

Statistical model for monthly rental apartment in Nakhon Ratchasima Province, Thailand

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Key words

Monthly Rental Apartment, Multiple Regressions Technique, Rental fee

Abstract

The purpose of this study explicates the several factors that affect the monthly rental rate for apartment service in NakhonRatchasima Province, Thailand. The information efforts in making the decision not only choosing the residence but also launching the marketing strategy in apartment business. By gathering data from total of 31 owners of apartment in the NakhonRatchasima Metropolitan Area, data is analyzed with multiple regression techniques to estimate apartment rental fee using basic mathematical model. Statistical inferences are applied for estimating the data parameters before analyzing the data. The 13 factors used in this study are composed of the distance between apartment location and a main railway station (FAR), sizing of apartment unit(S),age of apartment (A), parking space (C), public transportation (BUS), unit rate of water bill (W), unit rate of electrical bill (E), security services 24-hour (SA), internet access (I), kitchen Sharing (K), CCTV, grocery store (ST) and laundry facility (LA).

It is shown that only 3 of 13 factors, namely age of apartment, CCTV and auto vehicle parking space, play an important role to monthly apartment service fees. e. Finally, these factors can be described using the mathematical model in term of monthly rental rate for an apartment equation.

1. Introduction

To expedite the development and investment plan for the implementation of the Asean Economic Community (AEC), Thai's government has approved the government's massive infrastructure development program of 55 projects worth Bt 2.27 trillion (US\$66.29 billion). Of the total budget of Bt 2.27 trillion, 64 percent will fund 31 rail-related projects, 24 percent will go to 13 road projects, 7 percent to seven water-transport projects, and 4.75 per cent to four air-transport projects (www.nationmultimedia.com). NakhonRatchasima province also received the budget to promote become metropolis of transportation for the northeastern region. There are huge demands from people who need to live next to future site of railway stations. Therefore, many types of resident facilities, namely apartment, condominium, house, etc. will be constructed to support this mega infrastructure project. This study is very important to one who needs to operate the rental apartment or their marketing strategy.

This study provides an empirical investigation of factors that effect to market for apartment rent. The study will focus on the relationship between apartment rent and factor effects of apartment rent. Mathematical model will find out the relationship between them.

2. Literature Review

The previous literature such as (Guntermann and Norrbin, 1987); Ivy (2013); Zietz, etc., (2007) showed that many common factors played a key role on both rental fee and facility value. The apartment monthly rent is functions of size, location, condition, number of bathrooms, and amenities such as sport courts (Guntermann and Norrbin, 1987).The effect of rent controls on marginal valuation of apartment units are covered parking, Laundromats, age, distance to business center and other variables have a significant effect on rent (Mark, 1984). The regression can be used to examine the effect of creative financing on real estate values (Smith and Sirmans,

1983), also to estimate the market value (Gipe, 1976) and finally examines the effects amenities, services, and external factors on rent for multi-family housing (Sirmans,1989).

3. Data

The populations in this study are the entrepreneurs or the property owner of apartment which has at least 10 rooms of monthly rental and unlimited number of floors. The apartment is far from future site of railway station, within 10 kilometers. The data consist of two groups: (1) physical characteristic including location, age, room size (detail of the first data group shown in Table 1. (2) The Independent Variables that composed of price of parking area, number of public transportation, price of water using, price of voltaic using, security services 24-hour, price of internet access, kitchen sharing, CCTV, time opening of grocery store and number of Laundromats. The detail of the second data group shown in Table 2

Variable	Minimum Value	Maximum Value	Unit
o Rent	1,200	5,500	Bath/month
o Distance	0.5	8.5	Km.
o Age	1	20	Year
o Room Size	25	45	Square meter

Table 1:The physical characteristic data

Variable	0	1	2
o Price of parking area	none	1-100 Bath/month	101 Bath/month Up
o Number of public transportation	none	1-10 bus lines	11 bus lines Up
o Price of water using	none	5-8 Bath/unit	8 Bath/unit up
o Price of voltaic using	none	8-10 Bath/unit	10 Bath/unit up
o Security services 24-hour	none	1-12 hrs/day	24 hrs.
o Price of Internet access	none	1-100 Bath/month	101 Bath/month Up
o Kitchen Sharing	none	1-12 unit	24 hrs
o CCTV	none	Only first floor	More than 1 floor
o Time opening of grocery store	none	1-12 hrs/day	24 hrs.
o Number of Laundromats	none	5-10 units	More than 10 units

Table 2: The Independent Variables

4. Analysis Method

The descriptive statistics is used to analyze the characteristics of a monthly rental apartment in term frequency distribution including average (mean) and standard deviation. The Multiple Regression Method is used to estimate the various factors affect the apartment' monthly rent rate. Mathematical model of rental apartment equations can be found from the Multiple Regression in the general form of the equation is

$$P = f(Dist, A, S, C, BUS, W, E, SA, I, K, CCTV, ST, LA) \dots\dots\dots(1)$$

Dependent variable is the apartment' monthly rent rate that shows in THB a unit rent per month. Independent variables include the distance from apartment to the railway station expected location(Dist), a size of apartment room(S), apartment age(A), parking area(C), number of public transportation(BUS), price of water using(W), price of voltaic using(E), security services 24-hour(SA), price of Internet access(I), kitchen Sharing(K), CCTV, daily hour of grocery store(ST) and number of Laundromats(LA).

5. Results

Descriptive statistic parameters can be found from the secondary data, the average (mean) and standard deviation in Table 1 and the frequency distribution is shown in Fig. 1.

	Mean	Std. Deviation	N
o Rent	3,153.2	1,046.98	31
o Dist	3.53	2.089	31
o Age	7.65	4.746	31
o Size	37.71	6.77	31
o CarPark	1.39	.84	31
o Bus	1.00	.45	31
o Water	1.39	.84	31
o Elec	1.39	.84	31
o Sec	1.00	.45	31
o Internet	1.39	.85	31
o Kic	1.45	.77	31
o CCTV	.87	.34	31
o Shop	1.45	.77	31
o Lau	1.45	.77	31

Table 3: The descriptive statistic parameters of effected factors.

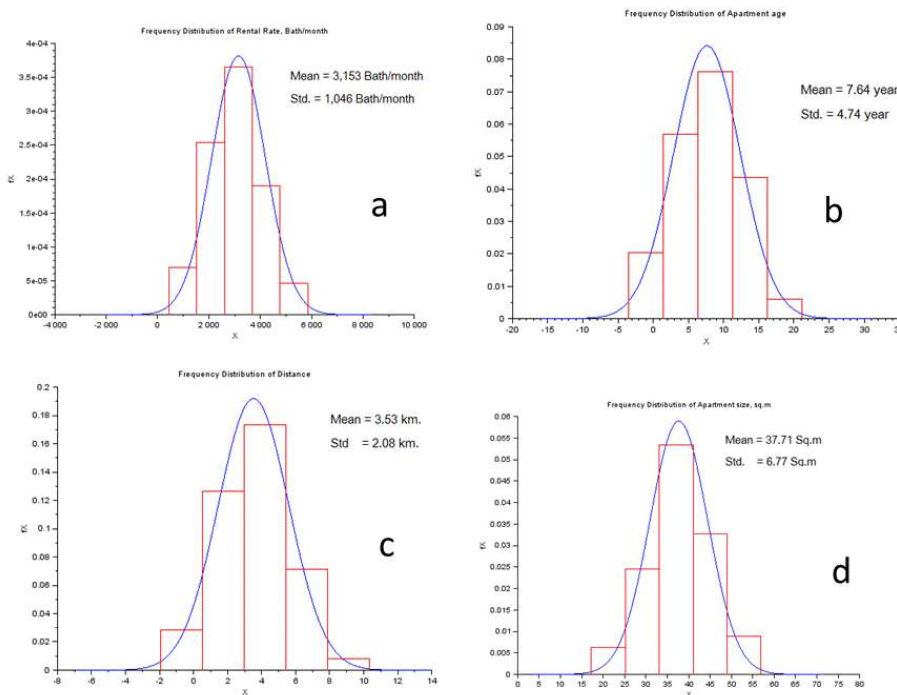


Figure 1: The frequency distribution of the first group data. a) Rent, b) Age, c) Distance, d) Room Size.

The multiple regression is performed to determine the mathematical apartment renting model. The mathematical model is shown in Eq.(2)

$$Rent = 3029.175 - 89.89 A + 1879.30 CCTV - 595.13 C \dots\dots\dots(2)$$

From Eq.(2) it found the factors that affect to the apartment renting are age of the apartment, car parking space and CCTV.

Output can be described that in any case don't have any factors; the apartment rent rate is 3,029.175 baht per month. The age of the apartment has negative effect on rent rate about 89.894 baht per month as same as car parking of the apartment has negative effect on rent rate about 595.129 baht per month. With CCTV, it was shown positive effect on rent rate about 1,879.297 baht per month.

6. Conclusions

The results show that a number of these characteristics do affect to apartment rent rate. Specifically, such items as age of apartment, parking and CCTV are very important factors of apartment rent. Mathematical model apartment rent equations can be found from the Multiple Regression in terms of important factors. This proposed mathematical model can be used for decision making of a residence facility information and can be used in the decision to plan a marketing strategy that meets the needs of consumers for such businesses in the further.

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