



Effectiveness the Use of Electronic Parking as the Implementation of Smart City in Semarang

Kania Kinasih ^a*, V.G. Sri Rejeki ^a, Riandi Tarigan ^a, A. Ardiyanto ^a, Albertus Sidharta ^a

^a Architecture Doctoral Study Program, Unika Soegijapranata, Semarang, Indonesia

* kaniakinasih@gmail.com

Abstract. In order to advance Semarang City, the Semarang City Government consistently strives to realize branding with the concept of a smart city. The most visible effort to implement smart cities is through electronic parking. The implementation of the smart city concept using electronic parking in Semarang City, one of which is located in the MT Haryono Street corridor. The purpose of this study is to find out the effective level of electronic parking as the application of smart city in Semarang City studied in the ERG theory of basic needs by Clayton Alderfer. The method used is a qualitative descriptive research approach through the need for the use of electronic parking, while data collection techniques through field observation, interviews, and documentation on location objects located in the MT Haryono Street Semarang City. The result of this study is that electronic parking in the MT Haryono corridor is not effective and is not the main factor in basic needs for Semarang residents. Semarang residents do not know much about the existence and feel the benefits of electronic parking. The government needs to socialize with residents about the existence and use of electronic parking.

Keywords: effectiveness; electronic parking; smart city; Semarang

I. Introduction

As the provincial capital, Semarang City is certainly a strategic area for the formal and informal sectors and in line with what policies and actions will be taken by the Semarang City Government. One of the things that can be seen is an effort to make branding with the concept of a smart city through facilities in public places.

Facilities that exist in public places that support smart cities and have been implemented are electronic parking. The application of electronic parking has been implemented in big cities such as Jakarta and Bandung, such as shopping centers like malls, shophouses, modern markets, and as well as a lifestyle of cashless [1]. A smart city is part of the development of an area to meet the needs of its community. The concept of smart city is a combination of the words smart and city, which includes systematic monitoring and management of infrastructure, buildings, transportation systems, health, education, energy consumption, and public safety through faster and smarter technology [2].

Several applications of the smart city concept using electronic parking in Semarang City, including located on MT. Haryono Street. The selection of the research site was on MT. Haryono Street Mataram-Bubakan corridor. Located at 12 (twelve) points there are 24 (twenty-four) electronic parking machines along the road corridor.

		the like
4	ICT Management	The use of <i>cashless</i> payment service application systems to support the infrastructure technology provided
5	ICT Accessibility	Full publicly granted access for the people of the city to the facilities provided

1.2. ERG Theory

The ERG theory adapted through a paper from Clayton Alderfer [7] discusses human needs and assumes that human behavior is driven by three basic needs, namely the need for existence, the need for relatedness, and the need for growth. The existence needs refer to the basic conditions of human existence and is further divided into security, psychological, and material needs [8]. The relatedness needs is the drive of human desire to maintain interpersonal relationships with significant others through the process of sharing, interacting, and togetherness. Next, growth needs are efforts to shape the creative or productive things of individuals in achieving personal development and achievement, self-actualization, and self-esteem.

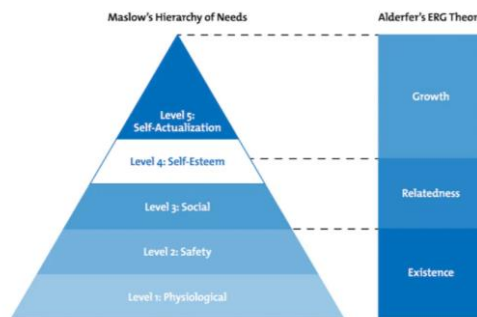


Figure 2. ERG theory according to Alderfer (figure by *mindtools*)

Based on Alderfer's theory, basic human needs are always associated with daily activities or activities. There is an activity or activity of producing facilities. From this facility then developed other facilities that are more supportive of these activities. The basic needs that produce facilities are certainly accompanied by the scale of the fulfillment of these facilities. The scale in question is an urban scale, where this facility can connect or connect humans in carrying out their activities through one space.

1.3. The Relationship Between ERG Theory and Smart City

Reexamining basic human needs in terms of the existence needs of. The necessity of existence refers to the basic conditions of human existence and is further divided into security, psychological, and material needs. In this case, humans use the basis of psychological factors, security, and what they see. When we want to go to the place on MT. Haryono Street, visitors will find a parking space for their vehicles, in this case, there is a psychological sense from the visitor, then a place to park the vehicle becomes important.

On MT Haryono Street, there is only a parallel parking lot that runs along the road corridor from Mataram to Bubakan. The existence of parking spaces in the road corridor is

also facilitated by electronic parking signs and electronic parking equipments to pay for parking cashless with the aim of facilitating service.



Figure 3. Electronic Parking Signage
(figure by author)



Figure 4. Electronic Parking Equipment
(figure by author)

There are places in the MT Haryono Street corridor, mostly in the trade and service sector, so the need for linkage is important because it connects visitors with these places. The need for linkage is the drive of human desire to maintain interpersonal relationships with significant others through the process of sharing, interacting, and togetherness. Parking lots that are equipped with electronic parking equipments can connect visitors, vehicle parking activities, and the intended place.

Smart facilities in the form of electronic parking, aim to make services about parking faster, such as the need for growth which is an effort to shape the creative or productive things of individuals in achieving personal development and achievement, self-actualization, and self-esteem. Things are productive through the smart concept because they follow the times in the form of technology.

Electronic parking practices in Semarang City are communicated appropriately through smart mobility. This indicator is used to ensure and increase the mobility of urban residents. New technology and information systems are able to increase mobility at various levels with employment, leisure, social opportunities, and so on, thus enabling urban communities to increase their level of satisfaction and ease of life [9].

In implementing an electronic parking system, the Semarang City Government has implemented electronic parking tools, electronic parking signs, cashless payment systems, and so on.

2. Methods

The method used is a qualitative descriptive research approach through the need for the use of electronic parking, while data collection techniques through field observation, interviews, and documentation on location objects are located on MT. Haryono Street Mataram-Bubakan corridor. The method technique also used supports of the evaluation of smart city launched by Semarang City [10].

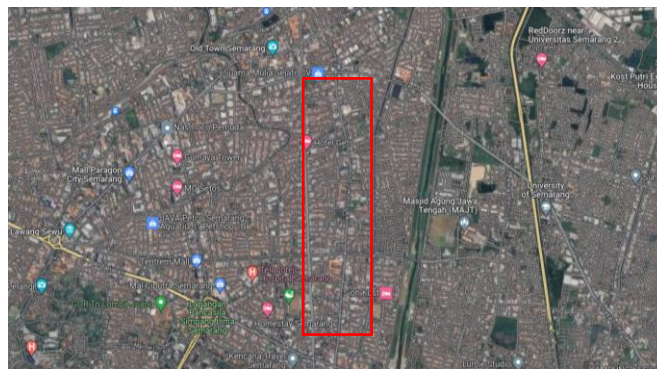


Figure 5. Research Location
(figure by Google Earth)

3. Results and Discussion

According to the Perwali of Semarang, Number 26 of 2018 the Semarang Smart City Master Plan [11] has principles including integration, effectiveness, efficiency, inclusiveness, and participation. Through these principles, it can be related to basic human needs in the application of smart cities in the form of electronic parking.

The number of respondents is determined through sampling that is considered representative with a simple questionnaire. According to Sugiyono [12] good sample is a minimum of 30 to 500. Through a sample of 100 respondents, it will be seen how the use of electronic parking through its users. The following are the assessment criteria:

Table 2. Standard Measure of Effectiveness

Effectivity Ratio	Level of Achievement
<40	Very ineffective
40 – 59,99	Ineffective
60 – 79,99	Quite effective
>80	Highly effective

(Source: Litbang, Depdagri, 1991)

3.1. Existence Needs

Table 3. Level of Achievement of Existence Needs

No	Sub Indicators	Level of Achievement of Existence Needs
I	Transportation Infrastructure	50

2	<i>Transportation Management</i>	61,5
3	<i>ICT Infrastructure</i>	41,5
4	<i>ICT Management</i>	45
5	<i>ICT Accessibility</i>	47

The existence needs with electronic parking leads to the existence of electronic parking equipments. Based on table 3 it can be seen that the average visitor in assessing the effectiveness is 49, so in this case it is not effective.

3.2. Relatedness Needs

Table 4. Level of Achievement of Linkage Needs

No	Sub Indicators	Level of Achievement of Linkage Needs
1	<i>Transportation Infrastructure</i>	35,5
2	<i>Transportation Management</i>	38
3	<i>ICT Infrastructure</i>	44
4	<i>ICT Management</i>	64
5	<i>ICT Accessibility</i>	70,5

The relatedness needs with electronic parking leads to the existence of a relationship between tools and visitors. Based on table 4 it can be seen that the average visitor in assessing the effectiveness is 50.4, so in this case it is not effective.

3.3. Growth Needs

Table 5. Level of Achievement of Growth Needs

No	Sub Indicators	Level of Achievement of Growth Needs
1	<i>Transportation Infrastructure</i>	70
2	<i>Transportation Management</i>	43,5
3	<i>ICT Infrastructure</i>	62
4	<i>ICT Management</i>	66
5	<i>ICT Accessibility</i>	75

The growth needs for electronic parking leads to the use of technology through electronic parking in realizing smart cities. Based on table 5 it can be seen that the average visitor in assessing the effectiveness is 63.3, so in this case, it is quite effective.

The results of the study were produced through a simple questionnaire, the results obtained were that the existence of electronic parking equipments was not effectively applied to the MT Haryono Street Mataram-Bubakan corridor. This can be due to a lack of information on the use of electronic parking equipment due to the lack of socialization provided.

From the author's observations associated with ERG theory, the application of smart cities needs a lot of socialization for visitors.

4. Conclusions

4.1. Conclusion

Based on the results of this study, the following conclusions can be drawn:

1. Through three basic needs according to Clayton Alderfer, the results of the study have an average rating of 54.23 where there are electronic parking facilities in MT. Haryono Mataram-Bubakan street corridor is ineffective.
2. The concept of a smart city offered to visitors, although it simplifies and speeds up services, if it is not accompanied by a system that runs as it should, then the usefulness of these facilities will be neglected.
3. With the proper running of electronic parking equipment, activities can still run well as usual, this shows, that people who need to adapt to this or people do not really need electronic parking equipment facilities on MT. Haryono Street Mataram-Bubakan corridor.

4.2. Suggestion

An electronic parking equipment in the MT Haryono street Mataram-Bubakan corridor is not effective for its users, so it is necessary to have comprehensive education and socialization to visitors and users on the street corridor through social media, mass media, and other media or through big day events in the city center as part of optimizing the use of electronic parking, namely the smart city program implemented by the Semarang City Government. The existence of coaching for parking drivers is also considered necessary so that the smart city system can run as it should.

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