

*Feasibility Analysis of Investment Project on Housing Development in Thailand with  
Valuation Technique based on Economy Factor*

Thirawat Chantuk\*<sup>1</sup>, Teera Kulsawat\*<sup>2</sup>, Nawalak Klangburam\*<sup>2</sup>

\*<sup>1</sup>Silpakorn University, Phetchaburi, Thailand, \*<sup>2</sup>Burapha University, Thailand

0319

The Asian Conference on Society, Education and Technology 2013

Official Conference Proceedings 2013

Abstract

This research concerns feasibility analysis of investment project in housing development in Thailand with valuation technique based on economy factor. The researchers brought conversion factor which World Bank developed in 1997 to apply with financial return calculation of the project. The results showed that the project was highly possible to invest. By considering financial ratio which was valued based on economy factor, IRR value reached 17.43%. This value was higher than other return on investment such as deposit with bank, debt instruments investment, gold, common stock, and NPV was higher than zero, equal to 50,706,519.93 Baht. Whereas other financial ratio had appropriate value, including profitability index which reached 1.10 and return on investment which was ROA, ROE, GPM, and OPM equal to 29%, 22%, 97%, and 91% respectively.

For a conclusion of administrative affairs according to business plan strategy, it was found that real estate entrepreneurs should establish salesperson skill training to know business process and condition, especially knowledge about Building Control Act, customer service process, and should emphasize on a location of project which was near to public utility, official place, and department store. Moreover, they had to provide sales promotion by giving a discount and gift, for example, air conditioning, motorcycle, etc. The important thing was to refund money back to customers in case that a credit was not valid, and the entrepreneurs should put an importance on advertising and making public relation about housing development project via media such as banner, local radio, television, and local newspaper.

**Keywords:** Investment feasibility, housing development, valuation based on economy factor

iafor

The International Academic Forum

[www.iafor.org](http://www.iafor.org)

## Introduction

Housing as part of the four factors is necessary for human life. The housing needs of individual are diversities according to the personal and economic status. The demand for housing in economic shall react through a theory of consumer behavior, which means that consumers would consider in buying a home subject to the utility that consumers consider at one time. That means the entrepreneur needs to conduct marketing strategy and execution with its maximum utility in view of the consumer or someone who would like to buy a house. The current housing demand of the consumers with a variety of real estate types such as single houses, semi-detached houses and townhouses. And because of different equity and attribute of real estate such as location, plan and facility which are considered as a key capital for entrepreneur. If construction costs are up by the economic situation, such as an inflation of the inflation target, the baht depreciation until it's increasingly affected to costs of essential imported materials for the construction. This may affect to quality of construction materials. It is considered that this type of business is high competition. The housing scheme must take the quality of the construction materials into account. In addition, the construction plans need to meet the needs of customers. Currently, the entrepreneur before start to run the business needs to conduct market research and analyze the feasibility of the project in order to evaluate the financial viability which is closed to the study of Saran Ukraihasa (2004), who studied the financial feasibility of the project: In case of town house in Pracharat Road area, Bang Sue Bangkok, the entrepreneur needs to analyze the feasibility to determine the viability of the project investment such as the net present value (NPV), internal rate of return (IRR) and benefit/ cost ratio (B / C Ratio), etc. It also needs to be studied about demand of costumers further before starting the project. The entrepreneur may acknowledge that their investment in the housing projects is uncertainty with the amount of money in several million Baht. Therefore, it is necessary to study carefully for the impacts and opportunities of investment by study the feasibility for investment in real estate. The analysis aimed to evaluate the potential of the project, both positive and negative in all aspects such as evaluation of satisfaction, expectations and the housing demands of consumers. As many researches can be seen from both the domestic and international such as the study of Joseph S.K. Lai (1999), who conducted a study regarding the evaluation of comparative facilities management for housing projects. The results showed that the fundamental factors for housing projects beside the quality of design and construction, facility also must take into account. It will give residents a better quality of life. Therefore, the study of demands before starting of the project is very important. It is not only informed the need of design and decoration but also guild the security, cleaning, repair and maintenance. The research of AMM Liu (2011), who studied satisfaction in housing scheme: A view of Hong Kong. The results showed that most of sample groups focused on the location of the project with the physical facilities and safety as the first priorities. This is compatible to the research of Ubonrat. Suwanboriboon (2003), who conducted a study to the satisfaction of the buyers to the housing project of Supalai Public Company Limited,

the results showed that the demographic characteristics of different buyers has no different for the overall satisfaction with housing project of Supalai Public Company Limited in a large scale. The structure of the housing projects focuses on facility and location with the positive appearance. The study of Pattara Thongnon (2004) about the expectations and trends of consumer behavior for buying decisions, who visited the exhibition of Thailand Asset Management Corporation, showed that the visitors will expect to buy the assets of the Thailand Asset Management Corporation based on price, quality and location. Market promotion is associated with decision behavior to buy a house.

The analysis of the feasibility of the project investment in the past, the entrepreneur will evaluate by the experience of management team. However, the current economic situation, as well as consumer behavior is more complex. It is important to use the techniques to analyze the feasibility of project investment, especially in housing industry by using Marketing Research to find the needs of customers and pricing adjustment, which will reflect the actual cost of production. Amid economic instability, using price adjustment of investment projects in accordance with project construction costs developed by the World Bank to consider the producer price index in case the entrepreneur develops the property and construction project. From the above phenomenon, the researcher is interested in the study to analyze the feasibility for investment in housing by modulation techniques based on economic factors. The two purposes are: 1) to analyze the possibility of administrative affairs and strategic planning for housing business 2) to analyze the feasibility for investment in real estate with price adjustments by economic factors to analyzing the return value of the investment in the real estate business.

### **Methodology**

In this study, the research tool was a questionnaire, interview and a show-card. Most of analysis picked from the primary data. In order to meet the objectives set by the researchers, data analysis in this research that was used for statistical data analysis are: 1) descriptive statistics, which is used to describe the statistics of personal information and the needs of the respondents. Presentation consists of (1) Frequency Table (Chatchawan Ruangprapan, 1994), (2) percentage (Boonjai Srisathitnaragul 2002: 293) (3), mean (Choosri Wongrattana 1998: 166) together with chi square statistics to test the hypothesis relations of the data in the study (Sutthanoo Srisai 2004: 124). The target groups of this research are the consumer population in the western part of the country's four provinces, such as Kanchanaburi, Ratchaburi, Nakorn Pathom and Petchaburi.

The studying procedure is determined in 4 steps including;

1. Conducting marketing research in order to determine consumer demand for marketing strategies. The study to those who are looking to purchase a house and existing resident which came from uncertain number of population. So the researchers had to determine the sample size in this study based on a formula of unknown population number to calculate the sample (Prasobchai Pasunon 2012) as follows.

$$n = \frac{Z^2 pq}{B^2} = \frac{(1.96)^2(0.5)(0.5)}{0.05^2} = 385.16$$

To obtain the better sample, the quantity of sample will be increased to 4 percent equal to 15 samples to obtain 400 samples for entire research. Feasibility sampling was used to select Convenience Sampling with Purposive Sampling and questionnaires to the samples in the western provinces.

2. To analyze the potential for investment in a housing project with tactical of value adjustments by economic factors, see the information in Table 1.

Table 1 shows the value of economic factors.

<b>Cost</b>	<b>Conversion Factor</b>
Land	0.91
Land Development	0.92
Construction	0.93
Building design	0.94
Deeds and permission	0.95
Other development	0.96
Service	0.97
Commission	0.98
Tax	0.99

Source: World Bank, 1997. References (Patcharee Adisornchai, 2009)

3. The income, expenses (cost) to not make the investment, income statement, balance sheet, and cash flow statements and return period.

4. To calculate the ratio of return on the investment by using ratio (Cohn & Geske, 1990) and (Thirawat Chantuk, 2012) follows.

- Internal rate of return (IRR) is the rate of internally return, must be greater than the return on other investment, such as money deposit, bond, gold and stock exchange.

- A net present value (NPV) is the present value, must be greater than zero, so it would be potential for investment.

- Profitability Index (PI) is the index of profit, greater than one index is potential for investment.

- Gross profit margin (GPM) is the primary gross margin to determine the effectiveness of the operation. High Percentage, high returns.

- Operating Profit Margin (OPM) is the profit from work. The higher percentage, the more potential for investment.

- Net Profit Margin (NPM) is the net profit margin. The higher percentage, the better for investment.

- Break event point (BEP) is the return of actual cost.

- Debt / Equity Ratio are the ratio of loans divided by shareholders' equity.

- Return on equity (ROE) is net income divided by shareholders' equity (Return on Investment).

-Ratio of net profit to total assets (ROA) is income divided by assets, the higher the percentage is better (Return on assets).

The conceptual framework shown in Figure1.

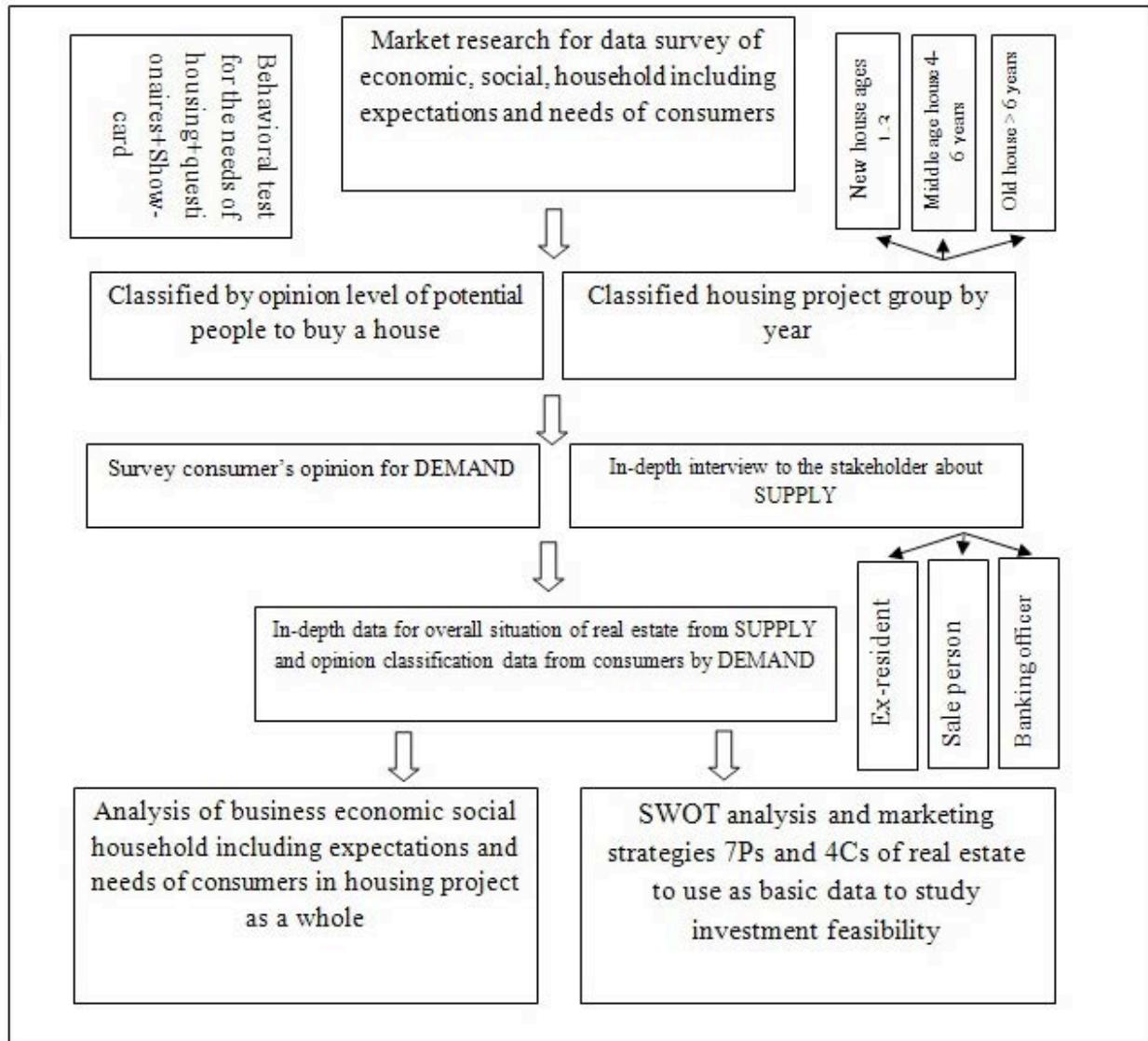


Figure 1: Conceptual framework of marketing research

Figure 1 shows the procedure of the marketing research. The research is based on the conceptual framework of the research in the first step with market research, which is essential to analyze the feasibility of the project. Pilot test was conducted by the researcher by using a behavioral test to 100 samples about their needs to buy a house in order to classify sample of the consumer who has the opportunity to buy a house by conventional career, while manufacturers are classified by entrepreneur group and ages of housing projects. To explore the in-depth data of the condition of the housing business from supply and the opinions of consumers data from DEMAND subject to the marketing mix strategies 7Ps (Product, Price, Place, Promotion, People, Physical, Process) and 4Cs (Customer, Cost, Convenience, Communication) of 400 samples. The researcher wants to get the results of the research beside the analysis of the business environment, economic, social and household as a whole as well as the expectations and needs of consumers in the real estate business. A SWOT analysis and the implementation of marketing strategies, 7Ps 4Cs of a housing project are

required to use as a preliminary study of the investment feasibility of projects. And can be linked to the concept of research from market research to analyze the feasibility of the project as in Figure 2.

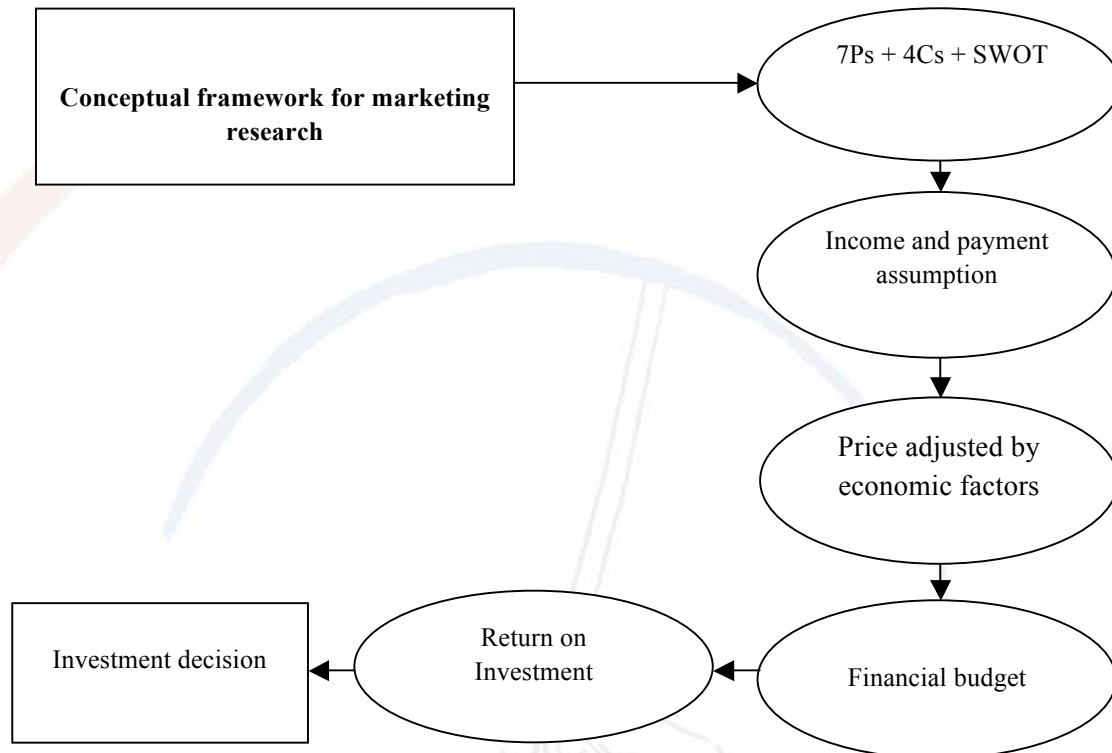


Figure 2: Conceptual framework of the research

## Results

It is found that the analysis of potential business administration with strategic planning for real estate contains useful information on the key marketing decisions. Most demand of strategic planning and business management in product are two floors homes, followed by two semi-detached where consumers consider that it is good-looking and sophisticated and prefer to buy a house with fully furnished. In terms of attributes, a durable structure house is the most preferable. If consider to the price, it is found that most of the mortgage plan are between 5,000 to 15,000 per month during period of 10 to 15 years, which is able to analyze that consumers have capacity to buy a house less than 2 million baht, while the most preferable about place are likely to have living space from 150 to 200 square meters and located at easy access adjacent to the main road and public transportation including all facilities within the project such as a convenience store, restaurants and a park . In terms of promotion, it should be the motivated promotion mostly the air-conditioned and motorbikes. In addition, if the loan is not being approved, in this case the project must return deposit money to client. The after-sales service in case of robbery, floods, power failure, etc. In case of people, the security guard is most wanted and its reliable

qualifications are required as well as good knowledge about the project. The transferred process is preferred to work out within one week and must be quick and easy to understand. For physical, tranquil environment for relax is preferable. In case of natural disasters, the housing purchase is turn out to be slowdown and it is able to summarize the results of the correlation analysis of consumers' opinions for management and marketing planning as shown in Table 2.

H0: Different personal factors of customers are not affected to 7Ps.

H1: Different personal factors of customers are affected to 7Ps.

**Table 2:** Relationship analysis between personal factors and 7Ps.

Personnel factors	Product	Price	Place	Promotion
<b>Sex (Female)</b>	<b><math>H_1</math> affected (P-Value = .005 )</b>	<b><math>H_1</math> affected (P-Value = .035 )</b>	<b><math>H_0</math> not affected (P-Value = .057 )</b>	<b><math>H_0</math> not affected (P-Value = .113)</b>
<b>Age (20-30 years old)</b>	<b><math>H_0</math> not affected (P-Value = .096 )</b>	<b><math>H_0</math> not affected (P-Value = .195 )</b>	<b><math>H_1</math> affected (P-Value = .037)</b>	<b><math>H_1</math> affected (P-Value = .005 )</b>
<b>Education (Bachelor degree)</b>	<b><math>H_1</math> affected (P-Value = .002 )</b>	<b><math>H_1</math> affected (P-Value = .002 )</b>	<b>not affected (P-Value = .088 )</b>	<b><math>H_1</math> affected (P-Value = .000 )</b>
<b>Career (Self-employed)</b>	<b><math>H_0</math> not affected (P-Value = .093 )</b>	<b><math>H_1</math> affected (P-Value = .093 )</b>	<b><math>H_1</math> affected (P-Value = .000)</b>	<b><math>H_1</math> affected (P-Value = .000)</b>
<b>Status (Single)</b>	<b><math>H_1</math> affected (P-Value = .002 )</b>	<b><math>H_1</math> affected (P-Value = .002 )</b>	<b><math>H_0</math> not affected (P-Value = .067 )</b>	<b><math>H_1</math> affected (P-Value = .011)</b>
<b>Residence status (Resident)</b>	<b><math>H_1</math> affected (P-Value = .038 )</b>	<b><math>H_1</math> affected (P-Value = .022)</b>	<b><math>H_0</math> not affected (P-Value = .119 )</b>	<b><math>H_1</math> affected (P-Value = .000 )</b>
<b>Family members (up to 5 persons)</b>	<b>not affected (P-Value = .073)</b>	<b><math>H_1</math> affected (P-Value = .003 )</b>	<b><math>H_0</math> not affected (P-Value = .138 )</b>	<b><math>H_1</math> affected (P-Value = .000 )</b>
<b>Personal salaries per month (10,000-15,000 Baht)</b>	<b><math>H_1</math> affected (P-Value = .000)</b>	<b><math>H_1</math> affected (P-Value = .000 )</b>	<b><math>H_1</math> affected (P-Value = .019 )</b>	<b><math>H_1</math> affected (P-Value = .000 )</b>
<b>Family salaries per month (20,000-30,000 Baht)</b>	<b><math>H_1</math> affected (P-Value = .000 )</b>	<b><math>H_1</math> affected (P-Value = .001 )</b>	<b><math>H_1</math> affected (P-Value = .000 )</b>	<b><math>H_1</math> affected (P-Value = .030 )</b>
<b>Personal Factor</b>	<b>People</b>	<b>Process</b>		<b>Physical</b>



<b>Sex (Female)</b>	<b><math>H_1</math> affected (P-Value = .011)</b>	<b><math>H_0</math> not affected (P-Value = .461)</b>	<b><math>H_0</math> not affected (P-Value = .361)</b>
<b>Age (20-30 years old)</b>	<b><math>H_1</math> affected (P-Value = .000)</b>	<b><math>H_0</math> not affected (P-Value = .061)</b>	<b><math>H_1</math> affected (P-Value = .003)</b>
<b>Education (Bachelor degree)</b>	<b><math>H_1</math> affected (P-Value = .002 )</b>	<b><math>H_1</math> affected (P-Value = .003)</b>	<b><math>H_1</math> affected (P-Value = .000)</b>
<b>Career (Self-employed)</b>	<b><math>H_1</math> affected (P-Value = .018)</b>	<b><math>H_0</math> not affected (P-Value = .237)</b>	<b><math>H_0</math> not affected (P-Value = .818)</b>
<b>Status (Single)</b>	<b><math>H_1</math> affected (P-Value = .010)</b>	<b><math>H_1</math> affected (P-Value = .005)</b>	<b><math>H_1</math> affected (P-Value = .010)</b>
<b>Residence status (Resident)</b>	<b><math>H_1</math> affected (P-Value = .000 )</b>	<b><math>H_1</math> affected (P-Value = .002)</b>	<b><math>H_1</math> affected (P-Value = .044)</b>
<b>Family members (up to 5 persons)</b>	<b><math>H_1</math> affected (P-Value = .022 )</b>	<b><math>H_1</math> affected (P-Value = .000)</b>	<b><math>H_1</math> affected (P-Value = .000)</b>
<b>Personal salaries per month (10,000-15,000 Baht)</b>	<b><math>H_1</math> affected (P-Value = .013 )</b>	<b><math>H_1</math> affected (P-Value = .013)</b>	<b><math>H_1</math> not affected (P-Value = .089)</b>
<b>Family salaries per month (20,000-30,000 Baht)</b>	<b><math>H_1</math> affected (P-Value = .000)</b>	<b><math>H_1</math> affected (P-Value = .005)</b>	<b><math>H_1</math> affected (P-Value = .006)</b>

*Criteria of Crosstab Chi-square values came from calculation more than standard value or Crosstab Chi-square P-Value < Alpha of .05 to accept  $H_1$  (Alternative hypothesis) reject  $H_0$  (Null hypothesis).*

As value adjustment data based on the economic factors, it is found that categories of capital to be adjust the value are included costs of land, land development, construction, building design, deeds separation, allocation license and other development, operations, fee and commission as well as tax payment. It is able to calculate percentage of income, as shown in Table 3 (which does not calculate the sensitivity for investment).

**Table 3:** The financial ratio

<b>Financial Ratio</b>	
Internal Rate of Return : IRR	17.43%
Net Present Value : NPV	50,706,519.93
Profitability Index : PI	1.10
Gross Profit Margin: GPM	97%
Operating Profit Margin: OPM	91%
Net Profit Margin: NPM	60%
Break Event Point : BEP	12,084,625.87
Debt to Equity Ratio : D/E Ratio	0.59
Return on Equity : ROE	29%
Return on Asset: ROA	22%

### **Conclusion**

The results showed that the real estate development business should come up with strategic planning in business operations, such as staff training for a greater potential for knowledge of the building codes, customer service procedures, development of housing quality, housing design meets customer's demand, on-going marketing plan in order to reach the potential customers as much as possible and able to select healthy location nearby facilities, official place and department stores, promotional discounts to customers with premium amenities such as air conditioning and motorcycle Including a refund of the credit in case the credit of customer was rejected and provide for the credit institution to join the program as an option. The on-going advertising public relations about the product must be spoken out along with market research every times before making decision on investment to reduce the risk of administration.

While the analysis of the investment possibility in housing projects with technical of price adjustments technique by economic factors. The division of the cost of the land, land development, construction, design, allocation license, other development, operations, fee and commission, tax expenditures. After price adjusted by economic factors and then the financial ratios can be used to analyze the investment feasibility. Since the ratio of the value adjustment through the financial and economic factors showed that the IRR is greater than the return on other investment, such as bank deposit, bond, gold and shares (IRR has a greater value than the return on other investment then it is potential for investment) the NPV is greater than zero then it is potential for investment and the PI is greater than one then it is potential for investment, while the profit index is equal or more than one at 1.10 and if the return on investment ROA, ROE, GPM and OPM is equal to 29%, 22%, 97% and 91%

respectively. Thus, by considering the financial ratio as above, the researcher sees that the project is possible for investment.

### **Suggestions**

The results showed that the housing entrepreneur should not set the price too high. Most consumers want the price not over than 2 million with marketing promotion such as discounts and gifts. Before start to invest in this sector, it is recommended to conduct marketing research for a decision making. This will bring to the knowledge of consumer's need and the competitive situation in the market.

For further research, as this research is focusing only four provinces of Kanchanaburi, Ratchaburi, Nakorn Pathom and Petchaburi, therefore, the researcher should conduct the research by cover all samples group in all regions of Thailand to obtain data for comparison the needs of the consumer that affected to the analysis of investment feasibility in housing project. Conversion Factor should be adjusted by using the recent Producer Price Index of Thailand to find the appropriate data for a case study in Thailand.

### **Acknowledgment**

The research was completed very well by a collaboration of the sample from people in the Western of Thailand for giving various data which is very useful for the research. This time, I would like take this opportunity to thank everyone especially professors for textbooks and materials as my reference. So this research can contain with the most substantial knowledge for further improvement and study.

## References

- A.M.M. Liu (1999). Residential satisfaction in housing estates: a Hong Kong Perspective. Department of Real Estate and Construction, The University of Hong Kong, Pokfulam Road: Hong Kong, China
- Boonjai Srisatitnarakool. (2002). *Nursing Research Methodology*. 2<sup>nd</sup> edition. Bangkok: Chulalongkorn University.
- Chucheep Pipatsithee. (2001). *Economics of Project Analysis*. 4<sup>th</sup> edition. Bangkok: Text and Journal Publication Co., Ltd.
- Chusri WongRattana. (1998). *Statistics Application Technique for Research*. Bangkok: Thepnimit Kan Pim.
- Cohn, Elchanan; & Gesk, G. Terry. (1990). *The Economics of Education*. 3rd ed. United State : BPCC Wheatons.
- Joseph H.K. Lai. (2011). Comparative evaluation of facility management services for housing estates. Department of Building Services Engineering, The Hong Kong Polytechnic University : Hong Kong, China
- Patchreeporn Adisornchai. (2009). *Feasibility Study of Investment Project in Housing Development on East Kanchanaphisek Road*. Thesis. Managerial Economics. Bangkok: Graduate School, Srinakharinwirot University. Photocopy.
- Pattara Tongnon. (2004). *Expectation and Behavior of Second-Hand House Buying Decision of Consumers who Participated Disposal of Thai Asset Management Corporation*. Thesis M.B.A. (Management). Bangkok: Graduate School of Srinakharinwirot University. Photocopy.
- Prasopchai Pasunon. (2012). *Marketing Research*. Bangkok: Top Publishing Co., Ltd.
- Sarun Ukraihasa. (2004). *Financial Feasibility Study of Town House Project at Pracharat Road Area, Bang Sue, Bangkok*. Thesis M.E. (Economics). Bangkok: Graduate School of Kasetsart University. Photocopy.
- Sootthanu Srisai. (2004). *Applied Statistics for Social Research*. Bangkok: Chulalongkorn University.
- Thirawat Chantuk. (2012). *Evaluation of the opportunity cost of Capital Costs for Feasibility Analysis of Investment Project to extend an Enterprise in Leasing Financial Service Industry*. (Research article). Business Administration and Economics Journal, Taksin University. 7<sup>th</sup> year Vol. 1, page 24.
- Ubonrat Suwanboriboon. (2003). *Satisfaction of Buyer toward Housing Development Project of Supalai Company (Public)*. Thesis M.B.A. (Management). Bangkok: Graduate School of Srinakharinwirot University. Photocopy.
- World Bank. (1997). *Shadow Prices for Economic Appraisal of Project: An Application to Thailand*. World Bank Staff Paper (NO.609). Washington D.C.

