Parking Study and Willingness to Pay for Vehicle Parking: The Case in Iligan City, Philippines

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Abstract

Parking is one of the important components in a transportation system, as vehicle must park at every travel destination. When parking supply in an area is less than the parking demand, this may result to parking problem. Iligan City has been experiencing this kind of problem, as more travellers choose to use private vehicles rather than by public utility jeepneys (PUJs), thus, increasing the demand for parking spaces.

This study is conducted to determine the parking adequacy in order to find appropriate solutions to parking problems in the study areas. The methods used include: street inventory for parking supply, plate number method for parking demand and random survey for the willingness to pay.

The results of the parking study show that, in general, the average parking index in the study areas is 1.44 during weekdays and 1.18 during weekends. This means that the parking spaces are beyond capacity at a particular time, thus, prospective parkers may have to look for other areas to park their vehicle. But when available parking space is farther from the intended destination, some may resort to illegal parking.

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The results of the survey for the willingness to pay for parking use show that seventy nine percent (79%) of the total respondents is willing to pay against twenty one percent (21%) who responded negatively. The City Government of Iligan may utilize the results of this survey to enforce Article XV of the New Traffic Code of the City that designates pay parking areas around the City.

Keywords: Parking Study, Willingness to Pay, Parking Barkers, Iligan City, Pay Parking

INTRODUCTION

Vehicle parking is one of the leading issues in growing economies today, both locally and abroad. Demand for parking steadily grows as more and more people deem it necessary to own their own vehicle rather than to travel using public transportation. Parking generators also such as malls, super markets, recreational facilities, banks, etc., create granular increase in parking demand every year, consuming parking supply to its full capacity (Bank, 2004 and Kadiyali, 2016). When the demand for parking is higher than the available parking supply in an area, especially at the central business district (CBD), this may result to parking problem and parkers may openly violate the law for the so called illegal parking, as stipulated in Article 20 of the Traffic Code of Iligan City (Traffic Code of Iligan City, 2003). This problem often arises in urbanized and developing cities like Iligan City (Trinidad & Porquiz, 2007).

Iligan City, an industrial city south of the Philippines, is hosts to a number of industries. Like other cities in the Philippines, Iligan City has also undergone rapid urbanization and economic growth since the 1990's according to the study on land use dynamics in Iligan City (Trinidad, 2007). Vehicle parking in the city has been a problem especially that motor vehicle ownership increases almost exponentially in the past ten years, according to the study presented during the seminar workshop on environmentally sustainable transport (Trinidad, 2007). The more vehicles there are on the streets, the higher will be its level of traffic congestion and the more parking spaces will be needed. This problem must be addressed before it will aggravate to a level that it will be difficult already to address it. A study on parking adequacy around the wet market of Iligan (Cantila, 2012) was already conducted. More studies must be observed to have a general view of parking situations in the City.

At the CBD of the city, most business establishments do not have parking spaces for their clients, despite the existing requirement for the issuance of building permit, as stipulated in the National Building Code of the Philippines. Thus, the shoulders or travel lanes fronting the establishments are often used for parking thereby reducing the lane capacity and forcing pedestrians to walk on the vehicle travel lanes which exposing them to higher risks (Trinidad, 2014). Business owners also use signage to reserve the space for them or their clients while traffic enforcers assigned in particular areas also tolerate this practice. Let us remember that parking, even in front of one's property, is not a right but a privilege subject to control (Oglesby & Hicks, 1982 and Wright & Dixon, 2004). The abuse of this privilege and the laxity in the enforcement of parking laws would aggravate parking and traffic congestion problems.

The designated on-street parking areas of the city are also considered ambiguous because there are no proper markings on the surface to delineate parking slots. The absence of proper markings has negative impact to the full utilization of parking supply as it tolerates vehicle owners to park their cars on any position they want, i.e., parallel, perpendicular or angle parking. In this manner, some parking spaces are wasted because of improper parking arrangement or lack of management of the parking spaces. In some sections of the street, sidewalk vendors tend to occupy the sidewalk areas and street shoulders. The local police enforcers, who are given the authority to enforce the local laws and ordinances, are sometime lax in enforcing the said laws (Trinidad & Porquiz, 2007).

This study is conducted to determine the adequacy or deficiency of parking spaces at the study areas, considering the problems mentioned. The study areas are the four major centers of the city where most traffic generating establishments are located namely: along Sabayle Street, Quezon Avenue Extension, Echiveri/Obach Street, and Mariano Badelles Sr. Avenue, as shown in Figure 1. The willingness to pay for parking use is also conducted through random survey. Other information like trip purpose is included in the survey to correlate it with the willingness to pay. The output of the study will be forwarded to the City Government of Iligan, through the Iligan City Traffic and Parking Management Office, for their review and considerations.

Figure 1. Study Areas along Sabayle, Echiverri, Obach, Quezon Ave. Extension & Badelles Sr. Ave. (Source: Google Earth Map, 2018)

METHODOLOGY

Street inventory was conducted at the four designated study areas in order to determine the parking supply for on-street parking while parking demand was obtained through the parking survey using the plate number method conducted during weekday and during weekend. In the plate number method, every parking space is monitored continuously at 15-minute interval in an hour for a period of ten hours, beginning from 7:00 a.m. to 5:00 p.m. The surveyor takes note of the vehicle type, the license plate number of the vehicle, the time the vehicle arrives until it departs the parking slot. The difference between the arrival time of the vehicle until it departs from the parking slot determines the total parking time for the particular vehicle. The average hourly parking is determined by the total parking time of the vehicles that parked for an hour divided by the total number of parkers.

Survey questionnaire was also distributed randomly to parkers to determine their opinion for pay parking in Iligan City. A total of 165 respondents participated in the survey. Other information included in the survey are trip purpose and the amount they are willing to pay.

RESULTS AND DISCUSSION

Parking Supply and Demand

The parking supply based on the on-site street inventory is shown in Table 2. The parking slots represent the full utilization for parking at a particular time. The hourly parking demand is shown in Figures 2-7.

Table 1. Number of Parking Slots along the Study Areas

Study Area	No. of Parking Slots
Sabayle St.	40
Obach/Echiverri Sts.	20
Quezon Ave. Ext.	30
Badelles Sr. St.	28

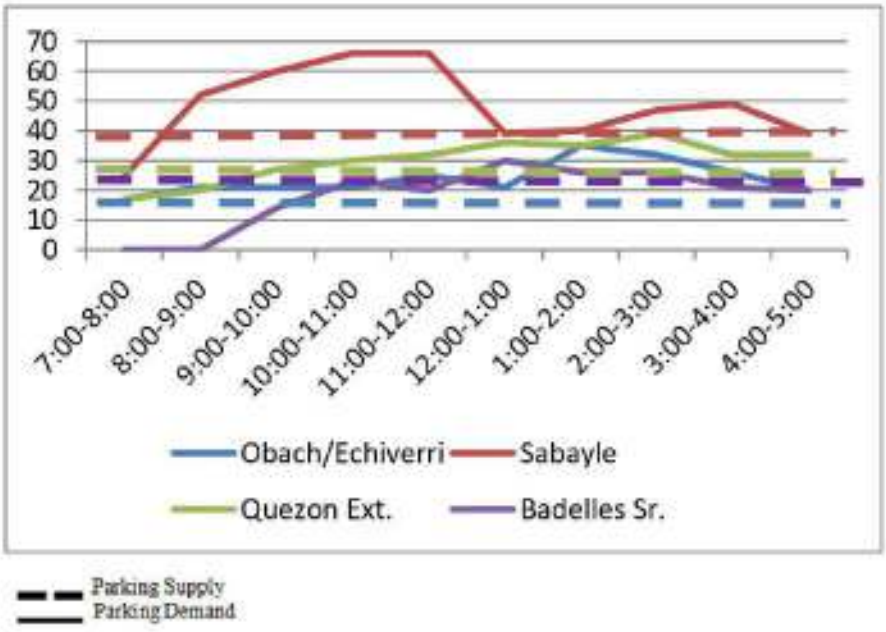


Figure 2: Parking Supply and Hourly Parking Demand during Weekday

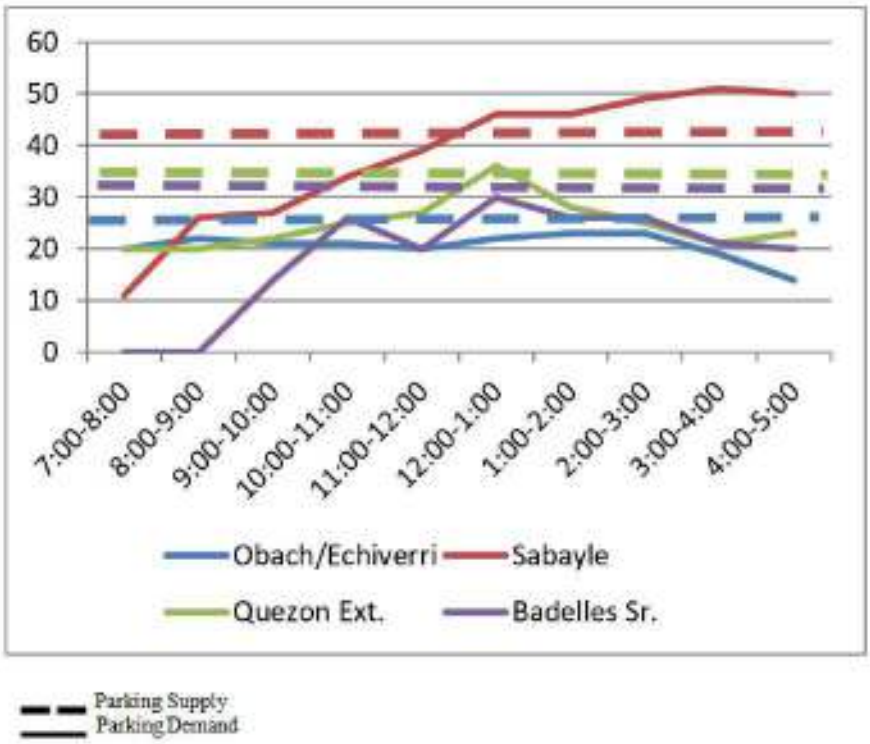
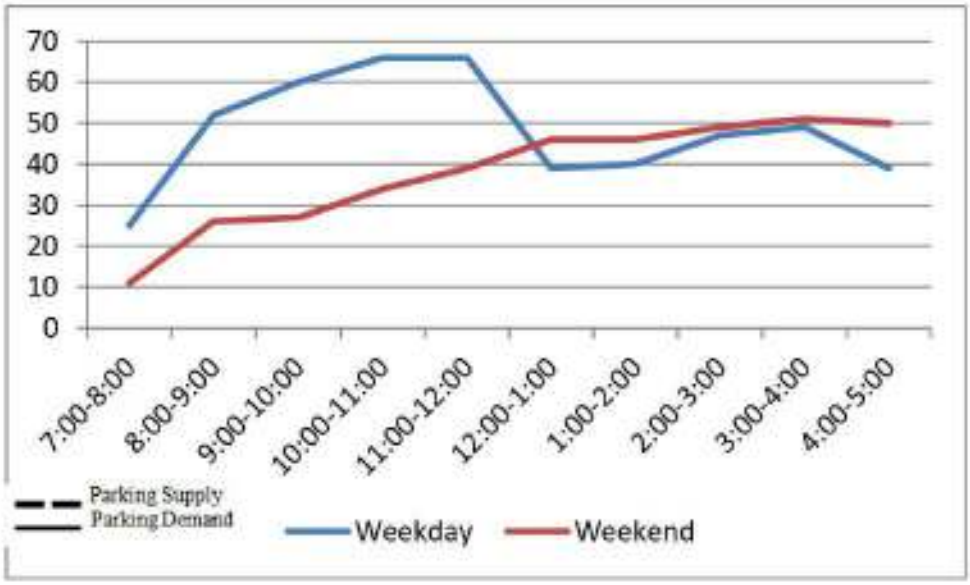


Figure 3: Parking Supply and Hourly Parking Demand during Weekend

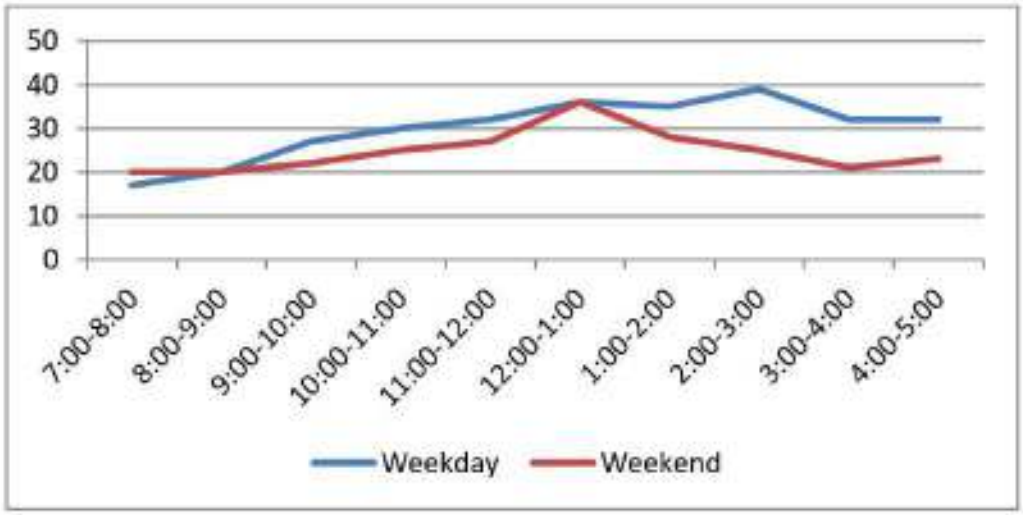
Figure 2 shows parking characteristics in the four study areas during weekday while Figure 3, during weekend. Along the Sabayle St., parking demand exceeds the parking supply in both morning and afternoon peaks during weekday while for weekend, the parking demand exceeds the parking supply mostly in the afternoon. Its maximum parking index is 1.65 during weekday and 1.30 during weekend. It means that during a one hour period, the population of short term parkers is more than the long term parkers. As parking is dictated by random occurrence, a parker can park at any available parking slot at any given time. This study area has high concentration of medium-sized commercial establishments. Customers do not stay long to transact businesses for such type of establishments compared to parking duration spent at big malls.

This observation is also true in other study areas, i.e., Quezon Ave. Extension, Obach/Echiverri, except along Badelles Sr. St. for this street is along the old highway. Parking is discouraged along highways. With the construction of Roxas Ave., the through traffic are divided between the



Parking Supply
Parking Demand

Figure 5: Parking Supply and Hourly Parking Demand Along Sabayle St.



Parking Supply
Parking Demand

Figure 6: Parking Supply and Hourly Parking Demand Along Quezon Ave. Extension

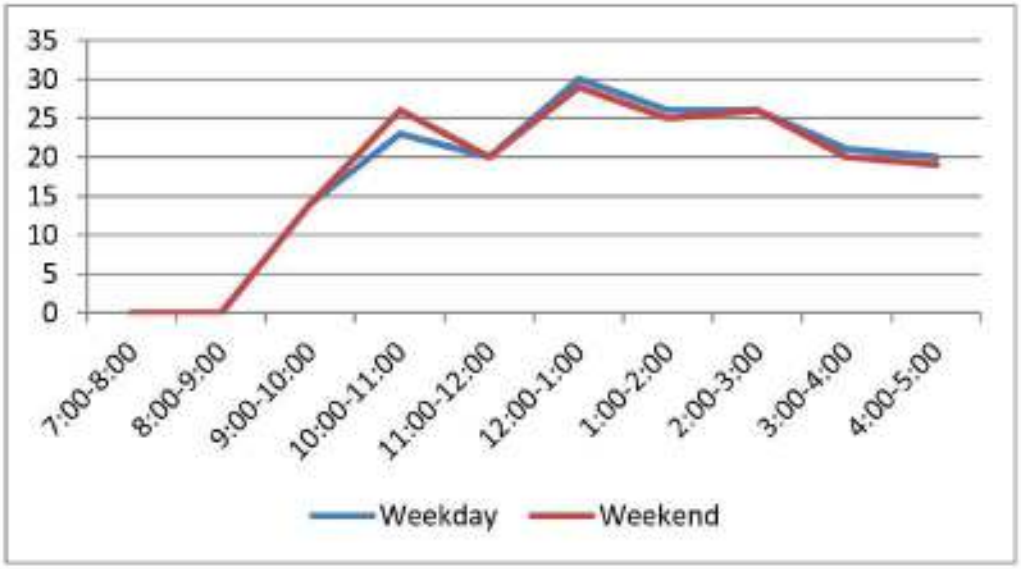


Figure 7: Parking Supply and Hourly Parking Demand Along Badelles Sr. Ave.

When the parking index in the study area is greater than one, at a particular time, it means that parking slot is in full capacity, so, the prospective parker may have to look for other areas to park the vehicle. The problem arises when the available parking space is farther from the intended destination that some may resort to illegal parking. When this practice is unchecked for more than one occasion by the traffic enforcer, this will become a habit by parkers who openly violate the law (Trinidad & Porquiz, 2007).

Iligan City is an old city with its planning style dated back from centuries old. At the CBD, street designs are of square pattern at shorter lengths, ranging from 20m to 30-m. This is reminiscent of the time when only few vehicles used the facility and people were encouraged to walk. But as motorization increases, as more and more travellers chose to drive, this street pattern becomes obsolete. When a single motorist maneuvers to turn off the street, the downstream traffic will suffer to a queue beyond a street block especially when there is no traffic enforcer in the area (Trinidad, 2014). The problem is compounded when motorist is allowed for on- street parking, as stipulated in Art. XVII of the Traffic Code of Iligan City, as this constricts the smooth flow of traffic. This

traffic condition should be avoided in environmentally sustainable transport environment (Tumlin, 2012 and Cohen, 2017) as more pollutants are emitted to the atmosphere for stop-go, stop-go scenario in a traffic stream.

Roads are not designed for parking but for moving traffic (Oglesby and Hicks, 1982). Business establishment owners along the street are required by law, upon issuance of the building permit, to provide parking spaces. It is a costly investment then on the part of the government to provide parking facilities that benefit only few sectors of the society. However, it is a fact that as motorization increases, the demand for parking also increases. As this is an inevitable fact, other cities, both locally and abroad, embark on parking management schemes, e.g., parking pricing, congestion pricing, establishment of pay parking facilities by private owners or by the government in order to generate more funds, aside from the local government share from the road user tax. Derived funds will be used to improve the street facilities and networks.

Willingness to Pay for Vehicle Parking

The willingness to pay survey solicits opinion for pay parking scheme in Iligan City. The survey also takes into account the trip purpose of the respondents and the amount they are willing to pay. A total of 165 respondent participated in the survey. Tables 2-4 and Figures 8-9 show the respondents response.

Table 2. Respondents Response for Willingness to Pay

Study Area	Agree	%, Agree	Disagree	% Disagree	Total Respondents
Sabayle	28	70	12	30	40
Obach/Echiverri	38	95	2	5	40
Quezon Ave. Ext.	37	74	13	26	50
Badelles Sr.	27	77	8	23	35
Total Respondents	130	79	35	21	165

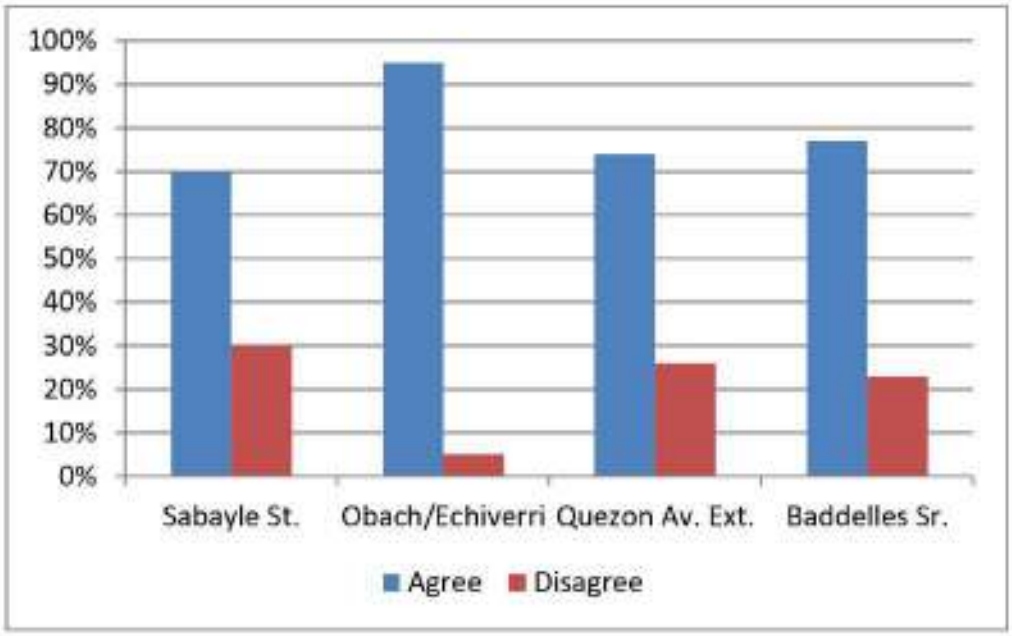


Figure 8: Respondents Response for Willingness to Pay for Parking Use

Table 2 above shows that of the total respondents from the survey questionnaire, seventy nine percent (79%) agrees for pay for parking use and only twenty one percent (21%) of the respondents disagree. The highest of the respondents who are willing to pay at ninety five percent (95%) is at the Obach/Echiverri Sts. which is located near the church, schools, business establishments, banks, coffee shops and restaurants. It is in this study area where the presence of parking barkers is high. The results of the survey agree with the findings of the study (Latorre, 2012) but with higher rate of respondents who are willing to pay for parking.

The response for the amount to pay for parking use is shown in Table 3 and Figure 9. Of the total respondents who are willing to pay, twenty four percent (24%) say they are willing to pay P5.00/hour ($ 0.10/hour) for vehicle parking use, twenty five percent at P10.00/hour ($0.20/hour), ten percent (10%) for P15.00/hour ($0.30/hour) and twenty five percent (25%) for P20.00 or more/hour ($0.40/hour) as long as they can be assured of the safety of their vehicles while at work or doing business transactions.

Table 3. Respondents Response for the Approximate Amount to Pay for Parking per Hour

	Sa ba yle	%	Obach/ Echiver ri	%	Quezo n Ave. Ext	%	Badell es	%	Tot al	%
P 5.00	10	25%	18	45%	5	10%	6	17%	39	24%
P 10.00	7	17%	8	20%	18	36%	8	23%	41	25%
P 15.00	3	8%	3	8%	8	16%	3	8%	17	10%
P 20.00	6	15%	0	0%	5	10%	9	26%	20	12%
>P 20.00	2	5%	7	17%	12	24%	1	3%	22	13%
Others	12	30%	4	10%	2	4%	8	23%	26	16%
Total	40	100 %	40	100 %	50	100 %	35	100 %	165	100 %

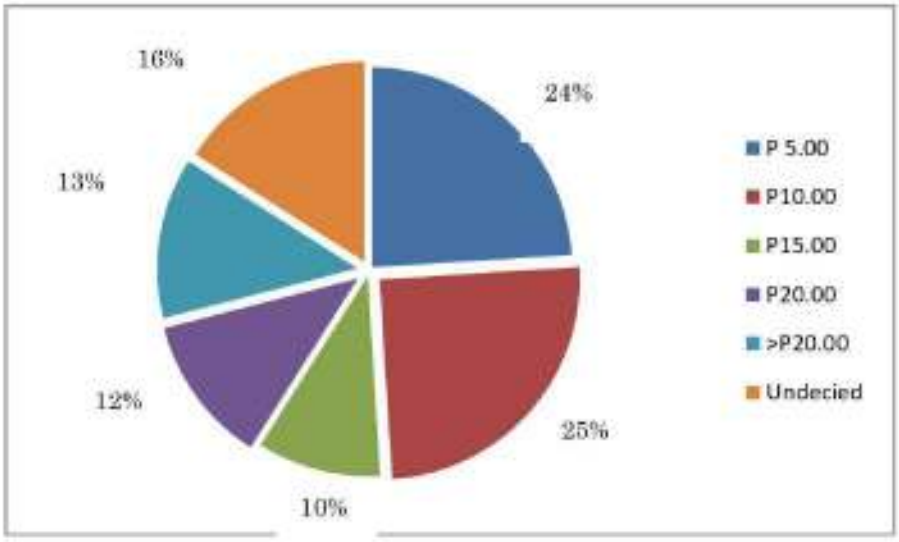


Figure 9: Distribution of the Amount the Parkers Willing to Pay

The response for the amount to pay is close to the parking fee charged by the City government of Manila. Manila is a highly urbanized city compared to Iligan City. It is charging P20 ($0.40) for light vehicle, P30.00 ($0.60) for medium type of vehicle and P60.00 ($1.20) for heavy vehicle for the first three hours of parking and an additional P40.00 ($0.80) per hour of continued parking (Philstar, Dec. 2017). If the respondents who are willing to pay P20.00/hour and more are added,

which is 25%, this is almost comparable to the amount charged for parking in Manila. There is still16% of the respondents who are undecided. But the number already speaks of the willingness to pay more, should they be given the opportunity to park near the intended destination and that the safety of their vehicles can be assured. Section 9-10, Article XV of the Traffic Code of Iligan City designates pay parking areas and the hiring of parking aides to collect parking fees, however, this particular ordinance has not yet been implemented by the city government. This pay parking management scheme can be made an opportunity by the city to generate more funds to be used to improve the street facilities and its network

In general, most of the trip purposes are for work and for business related activities, 28% and 30% respectively, as shown in Table 4. Along Sabayle St. and Obach/Echiverri Sts., most trip purposes are for work and shop

Table 4. Distribution of Trip Purpose

	Sabayle	%	Obach/ Echiverri	%	Quezon Ave.Ext	%	Badelles	%	Total	%
Work	15	38%	18	45%	5	36%	8	23%	46	28%
Shop	10	25%	8	20%	5	20%	9	26%	32	19%
Business	6	15%	3	8%	30	12%	10	29%	49	30%
Recreation	0	0%	0	0%	4	0%	2	6%	6	4%
Medical	0	0%	7	17%	3	18%	3	8%	13	8%
Others	9	22%	4	10%	3	14%	3	8%	19	11%
Total	40	100 %	40	100 %	50	100 %	35	100 %	165	100 %

A 5% level of significance test results to p-value of 0.811 which is greater than 0.05. It shows that the trip purpose of parkers and their willingness to pay is independent with each other.

CONCLUSION

Parking Supply and Demand

The parking demand is greater than the parking supply or the parking deficiency, especially during peak hours, is experienced in all the study areas but more prominent in areas where big generator or attractor

type of establishments are located like in Sabayle and Obach/Echiverri Streets. The parking deficiency is determined by the parking index which is greater than one. The maximum parking index along Sabayle St. is 1.65 and 1.75 along Obach/Echiverri Sts. When this condition happens, illegal parking may be observed. If it is left unchecked by the traffic enforcer, more parkers may openly violate the law of illegal parking that may result to constricting the smooth flow of traffic or traffic congestion. Traffic congestion should be avoided to maintain a healthy and sustainable environment.

The parking index along Badelles Sr. Ave. is almost unity at 1.07. This is because when law is strictly implemented, parking is prohibited along highways. However, there are few short term parkers observed along this street especially during noon peak.

Willingness to Pay

Seventy nine percent (79%) or more than the majority of the respondents to this study are willing to pay for parking use while only twenty one percent (21%) of the respondents disagree. The result of this survey supports the outcome of the previous study (Latorre, 2012) where in the year 2012, fifty seven percent (57) are willing to pay for parking use. The desire to park at travel destination having limited parking supply necessitates the parker to willingly pay for the parking use.

Of the total respondents who are willing to pay, twenty four percent (24%) say they are willing to pay P5.00/hour ($ 0.10/hour) for vehicle parking use, twenty five percent at P10.00/hour ($0.20/hour), ten percent (10%) for P15.00/hour ($0.30/hour) and twenty five percent (25%) for P20.00 or more/hour ($0.40/hour), as long as they can be assured of the safety of their vehicles while at work or doing business transactions.

For trip purposes, this include mostly for work at 15%, for shopping 10% while others for business, recreation, medical, and other purposes. Statistical analysis shows, that the trip purpose of parkers and their willingness to pay is independent with each other.

RECOMMENDATIONS

It is recommended that:

1. In order to decrease the parking index and to maximize the use of parking slots, signage will be installed and parking slots will be

properly marked to eliminate the ambiguity of parking supply. The city may utilize its financial share from road user tax to acquire equipment for pavement marking and to improve street facilities and its networks;

2. The City will implement the pay parking scheme, Section 8, Article 14 of the Traffic Code of Iligan City. Pay parking will decrease parking inadequacy by limiting to necessary parking only, thus, limiting the excessive demand. The results of two surveys show that the majority of the parkers in Iligan are willing to pay for parking use;
3. Reserved parking by business establishments for owner's vehicles or for their clients must not be allowed, to maximize utilization of parking spaces. Parking process is dictated by random occurrence or parker may come and go randomly;
4. The City Engineer's Office must require business establishments to comply with the provision of parking space before the building permit will be issued for new constructions or renovations;
5. There is strict implementation of the City's regulations on parking.
6. In the long term, the City may invest in the construction of parking buildings or open parking fields to provide for vehicle pay parking. This option may generate income for the city while it provides convenience to parkers;
7. For further studies, stochastic modelling may be used to predict parking demand.

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