

## IMPLEMENTATION OF THE ELECTRONIC PARKING SYSTEM POLICY IN BANDUNG: RESPONSE TO PUBLIC DEMAND

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**ABSTRACT.** Implementation of Electronic Parking System Policy in Bandung: Response to Public Demand This study examines the application of strategic planning in managing the electronic parking system in Bandung, focusing on the influence of local political dynamics on policy implementation. A qualitative approach and case study method were used to analyze strategic planning and political dynamics in the context of the electronic parking system. Primary data was collected through in-depth interviews and field observations, while secondary data was sourced from media documentation and previous research. The findings reveal that the strategic planning of the electronic parking system aims to improve urban mobility and optimize parking space utilization. However, challenges such as resource limitations and the influence of local political dynamics hinder effective implementation. Based on the Powercube theory, which includes the dimensions of level, space, and form, this study emphasizes the importance of a comprehensive approach to strategic planning. Local political dynamics significantly impact organizational capacity, particularly in terms of policy stability and resource allocation. Dependence on certain political actors and the lack of consensus among stakeholders weaken the effectiveness of policy implementation. Local governments, parking attendants, and public users play key roles in the success of this system's management. This study highlights the importance of cross-stakeholder collaboration to enhance traffic management, create sustainable parking solutions, and improve urban quality of life. Effective coordination is required to address political and operational challenges in implementing the electronic parking system in Bandung.

**Keywords:** Electronic Parking System; Political Dynamics; Strategic Planning; Traffic Management; Public Policy

### INTRODUCTION

In the context of regional autonomy, the policy implementation of the Electronic Parking Terminal (EPT) in Bandung City represents how regions can utilize their authority and rights to manage internal affairs, especially in enhancing local economic resource management. This illustrates how local governments proactively respond to the need for more efficient parking management through the use of technology. This approach not only improves efficiency in public services but also increases potential revenue from parking fees, which are a significant income source for local governments. Thus, the success of this program directly contributes to a stronger financial capability for the region, which in turn supports the provision of better services and welfare for the community. This aligns with the objectives of regional autonomy, which is to empower regions to manage and handle their own affairs, ensuring that each policy implemented can optimize local potential for the common welfare (Noviyanti et al., 2023).

Bandung, as one of the major metropolitan cities in Indonesia, has experienced a significant increase in motor vehicle numbers over the past decade. This growth has posed substantial challenges in traffic and parking management, subsequently affecting the quality of life for its residents. To address these

issues, the Bandung City Transportation Department initiated the implementation of an electronic parking system aimed at modernizing parking management and enhancing efficiency and compliance with parking regulations.

Local political dynamics play a crucial role in the success or failure of this policy. For example, political decisions regarding budget allocation can determine the amount of resources available for the implementation and maintenance of the electronic parking system. At the same time, support from local stakeholders, including the city government, business owners, and the community, is essential to ensure the system is widely accepted and well integrated into the daily lives of the citizens.

Changes in political priorities, which often occur during leadership transitions or in response to other public issues, can also affect the pace and direction of policy implementation. For instance, a change in government that shifts focus from technological infrastructure to other issues could result in reduced support for the electronic parking system implementation. This could lead to delays or even cessation of the project.

The regulatory framework developed through the political process dictates how the electronic parking system is operated, monitored, and regulated. Compliance with these regulations, which can also be influenced by political dynamics, will affect the

system's effectiveness and acceptance. For example, well-structured and stringent regulations supporting user data privacy and security are more likely to be accepted by the public and enhance trust in the system.

Finally, public response to the electronic parking policy is often influenced by how the policy is communicated, which can vary based on the current political climate. An effective and transparent information campaign by the Transportation Department, supported by political stakeholders, will significantly determine how successfully the policy is received by the community. By understanding and managing these local political dynamics, the Bandung City Transportation Department can be more effective in implementing the electronic parking system and meeting public needs and expectations for more modern and efficient parking management.

Bandung, as one of the major cities in Indonesia, faces various challenges in managing effective transportation and parking. Amid economic growth and an increase in vehicle numbers, parking issues have become increasingly critical, encroaching on various aspects of city life. One solution that has been found to address this parking issue is the implementation of the Electronic Parking Terminal (EPT). This initiative was launched as an effort to modernize the parking system and reduce revenue leakage from parking fees, achieving significant figures annually. The implementation of EPT is a crucial step in applying the smart city concept, where information technology is used to enhance the quality of public service and the efficiency of city resource management (Fatmawati et al., 2024).

The use of electronic parking technology not only supports transparency and accuracy in the management of fees but also helps minimize illegal parking practices, which often disrupt public order and the aesthetics of the city. Local Regulation of Bandung City No. 4 of 2017 and its related amendments, along with Mayoral Regulation Number 121 of 2022 and Number 66 of 2021 (Peraturan Wali Kota, 2022) (Perhubungan et al., 2017), affirm the city government's commitment to implementing technology-based solutions to parking problems. These regulations are designed to ensure that parking management is conducted fairly, efficiently, and sustainably, contributing to more stable regional revenue and improving the quality of life for urban residents.

Although this initiative has many advantages, the implementation of the electronic parking system in Bandung City is not without challenges. From social resistance due to a lack of understanding and

readiness of the community to adopt new technology, to issues of infrastructure and technology reliability that still need improvement. Continuous evaluation and policy adaptation are key to ensuring that the benefits of the electronic parking system can be enjoyed by all parties. Through in-depth studies and inter-sectoral cooperation, it is hoped that Bandung can continue to develop into a smarter city that is responsive to the needs of its citizens. The purpose of using this Electronic Parking System (EPS) is to improve parking administration which previously seemed inadequate and to minimize illegal parking fees (Kristian et al., 2024). Additionally, the EPS was chosen to replace the manual parking system, where parking attendants acted as collectors of cash parking fees. With the manual system, there was a leakage of parking fees amounting to 16 billion rupiah annually (Qohar, 2018).

The novelty of this research lies in the development of innovative strategies designed to overcome the implementation barriers identified in previous studies. These strategies focus on policy refinement and operational optimization, using an evidence-based approach that considers structural, technological, and behavioral factors of stakeholders. Thus, this study not only offers more effective practical solutions but also contributes theoretically to enriching the literature related to the implementation of public policy in the transportation and parking management sectors. The solutions generated are expected to be more responsive to the needs and expectations of the community, ensuring that the use of technology not only serves as a means of modernization but also as a tool to enhance the quality of life for urban residents.

The Powercube theory, formulated by John Gaventa, is an innovative analytical framework designed to deepen the understanding of power dynamics within societal structures. It is particularly relevant to examining how public policies are formulated and applied in real-world settings, such as the case of electronic parking systems in urban environments. This theory elucidates three distinct dimensions of power: levels, spaces, and forms, which collectively offer a comprehensive view of the policymaking process and its societal impacts.

The level dimension of the Powercube framework addresses the various layers of authority and influence that affect policy decisions, from the local to the global scale. In the context of the electronic parking system implementation in Bandung, this dimension helps to analyze how decisions made at the city government level resonate through different layers of governance, potentially influencing broader

policy frameworks at regional or national levels. This analysis can reveal how power at higher levels shapes the resources and mandates available at lower levels, directly affecting policy implementation.

The space dimension focuses on the physical and decision-making spaces where policies are discussed, shaped, and contested. For Bandung's electronic parking system, this dimension could examine public forums, city council meetings, and online platforms where stakeholders ranging from city planners and local business owners to residents—engage with and influence the policy's development and deployment. Understanding these spaces is crucial for identifying where power is exercised, who gets to participate in these discussions, and how their inputs shape the final policy outcomes.

Lastly, the form dimension explores the visible, hidden, and invisible forms of power that impact how policies are perceived and accepted by the community. Visible forms include the explicit rules and regulations governing the use of electronic parking systems, while hidden forms may involve the less transparent lobbying efforts by vested interests. Invisible power might be reflected in the deeper social norms and ideologies that either support or hinder public acceptance of new technologies like electronic parking.

Incorporating the Powercube framework into the analysis of Bandung's electronic parking system policy allows for a holistic understanding of how power dynamics influence policy success. By examining how the policy is formulated, the arenas in which it is debated, and the power structures that shape its acceptance, stakeholders can better strategize on implementing the system effectively to meet public demands and improve urban mobility. This comprehensive approach not only aids in policy implementation but also fosters greater public participation and transparency, ensuring that the electronic parking system is adapted to the local context and is more likely to be embraced by the community.

Previous research for this article is The study on the "E-Parking Management System" conducted in Makassar highlights significant challenges with illegal parking and the underutilization of electronic parking systems, primarily due to poor management and control by local authorities. It emphasizes the transformation from manual to electronic parking as a strategy to enhance efficiency, control, and transparency, noting that effective e-parking adoption could significantly improve revenue, reduce congestion, and better the welfare of parking attendants. The research recommends a robust

engagement of stakeholders and improved regulatory frameworks to ensure the successful implementation and acceptance of e-parking systems, underscoring the importance of technology integration in urban parking management to tackle inefficiencies and enhance urban mobility (Ayyub et al., 2021). And The research titled "Implementation of E-Parking Management Policy in Braga Area of Bandung City" examines the challenges and effectiveness of the electronic parking management system in Bandung. It reveals that the implementation of public parking policies in the Braga area has not been fully effective due to various compliance issues by parking officers and a lack of public understanding of the parking systems. The study also highlights the problem of inconsistent use of parking machines, where machines are sometimes unavailable, leading to unauthorized parking practices that reduce parking revenue and contribute to traffic congestion. The study suggests that better management and stricter enforcement of parking policies could improve the situation (Fatmawati et al., 2024). And then The study titled "Analysis of Project Integration on Smart Parking System in Telkom University" investigates the integration and challenges of implementing a smart parking system (SPS) at Telkom University using RFID technology. The research highlights the effectiveness of the SPS in improving parking management, reducing traffic, and enhancing user convenience through automated access and real-time parking data. However, it also points out several issues such as management challenges, technological reliability, and the need for continuous system improvements to address evolving demands and to maximize the potential benefits of the SPS (Lubis et al., 2019).

In practical application, without a strategic plan, policy implementation is often uncoordinated and ineffective. Lastly, the absence of a maintenance mechanism indicates weaknesses in operational policy management, where according to Knill and Tosun, poor maintenance hinders the sustainability and reliability of infrastructure. In practical application, this means that regular maintenance procedures and adequate resources are needed to ensure parking machines function properly. Thus, a comprehensive approach considering all dimensions of public policy is necessary to address the problems of the electronic parking system in Bandung. Considering these findings, this research provides significant contributions in understanding the challenges and potential in implementing the Electronic Parking System policy in Bandung City, as well as formulating more effective improvement

steps to achieve the goals of smooth traffic, increased regional revenue, and comfort for vehicle users.

## METODE

This study aims to analyze the Implementation of the Electronic Parking System Policy in Bandung City: Response to Community Demands. The research uses qualitative methods. Data sources consist of primary and secondary data. Primary data include observations and interviews with various informants. Informants were selected using purposive sampling (Creswell, 2010), which includes officials from the Bandung City Transportation Department, parking attendants in Bandung City, and the community using the Electronic Parking System land in Bandung. The collected data are analyzed descriptively in accordance with the research title. Data validation is based on certain criteria, including the level of credibility and accuracy of the obtained data, the truthfulness of descriptions, conclusions, and explanations, which can be assessed through compliance with regulations and important documents (Moleong, 2013). In the data validation process, this study uses data triangulation methods, aimed at verifying and strengthening the validity of research results. Triangulation is performed through three main methods: in-depth interviews, field observations, and document analysis. In-depth interviews were conducted with various stakeholders, including officials from the Bandung City Transportation Department, parking attendants in Bandung City, and the community using the Electronic Parking System land in Bandung. Information from these interviews is then validated with field observations.

Bandung, as one of the metropolitan cities in Indonesia, has faced significant challenges in managing the growth rate of private vehicles and related parking issues. Therefore, the policy to implement an electronic parking system was designed as a solution to minimize these difficulties while improving efficiency and compliance with parking regulations.

Using the Powercube Framework Formulated by John Gaventa, This study aims to analyze how this policy is applied at various levels of power from a local perspective, as well as how the policy is accepted and adapted by the community. The level dimension focuses on the interaction between the city government, entrepreneurs, and residents, while the space dimension discusses the arenas where policy discussions and implementations take place, including public forums and social media.

Further, the Form Dimension in the Powercube It explores the various ways power affects policy acceptance. Visible power through regulations and official policies, hidden power that may influence the political agenda without public knowledge, and invisible power that shapes public perception and acceptance of the policy. By understanding these aspects, the research aims to identify factors that affect the effectiveness of the electronic parking system implementation and the level of community satisfaction with these changes.

## RESULT AND DISCUSSION

In conducting this study, several informants were interviewed who were considered to have the knowledge and authority to provide answers regarding the Implementation of the Electronic Parking System Policy in Bandung City: Response to Community Demands. The questions in the questionnaire were divided into two criteria/aspects based on the framework proposed. The powercube theory formulated by John Gaventa is a new analytical framework to understand power. There are three aspects seen in the powercube framework: the dimension of level, the dimension of space, and the dimension of form. This framework is used to measure how policies are formally established and their application in practice, which includes the acceptance and adaptation by the community towards the electronic parking system (Rahmatullah & Tunjung Sulaksono, 2021).

### Level Dimension from local political

First, at the city government level, the implementation of the electronic parking system is part of a larger initiative to improve urban transportation management and mobility. The Bandung City Government has established a policy framework supporting the adoption of this technology, including regulations that define technical standards, pricing policies, and security protocols. At this level, the government also collaborates with private entities and researchers to ensure that the technology used is the latest and most efficient.

Second, at the operational level, the system is implemented at several strategic points throughout the city. These locations were selected based on traffic analysis and parking needs determined by the Transportation Department. Implementation at this level involves the physical setup of infrastructure, such as the installation of equipment and payment



systems, as well as training the personnel who will operate and oversee the system.

Third, at the user level, this dimension explores how various segments of the Bandung community — from private drivers to local entrepreneurs — experience and respond to the electronic parking system. The research shows that while most users welcome the convenience and speed of the service, some face challenges, such as unfamiliarity with the technology or resistance to transitioning from manual to electronic parking systems.

Fourth, at the community level, the study assesses how the electronic parking system has contributed to or impacted the quality of life. For example, by reducing the time spent searching for parking, the system can reduce stress and increase residents' productivity. However, in some communities, there may be concerns about additional costs or privacy issues arising from the use of this parking technology.

Fifth, at the economic level, the electronic parking system has the potential to provide a significant economic impact. By increasing parking efficiency, more consumers may be encouraged to visit commercial areas, which in turn can boost revenue for local businesses. On the other hand, the costs of implementing and maintaining the system must be considered in the city government's cost-benefit analysis.

At each of these levels, the success of the electronic parking system implementation in Bandung depends on effective integration and coordination between various parties, including policymakers, field operators, and the general public. By understanding and addressing these diverse needs and expectations, Bandung can continue to enhance its parking infrastructure and, ultimately, urban quality of life.

### **Space Dimension from local political**

In the context of the "Implementation of the Electronic Parking System Policy in Bandung City: Response to Community Demands," the "Space" dimension refers to the geographic, physical, and environmental aspects of where the electronic parking system is applied. This dimension is crucial because it influences how infrastructure is structured and interacts with existing land use and urban planning. The study considers the distribution, accessibility, and ecological effects of the electronic parking system within the urban context.

First, at the geographic level, the implementation of the electronic parking system in Bandung focuses on areas with high traffic volumes and significant

commercial density. The strategic selection of these locations is intended to optimize land use and improve traffic flow. By mapping these locations, the city government ensures that the electronic parking system supports economic and social hubs, such as shopping centers, offices, and public facilities.

Second, from a physical perspective, the electronic parking system requires significant infrastructure installation, including payment terminals, parking sensors, and camera-based monitoring systems. This infrastructure must be integrated with existing urban elements without disrupting the city's aesthetics or reducing public space. The design and location of the equipment must consider pedestrian safety and the visual experience of road users.

Third, in terms of the environment, Bandung's electronic parking system is designed to reduce the environmental impact of vehicles searching for parking spaces. By reducing the time required to park, the system helps lower carbon emissions and air pollution. Additionally, the choice to use energy-efficient technology and eco-friendly materials in building parking infrastructure supports the city's sustainability goals.

Fourth, the space dimension also relates to the interaction between the electronic parking system and other transportation infrastructure. Integrating the parking system with public transport can enhance overall urban mobility efficiency. For example, strategically placing parking stations near bus stops or train stations can encourage the use of public transportation, which is more environmentally friendly.

Fifth, the space dimension also includes social and spatial justice considerations. The implementation of the system must account for the needs of all segments of society, including people with disabilities and those who do not have easy access to digital technology. This requires inclusive design and effective marketing to ensure that all city residents can use the electronic parking system without barriers.

Finally, the space dimension demands continuous evaluation of how urban space is used and transformed by the presence of the electronic parking system. Changes in traffic patterns, parking habits, and social interactions around parking areas must be monitored to ensure that the system is not only technically effective but also socially and culturally accepted.

By exploring the space dimension in this context, the study provides a comprehensive view of how the electronic parking policy is implemented

in Bandung's highly dynamic and diverse urban environment, offering insights for future policy improvements and practices (Bennett et al., 2022).

### Shape Dimension from local political

The "Form" dimension explores how the physical design, technical configuration, and aesthetics of the electronic parking system influence the integration and functionality of the system within an urban context. The design of this system involves elements such as payment terminals, sensors, and cameras, which not only need to be functional but also user-friendly, considering the diverse users who will interact with this technology. The success of the system heavily relies on its ability to provide an intuitive and user-friendly interface that can be easily operated by all members of the public, including the elderly or those less familiar with digital technology.

Aesthetic aspects are also given special attention in the design of the electronic parking system in Bandung. Terminals and other devices are designed to blend with the urban environment, supporting the city's efforts to maintain its visual beauty and aesthetics. This is crucial to ensure that the addition of new infrastructure does not disrupt the character and visual harmony of the city's surroundings. Additionally, the design and materials used in this system are chosen for durability and security, minimizing the risk of physical damage and system disruptions, as well as facilitating maintenance processes.

The integration of advanced technology in the parking system is a key aspect that helps the city government manage parking spaces more efficiently. The system utilizes various identification technologies and automatic payment systems that enable quick transactions, reducing queues at parking locations and improving user experience while decreasing traffic congestion in related areas. Real-time monitoring through cameras and sensors not only enhances security in parking areas but also provides data that can be used for better traffic analysis and urban planning.

However, the implementation of the electronic parking system also faces challenges, especially in terms of adapting to existing infrastructure and resistance from some community groups that are not fully ready to adopt new technology. Therefore, the Bandung Department of Transportation conducts a series of public outreach and education campaigns to reduce obstacles and increase public acceptance of the electronic parking system. This includes demonstrations of how to use the system and information on the long-term benefits of using this

technology to reduce traffic congestion and improve urban quality of life.

Through a comprehensive and detailed approach in designing and implementing the electronic parking system, Bandung aims to ensure that this new technology can be smoothly integrated into the daily lives of its citizens, bringing tangible benefits in terms of efficiency and urban living quality.

Political dynamics play a critical role in influencing an organization's capacity to implement policies, such as an electronic parking system. One of the most fundamental aspects is resource allocation. Political decisions regarding budget allocation significantly determine the amount of resources available for the implementation and maintenance of the system. Without sufficient funding, even the most effective policies could fail to be properly implemented or maintained.

Furthermore, shifting political priorities often reflect the support for specific policies. For example, a change in government or political priorities can affect how quickly or slowly a policy is implemented. If a policy like an electronic parking system is considered important, then its implementation will be pushed with adequate resources. Conversely, if the policy is no longer a priority, support can diminish, hindering the implementation process.

Additionally, policies and regulations formulated through the political process determine the operational framework of the parking system. How these policies are crafted and compliance with the established regulations is monitored and enforced also results from political dynamics. Effective regulations and strict compliance are crucial to ensure the system functions as expected and meets its intended goals. Lastly, the public's response to policies is also influenced by political factors. How a policy is communicated to the public and how it is perceived can affect the level of resistance or support from the community. Effective communication and public acceptance of new policies are key to successful implementation, where the community feels part of the change process and is more likely to support the newly introduced system. Political dynamics not only affect the design and preparation of policies but also their execution and the public's reaction to these policies. Understanding this dynamic is crucial for managing and executing policy effectively.

### CONCLUSION

The conclusion on the implementation of the Electronic Parking System in Bandung has highlighted the critical importance of integrating technology

within urban infrastructure, focusing on government policy, technological adaptation, and community engagement. The government's establishment of a supportive policy framework, in collaboration with private entities and researchers, is crucial for leveraging advanced technology to enhance urban transportation and mobility. However, successful implementation also requires robust coordination among policymakers, private stakeholders, and the public to effectively meet diverse needs and expectations.

Furthermore, the design and operational execution of the system play significant roles in its acceptance and functionality. The electronic parking system's placement in strategically chosen, high-traffic areas aims to optimize land use and improve traffic flow, while its user-friendly interface caters to all community segments, including those less familiar with digital technologies. Overcoming challenges such as adapting to existing infrastructure and community resistance to new technologies is essential, necessitating comprehensive public outreach and continuous evaluation to ensure the system not only functions efficiently but also aligns with the community's broader social and cultural values.

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