The implementation of smart city through android-based device: ”Klaten Smart City Application”

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Abstract. Klaten is one of regions that elected in the movement towards 100 smart cities in Indonesia launched by The Ministry of Communication and Informatics. Due to this movement, an in-line application is created, particularly for Klaten regency which is named Klaten Smart City Application. Klaten Smart City Application is an Android-based device that can be downloaded via Google Play. This paper aims to identify the features of Klaten Smart City Application and to identify opinion of the Klaten government towards the development of Klaten Smart City Application. This research uses a qualitative method. The primary data was obtained from in-depth interview with representative of The Klaten Informatics Communication Department. The secondary data was obtained by direct exploring Klaten Smart City Application. Based on the result of this research, Klaten Smart City Application has 27 features. The opinion from Klaten Informatics Communication Department about Klaten Smart City Application is graphically perfect, it is a good application because it displays the mapping of several services in Klaten.

1. Introduction
The way to provide information has changed from time to time due to the development of information and communication technology (ICT). Therefore, the way to access information also becomes much easier. Information has become the primary need of people in the digital era[1].

Nowadays, the concept of a smart city is currently progressing. One of the most important dimensions of smart cities is that: cities today should provide a service that uses the latest technology and should build the smart infrastructure to provide an efficient and easy service to all people who live in cities[2]. The development of information and communication technology at this time can solve the quality of service issues in the community[3].

Klaten is one of regions that elected in the movement towards 100 smart cities in Indonesia launched by The Ministry of Communication and Informatics. Movement towards 100 smart cities is a movement which enable cities to manage all aspects of urban life in a better way[4]. Due to this movement, an in-line application is created, particularly for Klaten regency which is named Klaten Smart City application. The application was created and launched on June 27, 2017. Inside the Klaten Smart City application there is various information about Klaten. Therefore the aims of this paper are to identify the features of Klaten Smart City Application and to identify the opinion of the Klaten government in the development of Klaten Smart City Application.

An international journal that has the same topic with this research, namely A Smart City Application Value Proposition Reality Check and Challenges : The Case of Mobile Application For Local Tax Information and Payment (authors: Brillyanes Sanawiri and Rosalita Rachma Agusti) [5]. In that journal,
the writer discusses the problems and challenges of Smart City application in the field of taxation services, namely the SAMPADE application in Malang City. That journal uses the concept of a value proposition and a smart city framework to evaluate smart city applications. The research method used is a qualitative approach. Meanwhile, this research examines the features of Klaten Smart City application which contains information on health, culinary, education, news, job vacancies, transportation, property and others. This research also examines the opinion of the Klaten Informatics Communication Department regarding Klaten Smart City Application. The method used in this research is a qualitative approach.

2. Literature Review

2.1. Information

Information is data processed into a form that is more meaningful and useful for the recipient to make a decision in this current situation and the future[6]. Information as data has been processed in such a way, to be meaningful for its users[7].

2.2. Information Technology

Information Technology is a piece of electronic equipment, especially computers, for storing, analyzing, and distributing information, including words, numbers, and images. Information Technology is a set of tools that help work with information and perform tasks related to information processing. Information Technology is not only limited to computer technology (hardware and software) that is used to process and store information but also includes communication technology for sending information. Information Technology is all forms of technology applied to process and transmit information in electronic form. Information Technology is a technology that combines computing with high-speed communication lines that carry data, voice, and video[8].

2.3. Application

An application is a program that has command processing activities needed to carry out user requests with specific objectives[9]. An application is a program or group of programs designed to be used by end-users[10].

2.4. Smart City

Smart City defined as the use of intelligent computing technology to integrate important components of urban infrastructure and services, such as city administration, education, health, public safety, real estate, transportation, and other urban needs, where the overall use must be done smartly, interconnectedly and efficiently[11].

Smart City is a city at the forefront of the economy, human resources, government, mobility, environment, and community life, all of which built intelligently, independently, and have the awareness of the people[12].

Smart City is a city that monitors and integrates the conditions of all its infrastructure, including roads, bridges, tunnels, railways, subways, airports, ports, communications, water, electricity, even all government buildings so that they can be used to optimize resources, plan activities and monitor security while maximizing service to its citizens[13].

3. Methodology

This research uses a qualitative method. The data analysis method in this research is a qualitative descriptive analysis technique. The data in this research are primary data and secondary data. Primary data was obtained from in-depth interview with representative of Klaten Informatics Communications Department. Secondary data was obtained by direct exploring Klaten Smart City Application.
4. Results

Klaten Smart City Application is an Android-based device that can be downloaded via Google Play. The Klaten Smart City Application was created and was launched on June 27, 2017. In the Klaten Smart City Application there is a variety of information about the Klaten Regency.

![Image of Klaten Smart City Application](image)

**Figure 1.** The initial display of Klaten Smart City Application.

The initial display of Klaten Smart City Application is a picture of buildings and roads in Klaten that each building is a symbol of the features.

4.1. The features of Klaten Smart City Application

4.1.1. Tourism Destination

Tourism destination feature provides information on tourist sites in Klaten Regency. There are several submenus, such as homepage, category, add, filter, and my data. The homepage contains a map of tourist sites around the user and a list of all tourist sites in Klaten. Meanwhile, the category contains tourist information such as the temples, nature tourism, tourist caves, and others. Add feature enables users to add tourist information. The filter is used to search for tourist locations by keyword and radius of tourist locations. My data is used to display tourist information uploaded by user.

4.1.2. Agenda

The agenda feature provides information about the ongoing events in Klaten. The homepage gives the location map into 2 categories: public event and government's event. Add feature is a sub-menu that is used by the user to add an agenda. The filter feature is used to search the agenda according to the type and radius of users' location. My data is used to display the agenda uploaded by the user.

4.1.3. City Info

The city Info feature provides information about Klaten which also connected to social media such as Twitter, Instagram, and website. This menu also comes up with important phone information about offices in Klaten. Postal codes of each district are also listed on this menu.

4.1.4. Video

The video feature is a menu containing videos about Klaten regency.
4.1.5. Market
The market feature contains information sales of women's clothing, men's clothing, children's clothing, and makeup that is directly connected to the online shop seller's address. In the category Sub menu contains sales information with a variety of categories. The Add sub menu used to add a layer. In the filter sub menu used to look for the market with the keyword. My data sub menu is used to display the product uploaded by the user.

4.1.6. Transportation
In the Transportation feature, it gives sufficient information about city transport in Klaten. Every city transport has destination routes written.

4.1.7. Handyman
The homepage contains information in the form of services offered in Klaten. Each company contains a description of information, contact, and addresses. In the category, there are various types of a handyman. Add is used to add services and expertise owned by the user. The filter is used to find a handyman with a keyword or with a radius from the user's location. My data is used to display the service uploaded by the user.

4.1.8. Car
The car feature provides information about the cars that are going to be sold in Klaten. In the category section, it contains various brands of cars sold in Klaten. The add sub-menu is used to add complementary information about the car. While the filter sub-menu used to find the desired car through entering a specific keyword. My Data sub-menu contains car information that has been input by the user.

4.1.9. Motorbike
The motorbike feature offers information about the motorbike that is going to be sold in Klaten. In the category section, it contains various brands of bike sold in Klaten. The add sub-menu is used to add complementary information about the bike. While the filter sub-menu used to search the desired item through entering a specific keyword. My Data sub-menu puts on motorbike information that has been input by the user.

4.1.10. Property
The property feature contains information about the sold properties in Klaten Regency. In the sub-menu section, it has various property categories such as apartments, shophouses, land, and others. The Add sub-menu is used to add the property to be widely marketed. The filter sub-menu is used to search properties by entering keywords. While my data section contains the property information that was once uploaded by the user.

4.1.11. Food stall
The food stall feature contains information about the list of food stalls in Klaten Regency. In the Sub-menu category contains the type of food stalls such as Café, restaurant, and pastry shop. The category Sub menu also contains categories of food types such as seafood, snack and snacks, various rice, bread, and others. The Add sub-menu is used to add places to the food we want to advertise. The filter Sub menu is used to find a food stall by entering a keyword. My Data Sub-menu contains food stall information that was once uploaded by the user.

4.1.12. Location
The location feature shows the location where the user is located. This menu also includes information about the buildings around the user's location.
4.1.13. Pharmacy
The pharmacy feature presents information about the list of pharmacies in Klaten Regency. The Add sub-menu is used to add another list of pharmacies. The filter submenu is used to search for desired pharmacies by entering specific keywords. My Data Sub-menu contains pharmacy information that was once uploaded by the user.

4.1.14. Hotels
The hotel feature provides information on the list of hotels in Klaten Regency. The add submenu is used to add a list of hotels. The filter Sub menu is used to search for hotels by specific entering keywords. My Data Sub-menu contains the hotel information that the user has uploaded.

4.1.15. Doctor
The Doctor feature presents information about the list of doctors and their addresses in Klaten Regency. The Add Submenu is used to add a list of doctors. The filter Sub menu is used to search for doctors by entering specific keywords. My Data Sub-menu contains information about the doctor that has been uploaded by the users.

4.1.16. Salon
The salon feature contains information on the salon list and its address in Klaten Regency. The Add sub-menu is used to add a salon list. The filter Sub menu is used to search for salons by entering keywords. My Data Sub-menu contains salon information that was once uploaded by the user.

4.1.17. Hospitals
The hospital feature provides information about the list of hospitals and their addresses in Klaten Regency. The Add Submenu is used to add a list of hospitals. The filter Sub menu is used to locate hospitals by entering keywords. My Data Sub-menu contains hospital information that was once uploaded by the user.

4.1.18. Police
The police feature gives information about the list of police offices and their addresses in Klaten Regency. The Add sub-menu is used to add a list of police offices. The filter sub-menu is used to search the police station by entering keywords. My sub-menu contains information about the police office that was once uploaded by the user.

4.1.19. ATM and Bank
ATM and Bank feature presents information on the list of ATMs and banks and their addresses in Klaten Regency. The Add sub-menu is used to add a list of ATMs and banks. While the Add sub-menu is to add a list of ATMs and banks. The filter sub-menu is for searching ATMs and banks through entering desired keywords. My Data Sub menu contains ATM and Bank information that users once uploaded.

4.1.20. Gas Station
Gas Station feature lists information about the gas station and their addresses in Klaten Regency. The Add sub-menu is to add on a gas station list. The filter sub-menu is used to search for gas stations by entering keywords. My sub-menu contains gas station information that once uploaded by the user.

4.1.21. Prayer schedule
The prayer schedule feature consists of the homepage sub-menu, add, filter, and data. At the top of the homepage, there is a prayer schedule and at the bottom, there is a list of mosques in Klaten and their addresses. The Add sub-menu is to add a new list of mosques. The filter sub-menu is to look up mosques' information by entering keywords. My sub-menu contains information about a specific mosque that was once uploaded by the user.
4.1.22. Education
The education feature provides all information about education places in Klaten. There are several sub-menus, such as homepage, category, add, filter, and data. On the Home section, it presents the maps of school locations near the user and a list of all school locations in Klaten. In the sub-menu category, it contains information about Elementary School, Junior High School, Senior High School, University. The Add sub-menu is to add educational information by users through attaching photos, the names, locations, and contact info. The filter Sub menu is to search for a school by keyword and radius of the location while the My Data sub-menu is to display education information uploaded by the user.

4.1.23. Sports
The sports feature contains information on the list of places to exercise and the address in Klaten Regency. The Add sub-menu is to add a list of sports locations. The filter Sub menu is to locate sports locations by entering keywords. My Data Sub-menu contains the sport location information that the user has uploaded.

4.1.24. Health
The health feature provides information about health locations in Klaten Regency. There are several sub-menus, including home, category, added, filter, and my data. On the home section, it presents a map of health locations nearby the user and a list of all health locations in Klaten. The sub-menu category gives information on hospitals, health centers, general practitioners, and others. The add sub-menu is to add any health information by the user through uploading photos, health names, locations, and contact info. The filter sub-menu is to search for health based on keywords and location radius. Lastly, The My Data sub-menu is to display health location and information uploaded by users.

4.1.25. News
News feature contains news that comes from online media, social media, and print media.

4.1.26. Aspiration
Aspiration features contain aspirations, complaints, and reports from the community regarding the situation in Klaten. There are several sub-menus, including homepage, category, added, filter, and my data. In the submenu homepage, it contains photos and opinions. Meanwhile on the submenu category presents aspirational groupings such as damaged roads, fires, floods, and others. The add sub-menu is to put new aspirations by the user. Filter sub-menu is to search for certain complaints based on keywords and location radius. My data submenu is to display the aspirations uploaded by the user.

4.1.27. Job
The job feature contains information about job vacancies in Klaten. In the submenu category, there are various fields of a job such as designer, technicians, banking staff, and others. The filter on submenu is to list job vacancies based on the field of work and salary. My data submenu is to display job vacancies that have been uploaded by users.

Table 1. Matrix summary of features in Klaten Smart City Application

| Feature          | Function                        | Category                                    |
|------------------|---------------------------------|---------------------------------------------|
| Tourism destination | Provides information on tourist sites | Nature sites, temple, museum, tourism village |
| Agenda           | Provides information of the event to be held | Public and government                        |
| City info        | Provides information from social media | -                                           |
| Video            | Provides Klaten’s video          | -                                           |
| Market           | Provides Klaten market           | Clothes, souvenirs, make up, electronics, books. |
Transportation | Provides transportation information in Klaten | Train
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Handyman | Provides services information in Klaten | Carpenter, electrician
Car | Provides car that is going to be sold in Klaten | Daihatsu, Isuzu, Datsun, Mazda, Toyota, Nissan.
Motorbike | Provides motorbike that is going to be sold in Klaten | Honda, BMW, kawasaki, Yamaha, Suzuki, Piaggio.
Property | Provides property that is going to be sold in Klaten | Apartment, land
Food stall | Provides the location of food stall | Café, bakery, restaurant
Location | Provides user location | -
Pharmacy | Provides pharmacy list | -
Hotel | Provides hotel location | -
Doctor | Provides doctor location | -
Salon | Provides salon location | -
Hospital | Provides list of hospital | -
Police | Provides police location | -
ATM and Bank | Provides the location of ATM and Bank | -
Gas Station | Provides gas station location | -
Prayer Schedule | Provides prayer places and prayer time | -
Education | Provides education places | Elementary School, junior high school, senior high school
Sports | Provides sports places | -
Health | Provides health information | Dentist, optic, doctor
News | Provides Klaten news | -
Aspiration | Accommodates aspirations | -
Job | Provides job vacancy | Designer, Workers, marketing personnel, researchers, banking staff, accountants, technicians.

4.2. The opinion of Klaten Government about Klaten Smart City Application

One of the representatives Klaten Informatics Communication Department said that Klaten Smart City Application is a good application because it displays the mapping of several services in Klaten, when asked about his opinion towards Smart City Klaten Application. However, Klaten government must allocate a budget to renew the yearly license, making it less effective. Moreover, the government only relies on developers. Thus, when they intend to add a feature or maintenance, the government must arrange further funds. In fact, Klaten government itself has several programmers and because of that, they prefer to build their own applications.

This is as stated by the informant as follows:

“Klaten Smart City Application could show a lot of community services in Klaten with the map. The developer of this application visited us and offered the application. It’s a good application actually, but if we use it, we can utilize it only in a year for free, after that we have to pay. So, we prefer to make application by our selves.”

(Informant : Staff of Klaten Informatics Communication Department)

The government of Klaten's strategy to disseminate information about the Klaten into the wider community is through creating a group that accommodates information for the community. There are information agents who become the existing information distribution agents. Therefore, the government of Klaten disseminates information through the media, such as digital media and print media, the local
government maximizes the website klatenkab.go.id. Klaten government prepares all office websites in Klaten in the framework of uniformity of information, activities, and forms of website templates. This is as stated by the informant as follows:

“One of our strategies is creating a group that accommodates information to the community. There are information agents who become distribution agents of information, for example they distribute the information of the district government programs.”

(Informant: Staff of Klaten Informatics Communication Department)

The main purpose of a smart city in Klaten is to make people smart. Technology roled as a supporting tool, meanwhile the target is to improve the capacity of the village government apparatus because they are always on the first front in terms of direct contact with the community. Thus, in 2019, the Klaten government held a technical guidance event about infographics, graphic video image editing. This is as stated by the informant as follows:

“Making smart community is the main purpose of smart city in Klaten. Technology as a supporting tool.”

(Informant: Staff of Klaten Informatics Communication Department)

Klaten Informatics Communication Department has a desire that the entire service system in the Klaten district will be in one dashboard. The core of smart city is integration, so the whole service system must be integrated. All applications in Klaten Regency are expected to become a single data. This is as stated by the informant as follows:

“We will try to integrate the entire community service system in the Klaten government offices”

(Informant: Staff of Klaten Informatics Communication Department)

5. Conclusion
The features of Klaten Smart City Application are Tourism Destination, Agenda, City Info, Video, Market, Transportation, Handyman, Car, Motorbike, Property, Food Stall, Location, Pharmacy, Hotel, Doctor, Salon, Hospital, Police, ATM and Bank, Gas Station, Prayer Schedule, Education, Sports, Health, News, Aspiration, and Job.

The opinion from Klaten Informatics Communication Department about Klaten Smart City Application is graphically perfect, it is a good application because it displays the mapping of several services in Klaten. Unfortunately, Klaten government has to pay the yearly license to renew the application. While Klaten government has several talented programmers who can create their applications. So, they prefer to make it themselves. Moreover, if the Klaten government uses Klaten Smart City Application, it will be very dependent on developers. For instance, to add a feature or maintenance, the government must spend extra funds.

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