

PARKING BEHAVIOR IN CENTRAL BUSINESS DISTRICT A STUDY CASE OF BANGKOK, THAILAND

By:

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ABSTRACT

A parking behavior interview survey was done in Silom road, Bangkok to understand people's behavior in choosing a parking location for shopping and business trips in the Central Business District in Bangkok. Understanding parking behavior is an effective way to analyze the effects of parking policy measures.

The results show that the most important factors when choosing a parking location are closeness to destination and security. Bangkokians are only willingly to walk less than 10 minutes or around 1 km. By actual condition and by perception, shoppers park their cars closer to the destination than business parkers. Both shoppers and business-persons are willing to pay the parking fee as the best maximum parking fee but they also do not consider parking fees as an important factor. People's evaluation about parking facility in the CBD in Bangkok is relatively good.

ABSTRAK

Suatu survai wawancara tentang perilaku parkir telah dilakukan di jalan Silom, Bangkok guna mengetahui perilaku orang dalam memilih lokasi parkir, ketika mereka berbelanja atau melakukan perjalanan bisnis di Daerah Pusat bisnis di

Hasil studi menunjukkan bahwa faktor yang terpenting dalam pemilihan lokasi parkir adalah jarak dari tempat parkir ke tempat tujuan dan keamanan. Orang-Orang di Bangkok bersedia berjalan maksimum tidak lebih dari 10 menit atau sekitar 1 km. Baik secara opini maupun pada kenyataannya, orang-orang yang akan berbelanja cenderung memarkir mobil mereka lebih dekat ke tempat tujuan daripada orang-orang yang melakukan perjalanan bisnis. Kedua macam

B. Aim of Study

The purpose of this study is to understand people's behavior in choosing a parking location for shopping and business trips to the Central Business District in Bangkok. The specific objectives of this study are:

1. to examine the factors that cause the choice of parking location.
2. to evaluate the parking facility in Central Business District.
3. to examine people's perception in choosing a parking location.

C. Limitation of the Study

This study only focused in Silom road in Bangkok. The analysis done was conventional tabular and graphical work for several variables

II. METHODOLOGY

There are two approaches in studying human behavior in making decisions, one is the qualitative approach, and the other one is the quantitative approach. For the engineering field, the quantitative approach is usually used. The quantitative approach is usually done by questionnaire survey, interview, or collecting data from the fields or other studies.

For this study, the quantitative approach by interview survey was done. Conventional graphical and tabular work was done for the analysis to see the relationships more clearly. For facility evaluation, rating of satisfaction was indexed.

A. Distribution of Questionnaires

The questionnaires were distributed for four days on Silom Road, Bangkok.

B. Questionnaire Survey

Surveyors interviewed the respondents and filled up the questionnaires themselves. Turn over rates with this kind of method was low so to increase the rate, the surveyors distributed the questionnaires in office building and shopping centers in the morning and collected it in the afternoon.

The questionnaire was divided into 4 parts as follow :

1. General information, about gender, age and net income per month.
2. Trip information, about trip purpose, car owner ship driver, location of parking place, number of visited places, parking habit, parking place information and reason of choosing the parking location.
3. Evaluation of the parking space, according to several factors such as closeness to destination, ease to park, walking condition, parking fee, parking duration, availability of parking space and security.
4. People's perception, about the willingness of people to walk from the parking space to their destination and willingness to pay the maximum parking fee.

III. RESULTS AND DISCUSSION

A. Response of Survey

Three hundred and twenty-eight questionnaires were collected. The best location for interview were inside offices, restaurants shops, and parking places.

The difficulty is to randomize the sample and to get car owners / car users. People's Responses were also affected by their busyness and level of education. People who were waiting for something and highly educated are willing to give good a response.

From the four types of question in the questionnaire, Yes-No type is the easiest for the respondent. Ordered from easy to difficult to answer is: Yes-no, Multiplechoice, Rating, Comparison & rating. For questions about evaluation and perception, respondents have to compare, so that it needs time to answer and they refuse to answer. Changing the type of questions from Comparison and rating types to Yes-no or Multiplechoice types may improve the response. Giving an example about how to fill the question can also help interviewees to answer easily.

B. Characteristic of Parking Location Factors

Table 1 shows the distribution of the gender of the respondenst. It can be seen that it is equal between male and female. Females may walk less than males and respond differently when choosing a parking location.

Table 1. Responders Gender

0-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-104

consider walking time more, while lower income people may consider more about parking fee. Table 3 shows the distribution of income of the respondents.

Table 2. Distribution of Age of Responders

Age	frequency	percentage
< 20 yrs	13	3.98%
20-40 yrs	283	86.54%
40-60 yrs	30	9.17%
> 60 yrs	1	0.31%
total	327	100.00%

missing :

Table 3. Distribution of Net Income of Responders

Income/Month	frequency	percentage
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Table 4. Distribution of Trip Purpose of Responders

Trip purpose	frequency	percentage
shopping	52	15.95%
business	51	15.64%
work	208	63.80%
others	15	4.60%
total	326	100.00%

missing : 2

Table 5 shows the parking habit distribution. If there was independence between trip purpose and parking habit, and suppose all work trips have some habitual location, then 16% of shopping and business trip usually use the same parking place.

Table 5. Distribution of Parking Habit

habit	frequency	percentage
yes	246	79.87%
no	62	20.13%
total	308	100.00%

missing : 20

Table 6 shows the distribution of number of visited destination. Person who visit more number of destinations may choose parking place where closer to the first or end destination.

Reliability or assurance that there is available parking space for a parker can be measured by the difficulty to get parking space in the CBD area. Table 7 shows the distribution of number parking places visited before they found the parking space. More than one-third of parkers should turn around in looking for the parking space of their car due to the parking space limitation in the CBD.

Table 6. Distribution by Number of Visited Place

number	frequency	percentage
1	10	3.23%
2	15	4.84%
3	20	6.45%
4	25	7.97%
5	30	9.52%
6	35	11.18%
7	40	12.77%
8	45	14.35%
9	50	15.94%
10	55	17.54%
11	60	19.14%
12	65	20.74%
13	70	22.34%
14	75	23.94%
15	80	25.54%
16	85	27.14%
17	90	28.74%
18	95	30.34%
19	100	31.94%
20	105	33.54%
21	110	35.14%
22	115	36.74%
23	120	38.34%
24	125	39.94%
25	130	41.54%
26	135	43.14%
27	140	44.74%
28	145	46.34%
29	150	47.94%
30	155	49.54%
31	160	51.14%
32	165	52.74%
33	170	54.34%
34	175	55.94%
35	180	57.54%
36	185	59.14%
37	190	60.74%
38	195	62.34%
39	200	63.94%
40	205	65.54%
41	210	67.14%
42	215	68.74%
43	220	70.34%
44	225	71.94%
45	230	73.54%
46	235	75.14%
47	240	76.74%
48	245	78.34%
49	250	79.94%
50	255	81.54%
51	260	83.14%
52	265	84.74%
53	270	86.34%
54	275	87.94%
55	280	89.54%
56	285	91.14%
57	290	92.74%
58	295	94.34%
59	300	95.94%
60	305	97.54%
61	310	99.14%
62	315	100.74%
63	320	102.34%
64	325	103.94%
65	330	105.54%
66	335	107.14%
67	340	108.74%
68	345	110.34%
69	350	111.94%
70	355	113.54%
71	360	115.14%
72	365	116.74%
73	370	118.34%
74	375	119.94%
75	380	121.54%
76	385	123.14%
77	390	124.74%
78	395	126.34%
79	400	127.94%
80	405	129.54%
81	410	131.14%
82	415	132.74%
83	420	134.34%
84	425	135.94%
85	430	137.54%
86	435	139.14%
87	440	140.74%
88	445	142.34%
89	450	143.94%
90	455	145.54%
91	460	147.14%
92	465	148.74%
93	470	150.34%
94	475	151.94%
95	480	153.54%
96	485	155.14%
97	490	156.74%
98	495	158.34%
99	500	159.94%
100	505	161.54%
101	510	163.14%
102	515	164.74%
103	520	166.34%
104	525	167.94%
105	530	169.54%
106	535	171.14%
107	540	172.74%
108	545	174.34%
109	550	175.94%
110	555	177.54%
111	560	179.14%
112	565	180.74%
113	570	182.34%
114	575	183.94%
115	580	185.54%
116	585	187.14%
117	590	188.74%
118	595	190.34%
119	600	191.94%
120	605	193.54%
121	610	195.14%
122	615	196.74%
123	620	198.34%
124	625	200.00%

The security of parking place may be measured by the existence of a guard. Table 9 shows that not all of parking

important.

Table 9. Distribution of Having Parking Guard

Have guard	frequency	percentage
yes	225	76.01%
no	43	14.53%
don't know	28	9.46%

general, people's opinion about parking facility in the CBD of Bangkok are relatively good, relatively close to destination, ease to maneuver and secure. However there is no guarantee that people will get parking space when they come to this area because of parking space limitation.

Table 12 shows the indexes in detail by trip purpose. This table shows that shopping parkers actually park their car

0	-1	-2	→	index	rank
1.1%	4.4%	2.4%	far	0.85	1
5.5%	10.4%	5.4%	difficult	0.71	2
7.2%	12.2%	14.6%	not adequate	0.33	8
3.6%	13.1%	8.8%	long	0.43	6
3.2%	10.1%	7.4%	unsecure	0.62	5
3.7%	13.2%	8.0%	expensive	0.37	7
3.3%	10.8%	5.4%	uncomfortable	0.65	4
3.6%	7.2%	4.5%	unsafe	0.68	3
5.6%	21.8%	18.1%	unreliable	-0.24	9

	work	others	work+business
3	0.93	0.80	0.85
3	0.83	0.87	0.73
3	0.34	0.73	0.31
6	0.51	0.50	0.44
6	0.61	0.93	0.62
7	0.37	0.54	0.33
2	0.65	0.80	0.61
3	0.70	0.93	0.67
9	-0.21	0.20	-0.28

D. People Perception

The maximum parking fee that people are willing to pay is shown in figure 1. The cumulative frequency shows that around 60% of parkers are willing to pay maximum 20 Baht/hour. If the parking fee increase to 30 Baht/hour, it may reduce the number of parker around 30%.

If there is any change in policy of parking fee, it may not be sensitive to the parkers in long term period because most of the parkers are willing to pay maximum around 20 Baht/hour as the parking fee.

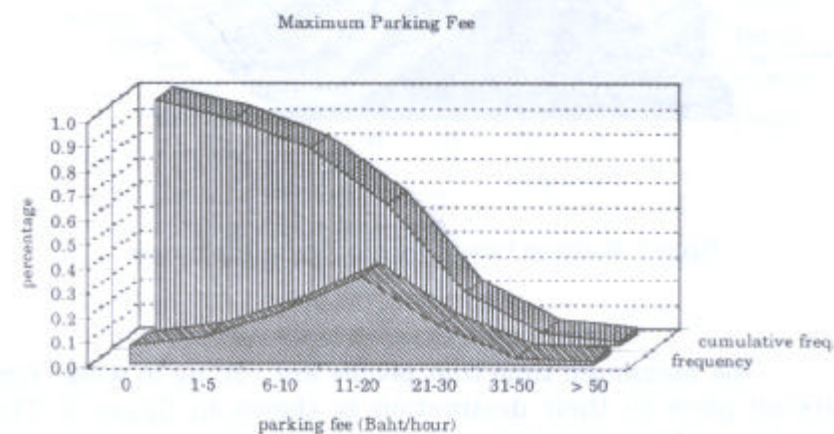


Figure 1. People Perception of Maximum Parking Fee

Figure 2 shows that the maximum parking fee are similar by trip purpose. Both shoppers, business-persons and commuters accept the recent parking fee as the best maximum parking fee.

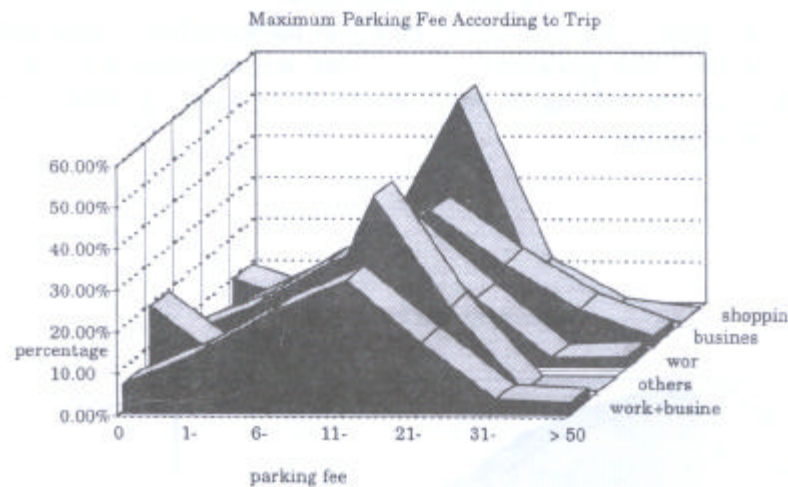


Figure 2. Maximum Parking Fee According to Trip Purpose

The maximum time that people are willing to walk from parking place to their destination is shown in figure 3. The cumulative frequency shows that 90% of parker are willing to walk a maximum of around five minutes. If the location of parking place is moved so that they should walk 10 minutes, 30% of parkers may not use that parking place or may not come to this area. This figure also shows that the bigger part

of people are only willing to walk not more than 10 minutes or around 1 km.

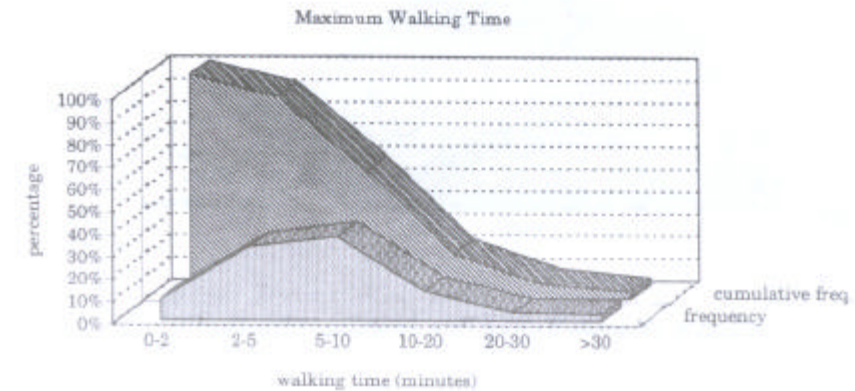


Figure 3. People Perception of Maximum Walking Time

Walking time for shoppers are less than business persons as shown in figure 4. It means that shoppers are willing to park closer to the destination than business-persons. This perception are consistent with the behavior that has been mentioned in the Evaluation of Parking Location part.

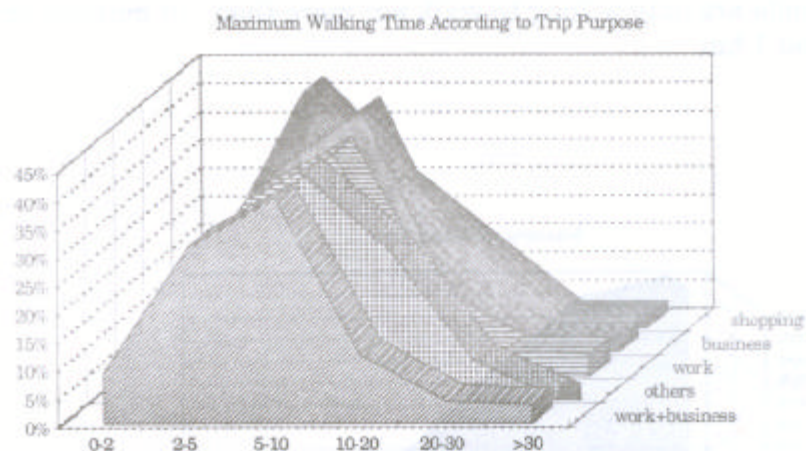


Figure 4. Maximum Walking Time According to Trip Purpose

IV. CONCLUSION AND RECOMMENDATION

The most important factor in choosing a parking location are closeness to destination and security. In general, people's opinion about parking facility in the CBD of Bangkok is relatively good, relatively close to destination, easy to maneuver and secure. Bangkok people are only willing to walk not more than 10 minutes or around 1 km. Shoppers park their car closer to the destination than business parkers. Both shoppers and business-person are willing to pay the most recent parking fee as the best maximum parking fee but they also do not consider parking fees as important factors.

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