

Parking Usage Model with Simulation Program in Surabaya City

Sri Wiwoho Mudjanarko^{a*}, Tubagus Purworusmiardi^b, Sutan Parasian
Silitonga^c, and Dani Harmanto^d

^a *Departement of Civil Engineering , Narotama University, Indonesia*

^b *Departement of Information System, Narotama University, Indonesia*

^c *Departement of Civil Engineering , Palangkaraya University, Indonesia*

^d *Departement of Mechanical Engineering , Derby University, United Kingdom*

Abstract

Parking user modeling using simulation programs is a way of helping to resolve the problems of the handling of parking in Surabaya based simulation program . Data on the number of motor vehicles in particular 2-wheel vehicles (two) obtained from the analysis of the form of the model is further processed to be made formula simulation program formulation. The use of this simulation program can help the settlement of several problems of user needs parking

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Keywords: parking , program simulation

1. Introduction

The growth of vehicles in Surabaya based on data traffic in 2014 reached 4.5 million or rather 4,521,629. From this number, motorcycle is a vehicle that is most dominant. Currently the number of two-wheeled vehicles in Surabaya reached 3,625,999. The rest, 915 630 vehicles are four-wheeled vehicles or more-wheeled (JP, 2014). The number of vehicles dominated by two-wheeled vehicles resulting in traffic jams. A direct result of the congestion is the number of two-wheeled vehicles parked on the side of the road (on street), besides those which parked in the yard and in the parking building (off street). The increasing number of vehicles, causing the parking space is no longer able to accommodate wheeled vehicles, especially two or commonly called a motorbike. One anticipation offered in this paper in predicting the need for parking space is by using a user behavior simulating program in choosing the location of the parking space requirements needed activity. The research questions used in this study are: a). What are the results obtained from the parking simulation program in predicting the demand of parking user in selecting the desired location? b). What advice can be given to the government of Surabaya resulted from the from this simulation program?

While the objectives of this research are 1). Knowing the results obtained from the parking simulation program in predicting the user needs, choosing the desired location; 2). Providing advice for Surabaya City Government from the result of this simulation program. This study only makes a simulation program based on the formulation of a model that has been done in previous studies.

2. Literature Review

2.1 Parking

* Corresponding author. *E-mail address:* Sri.wiwoho@narotama.ac.id

Parking is a temporary “not moving” state of a vehicle (Directorate General of Land Transportation, 1996, 1). In addition to above definition, some experts also give their definition of parking, one of those definition is that all vehicles will not be able to move continuously without stopping, at some point he has to stop for a while (unloaded) or stop long enough which is called “parking”.

2.2 Simulation Program

The simulation program used in the explaining the formulation of simulation models uses a program with the basic of Visual Basic programming language. Visual Basic or often referred to as OOP (Object Oriented Programming) is a computer-based programming language Object. VB programming language, developed by Microsoft since 1991, is a development of its predecessor the programming language BASIC (Beginner's All-purpose Symbolic Instruction Code) which was developed in the 1950s. Language Visual Basic program itself is one tool for application development are much in demand by the people. By using Visual Basic we can produce various kinds of programs including parking simulation program. VB is an application that integrates database, networking, office automation, and web applications.

3. Analisis and Discussion

The analysis results obtained from the research model of this model are:

3.1. Motorcycle parking Model on 2 choices parking : Yard and OnStreet Parking.

The Results of the running process of Visual Basic model for yard site selection to the onstreet parking, especially in the treatment of the data can be seen in Figure 3.1. Based on the simulation program, we can predict several things, which are:

Taking into account of the changes in the variable level based on the order of weights of interest and significant variables, onstreet parking site selection chances will decline from 83.4% to 26.3%, if it is simulated by the data of female users, with the yard parking availability and daytime parking.

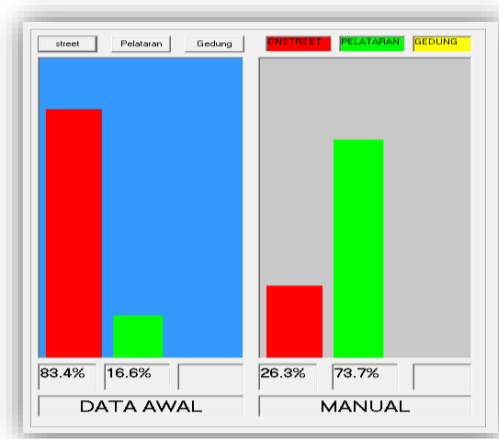


Fig. 3.1 Selection Model Simulation Output of yard parking site to onstreet parking location

By manual way of variable level changes, the chances of onstreet parking site selection will be expected to decline from 83.4% to 3.1% if it is simulated by the data of male users, with onstreet parking and the daytime parking.

3.2. Motorcycle parking Model on 2 choices parking : yard and Building

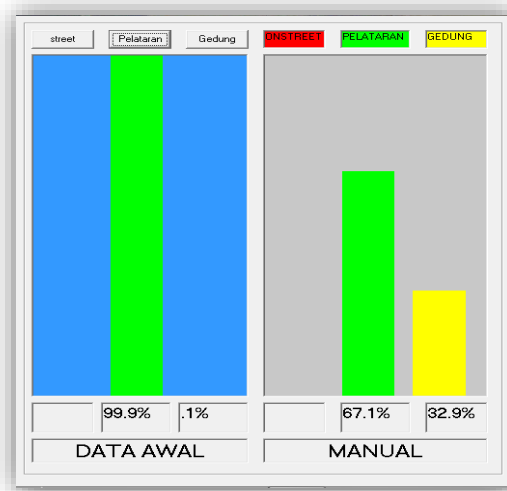


Fig. 3.2 Selection Model Simulation Output of yard parking location to Building parking location

By manual way of variable level changes, the chances of yard parking site selection will be expected to decline from 99.9% to 67.1% if it is simulated by the data daytime simulation, with the availability of parking in the yard instead and with parking duration not less than 1 hour.

The Results of the running process of Visual Basic model for yard site selection to the Building site parking, in the treatment of the selected examples of data can be seen in Figure 3.2. Based on the simulation model, we can predict several things, which are: Taking into account of the changes in the variable level based on the order of weights of interest and significant variables, yard parking site selection chances will decline from 99.9% to 89.2%, if it is simulated by the data of motorcycle user in the daytime instead, with the yard parking availability instead and with parking duration not less than 1 hour.

3.2 Motorcycle parking Model on 2 choices parking : OnStreet and Building

The Results of the running process of Visual Basic model for OnStreet parking site selection to the Building parking site location, in the treatment of the selected examples of data can be seen in Figure 3.3. Based on the simulation model, we can predict several things, which are:

- Taking into account of the changes in the variable level based on the order of weights of interest and significant variables, onstreet parking site selection chances will decline from 50.1% to 22.8%, if it is simulated by the data of motorcycle user on daytime simulation instead, with the availability of onstreet parking, with uneducated motorcycle user with income below 1 million.
- By manual way of variable level changes, the chances of yard parking site selection will be expected to decline from 50.1% to 22.7%, if it is simulated by the data daytime simulation instead, with the availability of onstreet parking in the yard instead and with

motorcycle user educated between elementary school education to junior school education with income between 1-2 million.

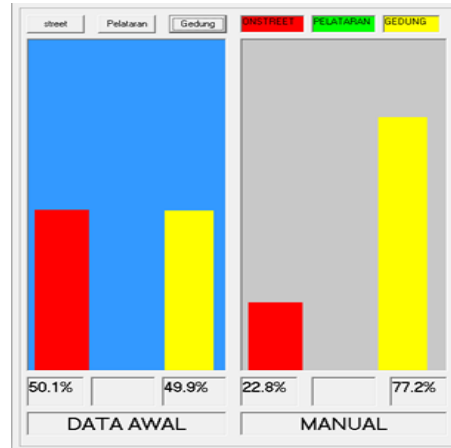


Fig. 3.3 Selection Model Simulation Output of Onstreet parking location to Building parking location

3.3 Motorcycle parking Model on 3 choices of parking : Yard, OnStreet and Building site

The Results of the running process of Visual Basic model for OnStreet parking site selection to the Building parking site location, in the treatment of the selected examples of data can be seen in Figure 3.4. Based on the simulation model, we can predict several things, which are:

Taking into account of the changes in the variable level based on the order of weights of interest and significant variables, yard parking site selection chances will decline from 46,8% to 8,5%, if it is simulated by the data of motorcycle user on daytime simulation, with the availability of onstreet and yard parking site, with motorcycle user's income above 4 millions.

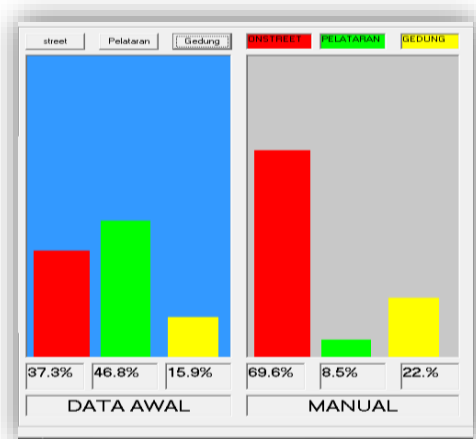


Fig. 3.4 Selection Model Simulation Output of Yard site parking location to Onstreet parking site and Building parking site.

4. Conclusion

Based on the results of this analysis, it can be concluded as follows : a. The results obtained from this parking simulation program is that women have a tendency to choose the yard as their preferred parking location as well as prefer daytime as their parking time when there is a yard parking option, it increase yard site location choice which was originally 16.6% to 73.7%. The advice obtained from the simulation resulted from this program to the Government of Kotra Surabaya are it is suggested to make vehicle restriction policy and expand yard site parking for motorcycles as well expanding the number of public vehicles.

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