Factors Affecting the Decision to Use Parking Business Services of Residents of Large Residential Condominiums near the BTS Lines in Bangkok

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Received: *21/04/2024* Revised: *25/05/2024* Accepted: *27/05/2024*

Abstract

This research aimed to study factors affecting the decision to use parking business services of residents of large residential condominiums near the BTS lines in Bangkok. This research is quantitative, studying residents living in large residential condominiums near the BTS Skytrain lines in the Bangkok area. Using simple random sampling, the samples consisted of 384 respondents. The data collection instrument used was a survey questionnaire developed by the researcher, and the statistical tools used were Pearson product-moment correlation and multiple regression analysis. Results of the study found that 1) overall and all aspects of using parking business services in Bangkok were at a high level, 2) overall and all aspects of the decision to use parking business services near the Skytrain lines in Bangkok were of high quality 3) there was a relationship between each variable of using parking business services in Bangkok and the decision to use the parking business services, statistically significant at the .01 level, and the Pearson correlation coefficients (r) ranging between .408 - .785 4) four out of seven factors, namely process of service (X_7), place (X_3), product (X_1) and physical evidence & presentation (X_6) together had a positive effect on the decision to use the parking business services in the city.

Keywords: Parking service business, Large residential condominiums near the Skytrain lines, Decision to use the parking business services

1. Introduction

Large residential condominiums are now a necessity in major cities around the world, including Bangkok, where there is a great need of large residential condominiums. That is a result of economic and social changes, leading to an influx of population into the capital area. Hence, there is a rapid increase in population in the urban area, resulting in high demand for housing (Puncreobutr etal., 2019; Ariyawansa & Udayanthika, 2011; Khemrat & Khumsap, 2022).

The number of large residential condominiums in Thailand has increased rapidly. It has been found that the number of large residential condominiums is very dense in every area along the Skytrain lines, and the main reason for buyers' purchase decision is that it provides a residential alternative for travelling to the workplace or to contact and coordinate various matters. Business contact, by using a private car or Skytrains (Puncreobutr et. al., 2018; Khemrat & Khumsap, 2022). This comes from the main reason of the person deciding to buy a condominium. as a choice of residence

However, in the daily life of residents of large condominiums in Bangkok and surrounding areas, it was found that they would choose to travel by Skytrain and park their personal cars in the parking area of the condominium (Choontanom, 2019; Kambut, 2019). Furthermore, it was found that in the construction of almost every condominium, there were fewer parking spaces than residential units (Kaewpruk, 2021; Vaisiriroj & Ussavadilokrit, 2022). For example, a condominium has 4,101 residential units, but there are 1,130 parking spaces, accounting for just 27.55% of the total (Methaworakul, 2019). That is, many residents' personal cars need parking spaces outside the condominium, and if there are many large condominiums in the same area, the demand for parking spaces outside condominiums is increasing exponentially (Methaworakul, 2019; Choontanom, 2019).

Obviously, there is a problem of insufficient car parking in condominiums, which is indeed a problem that occurs in major cities around the world (Barter, 2011); various solutions have been proposed. For example, the Victoria Transport Policy Institute (Department of Planning, Building and Code Enforcement, 2008) proposed six approaches to solving the problem: 1) increasing parking spaces on the road, 2) maximizing the current parking space efficiency, 3) reducing the need for parking, 4) solving the problem of overflowing parking in the parking area, 5) redesigning the parking space, 6) management of the parking space to support the changing need, such as providing parking business services, etc.

Although setting up a car parking business service is considered one important way to solve the problem of insufficient parking spaces in large condominiums of various large cities, the investment value in the parking business has been found to be relatively high because of land prices, building designs and construction costs. As a result, investing in such a business is still unclear. That influences the number of personal cars overflowing from parking spaces of large residential condominiums to on-street parking, causing even more traffic congestion (Choontanom, 2019).

In order to solve the aforementioned problem systematically and sustainably, which involves business development, traffic problem solving and the development of quality of life for Thai people, the researcher believed that there should be a study on factors affecting the decision to use parking business services by residents of large residential condominiums near the Skytrain lines in Bangkok.

Research results would be beneficial to the businesspeople, investors and consumers residing in condominiums and the surrounding areas. Study results would also benefit agency administrators involved in construction, urban planning and traffic, and those related to business administration and professional development to use the information obtained to develop social service as well as being beneficial to administrators of business administration programs who can use the information obtained to develop academic services and/or use in curriculum development to further raise the quality of Thai graduates.

2. Research Objectives

The main objective of the research is to investigate factors affecting the decision to use parking business services of residents of large residential condominiums near the Skytrain lines in Bangkok, Thailand.

3. Research Methodology

This research used a quantitative method. The population is 100,000 people living in large residential condominiums near the BTS Skytrain lines in Bangkok. The researcher calculated the sample size using the Krejcie and Morgan table. The sample, obtained using simple random sampling, consisted of 384 respondents.

3.1 Variables in the research

1) Independent variable

The independent variable was the factors in using parking business services in Bangkok.

Factors in the use of parking business services by residents of large residential condominiums near the Skytrain lines in Bangkok used in this study were applied from Philip Kotler's (2000) concept of marketing mix (7Ps) for service businesses consisting of 7 factors: product (X_1), price (X_2), place (X_3), promotion (X_4), people & employee (X_5), physical evidence & presentation (X_6) and process of service (X_7).

2) Dependent variable

The dependent variable was the decision to use parking business services near the Skytrain lines in Bangkok.

The decision to use the parking business of residents of large residential condominiums near the Skytrain lines in Bangkok used in the study was applied from Serirat's (2003) conceptual framework on buyer's purchase decision, consisting of 4 aspects: economic stimulus (Y_1), technological stimulus (Y_2), political stimulus (Y_3) and culture stimulus (Y_4).

3.2 Data collection instruments and statistics used in the research

The data collection instrument was a questionnaire created by the researcher. It had a discriminatory power of 0.351 to 0.938 and a reliability of 0.91.

Statistics used in the research were mean, S.D., Pearson product moment correlation, VIF (Variance Inflation Factor) and multiple regression analysis.
The research period was from June 2023 to October 2023.

4. Research Results

The results of the study are as follows:

4.1 Level of use of parking business services in Bangkok

The study of factors in using parking business services in Bangkok, Thailand, is shown in Table 1.

Table 1 Level of use of parking business services in Bangkok (N=384)

Factors	Mean	S.D.	Level of service use
Product(X_1)	4.04	.657	High
Price(X_2)	4.07	.628	High
Place(X_3)	4.30	.638	High
Promotion (X_4)	4.22	.636	High
People & employee (X_5)	4.12	.628	High
Physical evidence & presentation (X_6)	4.19	.707	High
Process of service (X_7)	4.24	.519	High
Overall use of parking business service	4.17	.538	High

Table 1 shows that the overall use of parking business services in Bangkok was at a high level (4.17). When considering each aspect of the use of parking business services, it was also found that each factor was at a high level, as follows: place (4.30), process of service (4.24), promotion (4.22), physical evidence & presentation (4.19), people & employee (4.12), price (4.07) and product (4.04), respectively.

4.2 Level of decision to use parking business services near the Skytrain lines in Bangkok

The level of decision to use parking business services of residents of large residential condominiums near the Skytrain lines in Bangkok, Thailand, is presented in Table 2 below.

Table 2 Decision to use parking business services near the Skytrain lines in Bangkok (N=384)

Aspect	Mean	S.D.	Decision level
Economic stimulus(Y_1)	3.85	.915	High
Technological stimulus (Y_2)	3.94	.803	High
Political stimulus (Y_3)	4.29	.526	High
Culture stimulus (Y_4)	4.26	.537	High
Overall decision of using parking business services	**4.09**	**.579**	**High**

Table 2 reveals that, overall, the decision to use parking business services near the Skytrain lines in Bangkok was at a high level (4.09). When considering each aspect of decision, it was also found to be at a high level, as follows: political stimulus (4.29), culture stimulus (4.26), technological stimulus (3.94) and economic stimulus (3.85), respectively.

4.3 Relationship between factors in using parking business services and the decision to use parking business services

Results of study of the relationship between factors in using parking business services and decision to use parking business services according to each variable, using the analysis of Pearson correlation coefficients as shown in Table 3.

Table 3 Correlation between factors in using parking business services and decision to use them in Bangkok (N=384)

Variables	X_1	X_2	X_3	X_4	X_5	X_6	X_7	Y_1	Y_2	Y_3	Y_4
X_1	1.000										
X_2	.731**	1.000									
X_3	.640**	.754**	1.000								
X_4	.672**	.732**	.786**	1.000							
X_5	.718**	.741**	.736**	.826**	1.000						
X_6	.707**	.709**	.725**	.776**	.763**	1.000					
X_7	.500**	.512**	.482**	.571**	.598**	.530**	1.000				
Y_1	.448**	.439**	.410**	.421**	.408**	.461**	.417**	1.000			
Y_2	.435**	.425**	.420**	.408**	.414**	.418**	.486**	.792**	1.000		
Y_3	.482**	.499**	.527**	.598**	.568**	.533**	.769**	.458**	.525**	1.000	
Y_4	.471**	.515**	.567**	.647**	.636**	.560**	.780**	.419**	.486**	.785**	1.000
VIF	2.703	3.302	3.310	4.422	4.222	3.295	1.633	2.707	2.976	2.806	2.653

** p< .01

Table 3 reveals that the relationship between variables of each aspect varied from low to high level. The Pearson correlation coefficients (r) were between .408 to .792, statistically significant at the .01 level, or multicollinearity may occur. Therefore, the researcher conducted a further test of multicollinearity using VIF values. The test results showed VIF values ranging from 1.633 to 4.422, which were less than 10. This indicated that there was no relationship among the variables or no multicollinearity, hence, they could be used for multiple regression analysis.

In addition, the researcher examined the relationship between the independent variable, which is the factor in using parking business services, and the dependent variable, which is the decision to use parking business services in Bangkok, as shown in Table 4.

4.4 Analysis of the influence of factors in using parking business services on the decision to use parking business services

To investigate the influence of factors of using parking business services on the decision to use parking business services of residents of large residential condominiums near the Skytrain lines in Bangkok, the researcher tested the hypotheses by using multiple regression analysis with the stepwise procedure and then created a raw score and standard score equation, as well as showed the results of the multiple correlation analysis (R), coefficient of determination (R^2), adjusted coefficient of determination (adj R^2), standard error of estimate (S.E. est), and variance obtained from multiple regression analysis, resulting in 4 models as shown in Tables 5 – 8.

Table 4 Test of correlation of regression coefficients: Factors in using parking business services that affect the decision to use parking business services in Bangkok (N=384), Model 1

Factors in using parking business services	Decision of using parking business services			t	p
	b	S.E.b	β		
Constant	.822	.177		4.642	.000**
Process of service (X_7)	.770	.041	.690	18.611	.000**
F= 346.387 P = 0.000 R =.690 R^2 = .476 AdjR^2 = .473					

* p< .05 ** p< .01

According to Model 1, as presented in Table 4, only 1 out of 7 factors was found to have a positive effect on the decision to use parking business services by residents of large residential condominiums near the BTS lines in Bangkok (Y), that is the process of service (X_7), statistically significant at the .01 level, with a coefficient of determination of 47.60% (R^2 = 0.476).

Table 5 Test of correlation of regression coefficients: Factors in using parking business services that affect the decision to use parking business services in Bangkok (N=384): Model 2

Factors in using parking business services	Decision of using parking business services			t	p
	b	S.E.b	β		
Constant	.340	.178		1.914	.056
Process of service (X_7)	.612	.044	.548	13.851	.000**
Place (X_3)	.268	.036	.295	7.459	.000**
F= 225.779 P = 0.000 R =.736 R^2 = .542 AdjR^2 = .540					

* p< .05 ** p< .01

According to Model 2, as presented in Table 5, only 2 out of 7 factors were found to have a positive effect on the decision to use parking business services by residents of large residential condominiums near the BTS lines in Bangkok (Y), that is the process of service (X_7) and place (X_3), statistically significant at the .01 level, with a coefficient of determination of 54.20% (R^2 = 0.542).

Table 6 Test of correlation of regression coefficients: Factors in using parking business services that affected the decision to use parking business services in Bangkok (N=384): Model 3

Factors in using parking business services	Decision of using parking business services			t	p
	b	S.E.b	β		
Constant	.287	.176		1.628	.104
Process of service (X_7)	.568	.045	.508	12.485	.000**
Place (X_3)	.195	.042	.214	4.674	.000**
Product (X_1)	.137	.041	.156	3.356	.001**
F= 158.326 P = 0.000 R =.745 R^2 = .556 AdjR^2 = .552					

* p< .05 ** p< .01

According to Model 3, as presented in Table 6, it was found that 3 out of 7 factors had a positive effect on the decision to use parking business services by residents of large residential condominiums near the BTS lines in Bangkok (Y), that is the process of service (X_7), place (X_3) and product (X_1), statistically significant at the .01 level, with a coefficient of determination of 55. 60% (R^2 = 0.556).

Table 7 Test of correlation of regression coefficients: Factors in using parking business services that affected the decision to use parking business services in Bangkok (N=384): Model 4

Factors in using parking business services	Decision of using parking business services			t	p
	b	S.E.b	β		
Constant	.311	.176		1.771	.077
Process of service (X_7)	.548	.046	.491	11.865	.000**
Place (X_3)	.148	.047	.163	3.173	.002**
Product (X_1)	.098	.045	.111	2.199	.028*
Physical evidence & presentation (X_6)	.099	.047	.121	2.129	.034*
F= 120.981 P = 0.000 R =.749 R^2 = .561 AdjR^2 = .556					

* p< .05 ** p< .01

According to Model 4, as presented in Table 7, it was found that 4 out of 7 factors had a positive effect on the decision to use parking business services by residents of large residential condominiums near the BTS lines in Bangkok (Y), that is the process of service (X_7), place (X_3), product (X_1) and physical evidence & presentation (X_6), statistically significant at the.01 level, with a coefficient of determination of 56.10% (R^2 = 0.561).

The researcher therefore used Model 4 to explain the factors of using parking business services that influenced the decision to use parking business services of residents of large residential condominiums near the Skytrain lines in Bangkok. This involved 4 factors: process of service (X_7), place (X_3), product (X_1) and physical evidence & presentation (X_6), with coefficient of determination of 56.10% (R^2 = 0.561) and a predictive equation as follows:

Raw score

$Y = .311 + .548(X_7) + .148(X_3) + .098(X_1) + .099(X_6)$

Standard score

$Z_y = .491(X_7) + .163(X_3) + .111(X_1) + .121(X_6)$

5. Summary of Results

Results of the study can be summarized as follows:

5.1 Overall and according to each of the 7 factors, use of parking business services near the Skytrain lines in Bangkok was at a high level, with place ranking first and product trailing last.

5.2 Overall and according to each of the 4 factors, decision to use parking business services near the Skytrain lines in Bangkok was at a high level, with political stimulus ranking first and economic stimulus coming last.

5.3 Based on the VIF test, the value of each variable of the use of parking business services near the Skytrain lines in Bangkok was less than 10. This indicated that the variables

under study did not have multicollinearity. In addition, every variable was related to the decision to use parking business services, statistically significant at the .01 level, with Pearson correlation coefficients (r) between .408 to .792, indicating that each variable of factors in using parking business services and decision to use them in Bangkok could be used to predict the decision to use parking business services.

5.1 The 4 factors in the use of parking business services near the BTS lines in Bangkok, namely process of service (X_7), place (X_3), product (X_1) and physical evidence & presentation (X_6) had a positive effect on the decision to use parking business services, with a coefficient of determination of 56.10% (R^2 = 0.561), that is, the 4 factors affected the decision to use parking business services.

The equation could be written in the raw score form as Y = .311 +.548(X_7) +.148(X_3) +.098(X_1) +.099(X_6) and in standard score form as Z_y = .491. (X_7) +.163(X_3) +.111(X_1) +.121(X_6).

6. Discussion

From the research results, it was found that process of service, place, product and physical evidence & presentation had an effect on the decision to use parking business services near the BTS lines in Bangkok. This may be because residents of large residential buildings near the BTS lines in Bangkok had first-hand experience of having to drive their personal cars around looking for a parking space inside the condominiums where they lived. After trying to look for one on every floor, they found that there was no available parking space and had to drive away from their condominiums searching for a parking space from other parking areas. This process takes up a lot of time and energy.

As far as the decision to use parking business services is concerned, many factors must be taken into consideration (Kaewpruk, 2021). This is in line with the research results of Vaisiriroj & Ussavadilokrit (2022) who conducted a study on factors affecting the Salable area of residential condominium project which found that there were up to 11 factors related to the spaces in the condominiums, such as construction area, usable area, total number of rooms, and importantly the parking spaces in the building.

In addition, the results of the study are in accordance with those of Choontanom (2019) who studied park and ride development guidelines for serving Bangkok rail transit system which found that most of the parking areas in Bangkok were in the form of a parking lot. As for the parking building design, it was meant to cater to parking of other buildings rather than a building specifically for parking. This will lead to many problems in terms of the physical condition of the area, conditions of use for parking, the one-way loop route, parking spaces where each turning path is less than 90 degrees, and the building plan that has limitations in both flat deck layout and split-level layout. Therefore, the decision to use parking business services involves many factors, including process of service, place, product and physical evidence.

7. Recommendations

7.1 Recommendations for application of research results

Based on the study results, place was the highest-ranking factor in the use of parking business services in Bangkok, while economic stimulus ranked the lowest for the decision to use the parking business services. This shows that the consumers do not only consider the service costs, but also appropriate place or location available at a reasonable price, which can be acceptable to consumers. Therefore, businesspeople and investors can plan to find a suitable location for consumers who are residents of large condominiums to be able to use the services conveniently. Besides, executives of agencies involved in construction, city

planning, and traffic should consider adjusting the city plan appropriately and to support construction. If consumers have convenient parking spaces in the building, they will not park their cars on the road in public areas. This will solve traffic problems that occur in the long run.

From the study which found that process of service, place, product, and physical evidence affected the decision to use parking business services near the Skytrain lines in Bangkok, it shows that in addition to location factors, there are at least 3 other factors that consumers use in making decisions, such as conditions for parking, route pattern, the parking layout at an angle to the driveway, and the building layouts, etc.

Therefore, businesspeople and investors must pay attention to various details related to each factor comprehensively. At the same time, those responsible for educational programs in each field of study need to improve the curriculum to align with the new needs of society, and use the information obtained from the study to develop social services, such as architecture courses, business administration courses, management and innovation courses, etc.

7.2 Recommendations for future research

Based on the study results, it was found that 3 factors: price (X_2), promotion (X_4) and people & employee (X_5) did not affect the decision to use parking business services near the BTS lines in Bangkok. This may be because, the researcher conducted this study with a sample group who lived in large residential condominiums near the BTS Skytrain lines in Bangkok only. Therefore, a study should be conducted with a sample group of people living in large residential condominiums near other BTS lines to cover all areas of Bangkok to confirm the results of the study.

From the study, it was found that process of service (X_7), place (X_3), product (X_1) and physical evidence & presentation (X_6) affected the decision to use parking business services near BTS lines in Bangkok, with a coefficient of determination of 56.10%. This may be a result of several other variables not included in the study and not having yet been investigated. Therefore, there should be a study of other variables affecting the use of parking business services or other factors that may affect the decision to use parking business services near the BTS lines in Bangkok, so that the prediction efficiency may be further increased.

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