

## Analysis of the E-Government Initiative at Local Government Level in Bandung City, Indonesia

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### Abstract

This research aims to analyze aspects affecting the implementation of electronic parking, a digital-based public services provision in parking. The concept of digital divide, workforce, regulation, and infrastructure were used to conduct the analysis. This study employed a qualitative research methodology with qualitative data collection techniques through interviews with two officers of the Parking Technical Implementation Unit (TIU) - the Department of Transportation Bandung City Government, 4 parking attendants, and 100 people as the roadside parking users. To enrich the data, observation and study documents were also conducted. The research used a descriptive analysis combined with simple descriptive quantitative data. It is evident from this study that four primary aspects hindered the implementation of the electronic-parking initiative. Those aspects are a large gap in the digital divide, low workforce quality and quantity, the absence of the proper regulations, and futile infrastructure. Adding to these four barriers, we also found other significant aspects: the investment that has not been strategically designed, the lack of leadership, and the low quality of education and marketing. All these three additional aspects also contribute to the failure in meeting the objective of the electronic parking initiative. This finding suggests that any new initiatives in public service provision, mainly using ICT, need to be well communicated and consulted with the implementing units. Furthermore, the initiative needs to be complemented with an acceptable set of policies to ensure its sustainability.

### Keywords:

E-Government Initiative; E-Parking; Parking Service

### Introduction

Local Government Revenue, hereinafter referred to as LGR, is required by any local government to finance the regional development. Bandung City has great potential to increase the LGR obtained from roadside parking. Roadside is a public facility that can be used as a regional revenue source as stipulated in the Local Government Regulation Act Bandung Municipality Number 9/2010. This means that the use of public roadside facilities for parking can be charged a specific fee as a public service provision.

However, the researchers' initial observation and document analysis shows

that the target of local government revenue from parking fees has not been achieved. Three factors cause this loss of LGR. *First, regulation:* There are two regulations as the basis for roadside parking retribution: Local Government Regulation Act Bandung Municipality Number 12/2001 concerning Parking Management Rules, and Local Government Regulation Act Bandung Municipality Number 9/2010 concerning Public Parking Retribution, Public Roads, and Specific Parking Spots. Even though some thorough attempts to trace the documents have been made, there are no details on technical instructions and implementation instructions for these two regulations can be

**Figure 1.**  
**Regulation Inconsistency<sup>1</sup> and Infrastructure Provision<sup>2</sup>**



Source: Compiled by Authors (Left: an e-parking machine was placed at an area that has a no-stop sign. Right: parking fee charge info board without e-parking machine)

found. This shows the lack of detailed parking regulations.

*Second, management:* There are no detailed explanations about the management of roadside parking payment. Consequently, illegal parking attendants take over, and the public is accustomed to paying for parking to illegal parking attendants. This means that there is no revenue for the local government from parking fees.

*Third, surveillance:* The issue of illegal parking can be solved if there is an effective surveillance system. The lack of surveillance causes the public to often park in no-parking areas or roadside. Parking ticket payment is regarded as one of the sources of local government revenue. However, in Bandung City, surveillance is only carried out by sticking stickers on vehicles. In Indonesia, sticking a sticker will not make any motorist pay the parking ticket, hence the potential for increased LGR is lost.

The three factors above caused the loss of potential increases in LGR. To solve such

problems, Information and Communication Technology (ICT) can be harnessed as creative problem-solving. ICT is applied in governmental processes to improve the quality of public sector organizations' activities and is defined as e-government (Cullen & Hassall, 2017). Presidential Regulation Number 95/2018 concerning Electronic Based Government System paves the way for Bandung city government to establish a policy that uses ICT to achieve parking retribution potential through electronic-parking, hereinafter referred to as e-parking. However, initial findings showed that there are four aspects likely to contribute to the failure of this. Based on observation, there are four aspects as the cause of unsuccessful e-parking implementation. *First*, the digital divide; there is a gap in public understanding of the use of e-parking machines.<sup>3</sup> *Second*, the quality of the workforce, i.e. the parking attendants, is still low.<sup>4</sup> The parking attendants have not been doing their tasks properly. For example, they do not help direct the

<sup>1</sup> A result of an observation done in one of designated e-parking areas (Hasanudin street - Bandung), on October 22<sup>th</sup>, 2021

<sup>2</sup> A result of an observation done in one of designated e-parking areas (Teuku Umar street - Bandung), on October 22<sup>th</sup>, 2021

<sup>3</sup>A result of an Interview with D, a community member of Bandung City, on October 22<sup>nd</sup>, 2018, at 15.47 PM

<sup>4</sup> A result of an interview with D (above) and confirmed with the result of an observation done in one of designated e-parking areas (Ahmad Yani street - Bandung), on October 18<sup>th</sup>, 2018

motorists, and they do not standby near the e-parking machines.<sup>5</sup> *Third*, the placement of the e-parking machine creates regulation inconsistency instead. For example, the parking machines are placed at a no-parking area or roadside. *Fourth*, in regard to infrastructure provision, there seems to be a problem with machine maintenance.

To this date, topics on e-government initiatives particularly on e-parking are under-researched. Reviewing scientific publication in SINTA indexing, there are only two studies about e-parking that have been published. Qohar (2018) discusses the e-parking performance's success using output and outcome performance approach. Other research by Kireina (2017) discusses e-parking using the smart city concept. In contrast to previous studies, this study uses an e-government approach that focuses on four aspects; digital divide, workforce, regulation, and infrastructure. Hence, our research fills this gap.

The four aspects of e-government implementation are used to identify barriers in achieving e-parking goals. The use of an e-government approach in this research is considered appropriate given that e-parking is a form of e-government, which is defined as the use of ICT in providing public services. This study is specifically aimed to answer the research question, "How is the e-parking initiative implemented and what are the aspects that are instrumental to the success of e-parking implementation in Bandung City?" This study provides a practical contribution to any governments at the local level (cities or districts) to understand important elements that hinder or advance e-parking and further finding solutions to the barriers.

## Literature Review

E-government refers to the use of technology in the government sector to change the work culture from non-electronic work culture to electronic work culture (Hasibuan, 2007). In e-government, the change paved the way to improve the quality of delivering public services. As such, e-government is an attempt by government organizations to deliver electronic-based services to be used by the public (Henman, 2010). According to OECD (2013), e-government is about rethinking the provision of services to optimize the opportunities provided by technology. Taking from this definition, the working definition of e-parking for this paper is a form of parking service that utilizes technology. E-parking is the process of changing from paying for parking manually to paying for parking via technology. The provision of technology for parking services is considered a strategic initiative carried out by the government of Bandung City to increase LGR. Therefore, e-parking can be considered as an e-government product. Elements significant to the e-government initiative implementation are used in this study. These are Digital Divide (Helsper & Van Deursen, 2015; and OECD, 2009), Workforce (World Bank, 2002), Regulation (Alcaide Muñoz & Rodríguez Bolívar, 2018; Brimkulov & Baryktasov, 2018; Gascó, 2006; and Joseph, 2018), and Infrastructure (Hamner et al., 2010; and Zulu, 2010).

To analyze e-parking, this paper focuses on relevant aspects for a developing country's context, such as Indonesia. These aspects are consistent with what has been argued by the World Bank (2002). Even though Indonesia is now considered as an upper-middle income country, in the aspect of technological advancement, Indonesia is still in its very early stage of e-government with a maturity index of 0.66 out of 1.00 & ranked 88<sup>th</sup> (UNDESA, 2020). Hence, understanding e-government initiatives and factors significant

<sup>5</sup> A result of an observation done in one of designated e-parking areas (Ahmad Yani street - Bandung), on October 18<sup>th</sup>, 2021



to their implementation needs to be based on the concepts of e-government for developing countries. In the next section, these aspects will be discussed.

First, according to the United Nation Department Economic & Social Affairs (2014), digital divide is one of severe challenges in e-government implementation. We argue that the digital divide is the first challenging aspect for any e-government implementation in developing countries because information technology infrastructure provision in developing countries is behind those of developed countries. Hence, prior to taking up the endeavour to implement any forms of e-government, any governments must first confront the digital divide problem and bridge the gap. Digital divide is a gap between people with the knowledge and the ability or skills to use technology and those who do not (West, 2011). The understanding of digital divide has been developed from “primarily revolves around the problem of access to relevant technology information” to “capacity and ability to access and use ICT” (UNDESA, 2014). In line to this understanding, Helsper & Van Deursen (2015) stated that aspects of skills and motivation must be considered in any e-government initiative; otherwise, it will inhibit the success of e-government, as OECD (2009) argued that the inability of people to use technology is a barrier that can cause low use of e-government. Taking a slightly different approach to understanding the digital divide, Van Dijk (2006) argues that one of the possible causes of the public avoidance in using e-government is a motivational factor. This motivational factor can be represented by the lack of desire to use technology (Van Dijk, 2006). Based on this approach, this research looked at the digital divide by understanding the aspect of the public's awareness of using technology.

Adding to the awareness factor, the digital divide also focuses on both the public

knowledge and ability in using technology. A lower ability level can only mean the wider the gap of the digital divide. We argued that knowledge and ability is defined by what is being understood by the public about the information technology which is fundamental in any e-government initiatives.

*The second* significant factor to e-government implementation is the workforce, of which, its role is to manage the e-government initiative (Sosiawan, 2008). World Bank (2002) describes that a skilled workforce is a prerequisite to any e-government initiatives. Therefore, the workforce is an essential aspect of implementing e-government to obtain the results set by the government.

It is generally accepted that workers contribute effectively to achieving an organization's mission and goals (Condrey, 2004). This means, to achieve e-government goals, the workforce must have good quality and sufficient quantity. In their recent research, Leon-Moreta & Totaro (2021) found evidence that municipal workforce capacity “allows local governments to extend their provision of public goods and services”. However, even when the workforce is highly competent and sufficient in number, there is a certain degree of resistance in using technology among the workforce (digital divide). This can cause ineffective e-government (World Bank, 2002).

In this study of e-parking implementation, the workforce refer to those who work as parking attendants. Parking attendants are responsible for directing the public, or the motorists, to use e-parking to pay for parking on the roadside. The e-parking revenue target is expected to be achieved when there is a high level of e-parking usage by the public. Therefore, parking attendants must have quality and sufficient quantity.

*The third* important aspect of e-government is regulation, as it is argued by Gascó (2006). This explains that any e-government initiative must have an appropriate legal framework

prior to its implementation. As Brimkulov & Baryktabasov (2018) stated, the implementation of e-government relies on a legal framework to be used as a strategic step to make e-government successful. Thus, regulations are needed as the strategic guidelines for any e-government implementation. Sosiawan (2008) even argues that for any e-government implementation to achieve its target, a master plan and a grand strategy is needed. A master plan and a grand strategy are needed to adapt policies to an area's local contextual characteristics. It is most likely that any e-government initiatives will fail when they are not founded on policies that fit into the local contextual characteristics (Joseph, 2018). Therefore, e-parking requires a regulatory framework that contains a master plan and basic strategies that consider planning, technical implementation, promotion, outreach, infrastructure deployment, monitoring, and evaluation of the performance of the e-parking implementation.

*The fourth*, defining factor for e-government implementation is the infrastructure provision and quality. Hamner et al., (2010) argue that the lack of infrastructure is a massive barrier to e-government implementation. This also true as the absence or low quality of IT infrastructure is also one of the causes of wider digital divide. E-government can only be implemented when the required infrastructure is available as infrastructure is the basis for the operation of e-government (Zulu, 2010). Hence, IT infrastructure must be not only available but also in good quality.

According to Ludwig (2017), infrastructure can be physical objects used in different locations and long-lasting. Thus, it is necessary to have a good maintenance plan for infrastructure for the e-government initiative. To ensure this, a specific agency needs to be assigned to maintain the electronic infrastructure (Campos, 2009). This is true, particularly if the e-parking machines are expected to function well and have long-life usage.

We argue that these four factors require special consideration when implementing e-government initiatives in a country like Indonesia. However, to fully comprehend the implementation of e-parking in Bandung City, it is necessary to consider the possibility of other significant factors influencing the success of e-government efforts.

Wohlers (2010) emphasized that successful e-government adoption in developing countries that are still in the early stages of their journey is contingent on a number of factors, including successful governance reform, institutional capabilities, and leadership. Even in more developed countries, however, leadership is still a critical factor in the adoption of e-government. According to Welchman (2015), leadership has a significant impact on the adoption of e-government. She claims that leadership must determine who has power over three areas: digital strategy, policy, and standards. Additionally, leaders must articulate a clear strategy for digitizing the public sector in the face of digital conservatism.

This paper argues that citizens, as well as bureaucracy, must embrace and actively use the e-government initiative, drawing on the work of Ho & Ni (2004), Jaeger & Matteson (2009), and Mahler & Regan (2002), all of whom emphasize the critical importance of bureaucratic acceptance of ICT-enabled transparency initiatives. When the bureaucracy demonstrates to citizens its willingness to embrace e-government initiatives, citizens will look to it as a model to emulate. As a result, any e-government initiative is much more likely to have far-reaching cultural consequences.

Citizens, on the other hand, must first acquire the necessary skills and knowledge to adopt ICT. Education and marketing of the technology used in the e-government initiative, in the form of training and introduction, are required. Both of these components are critical for closing the digital divide. Bertot et al. (2010) suggest that in order to ensure the broadest



main streets. Being busy or quiet streets will affect the number of vehicles needed to use the e-parking machines. The second category is the availability of the parking attendants who guarded the e-parking machines. We looked at both unguarded and well-guarded e-parking machines. Furthermore, the final category is the updated condition of the e-parking machines in those seven main streets. We observed all the e-parking machines, whether they are missing, damaged, and or out of order.

To analyze the aspects significant to e-government initiative, the authors crafted a conceptual framework which were inspired by aspects of considerations for the design of e-government contained in "The E-Government Handbook for Developing Countries," by Info Dev The World Bank. As a result of synthesizing these aspects of considerations with other authors' findings on aspects or dimensions of e-government implementation we highlighted aspects we considered relevant in discussing e-parking implementation in Bandung City. These aspects are Digital Divide, Workforce, Regulation, and Infrastructure. To understand the digital divide, we inquired about two aspects: the respondents' understanding and motivations in using e-parking and respondents' skills in using the e-parking machines. To understand the aspects of the workforce, we looked at the quantity (number) of the e-parking machines attendants and also the public perception on the quality of the e-parking machines attendants. Further, we delve into the official government documents to find any set of regulatory frameworks, including a master plan and a grand strategy, as the legal basis of the e-parking policy implementation.

To corroborate the research's finding, we delved into public conversation via twitter which serves as one of the leading social media platforms in Bandung. All the tweets and quote tweets from infobdg and PRFMNews twitter

account were collected for January 2020 and March 2021, of which the public conversation about e-parking of Bandung City took place. Precisely, 11 tweets from infobdg twitter account and 102 tweets and 11 quote tweets from the PRFMNews. All those tweets were then converted into 112 cases which then were analyzed using the ATLAS.ti qualitative data analysis software. Using ATLAS.ti, co-occurrence analysis was conducted to understand the public's perception of significant aspects for e-parking implementation. The co-occurrence analysis consists of several steps. The first is code setup. As described in the literature review section, these four codes are digital divide, workforce, regulation, and infrastructure. Second, co-occurrence analysis for all the 112 cases were conducted. The result shows that two other important aspects emerged from the public conversation, leadership and education & marketing aspect. The third step is, adding these two new codes and re-run the co-occurrence analysis.

## **Results**

This section discusses the findings of the four aspects significant to the e-parking implementation. The first finding is on the digital divide. The digital divide is the gap in understanding ICT, which leads to differences in the public's ability and skill when using e-parking. According to Helsper & Van Deursen (2015), digital divide can be understood as motivation and skills to use any e-government initiatives. We argue that the level of awareness determines motivation. Users are generally motivated in using these initiatives when they are aware of them. Hence, based on Van Dijk (2006), public awareness is important to public understanding of the e-parking policy. Based on the interviews with 100 users of parking on the roadside, the following is a summary of the findings on public awareness.



**Table 1.**  
**Public Awareness in Using e-Parking**

No.	Public Awareness	Number	Percentage
1.	Aware	17	17%
2.	Not aware	83	83%
Total		100	100%

Source: Compiled by Authors

It is evident that the public awareness about the e-parking policy is very low, only 17% of the public are aware of the e-parking policy (Table 1). This signifies that there is a significant gap in the public's awareness of e-parking. From the interview, it can be understood that the public were used to paying the parking fee to the parking attendants because this practice is considered more convenient and more accessible. However, this habit causes low public awareness in using e-parking.

The digital divide is also understood as the gap in public skills to use technology which can lead to a low number of people who are able to take advantage of electronic-based policies (Joseph, 2018).

**Table 2.**  
**Level of Public Understanding**

No.	Public Skill in using E-Parking Machine	Number	Percentage
1.	Able to use	38	38%
2.	Not able to Use	62	62%
Total		100	100%

Source: Compiled by Authors

Table 2 shows that the public ability to use e-parking machines is very low, only 38%. To corroborate the finding that the public prefers paying the parking fee to parking attendants, we analyzed Bandung people's conversation on Twitter.

The co-occurrence analysis using ATLAS.ti shows that Bandung people perceived using the e-parking machines to make payment more expensive. The public must pay double the amount because the public must pay both to the machine and to the parking attendants. Hence,

they often choose not to use the e-parking machine but pay directly to the parking attendants (manually).

The second aspect significant to the e-parking implementation is workforce. As the workforce for the e-parking initiative, parking attendants have the responsibility to direct the public to use the e-parking machine for paying the parking fee. Table 3 shows that 73% of the public believe that parking attendants did not do their job in directing the parking users. This indicates the low quality of parking attendants in doing their job. Public perceptions about the low quality of parking attendants are validated with interviews of four parking attendants and also findings from observations. A question was asked about what the parking attendants will do when confronted with a situation in which two parking users came at the same time and required their services. Four responses are below:

*"I will prioritized the vehicle that closest to where I am standing, the most important is that I achieve my daily target"*<sup>6</sup>

*"I will choose the closest one first, and if I have enough time, I will help other users"*<sup>7</sup>

*"I will choose the closest one first, and when this vehicle has parked correctly then I will assist other users"*<sup>8</sup>

*"If I were put in that situation, I will help the vehicle closest to my position"*<sup>9</sup>

The findings from observations are consistent with the interviews' results. When more than one vehicle wants to park simultaneously, the parking attendants will

<sup>6</sup> Interview with A, on December 3<sup>rd</sup>, 2019, in Braga Street – Bandung

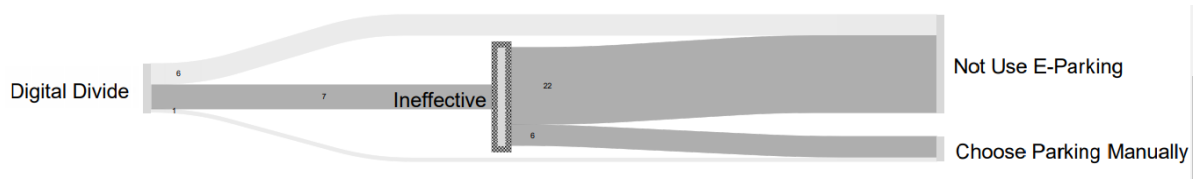
<sup>7</sup> Interview with W, on December 3<sup>rd</sup>, 2019, in Braga Street – Bandung

<sup>8</sup> Interview with U, on December 4<sup>th</sup>, 2019, in Ahmad Yani Street -Bandung

<sup>9</sup> Interview with D, on December 4<sup>th</sup>, 2019, in Ahmad Yani Street -Bandung



**Figure 2.**  
**Ineffective of Digital Divide**



Source: Compiled by Authors

**Figure 3.**  
**Ineffective Parking Attendants Causes E-Parking More Expensive**



Source: Compiled by Authors

**Table 3.**  
**The Quality of Parking Attendants**

No.	The Public Perception	Number	Percentage
1.	Not directing the public	73	73%
2.	Directing the public	27	27%
Total		100	100%

Source: Compiled by Authors

choose to help direct the closest one first, then the latter. This choice causes the parking attendants to lose the opportunity to direct other vehicles. This happens so often that the public describes the parking attendants as being not proactive in directing the public to use e-parking. Local government regulation Act Bandung Municipality Number 3/2008 stipulated that the parking attendants' responsibility is to deliver the best service to users parking. When the parking attendants are not considered proactive, that means they do not deliver the best services.

This finding was also validated against the result of a content analysis on 119 comments on Twitter. Bandung people considers that e-parking is useless due to parking attendants'

low quality. Whenever the public wants to make a payment through an e-parking machine, the parking attendants are not being helpful and to some extent force the public to make payment manually to them. The parking attendants argue that when the public makes the payment using the e-parking machine, they will not get any income. In contrast, it can be understood from the interviews with TIU of Parking, the government of Bandung City pays salaries to the parking attendants monthly.

The number of workers is also a defining factor in the implementation of e-parking initiatives. However, in this study, the quantity in the workforce is very low. This is indicated by the gap between the number of machines stipulated in the official document and the number of parking attendants.

The data shows 21.3% of e-parking machines were not guarded by any parking attendants. Further, the users still prefer to pay the parking fee in cash directly to the parking attendants. The users who cannot process the payment through e-parking will ask the parking attendants to make the payment. Hence, the

**Table 4.**  
**E-parking Machine & Parking Attendants Availability**

No.	E-Parking Machines	Number	Percentage
1.	Guarded by a Parking Attendant	350	78.7%
2.	Not Guarded by a Parking Attendant	95	21.3%
Total		445	100%

Source: Compiled by Authors

unguarded e-parking machine indicates the loss of potential local government revenue. The loss potential of Local Government Revenue was also caused by the undeclared extra money from parking fees collected by parking attendants. An interview with one of TIU's parking officers validated this.

*"I found that parking attendants have become cunning. They will collect money from the parking users manually. When his working day was finished, he would tap the e-card into the machine and input the exact amount of the daily target collection. Hence, he did not report the remaining amount of money collected if he exceed the daily target collection"<sup>10</sup>.*

The third important element of the e-parking initiative is regulation. Regulation serves as the legal basis for any policy implementation, from planning, technical guidance, socialization, distribution of infrastructure, monitoring, and evaluation (Alcaide Muñoz & Rodríguez Bolívar, 2018). This study found that the implementation of the e-parking policy in Bandung City was not based on a specific master plan and strategic planning. The authors were able to trace all related documents on regulations of parking in Bandung City Government, as follows:

1. Regulation of Bandung City Mayor Number 1392/2016 about The Position,

Organizational Structure, Duties, and Functions and Work Procedures of the Department Transportation of the Bandung City.

2. Local Government Regulation of Bandung City Number 634/2017 about the changes in Local Government Regulation of Bandung City Number 764/2014 Concerning Technical Guidelines for Transportation and Retribution in the Transportation Sector.
3. Local Government Regulation of Bandung City Number 4/2017 About the changes in Local Government Regulation of Bandung City Number 16/2012 Concerning Transportation and Retribution in the Transportation Sector.
4. The Strategic Plans Year of 2013-2018 of Department of Transportation of Bandung City
5. Regional Medium-Term Development Planning year 2014-2018 of Bandung City.
6. Regional Medium-Term Development Planning year 2018-2023 of Bandung City.

However, in those six regulations, there cannot be found any single article that stipulated the implementation of e-parking clearly.

For the e-parking initiative to be successful, the e-parking machines as the basic ICT infrastructure should be adequate and well-maintained (Hamner et al., 2010). Therefore, in this study, the aspects of infrastructure are analyzed based on the E-parking machine's availability.

According to TIU of Parking, there are two categories of e-parking machines; productive and non-productive. Productive e-parking machines mean that the e-parking machines are in good working order. In contrast, non-productive e-parking machines are e-parking machines that were not used by the public. The following is a table about the availability of the e-parking machines:

Table 5 shows that out of 445 e-parking machines, 54% are productive, and 46% are

<sup>10</sup> Interview with H, on December 19<sup>th</sup>, 2019, in TIU of Parking Bandung.

**Table 5.**  
**Availability of E-Parking Machines**

No.	Productivity	Conditions	Number	Percentage
	<b>Productive (Maximum Usage)</b>	Maximal Potential, Active, and Guarded by a Parking Attendant	240	54%
	<b>Non-Productive (Minimum Usage)</b>	Minimal Potential	108	24.3%
		Inactive	2	0.4%
		Not Guarded by a Parking Attendant	95	21.3%
Total			445	100%

Source: Documents UPT of Parking, 2019

**Table 6.**  
**E-Parking Machines Conditions (Based on Observations)**

No.	Condition	Number	Percentage
1.	Adequate	175	53.5%
2.	Inadequate	4	1.2%
3.	Unavailable	148	45.3%
Total		327	100%

Information:

\* Adequate: The e-parking machine is in good condition, complete components, no errors so that it can be used.

\*\* Inadequate: The e-parking machine is in an error state (indicated by notification to use another e-parking machine), and the e-parking machine will not turn on.

\*\*\* Unavailable: Only 'use e-parking machine to pay for parking' sign is available, but the e-parking machine was not available.

(Note: the researcher determines three categories of the e-parking engine conditions by comparing the condition of one engine with another)

Source: Compiled by Authors

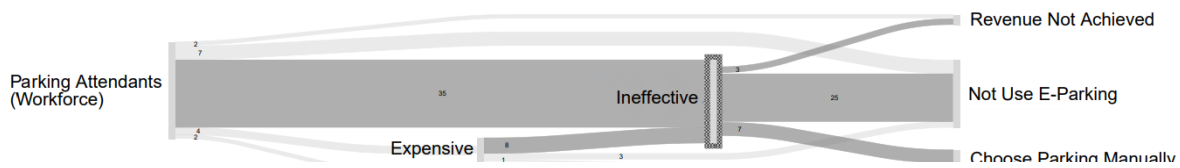
not productive. In addition, two machines were inactive; therefore, they cannot be used by the public to make any payment. Further, the table showed the parking attendants guard as many as 21.3% of the machines. Based on all these numbers, it can be understood that there is a loss of revenue potential as much as 21.7% from the inactive machines and the ones that any parking attendant did not guard.

To verify the data's validity from the TIU of Parking, the authors also conducted observations to cross-check the availability and updated condition of the 445 e-parking machines. The Document from TIU of Parking consists of the number of machines (445) and where about the machines are planned to be placed. Furthermore, the authors traced all the streets mentioned in the documents to check the e-parking machines. As a result of

the tracking, out of 445 machines mentioned in the document, there are only 327 machines detected.

The table above shows that only 53.5% of the e-parking machines are in the good category. This percentage is somewhat similar to the data in table 5, even though the total number of e-parking machines is slightly lower. Hence, the data from the TIU of Parking is confirmed by the data based on primary data. It gives more vigorous justification that the revenue target will be most likely to be achieved by only half of the target. It also means that 46,5% of the e-parking machines were not in good working condition. This is partly because the TIU of Parking did not conduct any maintenance activities for the e-parking machines.

**Figure 4.**  
**Absence of Socialization Causes E-Parking Ineffective**



Source: Compiled by Authors

## Discussion

This research aims at understanding aspects necessary to the implementation of the e-parking initiative in Bandung City. By understanding these aspects, the barriers to the success of e-parking can be identified. The following is the explanation of those four aspects.

Digital divide is a barrier that can cause low use of e-government OECD (2009). Considering that digital divide is one of severe challenges in any e-government implementation in developing countries, such as Indonesia, it must be addressed and dealt with to enable the public to use e-parking.

The digital divide is not only related to people's understanding of the use of ICT but also to public awareness in using technology (Van Dijk, 2006). The findings show that the public understanding of using e-parking is low. The low level of public understanding of the e-parking initiative is caused by the government's absence of socialization or marketing. As it is generally accepted, understanding creates ownership. This is also true for e-parking in Bandung City.

Socialization as a medium to introduce the e-parking by the Bandung City Government or agency in charge is paramount. Socialization can be done by informing the public about the positive impacts of fully participating in e-parking policy. The people of Bandung and the public must know that e-parking will increase the local government revenue

of Bandung City Government, which will eventually also be beneficial for public services quality improvement. However, from the interview, it is revealed that TIU of Parking, as the implementing unit of e-parking policy, is pessimistic in making the public understand the use of the e-parking. This can be understood due to the lack of communication between the initiator of this e-parking policy and the implementation unit. This lack of communication is worsened by the fact that there are no clear regulatory frameworks.

Interview with one of the officials in TIU of Parking shows as follows:

*"We did not want these e-parking machines. Since the beginning, TIU of Parking was not the one who wanted these machines. It is not our idea. One day, it's there, being placed on certain roadsides. We were not being asked about that, at all."<sup>11</sup>*

That interview shows that the lack of communication creates no ownership from the TIU as the workforce of the e-parking. From this, it is understandable if even TIU was reluctant to do any socialization about e-parking to the public.

According to Van Dijk (2006), problems such as low skill in using technology can be easily solved with simple training. Hence, the local government could conduct a simple

<sup>11</sup> Interview with H, on December 19<sup>th</sup>, 2019, in TIU of Parking Bandung.



training on the use of e-parking machines. Further, based on the interviews, there are three factors causing the low level of skills in using an e-parking machine to make the payment.

*First*, the public in Bandung City experience technophobia which causes the low motivation of the public to use e-parking. Technophobia means the fear of using technology and disbelief that technology can have beneficial effects (Van Dijk, 2006). Based on the interview, the public does not use e-parking because they experience fear of using technology. Mostly technophobia can be found in aged persons. They said the following:

*"I am old, and I do not know how to operate this kind of machine"*<sup>12</sup>

*Second*, the TIU officers do not set a role model to the public in using the e-parking machine. The TIU of Parking officers also has low motivation to pay for parking using an e-parking machine. This is problematic because the TIU of parking officers should set a role model for the public. It cannot be expected that the e-parking system will be successful if the system owner, the TIU of parking, does not use the machine and is not aware of the importance of paying the e-parking as a contribution to LGR. As discussed above, the behaviour of the TIU of parking officers caused by the absence of ownership toward this e-parking policy.

*Third*, the parking users often experience a technical barrier, such as not having electronic money. This has become the cause of low e-parking machine use. Based on the interview, the public considers paying the parking fee in cash directly to the parking attendants is the easiest option. However, this easiness can lead to the loss of LGR.

Using the data on public understanding, Bandung City has a wide digital divide, as 83% of the public in Bandung City do not understand about e-parking policy. Furthermore, as much

as 62% of the public in Bandung City cannot use the e-parking machine. Therefore, while the e-parking policy is considered a boost for LGR of Bandung City, the low level of the e-parking machine usage means LGR loss.

Condrey (2004) argues that workers contribute effectively to achieving the organization's mission and goals. We also argue that the workforce is also crucial in e-parking implementation, and it is the parking attendants that are significant to the implementation of e-parking. The parking attendants are responsible for directing the public to use e-parking machines, therefore essential to achieving the LGR targets. Considering their essential role, parking attendants' readiness to carry out its responsibilities is significant to the success of e-parking.

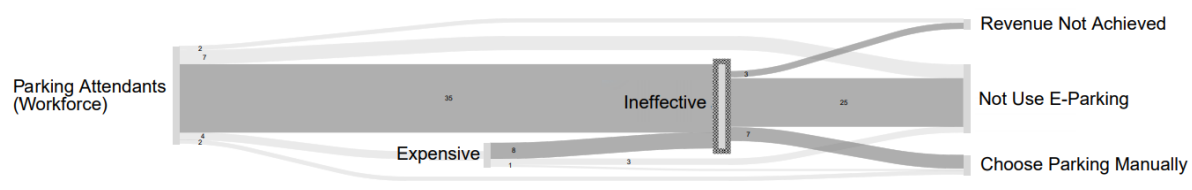
Based on finding, TIU of Parking as the management of e-parking affects the low quality and insufficient parking attendants. Trost (2018) argues that working in the implementation unit is indeed more challenging. This is true, particularly for public organizations in which the technical implementation unit such as TIU of parking of Bandung City is in charge of the e-parking implementation.

As explained above, ownership of TIU of Parking toward the e-parking policies was very low or even absent. The absence of ownership was caused by the lack of communication and direction from the e-parking initiator and the sudden change in the system of roadside parking from manual to electronic-based. As Alcaide Muñoz & Rodríguez Bolívar (2018) argued, the resistance to e-government implementation will be a barrier to e-government success.

From the interviews, the details about the consequences of this resistance appear. TIU of Parking instructed the parking attendants to no longer assist in directing the users to use e-parking machines. This instruction was intended to make the public learn independently how to process the payment transactions through the machine. However, without prior

<sup>12</sup> Result of an Interview with B, a community member of Bandung City, on November 28<sup>nd</sup>, 2018, at 14.21 PM

**Figure 5.**  
**Ineffective Workforce**



Source: Compiled by Authors

information or socialization and basic training in using the e-parking machines, it is difficult for the public. This is evident from the low level of public skill in using e-parking machines in Table 2 that shows only 38% of the public can use e-parking machines. This shows that TIU of Parking has made no effort to empower the public to use the e-parking machine.

The parking attendants, of course, followed the instruction given by TIU of Parking. However, the public saw this as incompetency of the parking attendants in doing their job. This is supported by the data in Table 3 shows that only 27% of the public consider the parking attendance directing them in using e-parking machines.

The Bandung City Government often promotes that implementing e-parking in Bandung City is part of Bandung Smart City approach, and the public also accepted this. The only official document about Bandung Smart City is the 'Panduan Penyusunan Master Plan Smart City 2017 Gerakan Menuju 100 Smart City', published by the Indonesian Ministry of Communication & Information on July 10, 2017. This document serves as the legal & official document for the basis of any local government initiative for smart city. Meanwhile, other sources of data confirmed that the mayor of Bandung City (Ridwan Kamil) has officially marked the beginning of using the e-parking machines on December 24, 2013 (Putra, 2014). Another document, Strategic Planning Document of the Bandung City Transportation Department (year 2013 - 2018) did not mention anything about e-parking machines.

Hence, comparing the timeline of those documents and the date on which implementation of the e-parking started, indicates that the e-parking implementation was also not based on the Bandung Smart City Master Plan. The interview with one of the officials in TIU of Parking provided another basis for this fact:

*"As far as I know, there is no single regulation that can be used as the basis for the e-parking implementation. I suppose it is only a replication of similar initiatives from other countries."*<sup>13</sup>

From that interview, it can be understood that the e-parking initiative might have been an initiative to adopt practices from other countries. However, as Joseph (2018) argued, an e-government initiative must be implemented in accordance with the local contextual characteristics in the area. Therefore, without any strategic plan, the e-government initiative will most likely fail.

Ludwig (2017) argues that infrastructure is any object used in many different locations and lasts for a long time. Therefore, scheduled maintenance to the e-parking machines must be provided to keep the e-parking machine in a good working order. However, from the interviews with the officials of TIU of Parking and the parking attendants, it is evident that no maintenance has ever been done to any of the e-parking machines. The TIU of

<sup>13</sup> Interview with H, on December 19<sup>th</sup>, 2019, in TIU of Parking Bandung.

Parking claimed that they do not employ any technicians to do the maintenance job. The TIU of Parking only conducts number checking to the e-parking machine.

An interview with one of the TIU of Parking officials confirmed that TIU of Parking even asked for assistance to do the machine maintenance from officials at the district and sub-district levels. However, the officials at the lower governmental levels refuse to assist because they perceive that e-parking machine maintenance is not their responsibility. These officials argued that they were not informed about the placement of the e-parking machines. Therefore, they will not be responsible for those machines. This finding suggests that the lack of regulation as the basis for the e-parking initiative led to the absence of resources. The absence of technicians is also evident. Furthermore, the lack of communication between the e-parking initiators discussed in the digital divide section causes the lack of engagement from the officials in districts and sub-districts level.

Having understood all aspects of e-parking implementation, this study concluded that the main objective of e-parking has not been met.

**Other Significant Aspect Impediments to the E-Parking Initiative**

This study also found other aspects significantly affecting the e-parking initiative implementation. These aspects strengthen the practical contribution of this paper, and further research agendas can be drawn from these findings. These three aspects are discussed as follows:

**First**, strategic investment is needed because e-government requires goals and direction to implement an e-government program. One form of strategic investment is to create short-term and long-term planning flow, financial expenditure, income, and deadlines (World Bank, 2002). It is evident from this research that there are no plans or assigned technicians to maintain the e-parking machines. Therefore, the e-parking machine is used as an investment in increasing LGR is not a strategic investment.

**Second**, leadership is the ability to get people to take action under direction, even if they do not like it (World Bank, 2002). The research suggested that the understanding of people about e-parking is only 17% (Table 1). This low level is partly due to the lack of direct instruction from the parking attendants. However, based on the interview, the parking attendants did not give any instructions because they followed the TIU of Parking’s technical guidance. That is to let the parking users independently use the e-parking machine and independently make the payment. In this aspect, the technical guidance from TIU of Parking does not match the needs of the e-parking users. This can be considered as the failure of leadership to understand the needs of the service users.

**Third**, education and marketing. Any e-government initiative will only be beneficial for the public if the public knows about those e-government services. Therefore, e-government needs specific promotions or marketing so that the public becomes aware of

**Figure 6.  
Ineffective of Infrastructure**



Source: Compiled by Authors





aspects are expected to be resolved. It will then lead to the successful implementation of e-parking initiatives.

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