Parking Space Needs Analysis Tamini Square Mall and Performance Roadway Pondok Gede, Jakarta

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Abstract

Jakarta is the capital city of Indonesia with a population of 10.46 million inhabitants (CBS, 2018). Tamini Square Mall located in East Jakarta has a population of approximately 2,916,018 people (BPS, 2018). Tamini Square Mall is a mall located in East Jakarta, precisely at the Crossroads Taman Mini Raya and Jalan Raya Pondok Gede were established in 2006. The total area of approximately 1,000 meter² consisting of 5 floors. Tamini Square Mall became one of the popular shopping center due to its strategic location and within walking distance of Pinang Ranti Terminal, Settlements, Central Offices, Schools and Recreation Taman Mini Indonesia Indah. The method used in this research is by way of observation. Observation method is a method by means of direct survey of spaciousness. It is absolutely necessary to know the actual conditions. The survey method is dilakukan on this analysis, a method of recording the number of vehicles. Accumulation of the largest parking for cars on Sunday as many as 120 vehicles occurred between 16:00 to 16:59 pm, while on Sunday for a motor vehicle 382 takes place between 14:00 to 14:59 pm. The average duration of parking of vehicles is 4 hours 24 minutes for cars and 4 hours 18 minutes for the motor. The parking index was 89.55% for cars occurred on Sunday at 16:00 to 16:59 pm and 88.84 for motorcycles occurred on Sunday at 14:00 to 14:59 pm. The Turn Over parking is 3 vehicles / SRP / time observations for cars and 4 vehicle / SRP / observation time for the motor and it happened on a Sunday. Judging from the analysis Roads Raya Pondok Gede, East Jakarta for speed survey at peak hours in the morning, afternoon and evening in getting the level of service or Level of Service (LOS), namely C and D.

Keyword: index parking, parking needs, level of service.

1. Introduction

Tamini Square Mall is a mall located in East Jakarta located precisely at the junction of Jalan Taman Mini Raya and Jalan Raya Pondok Gede operational in 2006. Built with modern architecture to occupy a land area of approximately 1,000 meter² consisting of 5 floors. Tamini Square Mall became one of the popular shopping center due to its strategic location and within walking distance of Pinang Ranti Terminal, Settlements, Central Offices, Schools and Recreation Taman Mini Indonesia Indah.

The problems of this study include: 1). What is the capacity of existing parking spaces and whether the need for parking spaces in Tamini Square Mall, this time is enough to accommodate the vehicles meet? 2). How characteristic parking parking in the form of volume, the accumulated parking, parking index, duration of parking and parking turnover (turnover) in Tamini Square Mall? 3). How alternative solutions to tackle the problem of parking in Tamini Square Mall? 4). How is the performance of road in front of the mall Tamini square jakarta?

2. Methodology

2.1 Data Collection Methods

- Observations or observation includes observations of various matters relating to the physical condition and activity at the study site.
- Documentation refers to the gathering and assessment of some information from periodicals, books, literature documents, photographs, newspapers, electronic media and statistical references.

2.2 Method of Data Processing and Data Analysis

Methods of data processing and data analysis used in this research is qualitative descriptive analysis by considering the field survey on parking duration, the accumulated volume of parking, parking capacity, parking index, use of parking space and parking space requirements. In addition it also used the standards and guidelines for the planning and operation of parking facilities. As for the performance of road by taking into account the results of a field survey on the data traffic volume, the data side friction, road capacity (C) and Q / C ratio, speed survey of traffic, speed based MKJI 1997, and Service Level (Level OF Service).

2.3. Flowchart

Figure 1. Flowchart of Research
(Source: Processed Author, 2019)

3. Results and Analysis

3.1 characteristics Parking

From the data that has been obtained, then the processing of the data as follows:

3.1.1 Volume parking

Parking volume is the number of vehicles that have been using the parking space at a particular parking space in a certain time (usually per day).

Table 1. Volume Car Parking and motors
Friday 22 November 2019

Time	Car		Motorcycle	
	entry	Exit	entry	Exit
<10:00	12	0	34	0
10:00 to 10:59	5	4	62	49
11:00 to 11:59 a.m.	12	8	71	32
12:00 to 12:59	18	16	76	54
13:00 to 13:59	25	27	78	52
14:00 to 14:59	19	18	56	67
15:00 to 15:59	11	12	46	51
16:00 to 16:59	47	16	77	71
5:00 p.m. to 5:59 p.m.	36	28	87	68
18:00 to 18:59	21	31	69	73
19:00 to 19:59	28	42	52	79
20:00 to 20:59	24	34	45	113
21:00 to 21:59	6	28	18	62
> 22:00	0	0	0	0
TOTAL	264	264	771	771

Source: Processed Author, 2019

Figure 2. Graph Volume Car Parking On Friday, 22 November 2019

Source: Processed Author, 2019

Figure 3. Volume Graphics Mo Parkingtor Saturday, 22 November 2019
Source: Processed Author, 2019

Table 2. Volume parking Cars and Motorcycle
Day Saturday 23 November 2019

Time	Car		Motorcycle	
	entry	Exit	entry	Exit
<10:00	14	0	53	0
10:00 to 10:59	21	19	125	77
11:00 to 11:59 a.m.	26	17	153	94
12:00 to 12:59	31	21	124	112
13:00 to 13:59	23	37	168	97
14:00 to 14:59	27	26	141	103
15:00 to 15:59	31	18	129	99
16:00 to 16:59	47	25	132	93
5:00 p.m. to 5:59 p.m.	34	27	196	178
18:00 to 18:59	29	39	101	157
19:00 to 19:59	26	29	76	174
20:00 to 20:59	11	46	48	202
21:00 to 21:59	7	23	22	82
> 22:00	0	0	0	0
TOTAL	327	327	1468	1468

Source: Processed Author, 2019

Figure 4. The Volume Graph M Parkingobil Saturday, November 23 2019
Source: Processed Author, 2019

Figure 5. Graph Volume Motor Center Saturday, 23 November 2019
Source: Processed Author, 2019

3.1.2 Accumulated Parking

Accumulated parking is the number of vehicles that were in a parking lot at specified intervals and divided according to category type of purpose of travel, where the integration of accumulated parking during certain periods showed loads of parking (the number of parked vehicles) in hours vehicles per given time period.

Table 3. Accumulated Parking Cars and Motorcycles
Friday 22 November 2019

Time	Car		Accumulated Parking	Motorcycle		Accumulated Parking
	entry	Exit		entry	Exit	
<10:00	12	0	12	34	0	34
10:00 to 10:59	5	4	13	62	49	47
11:00 to 11:59 a.m.	12	8	17	71	32	86
12:00 to 12:59	18	16	19	76	54	108
13:00 to 13:59	25	27	17	78	52	134
14:00 to 14:59	19	18	18	56	67	123
15:00 to 15:59	11	12	17	46	51	118
16:00 to 16:59	47	16	48	77	71	124
5:00 p.m. to 5:59 p.m.	36	28	56	87	68	143
18:00 to 18:59	21	31	46	69	73	139
19:00 to 19:59	28	42	32	52	79	112
20:00 to 20:59	24	34	22	45	113	44
21:00 to 21:59	6	28	0	18	62	0
> 22:00	0	0	0	0	0	0
TOTAL	264	264		771	771	

Source: Processed Author, 2019

Figure 6. Graph Accumulated Car Parking and Motor On Friday, 22 November 2019
Source: Processed Author, 2019

Table 4, Accumulated Parking Cars and Motorcycles
Day Saturday 23 November 2019

Time	Car entry	Car Exit	Accumulated Parking	Motorcycle entry	Motorcycle Exit	Accumulated Parking
<10:00	14	0	14	53	0	53
10:00 to 10:59	21	19	16	125	77	101
11:00 to 11:59 a.m.	26	17	25	153	94	160
12:00 to 12:59	31	21	35	124	112	172
13:00 to 13:59	23	37	21	168	97	243
14:00 to 14:59	27	26	22	141	103	281
15:00 to 15:59	31	18	35	129	99	311
16:00 to 16:59	47	25	57	132	93	350
5:00 p.m. to 5:59 p.m.	34	27	64	196	178	368
18:00 to 18:59	29	39	54	101	157	312
19:00 to 19:59	26	29	51	76	174	214
20:00 to 20:59	11	46	16	48	202	60
21:00 to 21:59	7	23	0	22	82	0
> 22:00	0	0	0	0	0	0
TOTAL	327	327		1468	1468	

Source: Processed Author, 2019

Figure 7. Graph Accumulated Car Parking and Motorcycle Day Saturday, 23 November 2019

Source: Processed Author, 2019

3.1.3 Parking Index

Parking index is the ratio between the accumulation of vehicles parked in parking capacity available. Parking index is used to determine whether the number of parking plots available at the study site comply or not to accommodate the parking of vehicles.

Table 5. Index and Motor Car Parking
Friday 22 November 2019

Time	Accumulated Car Parking	Index Car Parking	Availability of parking	Accumulated Parking Motor	Index Motorcycle Parking	Availability of parking
<10:00	12	8.96%	91.04%	34	7.91%	92.09%
10:00 to 10:59	13	9.70%	90.30%	47	10.93%	89.07%
11:00 to 11:59 a.m.	17	12.69%	87.31%	86	20.00%	80.00%
12:00 to 12:59	19	14.18%	85.82%	108	25.12%	74.88%
13:00 to 13:59	17	12.69%	87.31%	134	31.16%	68.84%
14:00 to 14:59	18	13.43%	86.57%	123	28.60%	71.40%
15:00 to 15:59	17	12.69%	87.31%	118	27.44%	72.56%
16:00 to 16:59	48	35.82%	64.18%	124	28.84%	71.16%
5:00 p.m. to 5:59 p.m.	56	41.79%	58.21%	143	33.26%	66.74%
18:00 to 18:59	46	34.33%	65.67%	139	32.33%	67.67%
19:00 to 19:59	32	23.88%	76.12%	112	26.05%	73.95%
20:00 to 20:59	22	16.42%	83.58%	44	10.23%	89.77%
21:00 to 21:59	0	0	100%	0	0	100%
> 22:00	0	0	100%	0	0	100%

Source: Processed Author, 2019

Table 6. Index and Motor Car Parking
Day Saturday, November 23, 2019

Time	Accumulated Car Parking	Index Car Parking	Availability of parking	Accumulated Parking Motor	Index Motorcycle Parking	Availability of parking
<10:00	14	10.45%	89.55%	53	12.33%	87.67%
10:00 to 10:59	16	11.94%	88.06%	101	23.49%	76.51%
11:00 to 11:59 a.m.	25	18.66%	81.34%	160	37.21%	62.79%
12:00 to 12:59	35	26.12%	73.88%	172	40.00%	60.00%
13:00 to 13:59	21	15.67%	84.33%	243	56.51%	43.49%
14:00 to 14:59	22	16.42%	83.58%	281	65.35%	34.65%
15:00 to 15:59	35	26.12%	73.88%	311	72.33%	27.67%
16:00 to 16:59	57	42.54%	57.46%	350	81.40%	18.60%
5:00 p.m. to 5:59 p.m.	64	47.76%	52.24%	368	85.58%	14.42%
18:00 to 18:59	54	40.30%	59.70%	312	72.56%	27.44%
19:00 to 19:59	51	38.06%	61.94%	214	49.77%	50.23%
20:00 to 20:59	16	11.94%	88.06%	60	13.95%	86.05%
21:00 to 21:59	0	0,00%	0,00%	0	0,00%	0,00%
> 22:00	0	0,00%	0,00%	0	0,00%	0,00%

Source: Processed Author, 2019

Figure 8. Graph Index and Motor Car Parking On Friday, 22 November 2019

Source: Processed Author, 2019

Figure 9. Graph index Car Parking and Motorcycle Saturday, 23 November 2019

Source: Processed Author, 2019

3.1.4 Length Parking

The average duration of the parking time is the average time used by each vehicle in the parking facilities.

Table 7. Length Car Parking and Motor
Friday 22 November 2019

Parking Duration (Hours)	Number of vehicles	Car Length Parking x Number of Vehicles	Number of vehicles	Motorcycle Length Parking x Number of Vehicles
1	34	34	172	172
2	66	132	234	468
3	71	213	157	471
4	28	112	36	144
5	15	75	41	205
6	11	66	33	198
7	7	49	16	112
8	9	72	23	184
9	8	72	17	153
10	9	90	19	190
11	3	33	11	121
12	1	12	7	84
13	2	26	5	65
Total	264	986	771	2567

Source: Processed Author, 2019

Table 8. Duration parking Motor
Saturday 23 November 2019

Parking Duration (Hours)	Number of vehicles	Car Length Parking x Number of Vehicles	Number of vehicles	Motorcycle Length Parking x Number of Vehicles
1	56	56	324	324
2	45	90	287	574
3	51	153	198	594
4	49	196	133	532
5	32	160	151	755
6	19	114	78	468
7	21	147	61	427
8	18	144	87	696
9	6	54	43	387
10	13	130	54	540
11	8	88	22	242
12	6	72	19	228
13	3	39	11	143
Total	327	1443	1468	5910

Source: Processed Author, 2019

3.1.5 Parking Space Needs

Parking space requirement is the result of the calculation of the duration of the parking lot into an equation to determine the needs of each parking space vehicles parked.

Table 9. Parking Space Needs Tamini Square Mall

Day and Time Survey	Transportation type	Short Time Parking (SRP)	%	Parking Time Medium (SRP)	%	Old Time Parking (SRP)	%
Friday, November 22, 2019	Car	50.76	37.88	50.25	37.50	32.99	24.62
	Motorcycle	226.43	52.66	107.64	25.03	95.93	22.31
Saturday, November 23, 2019	Car	41.39	30.89	40.98	30.58	51.63	38.53
	Motorcycle	178.97	41.62	96.96	22.55	154.07	35.83

Source: Processed Author, 2019

3.1.6 Substitution levels of parking (Parking Turn Over / PTO)

Parking turnover rate will indicate the level of use of the parking spaces are obtained by dividing the number of vehicles parked during the time of observation.

- a) Substitution level parking / Parking Turn Over (PTO) for a car that is:
 1. PTO on the day of Friday, November 22, 2019
 $PTO = 264/134 = 1.97 \approx 2 \text{ vehicle / SRP}$
 2. PTO on a Saturday, November 23, 2019
 $PTO = 327/134 = 2.44 \approx 2 \text{ vehicle / SRP}$
- b) Substitution level parking / Parking Turn Over (PTO) for the motor, namely:
 1. PTO on the day of Friday, November 22, 2019
 $PTO = 771/430 = 1.79 \approx 2 \text{ vehicle / SRP}$
 2. PTO on a Saturday, November 23, 2019
 $PTO = 1468/430 = 3.41 \approx 3 \text{ vehicle / SRP}$

3.1.7 Parking capacity

Parking space capacity is the maximum capacity of the space to accommodate the vehicle, in this case the vehicle volume users such parking facilities.

- a. Capacity for car parking, namely:
 1. Parking capacity on the day of Friday, November 22, 2019
 $KP = 134 / 3.7 = 36 \text{ vehicles / hour}$

2. The capacity of the park on Saturday, November 23, 2019
 $KP = 134 / 4.4 = 30$ vehicles / hour
- b. Parking capacity for the motor, namely:
 1. Parking capacity on the day of Friday, November 22, 2019
 $KP = 430 / 3.3 = 129$ vehicles / hour
 2. The capacity of the park on Saturday, November 23, 2019
 $KP = 430 / 4.0 = 107$ vehicles / hour

3.1.8 Parking Space Needs Analysis 5 (Five) Years Future

To determine the need for parking spaces on Tamini Square Mall within the next 5 years, the variables that influence the economic growth in the city East Jakarta, Based on data from the Central Statistics Agency (BPS) East Jakarta, The economic growth rate by an average of 6.22% Per year, while the volume of cars and motor vehicles used the largest volume in 2019. This figure can be used to estimate how long the car parking spaces and motorcycle parking spaces Tamini Square Mall can accommodate the number of vehicle volume annually.

$$\text{Growth forecasts Parking} = \text{Accumulated Vehicles} (1 + \text{Growth})^n$$

- a) vehicles Cars

The volume of automobiles in 2019 = 327 vehicle

Car parking spaces are available = 134 SRP

$$\begin{aligned} \text{Parking growth forecasts} &= 327 \times (1 + 0.062)^5 \\ &= 327 \times 1.35 \\ &= 442 \text{ (Rounded)} \end{aligned}$$

Thus, the volume of automobiles in 2024 is expected to increase to 442 vehicle.

- b) Motorcycle

Volume of motor vehicles in 2019 = 1468 vehicles

Car parking spaces are available = 430 SRP

$$\begin{aligned} \text{Parking growth forecasts} &= 1468 \times (1 + 0.062)^5 \\ &= 1468 \times 1.35 \\ &= 1982 \text{ (Rounded)} \end{aligned}$$

Thus, the volume of motor vehicles in 2024 is expected to increase to 1982 vehicle.

3.2 Roads

3.2.1 Traffic Volume

Traffic data obtained from the results of the field survey at peak hours by counting the number of vehicles every 15 minutes for 2 hours in the morning, 15 minutes for 2 hours during the day, and 15 minutes for 2 hours in the afternoon. The number of vehicles converted into passenger car unit (smp) according to the type of vehicles that pass through JalanRaya Pondok Gede,

Table 10. Maximum Vehicle Traffic Volume Day Friday, November 22, 2019

Period	Friday, November 22, 2019		Total	
	Jalan Raya Pondok Gede			
	veh / h	smp / hour	veh / h	smp / hour
Morning (07:00 to 9:00)	4314	2757.6	4314	2757.6
Lunch (11:00 to 13:00)	3068	2001.5	3068	2001.5
Afternoon (14:00 to 18:00)	4524	2655.6	4524	2655.6

Source: Processed Author, 2019

Table 11. Maximum Vehicle Traffic Volume Day Friday, November 22, 2019

Period	Saturday, November 23, 2019		Total	
	Jalan Raya Pondok Gede			
	veh / h	smp / hour	veh / h	smp / hour
Morning (07:00 to 9:00)	4410	2695.2	4410	2695.2
Lunch (11:00 to 13:00)	4556	2897.9	4556	2897.9
Afternoon (14:00 to 18:00)	4648	2768.5	4648	2768.5

Figure 10. Graph Maximum Volume Vehicle On Friday, 22 November 2019
Source: Processed Author, 2019

Figure 11. Maximum Vehicle Volume Graph Saturday, 23 November 2019
Source: Processed Author, 2019

3.2.2 Barriers Side

Data obtained from the side barriers field survey at peak hours by counting the number of side barriers every 15 minutes for 2 hours in the morning, 15 minutes for 2 hours during the day, and 15 minutes for 2 hours in the afternoon.

Table 12. Maximum Volume Side Barriers

Period	Friday, November 22, 2019		Saturday, November 23, 2019	
	veh / h	smp / hour	veh / h	smp / hour
Morning (07:00 to 9:00)	244	155.2	288	204.3
Lunch (11:00 to 13:00)	176	114.2	259	177.9
Afternoon (14:00 to 18:00)	252	176.5	287	202.5

Source: Processed Author, 2019

3.2.3 Road capacity (C) and Q / C Ratio

The capacity of urban roads can be determined from the following formula:

$$C = C_o \times FC_{sp} \times FC_{FW} \times FC_{sf} \times FC_{CS}$$

Where :

C = Capacity (smp / hour)

C_o = Capacity basic (smp / hour)

FC_{FW} = Lane width adjustment factor

FC_{sp} = Adjustment factor dividing direction

FC_{sf} = Side friction adjustment factor

FCCS = City size adjustment factor

Then the value of C ratio can be determined by calculation as follows:

Then the value of C ratio can be determined by calculation as follows:

$$C = Co \times FCsp \times FCW \times FCCS$$

$$C = 4950 \times 1,00 \times 1,00 \times 0,97 \times 1,00$$

$$C = 4801.5 \text{ smp / hour}$$

Table 13. Capacity of RoadsRaya Pondok Gede

Jalan Raya Pondok Gede				
variables	Adjustment factor	Morning	daylight	Afternoon
Co	Divided road (3 lanes) / 1 way	4950	4950	4950
FCW	Not Divided Lane road width 3.5 m	1	1	1
FCsp	Jalan 3/1	1	1	1
FCsf	Side Barriers class Medium (M), width of 2 m Effective Sidewalks, Street Not Divided 3/1	0.97	0.97	0.97
FCCS	East Jakarta Population 2,916,018 Million People	1	1	1
C		4801.5	4801.5	4801.5

Source: Processed Author, 2019

Table 14. Q / C ratio of Roads Raya Pondok Gede Friday 22 Nov2019 bucket

Friday, November 22, 2019				
Period	Q	C	Q / C	LOS
Morning (07:00 to 9:00)	4314	4801.5	0.90	D
Lunch (11:00 to 13:00)	3068	4801.5	0.64	B
Afternoon (16:00 to 18:00)	4524	4801.5	0.94	E

Source: Processed Author, 2019

Table 15. Q / C ratio of Roads Raya Pondok Gede Saturday 23 Nov2019 bucket

Saturday, November 23, 2019				
Period	Q	C	Q / C	LOS
Morning (07:00 to 9:00)	4314	4801.5	0.92	E
Lunch (11:00 to 13:00)	4556	4801.5	0.95	E
Afternoon (16:00 to 18:00)	4648	4801.5	0.97	E

Source: Processed Author, 2019

3.2.4 Speed Traffic Survey Results

The following survey data traffic speeds at peak hours at each segment is complete, the results of the primary data collection in the field can be seen in the calculation of average speed of the vehicle based on a sample 3 light / 15 minutes unless there is a data error (values are too different).

Table 16. Free Resume

Jalan Raya Pondok Gede				
TIME	Friday, November 22, 2019		Saturday, November 23, 2019	
	Speed	LOS	Speed	LOS
Morning (07:00 to 9:00)	32,50	C	31.08	D
Lunch (11:00 to 13:00)	42.13	B	29.60	D
Afternoon (16:00 to 18:00)	30.73	D	28.05	D

Source: Processed Author, 2019

3.2.5 Based on the speed of MKJI 1997

Free flow speed using light vehicles as the primary measure of performance. According MKJI 1997, the equation for the free flow speed has the following general form:

$$FV = (FV0 + FVW) \times FFVSF \times FFVCS$$

Where :

FV = Free flow speed of light vehicles in field conditions (km / h)

FV0 = Basic free flow speed of light vehicles (km / h)

FVW = Adjustment speed for the road width (km / h)

FFVSF = Adjustment factor due to the side barriers

FFVCS = City size adjustment factor

Thus, value FV is: $FV = (FV0 + FVW) \times FFVSF \times FFVCS$

$$FV = (61 + 10.5) \times 0.98 \times 1.00$$

$$FV = 70.07 \text{ km / h}$$

Table 17. Results of Determining the Value VLV Day Friday, November 22, 2019

Friday, November 22, 2019		
Information	Jalan Raya Pondok Gede	
Free Flow velocity (FV) km / h	Morning (07:00 to 9:00)	70.07
	Lunch (11:00 to 13:00)	70.07
	Afternoon (16:00 to 18:00)	70.07
The degree of saturation (Q / C)	Morning (07:00 to 9:00)	0.90
	Lunch (11:00 to 13:00)	0.64
	Afternoon (16:00 to 18:00)	0.94
VLV km / h	Morning (07:00 to 9:00)	52.3
	Lunch (11:00 to 13:00)	64.7
	Afternoon (16:00 to 18:00)	48.4

Source: Processed Author, 2019

Table 18. Results of Determining the Value VLV Day Saturday, November 23, 2019

Saturday, November 23, 2019		
Information	Jalan Raya Pondok Gede	
Free Flow velocity (FV) km / h	Morning (07:00 to 9:00)	70.07
	Lunch (11:00 to 13:00)	70.07
	Afternoon (16:00 to 18:00)	70.07
The degree of saturation (Q / C)	Morning (07:00 to 9:00)	0.92
	Lunch (11:00 to 13:00)	0.95
	Afternoon (16:00 to 18:00)	0.97
VLV km / h	Morning (07:00 to 9:00)	50.2
	Lunch (11:00 to 13:00)	48.1
	Afternoon (16:00 to 18:00)	46.2

Source: Processed Author, 2019

3.2.6 Service Level (Level of Services)

The service levels can be determined by calculating the volume of traffic with the basic capacity (Q / C). By performing the calculation of the value of the Ombudsman, it is known classification of the road or the level of service on a particular road segment.

Table 19. Level of Services Based on Value Relations (Q / C)

Period	Friday, November 22, 2019			LOS
	Q	C	Q / C	
Morning (07:00 to 9:00)	4314	4801.5	0.90	D
Lunch (11:00 to 13:00)	3068	4801.5	0.64	B
Afternoon (16:00 to 18:00)	4524	4801.5	0.94	E

Source: Processed Author, 2019

Table 20. Level of Services Based on Value Relations (Q / C)

Period	Saturday, November 23, 2019			LOS
	Q	C	Q / C	
Morning (07:00 to 9:00)	4410	4801.5	0.92	E
Lunch (11:00 to 13:00)	4556	4801.5	0.95	E
Afternoon (16:00 to 18:00)	4648	4801.5	0.97	E

Source: Processed Author, 2019

4. Conclusion

Based on the survey results and analysis of the characteristics in the parking lot Tamini Square Mall in previous discussions, the results are as follows:

1. Parking space capacity in Tamini Square Mall,
 - a) The number of entrances and exits to the car park, namely:
 - 1) 2 entrance to the car park area.
 - 2) 2 exit of the car park area.
 - b) The number of entrances and exits to the parking of motor, namely:
 - 1) 1 entrance to the parking area of the motor.
 - 2) 1 exit motorcycle parking area.
 - c) Parking Space Unit size (SRP) for cars Tamini Square Mall has dimensions of 2.50 x 4.90 (95% of BSLLAK 1998) with a total capacity amounted to 134 SRP.
 - d) Parking Space Unit size (SRP) for the motor in Tamini Square Mall has dimensions of 0.75 x 1.90 (95% of BSLLAK 1998) with a total capacity amounted to 430 SRP.
2. Car parking space requirements in Tamini Square Mall, Jakarta Timur on Friday 22 November 2019 and Saturday 23 November 2019 can still meet to accommodate the vehicles. It is known from the parking index value of 41.79% for cars and parking index with a value of 33.26% for a motor vehicle that occurred on Friday 22 November 2019. For Parking index with a value of 47.76% for cars and parking index with a value of 85.58% for a motor vehicle that occurred on Saturday 23 November 2019.
3. Characteristics parking in Tamini Square Mall,
 - a) The volume of vehicles
 - 1) Friday, 22 November 2019
Cars: 264 vehicles
Motor: 771 vehicles
 - 2) Saturday, 23 November 2019
Cars: 327 vehicles

Motor: 1468 vehicles
 - b) Accumulated Parking
 - 1) Friday, 22 November 2019
Car: 56 vehicles occurred between the hours of 5:00 p.m. to 17:59 pm.
Motor: 143 vehicles occurred between the hours of 5:00 p.m. to 17:59 pm.
 - 2) Saturday, 23 November 2019
Car: 64 vehicles occurred between the hours of 5:00 p.m. to 17:59 pm.
Motor: 368 vehicles occurred between the hours of 5:00 p.m. to 17:59 pm.
 - c) Average duration of parking
 - 1) Friday, 22 November 2019
Cars: The average duration of the car park at 3 hours 42 minutes.

Motor: The average duration of the motor park of 3 hours 18 minutes.

2) Saturday, 23 November 2019

Cars: The average duration of the car park for 4 hours 24 minutes.

Motor: The average duration of the motor park of 4 hours 0 minutes.

So that belong to the middle and long parkers parkers.

d) Parking Index

1) Friday, 22 November 2019

Car: parking index of 41.79% occurred at 17:00 to 17:59 pm.

Motor: parking index of 33.26% occurred at 17:00 to 17:59 pm.

2) Saturday, 23 November 2019

Car: parking index of 47.76 struck at 5:00 p.m. to 17:59 pm.

Motor: parking index of 85.58% occurred at 17:00 to 17:59 pm.

e) *Parking Turn Over*

1) Friday, 22 November 2019

Car: Parking Turn Over Car by 2 vehicles / SRP.

Motor: Parking Turn Over motors for 2 vehicles / SRP.

2) Saturday, 23 November 2019

Car: Parking Turn Over Car by 2 vehicles / SRP.

Motor: Parking Turn Over motors for 3 vehicles / SRP.

4. Performance Roads Raya Pondok Gede

A. From the analysis of Roads Raya Pondok Gede which has been done:

1) Friday, 22 November 2019

a) The morning average level of service or Level of Service (LOS) that D in hours 07:00 to 09:00 with a degree of saturation value is 0.90.

b) During the day the average level of service or Level of Service (LOS) that is in hours 11:00 to 13:00 with a degree of saturation value is 0.64.

c) Sore day average level of service or Level of Service (LOS) is E in hours 16:00 to 18:00 with a degree of saturation value is 0.94.

2) Saturday, 23 November 2019

a) The morning average level of service or Level of Service (LOS) is E in hours 07:00 to 09:00 with a degree of saturation value is 0.92.

b) During the day the average level of service or Level of Service (LOS) is E in hours 11:00 to 13:00 with a degree of saturation value is 0.95.

c) Sore day average level of service or Level of Service (LOS) is E in hours 16:00 to 18:00 with a degree of saturation value is 0.97.

B. Judging from the survey speed of service level or Level of Service (LOS) on Roads Raya Pondok Gede which has been carried out on:

1) Friday, 22 November 2019

a) Morning service level or Level of Service (LOS) is C.

b) During the day the level of service or Level of Service (LOS) is B.

c) The afternoon service level or Level of Service (LOS) is D.

2) Saturday, 23 November 2019

a) Morning service level or Level of Service (LOS) is D.

b) During the day the level of service or Level of Service (LOS) is C.

c) The afternoon service level or Level of Service (LOS) is D.

Reference

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- [2] Anonymous, (1996). Directorate General of Land Transportation. Guidelines. Technical Operation of parking facilities. Jakarta.
- [3] Anonymous (1997). Highway Capacity Manual Indonesia, Jakarta.
- [4] BPS East Jakarta, (2018). Statistics of CityEast Jakarta 2018,