Analysis of the Effectiveness of the Use of E-Parking System in the Payment of Parking Fees in Jember District

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ABSTRACT

Rapid population growth and increasing demand for private vehicles make parking problems one of the biggest challenges for local governments. Jember Regency, one of the urban areas in Indonesia, is not spared from this complex parking problem. This study uses a qualitative approach to analyze the effectiveness of the use of e-parking system in paying parking fees in Jember Regency. Data collection methods include interviews, documentation, and observation. The purpose of this research is to identify the advantages and disadvantages of the e-parking system, compare the effectiveness of using the e-parking system with conventional methods, and identify factors that affect the effectiveness of using the e-parking system. The results of this study are expected to contribute knowledge and insights, as well as provide recommendations for the improvement and development of the e-parking system. The e-parking system offers ease of access, payment, and management of parking spaces, but also has drawbacks such as dependence on technology. Factors that affect the effectiveness of e-parking systems include human resource training, public response, illegal parking, and education. Comparison with conventional methods is also the main focus of this research

Keywords: *Effectiveness, E-Parking, Parking Retribution*

1. INTRODUCTION

In the current era of globalization, advanced technological developments bring changes in various fields of life. Almost all sectors, including public services, have utilized technology. Modern urban development has a significant impact on population mobility, especially in the transportation sector. Rapid population growth and increasing demand for private vehicles make parking problems one of the biggest challenges for local governments. Jember Regency, one of the urban areas in Indonesia, is not immune from the complex parking problems. To solve this problem, the Jember District Government introduced an electronic parking system (e-parking) as a solution. The e-parking system is a system that utilizes information and communication technology to monitor and manage parking electronically.

E-parking is a change in the roadside parking payment system which was previously a cash transaction into a non-cash transaction that aims to increase parking fees and facilitate public parking service users in facilitating and paying progressive parking rates according to regulations. E-Parkir is a parking service designed to create safe, convenient and transparent parking options. It is expected to introduce progressive pricing to avoid disputes between parking attendants and the public . The use of electronic parking can reduce several risks for the government, such as the risk of fraud, especially leakage of

retribution due to the manual process carried out by the community, the risk of calculation and return errors, and security risks in revenue collection. In the context of Jember Regency, the electronic parking system is expected to provide convenience and efficiency for parking service users in paying parking fees. However, before implementing an electronic parking system, it is important to analyze the effectiveness of its use to ensure its successful implementation. The development of adequate parking infrastructure is a necessity given the increasing number of motorized vehicles in Jember Regency.

Parking problems that are not well organized can cause traffic congestion, increase air pollution and affect the aesthetics of the city. Therefore, the need for a system that can manage parking efficiently and effectively is becoming increasingly urgent. Electronic parking systems offer several advantages such as: reduced time in the payment process, increased transparency and more efficient data management. However, the successful implementation of an electronic parking system is not only determined by technological factors, but also by public acceptance and willingness to adopt the new technology. With a thorough understanding of the advantages and disadvantages of electronic parking systems, local governments can take strategic steps to improve the quality of parking services for the community and parking service users. By describing this context, the urgency and relevance of research to analyze the effectiveness of the use of e-parking system in the payment of parking fees in Jember Regency becomes clear. This research is expected to make a real contribution to efforts to improve the quality of parking services and urban mobility in Jember Regency.

2. METHODS

In this research the author uses descriptive qualitative research. According to David Williams, qualitative research is a researcher's effort in data collection based on a natural and accountable setting. While descriptive is used to describe, explain or describe data from the influence of the independent variable on the dependent variable. Descriptive qualitative research is research that describes a phenomenon that is explained through narrative writing, in the form of facts and data containing quotes obtained from field facts. This qualitative approach aims to obtain complete information about the effectiveness of the use of e-parking system on parking retribution payment in Jember Regency. Furthermore, the data obtained is analyzed using a qualitative approach.

Qualitative methods are used to obtain in-depth data, data that contains meaning. Meaning is the real data, definite data which is a value behind the apparent data. Therefore, qualitative research does not emphasize generalization, but rather emphasizes meaning. This method is able to describe social phenomena that are expected to explain things related to the effectiveness of using the e-parking system in paying parking fees in Jember Regency. The author collected data through interviews, documentation and observation. In collecting qualitative data, the author conducted in-depth interviews with 15 informants consisting of the Head of PLT. KA. UPT Parking of Jember Regency Transportation Agency, Parking Officers, and several people who are in the process of parking.

3. RESULTS AND DISCUSSION
Comparison between e-parking system and conventional method

Parking is an integral aspect of the increasingly complex traffic management efforts in modern cities. As an important component of urban infrastructure, parking systems play a vital role in regulating vehicle flow and maximizing the use of limited public space. In recent years, technological breakthroughs have opened the door for new innovations in parking management, especially with the emergence of sophisticated electronic parking systems in various regions, including Jember District. However, despite the growing adoption of technology, traditional parking methods are still widely used in towns and

villages, indicating a continued need for solutions that can adapt to local preferences and conditions.

Factors such as accessibility, operational efficiency, and impact on community mobility are key considerations in comparing electronic parking systems with conventional parking methods. Therefore, it is important for the government and relevant stakeholders to continuously develop and update parking management strategies to create a more organized, efficient, and user-friendly urban environment. There are several factors to consider when comparing electronic parking systems with traditional parking methods.

1. Ease of access

   The electronic parking system ensures ease of access for users. Users can check parking availability, reserve a parking space and pay through a mobile app or website. On the other hand, traditional parking methods often require manual parking searches, which can be time-consuming.

2. Time efficiency

   Electronic parking systems usually save more time because users know the availability of parking in advance and can choose the parking space that best suits their needs. On the other hand, traditional parking methods lead to longer search times for available parking spaces, especially during peak hours.

3. Space management

   Electronic parking systems can help manage parking more efficiently. The data collected by electronic parking systems can be used to analyze parking behavior and optimize parking space usage. On the other hand, traditional parking methods often struggle to obtain accurate parking utilization information.

4. Easy payment

   Electronic parking systems offer more convenience when paying. Users can pay through a mobile app or website without paying cash or using a car park. On the other hand, traditional parking methods often require cash payment or use of valet parking, which can lead to technical issues.

5. Availability of information

   Electronic parking systems provide more detailed information regarding parking availability, parking fees and parking spaces that users can access before arriving at the location. On the other hand, traditional parking methods often do not provide clear information to users regarding the availability of parking spaces.

6. Security

   In terms of security, electronic parking systems are more secure because transactions are conducted electronically and can be monitored. However, even traditional parking methods can be secure if there is adequate monitoring by parking attendants or other security systems.

7. Technology addiction

   Electronic parking systems are based on high technology and system failures or malfunctions can change the user experience. On the other hand, traditional parking methods are not completely dependent on technology, although they are still prone to problems such as loss or theft of parking tickets.

It can be concluded that electronic parking systems and traditional parking methods have advantages and disadvantages. Electronic parking systems offer easy access, time efficiency, better space management, easy payment, better access to information and increased security. However, reliance on technology also comes with its own risks. On the other hand, traditional parking methods are still widely used and offer more stability, although they are less efficient and provide less information to users. Technological advancements continue to change the way we view and manage parking, and in the future,

integration between electronic parking systems and traditional parking methods may provide the optimal solution for efficient and effective parking management.

Advantages of E-Parking System:

The e-parking system in Jember Regency is an innovation that provides various advantages for the community and parking service users in the area. In the midst of technological advancements, Jember District introduced a revolutionary e-parking system. This system provides convenience for users by removing the hassle of finding a parking space through an application that can be accessed easily through a smart phone.

One of the main advantages of the e-parking system is the ease of payment. By simply using the app, users can pay for parking fees without having to waste time in queues or looking for cash. This not only saves time, but also minimizes the risk of losing cash. Not only that, the e-parking system in Jember Regency also helps optimize the use of parking spaces more efficiently. Through data collected from the system, the local government can analyze parking patterns and set smarter parking placement strategies, thereby reducing congestion and improving convenience for road users.

In addition, this e-parking system also supports more transparent and accountable payment efforts.

Parking transaction data is securely stored in the system, allowing for better auditing and monitoring by related parties. Another advantage of the e-parking system in Jember Regency is the notification and warning feature through the application. Users will receive notifications when parking time is running out or when their vehicle is detected violating parking rules. This helps users to avoid fines and maintain discipline in traffic. With all the advantages and conveniences offered, the e-parking system in Jember Regency is not only a practical solution for users, but also a real example of the application of technology to improve the quality of public services and public convenience.

Disadvantages of E-Parking System

Although the e-parking system implemented in Jember Regency has provided various significant advantages in managing parking, such as ease of payment and more efficient monitoring, as well as reducing congestion in the parking area, however, it cannot be denied that there are several shortcomings that need to be considered carefully in its implementation, such as:

1). Not everyone has access or the ability to use this technology. Some people may not have a smart phone or be familiar with the use of apps, making it difficult for them to utilize this e-parking system.

2). There is a risk of technical glitches that may hinder the functionality of the system. In the event of problems with the network or software, parking users may experience difficulties in making payments or obtaining necessary information.

3). Although the e-parking system can help optimize the use of parking spaces, it does not guarantee that congestion problems will be completely resolved. Other factors such as growth in the number of vehicles and limited road infrastructure can also affect the effectiveness of the e-parking system in managing parking in Jember District.

4). Accessibility Limitations, users who are unfamiliar with technology or do not have access to electronic devices may have difficulty using the e-parking system.

In the face of the complexity of the e-parking system, the need for continuous evaluation and continuous improvement became apparent to the government and organizers in Jember District. Understanding that the sustainability of parking services depends not only on quality but also on equitable accessibility for all levels of society, relevant parties are taking proactive measures to ensure that every stage in the parking process is easily accessible to all individuals.

Regular evaluations provide an important window to review existing weaknesses and shortcomings, while implemented improvements aim to address challenges and improve the overall efficiency of the system. Through these efforts, the government and organizers in Jember District seek to make the parking system an integral part of the city's inclusive infrastructure, presenting solutions that take into account the needs and interests of all parties involved.

Thus, improving the quality and accessibility of parking services is not only a goal, but also a reflection of a strong commitment to provide better services to the community as a whole.

Factors Affecting the Effectiveness of the E-Parking System

In an interview with the Head of the Parking Unit of the Jember Regency Transportation Office about the factors affecting the effectiveness of the electronic parking system, two main factors were identified, namely:

1. Internal factors:

   The role of human resources in implementing electronic parking. When developing an electronic parking system, the role of the parking operator's human resources (HR) is a key factor in ensuring the efficiency and sustainability of the system. These internal factors include several important elements, such as:

   a. Park ranger training and skills

      Effective training is essential to prepare maintenance personnel for the technological changes in the online parking system. Training is not just about the correct use of software and hardware but also includes interpersonal skills. Conflict management and proper customer service The ability of parking operators to understand and successfully manage electronic parking systems will have a direct impact on the end-user experience and overall operational efficiency.

   b. Data management and administration

      The ability of parking operators to manage the data generated by electronic parking systems is also important. This includes understanding how to store, process and analyze parking data for advanced management and planning. Administrative aspects such as sales reports, equipment maintenance and customer complaint management are an important part of a parking attendant's daily work. Good management skills help stabilize the operation of an electronic parking system.

2. External factors:

   Challenges and constraints to the implementation of electronic parking systems in the community. In addition to internal factors, external factors also have a significant impact on the performance and acceptance of electronic parking systems. Jember District Transportation may face a number of external issues, including:

   a. Community response and skill level

      Technology The level of technological sophistication and people's skills can influence people's response to electronic parking. Although technology penetration in daily life is increasing. However, there are some segments of society that are still uncomfortable or unfamiliar with the use of mobile applications or other technologies related to electronic parking. Public awareness of data security and protection can affect the implementation of electronic parking systems. Educational campaigns and raising awareness of the benefits and security of e-parking technology can help address this. These challenges are possible.

   b. Illegal parking and cash payments are still dominant. Illegal parking and cash payments hinder the implementation of a comprehensive and efficient electronic parking system. Illegal parking not only disrupts the regular parking system. It can also impede pedestrian traffic and reduce potential revenue from a well-managed

parking system. Consistent and effective enforcement of illegal parking policies and campaigns to promote cashless payments. This can help change behavior and increase the adoption of online parking systems.

c. Education and socialization

There is a need to intensify education and efforts to raise awareness of the benefits and uses of electronic parking. Effective public campaigns can help change consumer behavior and accelerate technology adoption.

By understanding and addressing the internal and external factors that affect the performance of electronic parking systems, the Jember District Transportation Office can strengthen the infrastructure and protocols that support and improve the efficiency of online parking technology. Improved user experience and increased efficiency of the overall parking management function These measures will provide long-term benefits to traffic stability and parking management in the region.

In addition, the high number of people who still use cash parking is an obstacle in increasing the adoption of electronic systems. With only 20 percent of users switching to e-parking, it is evident that further efforts are needed to educate and change people's behavior towards a more efficient and effective e-parking system. This challenge shows that the transition from conventional parking systems to e-parking systems requires a strong communication strategy and an inclusive approach to overcome the reluctance and uncertainty that some people may feel.

Thus, the Jember District Transportation Office needs to design a comprehensive education program and an active socialization campaign to promote the benefits and ease of use of the e-parking system. These measures are expected to accelerate the adoption of e-parking technology and reduce reliance on cash payments, thereby optimizing the overall use of the electronic parking system.

4. CONCLUSION

In an era where technology is dominating, conventional methods of parking still play an important and effective role in parking management. The simplicity and affordability of this method provides a number of advantages that cannot be ignored. First of all, the conventional method of parking offers easier access for everyone. With no dependence on electronic devices or internet access, anyone can use the system without technological limitations. This ensures inclusivity and ease of access for all individuals, without exception. Furthermore, the conventional method of parking offers the convenience of direct and clear information. Users can easily view and assess the availability of parking spaces without the need to rely on apps or other technologies. With a quick glance, users can make quick and efficient decisions. Flexibility in payment is also one of the advantages of conventional methods. With direct payment options using cash or credit cards, users do not have to bother with digital processes that may be time-consuming or complicated. This provides convenience that cannot be overlooked, especially for those who are not familiar with technology. In addition, the conventional method of parking allows for easier and more direct parking management. Parking attendants can quickly manage parking areas without the need to rely on electronic systems that are prone to technical glitches or system failures. This ensures smooth operations without any unwanted hitches. Lastly, warm human interaction is an important aspect of conventional methods of parking. Direct interaction between parking attendants and users creates a more humanized and personalized relationship. This not only provides a more meaningful experience for users, but also allows them to get additional help or information in person. Considering all these advantages, it is undeniable that the conventional method of parking is still a more effective option in many situations. Simple, accessible, and flexible, it remains relevant and reliable in managing parking in various neighborhoods and communities.

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