



ABAC  
GRADUATE SCHOOL  
of BUSINESS

*Au Virtual International Conference 2020*  
**Entrepreneurship and Sustainability in the Digital Era**  
*Assumption University of Thailand*  
**October 30, 2020**  
*Co-hosted by*



## **Perceived Impact of The Population on The Khlong Thai Project**

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### **Abstract**

The objectives of this research were 1) to conduct the analysis of the needs of the Khlong Thai Excavation in the five southern provinces involved in the operation. 2) to study the impact on various areas of the Khlong Thai Excavation Project in the five southern provinces by collecting questionnaires from people, measured by educational level, occupation, income and residential area. The sample group used in the research was people domiciled in 5 southern provinces, namely Krabi, Phatthalung, Songkhla, Trang and Nakhon Si Thammarat. The sample size in each province was 200 samples, totaling 1,000 samples. The researcher used questionnaires for collecting and quantitative data. The results of the research found that the study of the perceived impact of the population on the Khlong Thai excavation and various impacts on the Khlong Thai project operation area in the five southern provinces were 1) The cognitive factor had the highest Beta coefficient or equal to 0.1909, followed by 2) Income variables 3) Age variables and 4) Environmental factors, respectively. All of them were statistically significant at a level of 0.01. Moreover, 5) Social factors and 6) The economic factor was statistically significant at the 0.05 level and the R square value of 0.078, with statistical significance at the 0.01 level. This showed that the independent variables had 7.8% influence on project demand assessment.

**Keywords:** Khlong Thai, economy, politics, society

### **Introduction**

The idea of digging a canal to connect the two coasts of Thailand between the Andaman coast and the Gulf of Thailand had been initiated for 327 years from the Ayutthaya period during the reign of King Narai the Great. The main reason for this was to shorten the distance of both coasts and to trade with foreign countries. From summarizing the feasibility report of the Khlong Thai Project, if it is completed, it will benefit the economy, society, politics, security and technology, which will be the key for Thailand to play an important economic role at the global level and to be the new international shipping route of the world. This will help the development of Thailand, especially as the economic and social development of the

southern region directly, which will reduce the problem of unemployment and solve the problem of poverty. When the economic and social status improves, it will increase the national security as well. Therefore, excavating the Khlong Thai should be a sustainable solution and benefit the country in every way. The obvious aspects are transport, trade, agriculture, industry, port, tourism, etc., which will develop the country to prosper in the long term and forever (Extraordinary Commission to Study the Feasibility of the Senate Isthmus Project, 2005). It was found that the people saw that Thailand would be benefitted in terms of economy the most, followed by a shorter period of sea transportation, resulting in the benefit of the boat tax via the Kra Isthmus and creating a new

tourism area of the country (Wiwat Chankingthong et al, 2017).

Until 1970, the Interior Ministry hired the TAMS company (Tippetts-Abbett-McCarthy-Stratton:TAMS) to study the economic feasibility of Kra isthmus mining and report the study of the year 1973. It was found that the most suitable and possible canal line was Route 5A between Satun - Songkhla. But assessing the feasibility of the relevant organizations and agencies, it was found that the project was not worth to be operated. In 2001 an Extraordinary Commission was established to study the feasibility of the project consisting of 12 routes: Routes 1, 2, 2A, 3, 3A, 3C, 4, 5, 5A, 6,7,7A. And study one additional route, which is 9A (Attaporn Boromsuk, 2010) and the Extraordinary Commission approved the choice of route 9A as the most suitable route. (Extraordinary Commission to Study the Feasibility of the Senate Isthmus Project, 2005).

The impacts of digging the Khlong Thai are divided into 4 areas: 1) overall economy: People on Route 9A are of the view that if the Khlong Thai is formed, the advantage is that it will make Thailand a world trade center, creating a new maritime economy in both domestic and international maritime transport; while the disadvantage is that digging the Khlong Thai requires a large amount of capital, which may result in a sluggish economy in Thailand. 2) Environment: People on Route 9A believe that if the Khlong Thai is formed, the advantage is that it will improve coastal fisheries. While the

disadvantages are environmental impacts, ecosystem changes, natural resources are destroyed, water quality / soil quality / forest resources change. 3) Security: People on Route 9A believe that if the Khlong Thai takes place, the advantages are that it will provide increased military security, and caring for the rivers, canals, water of the Navy will be more efficient and convenient. On the other hand, the disadvantage is that it provides a means of smuggling illegal things into the country and may cause problems separating the territory. 4) Social aspect: The people of Route 9A believe that if the Khlong Thai occurs, the advantage is that it will make the people in the community that the canal pass more jobs, improve their livelihoods and quality of life, as well as make the country earn more income; while the disadvantage is that the way of life of the community and culture will change, there will be immigration which affects the livelihood of the community. Tinno Kwandi (2015) wrote an article on the topic "Kra Isthmus to the Khlong Thai, the ASEAN Transport Center of Thailand", by saying that the Khlong Thai will create more jobs for the people and make people have a better quality of life because there will be ports, shipyards, services, tourism, hotels, financial services and banks.

From the past study of the Khlong Thai (Kra Isthmus) excavation, many findings were made including advantages, disadvantages of each route and their impacts, and from the feasibility assessment of the Office of the Economic

Development Board and The National Society and the Feasibility Review Committee of the Khlong Thai concluded that there was no possibility. However, at present the situation has changed and the Khlong Thai excavation has been proposed again. In order to consider for undertaking a large project, an in-depth study is needed, especially in the area that are Khlong Thai routes by conducting surveys with people living in the area to study public opinion on both positive and negative impacts, pros and cons of each route and feasibility analysis of the Khlong Thai excavation Project. Therefore, the research team was interested in studying the impacts and feasibility of the Khlong Thai excavation Project. **Research Objectives**

1. To study and analyze the needs of excavating the Khlong Thai in the five southern provinces
2. To study the results of studies on various impacts on the implementation of the Khlong Thai Project in the five southern provinces.

### **Literature Reviews**

#### **Theories of Media exposure**

Klapper, J.T., 1960: 19-25, stated that the process of choosing to receive or receive news is like a filter of information in human perception, which consists of 4 steps of filtering in order as follows

1. Selective Exposure: It is the first step in choosing a communication channel. People are exposed to media and news from a variety of

sources, such as shopping for newspapers, choosing to listen to radio based on their interests.

2. Selective Attention: Exposure is more likely to be interested in news from a specific source based on their interests to support the existing attitude.

3. Selective Perception and Interpretation: When a person is exposed to information, not all information is perceived by intent, experience, belief.

4. Selective Retention: The person will choose to remember the information in the part that is relevant to their own needs, attitudes, etc., and transfer them to the areas of their interest.

#### **Impacts from the Khlong Thai excavation**

Various impacts of the Khlong Thai in large-scale projects must be studied both positive and negative. The implementation of the Khlong Thai Project is a large project, and once it is implemented, it will have both positive and negative impacts on Thailand. The results of studies on the impacts of excavation of the Khlong Thai have been compiled in key areas including environmental, economic, political, security, and social (Attaporn Boromsuk, 2010) with details as follows:

- 1) Environmental Impacts: The major environmental impacts of the Khlong Thai are impacts of marine ecosystems, which can be divided into 3 phases: pre-excavating phase, excavating phase, and after-use. In addition, the

impacts of sea water pollution when more people live in the port area according to the full-step project of the Khlong Thai excavating, which is to develop at both ends of the canal to be a port, community and large industrial city. It also has effects on coastal marine fauna and flora, changes in tidal range, and the transfer of water masses through canals or can shorten maritime distances, saving time and money. Moreover, many countries will turn to the Khlong Thai. It is also a security benefit because it will give the Navy a higher maritime potential, the movement of the Navy will be more autonomous, reducing patrols to prevent illegal entry along the boundaries of international waters. It also empowers the Thai government to negotiate economic, political and military negotiations between world powers.

2) Economic Impact: A study of the economic feasibility of the Khlong Thai Project is very important because the excavating for international maritime canals requires a large investment. Decisions to take any action must be made prudently and in principle, taking into account that: The Khlong Thai Project is an economic infrastructure to raise the country's economy from agricultural bases to modern industries. Although the project requires huge investment, but the use of capital to develop such an economic infrastructure is a very rewarding investment.

3) Political implications: Domestic reaction by considering two political issues: Politics and Support of the Khlong Thai Project, and politics

and opposition to the Khlong Thai project. The details are as follows

3.1) Politics and Support of the Khlong Thai Project: In politics, many governments in the past had different opinions about the Khlong Thai Project. Some agreed, some objected. As for the government that supported the Khlong Thai project in the past, the project had been put forward to study the feasibility and impacts, but no government had seriously supported the Khlong Thai Excavating Project because they were not sure about the worth of investment and the impact that would happen in both the short and long term.

3.2) Politics and opposition to the Khlong Thai project: Most of the opposition to the Khlong Thai Project is not from the government, it is mostly arose from organizations that believe that if the Khlong Thai Project is up, there will be many negative impacts that are not worth the positive impacts that will happen. The government simply does not support the proposal, or does not take it seriously. They are simply accepting proposals to study, which, in the past, the proposal for excavating the Khlong Thai would be silent when the government was changed.

4) Impact on security: Most security impacts stem from racial, religious ideologies, which can be remedied through governance, administration and management. Although separatist movements exist, secession into an

internationally recognized independent state is not easy because it is subject to international law.

Sathaporn Kheawimol (2005) said that in order to excavate the canal to have the best results and to minimize the negative impact as much as possible, it is necessary to consider 5 key elements as follows:

1) Independence in the administration of the country's canals: When a sea boat come to use the service through the Khlong Thai to be excavated, if it is going to pass through neighboring countries' waters, there will be an opportunity to create problems about the benefits that will arise in the future. In order to prevent Thailand from having problems on international waters with its neighbors, whether it is the Andaman coast with cooperation with Malaysia or Myanmar and the Gulf of Thailand with Cambodia and Vietnam; therefore, there should be a canal line where boats to enter the service should have a distance of about 200 nautical miles or 400 kilometers.

2) The country's economy: Transport routes, whether by land or water, when it cuts through, it will bring prosperity there, and the birth of businesses and communities will follow. Because it is a route within the course of world water transportation, it is not uncommon for great benefits to follow. Therefore, the two banks of the canal must have an area large enough to support a large city in the future, sufficient fresh water supply, located in a good geographic area to be the city plan of the future.

3) Military strategy: If the canal crosses too close to one side, any military operation will be limited, especially for the arrangement of the land forces of the country, where operations are

required to be convenient, and must be in line with the canal line to increase the capacity of the Navy in moving the navy on both sides of the Thai Sea.

4) Society and environment: In order to dig a canal, it is necessary to use an area along the two banks of the canal with a width of approximately 4 kilometers (including reserve for future use). The length of the canal is approximately 120 kilometers, which inevitably affects the source to make a living for people. There will be a migration and change in the way of life of people from rural society to new urban society. Various people from all over the country will come together to form a large city society. As well as the natural and cultural environment will be adjusted so that the canal line to be excavated should avoid the density of communities and important natural sites.

## **Materials and Methods**

### **Sampling and data**

The sampling for interviewing this questionnaire was general citizens living in five provinces where the Khlong Thai Project was located, namely Nakhon Si Thammarat, Krabi, Songkhla, Trang and Phatthalung. Due to limited budget and time, Accidental Sampling was chosen to complete the specified number of sample sizes in each province, which was 200 samples, totaling 1,000 samples. Questionnaire collection period from June to August 2020.

However, the questions set up in the questionnaire would reflect a positive opinion. Each question was given to respondents to comment on a 5-level assessment, which was a semantic measure of data as follows: Level 1

means Lowest, Level 2 means Low, Level 3 means Moderate, Level 4 means High, Level 5 means Highest.

The revised questionnaire was then tested (Pre-Test) with the target sample group to find the reliability of the evaluation form with Cronbach's Alpha test, which was the value that measures the Likert Rating Scale data (Kallqya Wanitbancha, 2011) which had a criterion of more than 0.70 and was considered to be highly reliable. For the benefit evaluation variables of the dimensions, the values ranged from 0.789 to 0.805, which had a very high level of reliability of the variables.

**Method of data analysis**

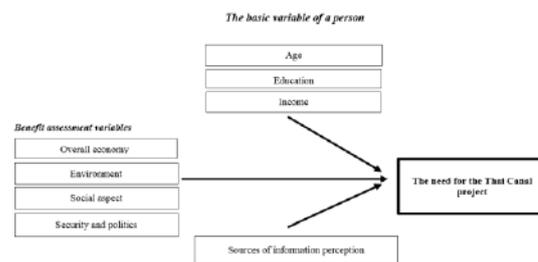
For the analysis of primary data, descriptive analysis was used. For analyzing the data on the level of benefit assessment in various dimensions, Factor Analysis was used to calculate the Factor Score. For the demand analysis of the Khlong Thai project, the statistics of multiple regression analysis were used.

**Models and parameters determining the needs of the Khlong Thai Project**

From the initial conceptual framework of the Khlong Thai Demand Assessment, it was found that there were various independent variables that were important and in-depth analysis of their relationship and influence on project requirements determination. The results from relevant literature reviews provided a very important basis for the creation of a framework for analyzing the relationships of the variables that influence the project requirements.

According to the study concept in Figure 1, there were 3 main groups of

independent variables:(1) Basic variables of a person (2) Benefit assessment variables and(3) Information variables. These independent variables had a direct influence or impact on the demand for the Khlong Thai Project.



**Figure 1-** Conceptual framework for

Conceptual framework for Perceived Impact of The Population on The Khlong Thai Project

**Results**

**Analysis of benefits assessment scores from the Khlong Thai Excavation Project**

The results from the assessment of the mean score were found to be between 3.36 and 4.34 with the highest level of 3 assessments as follows:

The excavation of Khlong Thai will reduce the cost of sea transportation, The excavation of Khlong Thai will affect everyday life, and the excavation of the Khlong Thai will create a new marine economy. However, it was found that the excavation of the Khlong Thai will result in a reduction in the cost of transporting agricultural products, making it more competitive with a moderate level of assessment score. For the rest



of the assessments, they were at high scores (Table 1).

for these questions.

Assessment list	Mean	Std. Deviation	Interpret
1. The excavation of the Klong Thai will bring prosperity and economic development to the South.	4.03	.813	High
2. The excavation of the Klong Thai will create a new marine economy.	4.23	.773	Highest
3. It will create a center for trade, investment, business resources	3.70	.955	High
4. It will create jobs and income throughout the South and the country	3.78	.835	High
5. It will make Thailand a world trade center	3.62	.858	High
6. The Klong Thai will be the symbol of Thailand which will attract tourists from all over the world.	3.47	.944	High
7. It helps the Thai government to have more economic bargaining power.	3.69	.876	High
8. It will help the Thai fishing system to be more competitive with foreign countries	3.64	.859	High
9. It will help reduce the cost of sea transportation.	4.34	.695	Highest
10. As a result, the cost of transportation of agricultural products will be reduced, enabling market competition.	3.36	1.059	Moderate
11. The excavation of the Klong Thai contributes to the livelihood of marine life.	4.16	.654	High
12. The excavation of the Klong Thai can help solve the flood problem.	4.07	.672	High
13. The excavation of the Klong Thai will help to have more fresh water reservoirs	4.00	.705	High
14. The change in sea currents has a beneficial effect on the marine ecosystem of Thailand	4.18	.745	High
15. Shorten the travel distance of the ship	4.19	.803	High
16. People both in the area and outside the Klong Thai have more opportunities for employment.	4.01	.963	High
17. As a result, the well-being of the people in the area improves.	3.75	1.105	High
18. It will be a target for entering the work of people all over the country	3.85	1.026	High
19. Help develop basic infrastructure in Thailand	3.96	.962	High
20. The excavation of the Thai Cana will affect daily life.	4.23	.788	Highest
21. The excavation of the Thai Cana will help the Thai government to be stabilized.	3.61	.866	High
22. It can solve the problems of the 3 southern border provinces.	3.97	.711	High
23. Help prevent the illegal entry	3.99	.964	High
24. The Navy can more easily protect national sovereignty.	3.98	.708	High
25. It is a boon for maintaining maritime security and a strategic advantage.	3.92	.771	High

**Table 1:** the factors influencing the demand for the Khlong Thai Excavation Project

### Benefit assessment score factor analysis

The factors influencing the demand for the Khlong Thai Excavation Project were summarized into four factors using the principle of element analysis (PEA) and variable axis rotation method (Varimax with Kaiser Normalization). The results of the analysis revealed that four factors could be prioritized as influencing the demand for the Khlong Thai Project, namely economic factors, social factors, environmental factors, and security and political factors. In addition, the Kaiser-Meyer-Olkin test results (KMO = 0.885) and Bartlett's test at a significance level <0.01 (sig - 0.001 rejected) indicated that the factor analysis was appropriate

### Analysis of multiple regression equations

The results of the analysis of multiple regression equations showed that there were 4 variables that were statistically significant at level 0.01 including, Age, Income, perceived Khlong Thai news source (Media) and Environmental Dimensional Factor Score (Factor2). The overall economic dimension factor score variable (Factor1) and the social dimension factor score (Factor3) were statistically significant at 0.05. For education variables (Educate) and the dimensional factor score variables for security and politics (Factor4) were not statistically significant.

When considering the direction of the variables, it was found that if the age increased by 1 year, the project demand decreased by 0.1003 points and the monthly income variable increased by 1 baht, causing the project requirement assessment score to be significantly decreased by 0.1036 points with statistical significance at level 0.01. On the other hand, one more information awareness source variable resulted in an increase in the requirement Assessment score of 0.1909. For the 4 factor score variables, there was a positive direction. In summary, as the factor scores in each dimension increase, the requirement assessment scores increase.

**Table 2:** T-test coefficient and significance of the signal quality evaluation equation (933 samples)

Determinant	Coefficient B	Coefficient Beta	t-test	Significance
Age (year)	-0.0055	-0.1003	-2.9609**	0.00
Educate (year)	0.0025	0.0203	0.5136	0.61
Income (1000 baht / month)	-0.6072	-0.1036	-2.9557**	0.00
Source of information (number) (Media)	0.0992	0.1909	3.3224**	0.00
Factor 1- Economy	0.0404	0.0670	2.1420*	0.03
Factor 2- Environment	0.0393	0.0655	2.1325**	0.00
Factor 3- Social	0.0550	0.0919	2.9819*	0.03
Factor 4- Stable and political	0.0277	0.0459	1.4956	0.14
Constant	2.4250			

R square = 0.078    SEE = 0.579    F = 10.476    sig of F = 0.00\*\*

Note: \* Statistically significant at the .05 level.  
 \*\* Statistically significant at the .01 level

The R square value of 0.078, which was statistically significant at a level of 0.01, indicating that the independent variables had a 7.8% influence on the evaluation of project demand.

### Conclusion

#### Analysis of benefit assessment scores from the Khlong Thai Excavation Project

The results from the assessment of the mean score were found to be between 3.36 and 4.34 with the highest level of 3 assessments as follows: 1) The excavation of Khlong Thai will reduce the cost of sea transportation, 2) The excavation of Khlong Thai will affect everyday life, and 3) the excavation of the Khlong Thai will create a new marine economy. However, it was found that the excavation of the Khlong Thai will result in a reduction in the cost of transporting agricultural products, making it more competitive with a moderate level of assessment score. For the rest of the assessments, they were at high scores.

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In addition, it was found that the most important variable in the regression equation was the information perception variable with a Beta coefficient of 0.1909, followed by the income variable and the age variable, respectively. In addition, the R square value of 0.078, which was statistically significant at a level of 0.01, indicating that the independent variables had a 7.8% influence on the evaluation of project demand, which was very low value.

### Discussion

From the results of the experiment, the study on the level of impact of the population on the Khlong Thai excavation and various impacts on the area of the Khlong Thai excavation project in

the five southern provinces found that :

1. The awareness of environmental factors was at a high level with a Beta coefficient of 0.0655 with a statistical significance of 0.01. The results of the research showed that the population thought that the Khlong Thai excavation had the highest environmental impact. It would affect the livelihoods of marine life and wildlife, and would also affect the marine ecosystem of Thailand and air pollution. This was in line with Wiwat Changingthong et al (2017) who studied the disadvantages of excavating this project as a route that cuts through the densely populated area. It would also have an environmental impact on the communities and important tourist attractions. And in accordance with Piamsak Menasawet et al (1999). The study results were found to have an environmental impact. From the environmental impact assessment, it was found that the Andaman coast was negatively affected.

2. The overall economic factor was at a high level, with Beta coefficient of 0.0919 with statistical significance of 0.05. The results of the research showed that the population thought that the excavation of the Khlong Thai will bring prosperity and economic development in the southern region, creating a new marine economy for both domestic and international maritime transport, creating a center for Trade, investment, business and industry in the world, creating jobs and income throughout the South and the country. It will make Thailand a global trade center, attract tourists from all over the world, help the Thai government have more economic bargaining power, help the Thai

fishing system more competitive with foreign countries, help reduce the cost of sea transportation, result in the reduction of cost in transporting agricultural products which will make it able to be more competitive with the international market. This was consistent with Sathaporn Keawimol (2005), who said that the country's economic aspects, whether it is land or water, where it cuts through, it will lead to prosperity there. The birth of businesses and communities will follow, as these are the paths in the world's waterways, so it is not uncommon for great benefits to follow. Therefore, the two sides of the canal must have an area large enough to support a large future city, sufficient fresh water supply, and located in a good geographic area to be a future city plan.

3. The social factor was at a high level with a Beta coefficient of 0.0670 with a statistical significance of 0.05. The results of the research showed that the population thought that government agencies should educate and understand local residents about the social impact, and show that people in the area and outside the Khlong Thai excavation area would have more opportunities in having jobs. Including people in the Khlong Thai excavation areas affected to the migration stage, the state will compensate the benefits of occupational rights in the Khlong Thai area, including additional benefits such as medical treatment, academic support, etc. As a result, the well-being of the people in the area improves and the area will be a target for people all over the country to come to work, helping to develop the infrastructure of Thailand, which affects their daily life. This was in line with Sathaporn

Kheawimol (2005) who studied that In order to dig a canal, it is necessary to use an area along the two banks of the canal with a width of approximately 4 kilometers (including reserve for future use). The length of the canal is approximately 120 kilometers, which inevitably affects the source to make a living for people. There will be a migration and change in the way of life of people from rural society to new urban society. Various people from all over the country will come together to form a large city society. As well as the natural and cultural environment will be adjusted so that the canal line to be excavated should avoid the density of communities and important natural sites.

4. The security and political factors were not statistically significant, which was in line with Attaporn Boromsuk (2010), stating that in politics, many governments in the past had different opinions about the Khlong Thai Project. Some agreed, some objected. As for the government that supported the Khlong Thai project in the past, the project had been put forward to study the feasibility and impacts, but no government had seriously supported the Khlong Thai Excavating Project because they were not sure about the worth of investment and the impact that would happen in both the short and long term.

#### **Limitations of the study**

The limited time and budget made this study based on secondary data collected from institutions or offices and then recalculated and processed again, which would not allow the study to visualize or steal. The self-study area of the locality will provide the students with a better understanding of the living conditions of the

people as well as the opinions of local people on the issue of digging the Thai Canal.

The indirect effects of investment have not been studied This will lead to more economic expansion, including indirect effects such as environmental destruction, pollution, social problems from labor migration, etc. The next study of interested parties may be studies in these areas that will enable a more complete and accurate study of the impacts of canalization.

#### **Recommendations**

If a canal is dug to connect two sides of the ocean as a route. The new global navigation will generate economic growth for the country and local region, especially the provinces surrounding the canal, although planning for the development of the maritime system is very necessary and inevitable. To prepare in terms of service regarding future shipping. But maritime trade is not the only thing that needs to be taken into account, as the impacts of the opening of the new shipping route will extend to the industrial development and livelihood of local residents. The world is close to home, as if lifting the world market closer to you, it means being able to more easily carry out their existing products while being able to find raw materials for use in production. Therefore, the provinces that are most affected by the canal are Krabi, Trang, Phatthalung and Nakhon Si Thammarat and Songkhla

#### **References**

Attaporn Boromsuk. (2010). Khlong Thai excavation and Thai maritime security. Master's Thesis (Resource Management for Security). Chonburi: Graduate School, Burapha University.

- Extraordinary Commission to Study the Feasibility of the Senate Isthmus Project. (2005). The study results of the Khlong Thai Excavation Project (Study report). Bangkok: The Secretariat of the Senate.
- Klapper, J. T. (1960). The effects of mass communication.
- Piamsak Menasawet, Pipat Phataphonphaiboon, Sompop Rungsubha, Anupap Phanichphol. (1999). A Feasibility Study on the Commercial and Physical Aspects of Kra Isthmus Excavation. Environmental education section. Research report. Bangkok: Institute of Maritime Affairs. Chulalongkorn University
- Sathaporn Keawimol. (2005). Analysis of the feasibility of the Khlong Thai Project. In the study results of the Khlong Thai Excavation Project (Study report). Bangkok: The Secretariat of the Senate.
- Thanit Sorat. (2018). The Khlong Thai Excavation project for economic support. Meeting documents, Transport Commissioner, National Legislative Assembly (Copied documents)
- Tinno Kwandee (2015). Kra Isthmus to Khlong Thai, Thailand's ASEAN transport hub. Retrieved 6 August 2020, from <http://tinno01042558.blogspot.com/2015/04/blog-post.html>.
- Wiwat Chankingthong, Korkaew Chankingthong, Chutima Wangbenmad, Maneerat Rattanaphan, Singhanat Iadjui. (2018). People's opinions on the impact of the Khlong Thai project. *Journal of the Faculty of Business Administration, Hat Yai University, Thailand*, 997-1005.
- Wiwat Chankingthong, Phatarin, Rattanasuwan, Nathee Hemman, Wanna Wijit, Kanida Kraisanti and Puchita Chucherd Parnrungsi. (2018). Impact on the implementation of the Khlong Thai Project, Route 5A (Satun Province - Songkhla Province). *Journal of Faculty of Business Administration, Hat Yai University, Thailand*, 260-285.
- Wiwat Chankingthong, Phatarin, Rattanasuwan, Nathee Hemman, Wanna Wijit, Kanida Kraisanti and Puchita Chucherd Panrangsi. (2017). Impact on the implementation of the Khlong Thai Project, Route 7A (Trang - Songkhla). *Journal of Faculty of Business Administration, Hat Yai University, Thailand*, 1519-1528