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Utilization of digital parking web for the convenience of vehicle users

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ABSTRACT

Humans in their activities need comfort. The comfort that is owned will allow humans to reduce anxiety in unexpected situations. This also applies to the need for parking facilities that are easily accessible from any place and time. Limited access will slow down our planned activities. This problem needs to be solved. This solution can be solved with the use of Web-based IT. The methodology used is to create an application that is easy and convenient for transportation users to find a parking space. The use of the Digital Parking Web is expected to be able to answer the convenience needs of vehicle users while influencing the needs of modern society for transportation. This research is expected to produce an effective parking management web application to support smart cities and their users.

Keywords: comfort; digital parking web; management; smart city; limited access.

INTRODUCTION

Parking is one of the biggest problems in structuring transportation management, especially in Indonesia, good economic growth despite the COVID-19 pandemic. The most common parking problem is the limited space and the accuracy of the available locations, especially in the business-oriented city center. This situation has triggered the problem of arrangement that is not easy to realize transportation management. A breakthrough innovation in parking management is needed to improve transportation performance in general. This innovation aims to make parking easier for users and also for parking management (single window management). The use of information technology (IoT) has been encouraged to increase innovation in parking management. In many developed countries, information technology (IoT) has been used for parking management and will eventually contribute to building smart city parking systems. In the case of parking management, a time limit scheme may be part of the settlement policy. Business buildings must provide IT-based parking management so that it can make it easier for parking users to find parking spaces and certainty of time to get information. Some business buildings have access to IT-based parking arrangements but are not generally connected. In contrast to the conditions we encounter in developed countries. Convenience and certainty of place-time are part of the service.

Muhammad Akbar at. Al., 2019, The need for a parking location is a necessity that can be handled by using a modern parking system. An information system that makes it easy for users who have difficulty finding space or knowing zones an empty parking lot, especially if the parking area is crowded. In addition to this, there is no information regarding the layout of the parking zone whose location is not yet known for sure. Availability information system required automatic parking, where every vehicle that wants to enter the parking area can find out vacant parking zone information. It is even possible to process a parking area reservation before heading to the location in question. This of course can reduce the worries of parking users if later do not get an empty parking lot. Rio Lianzah, 2017, Parking space available in the city is very limited. This is a complex problem faced by urban communities. This is in line with increased vehicle ownership in urban areas. Increase population is accompanied by community mobility needs urban. Activity center can in the form of a city business center, a university complex, an industrial area and entertainment center. The high intensity of activity in the downtown area have an influence on vehicular traffic conditions from areas surrounding area. Endra S. Atmawidjaja at. Al., 2015, The existence of the city is constantly changing and experiencing rapid development It is very significant and has a big influence on the pattern of life and human civilization. Nevertheless, the faster and bigger the growth of a city, the bigger the problem tends to be that appeared to the city. Various urban development issues and problems are urbanization and significant increase in urban

population, the declining quality of the urban environment, poverty in urban areas, regional capacity in development and management, cities in the decentralized era and undeveloped inter-city growth rate. Omid Khazaeian, 2021, Each car trip starts from a parking and terminates in a parking, and cars spend most of the day parked. A parked car has several externalities that impact travel behavior (e.g.slowing traffic). Parking affects traffic and overlooking parking in transport planning might limit the effectiveness of many traffic policies. Surono and Wasono (2019): It should be noted that the proportion of space available and vehicle volume must be considered properly. Otherwise it can disturb the order and comfort for parking users. Roy, at Al., (2016) stated that improper traffic management, especially parking activities, will cause stress and frustration for vehicle drivers.

Figure 1. Parking Space

Figure 2. Stress and frustration for vehicle drivers

James and Abraham (2018) noted that parking has become problem in most big cities in the world. The limited parking space has been detected as one of major cause for urban traffic congestion and air pollution. The drivers used to find the parking space manually by finding a space on the street through luck and experiences. In case of cities with high vehicles density, it would take time and effort and might lead to failing to find any parking space. Therefore, they proposed a system which automated the vehicles as well as the parking space with a Smart Parking System (SPS). The system integrated an Android application and QR Code reader. The duration limitation model can be found in the Netherlands under the name blue zone/disc practice. Where in places specified, the parking duration is determined by a sign indicating the maximum duration parking.

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Figure 3. Netherlands parking

Figure 4. Disc on the dashboard parking

To use this facility, the vehicle must install the disc on the dashboard. Car showing parking duration. Then there will be officers on patrol to ensure that no vehicle parking more than the specified amount of time. Furthermore, related to the provision of special selective means arranging for parking spaces at the point.

Figure 5. Parking Regulation

The Google Maps Platform is a set of APIs and SDKs that allow developers to embed Google Maps into mobile applications and web pages to retrieve data from google maps. The existence of smartphones and Google today is very helpful for humans in carrying out their daily activities. There are so many activities related to work, school, to household matters that take advantage of various features in smartphones. One of the features that really help people's daily lives today is Google Maps. Google Maps can answer all your questions about directions and locations, the best route that can be chosen to get to a place, knowing the density of traffic levels along the road that

will be passed or for just a virtual walk and survey the location you want to visit on vacation. Google Maps has proven to have brought a lot of benefits to its users around the world. No wonder this service is the most important and leading online map service, which is trusted and used by anyone who has a smartphone in their hand. Besides being practical and easy to use, the level of accuracy of the location points provided by the Google Maps service is also very good.

The vehicle parking space must adjust to the existing capacity. In convenient conditions park the vehicle on the roadside marked with a parking sign (Syaiful S, Mudjanarko SW, 2019; Syaiful S et.al, 2022; Syaiful S et.al, 2021). These signs affect road conditions. Good road conditions will affect the accuracy of parking the vehicle. If the road is not good then parking the vehicle will be constrained too (Syaiful S, Pratama Y, 2019; Syaiful S et.al, 2020).

METHODS RESEARCH

Designing Web

The following is a general explanation of the development of a parking lot geographic The following is a general explanation of the development of a parking lot geographic information system application using a web based.

1. Simplify the process of submitting data & information, this system was created to facilitate the process of submitting data and information related to the development needs of public transportation.
2. Simplify administration, with the existence of this system is expected to accelerate the creation of an up to date information presentation.
3. Integrated information system, the system is designed to be integrated with each other, so that this system has a high level of reliability.
4. Authorization and multiple user access, this system has a high level of security where users using this system allow multiple users to access simultaneously.
5. Data security (backup and restore), the system can be relied on in managing all existing activities by using software that is quite capable of handling data security issues. The data backup and restore system is carried out automatically so that if there is a human error or hardware damage, the data will remain safe and can be used again after the damage is repaired.

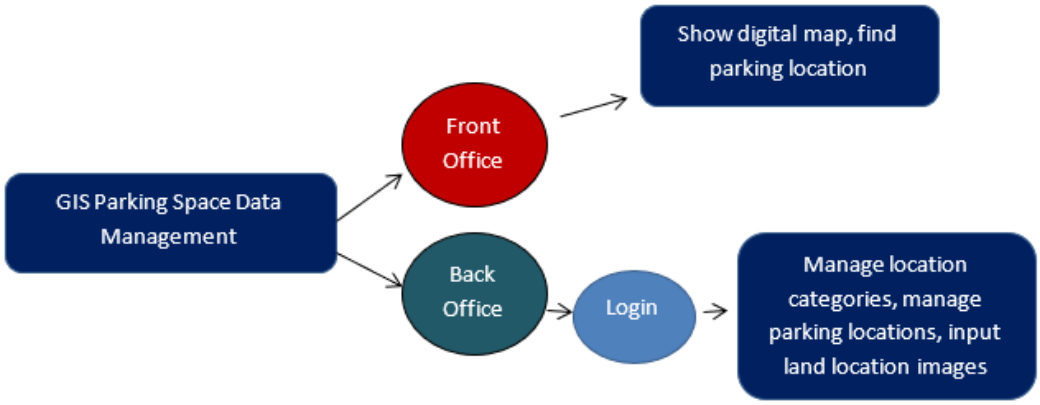

Figure 6. Flowchart System

Figure 7. The Stages of the Input Output Process

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RESULTS AND DISCUSSION

Making this web content required the operator as a control officer. The steps taken are described in the display below:

The dashboard menu is used to perform data analysis, where the presentation of information is done in the form of a table making it easier to perform data analysis.

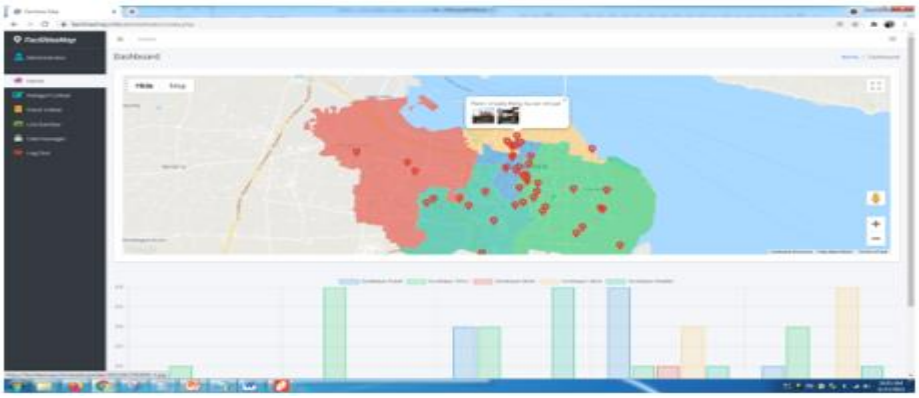

Figure 8. Dashboard Page View

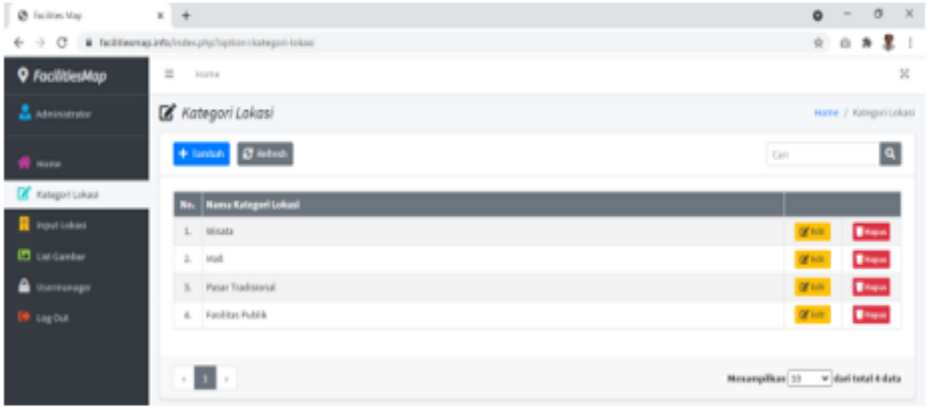

Figure 9. Location Category Input Page Display

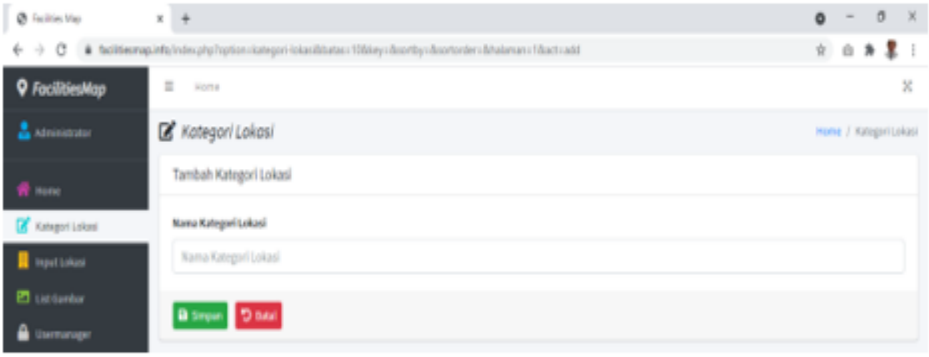

Figure 10. Location Category Input Page Display

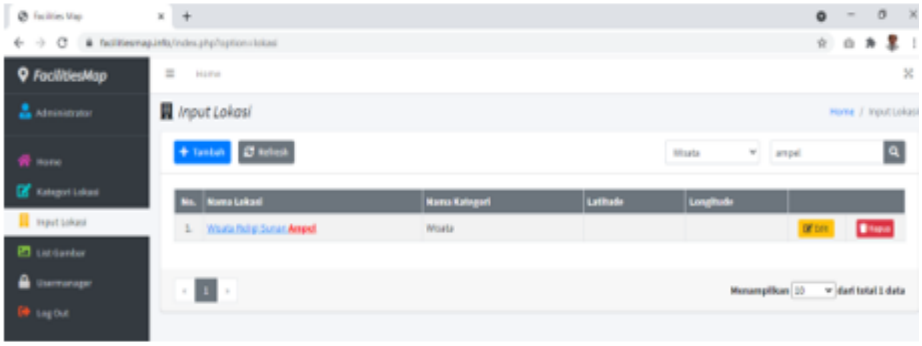

Figure 11. Location Input Page Display

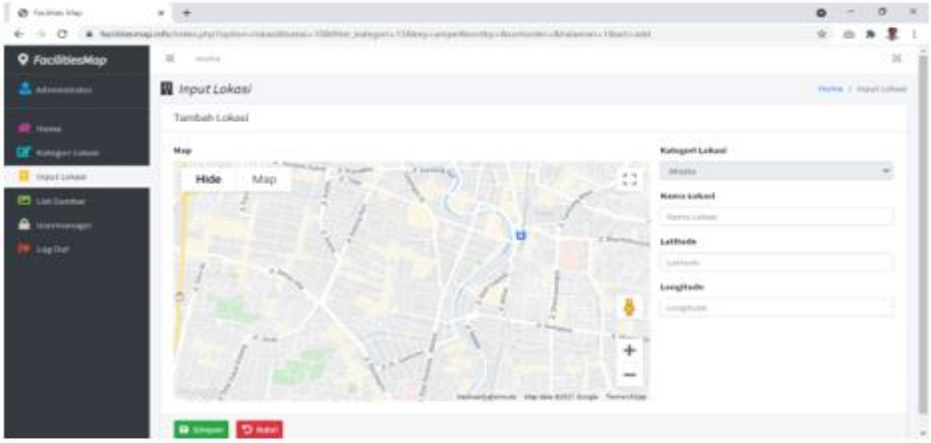

Figure 12. Page Display of Add Parking Location Data

To validate the system model, the program has been shown to 150 chosen respondents. The research explored respondents' views regarding the trialed program. It was noted that majority of the respondents accept or willing to employ the program (62%). However, there was 14,7% respondents said "no" to the program and the rest of the respondents (23,3%) had no definitive answer. For the last group of respondents, they had doubt whether such a program could be implemented in society.

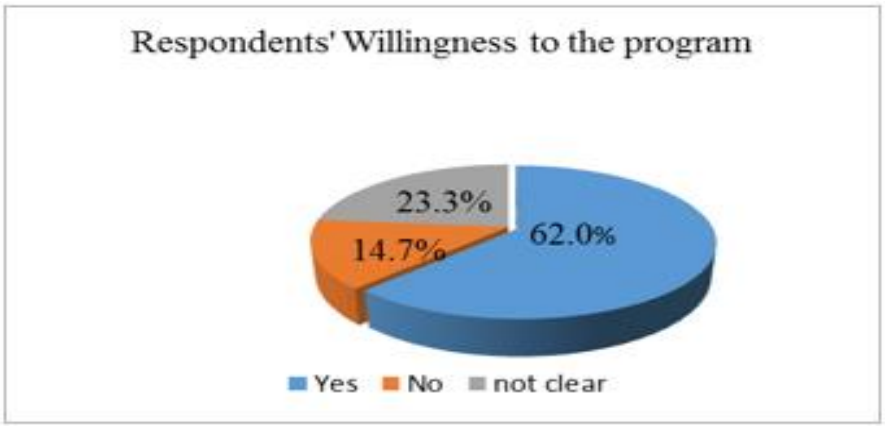

Figure 13. Willingness to the program

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CONCLUSION

Parking arrangement will be easy and technologically controlled can be done using application tools. The use of a parking web application will help vehicle users who carry out their activities. In utilizing information technology, regulators can effectively use modern tools while reducing the manual tools that are still available. This will help parking management. It was noted that the majority of respondents accepted or were willing to use the program (62%). However, there were 14.7% of respondents who said "no" to the program and the rest (23.3%) did not answer with certainty. For the last group of respondents, they doubt whether such a program can be implemented in the community.

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