square meter, followed by offices of 4,900 Baht/square meter, and warehouses of 3,550 Baht/square meter. The price of Industrial factory in Pattani 4,500 price per m2.



BIOGRAPHY

Ms. Juthamas Choomlucksana graduated in Bachelor Degree from the Department of Information Technology, Faculty of Science and Technology, Assumption University in 1999. In 1999, she continued her studies for Master Degree in Engineering Management, the Regional Centre for Manufacturing Systems Engineering, Chulalongkorn University