How Jakarta uses the Information and Communications Technology (ICT) in Urban Planning?

Danang Kurniawan¹,!* Eko Priyo Purnomo¹ Aqil Teguh Fathani¹

¹Department Government Affairs Administration, Jusuf Kalla School of Government, Universitas Muhammadiyah Jogjakarta, Indonesia
!*Corresponding author. Email: kurniawand949@gmail.com

ABSTRACT

This research aims to look at the role of Information and Communications Technology in urban spatial planning policy formulation based on community participation. Through its "Jakarta Satu Map, One Data, One Policy" program, Jakarta creates an integrated digital collaborative in realizing information disclosure in the formulation of urban spatial planning policies. Jakarta Satu is a smartphone and web-based application aiming to collect public reports or feedback regarding spatial planning and zoning of space used in Jakarta. This study used a descriptive qualitative approach, and in presenting the data, the researcher used the Q-DAS (Qualitative Data Analysis Software) tool. The results show that ICT application through Jakarta Satu can increase the community's active involvement through reporting problems and proposing spatial use in Jakarta's urban areas. The findings show that the Jakarta Satu program can realize the integrity of actual field data through a digital platform accessed by the community in the reporting and submission nodes. Community involvement plays an essential role in producing an excellent urban spatial planning policy. The application of ICT in the formulation of urban spatial planning policies can make it easier for the public to participate so that field data can provide vital Information for the Government.

Keywords: ICT, E-Governance, Urban spatial planning, Smartphone, Participation, Jakarta Satu.

1. INTRODUCTION

This study analyzes the application of ICT-based smartphone applications and websites to support the formulation of urban spatial planning policies in Jakarta, Indonesia. The metropolitan city of Jakarta, as one of the big cities with a population of around 9.6 million people with an area of 660 kilometers, has experienced various complex urban problems in the past three years [7]. The government, as a facilitator of urban management, is required to be able to manage and provide solutions related to urban problems that continue to grow [1], [2]. The current urban management approach is more focused on improving infrastructure and urban services, aiming to improve social, economic, and environmental conditions to increase urban value [3], [4]. At the Indonesian National Government level, it has a decent city policy that aims to increase stakeholder collaboration in solving urban problems [5], [6], [8].

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Problems of the metropolitan city, Jakarta, occur due to weak management of urban governance, so that the problem of flooding and congestion continues to intensify every year (Figure 1). In the past five years, Jakarta has experienced an increase in flood points and fatalities. Additionally, in the aspect of congestion, Jakarta is ranked seventh in the highest traffic congestion cities around the world [11]. The data shows that Jakarta becomes the 7th city to produce emissions caused by traffic. On the other hand, Figure 1 shows that the number of flooding fluctuates and, in 2020, Jakarta became the highest flooded city with a score of 24.881.99. Jakarta’s urban problems become one of the obstacles in urban development, so a city development and city management program is needed. They should pay attention to aspects of policy formulation and cooperation on each side [10].

Good urban planning should be supported by ample information on the social, economic and health conditions of an urban area. In planning the development of urban areas [12], the availability of data is an important point [13]. At present, the role of ICT has contributed to the development of various artificial intelligences that help in revealing insights on the visualization of the urban environment based on geographic visualization [1], [14]. Utilization of ICT not only facilitates urban governance planning, but also facilitates stakeholder collaboration in developing urban designs and increases community participation in integrating information in the field [15].

This study focuses on analyzing the application of ICT functions in the formulation of urban governance policies [16], which aims to explain the potential for developing ICT functions in providing open and data-based coloration services. The use of ICT in the formulation of urban governance policies through a smartphone application-based website can provide integrated services between parties [17]. In addition, the involvement of all stakeholders can be the main actor in the preparation of urban governance designs directly [18], [19]. The City Government of Jakarta, Indonesia is aware that ICT plays an important role in urban governance planning. The Jakarta Satu program is part of the transformation of the Jakarta City Government to adopt ICT in an effort to create good urban planning, through the availability of accurate data based on public participation [20]. So in this study, we will look at the role of the function of ICT in facilitating cross-actor collaboration in the formulation of urban governance policies.

2. METHOD

This study aimed to research how ICT and social media affect the governance process by analyzing the usefulness of ICT Jakarta Satu in the preparation of RDTRZ (Basic Spatial Planning and Zoning). The research method used was descriptive-analytical. The descriptive method seeks to explain and record conditions or attitudes related to the object under study. The researcher also analyzed social media and Jakarta Satu’s official Twitter accounts as additional supporting data on the website’s usability and application. Social media analysis used a qualitative approach with a descriptive method to convey the Jakarta Satu results and the value of social media content in supporting the website platform. The research also used Q-DAS (Qualitative Data Analysis Software) to analyze data: NVivo 12Plus social media, to analyze the content of social media data. This study focused on analyzing the Integration of Map and Data Systems in the Jakarta Satu program into E-Government services in realizing the preparation of an Open Government-based Jakarta RDTRZ to increase public participation.

3. BASIC THEORY

3.1 ICT and urban governance

The trend of planning strategies to adopt the function of ICT in helping to solve urban problems continues to increase, so that in the current development ICT has become an important requirement in urban planning projects [21].
Metropolitan cities worldwide are massively transforming and innovating in the use of ICT in the aspect of “urban governance” [23]–[26]. Utilization of the function of ICT applications in the aspect of urban governance is aimed at increasing community participation, and creating integrated planning [27], [28]. Urban residents play an important role in monitoring and providing valuable data in assessing urban governance for Government consideration. While this is a demanding set of roles, there is evidence that participatory decision-making within the framework of urban planning initiatives can broaden and deepen democratic decision-making and public service delivery [29]. However, there are challenges in the application of ICT in the scope of urban governance planning, related to overall understanding, integration of data information specifications, promotion of application use, and decision-making processes [22].

3.2 Public participation

Public participation in urban governance studies is defined on dominant concepts, including, as a form of public communication, the role of public consultation-- which has the function of minimizing misunderstandings related to public data information [30]. The public participation mechanism is carried out in a planned and structured manner using a communication typology and comprehensive consultation [31]. An important aspect of public participation in urban governance is the method of the mechanism in proposing public participation. However, the current development of the Government has realized the role of ICT in the development of public participation service innovations through applications, starting with data sharing activities, conducting surveillance activities, and new innovation proposals from the community [32]. The current development and use of ICT can facilitate the public to actively participate in activities, and the formulation of Government policies [33]. The condition confirms that in realizing a participatory city, the Government must identify and innovate to produce urban applications that can integrate data information openly and require interaction between actors [34].

4. FINDINGS AND DISCUSSION

4.1 Functions of ICT in Urban Planning Collaboration and Participation

The integration of field data information related to land use, function transfer, and types of activities is carried out through a smartphone application-based website platform, the development of ICT is a solution in providing ease of collaboration across actors in the formulation of urban planning policies effectively and efficiently [1]. The development of the ICT-based Jakarta Satu Program plays an active role in facilitating collaboration, and creating spatial development that represents the needs of the people of Jakarta [35]. Jakarta Satu can provide information on land use field data and the social dynamics of Jakarta's spatial planning in two directions. Besides that, Jakarta Satu has integrated access to every node of the Jakarta Regional Government Work Unit network. Based on the value of the benefits and role of ICT in the development of urban governance planning studies, it had become an important part in creating mobility and encouraging the use of innovative and sustainable approaches [36].

The mechanism for reporting community involvement is through inputting related data (forms of valid location activities/activities (SPPT), City Planning Certificate, SIUP, IMB, TDP, Hotel Licensing, School Licensing and other business activities, into the big data form of the Jakarta Satu Website. Usage of the features in the website portal of the Jakarta Satu Program are easily understood by the public, which can be proven by the high participation of public reports. Then, in terms of efficiency, the ICT-based Jakarta Satu Program could play an important role in minimizing the use of the Jakarta Regional Government budget in data validity [37]. Policy actors are influenced by the facilities provided, in addition to the existence of the Jakarta Satu Program, it can produce urban development planning policies in Jakarta that have high accountability [38].

Figure 2. Activity Report / Application Form
Source: https://jakartasatu.jakarta.go.id/

This development, ICT (Information and communication technology), is seen as an essential driver for sharing, expanding the space in which sharing can be done. The principle of openness and participation in determining the e-government-based Detailed Study of Spatial Plans and Zoning Changes
is a solution to the needs and development of a strategic environment. It is based on open government principles, such as transparency, participation, and collaboration [39], [40]. The community plays an important role in providing information on reports and usual activities as a form of information on spatial use in the use of space in Jakarta. Thus, community participation activities become part of the data in supporting the Jakarta Satu Program. Besides, it can be a form of government responsibility in providing services to the community [41].

**Chart 1. DKI Jakarta Public Aspiration Report**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return zoning</td>
<td>48.00%</td>
</tr>
<tr>
<td>Change in space</td>
<td>1.00%</td>
</tr>
<tr>
<td>Report on road structure</td>
<td>20.00%</td>
</tr>
<tr>
<td>Change in road</td>
<td>3.00%</td>
</tr>
<tr>
<td>Change in zoning and...</td>
<td>1.00%</td>
</tr>
<tr>
<td>Not filled in</td>
<td>6.00%</td>
</tr>
</tbody>
</table>

Community participation in the process of formulating urban governance policies is one of the important roles in responding to proposals [42]. Participation of the community as a whole in the Jakarta Satu Program, has resulted in a proposal of revisions to the Spatial and Regional Planning (RTRW) aspects related to Zoning Changes in the Jakarta Government policy documents. Reports on Zoning Changes (62%) became the reports with the highest percentage, then the Road Structure Change Reports occupied the second highest report with (20%). Meanwhile, the Change in Provision of Land Activities has the third highest report with a percentage (6%). From the results of the community report as a whole, it can be seen that Zoning Change is an important part of the Jakarta Spatial and Regional Planning (RTRW) policy issue. Sustainable development in its management involves the Government, both at the regional and village community levels, to achieve targets [43]. Through the Jakarta Satu Program, the Jakarta Government can obtain information on problems in the field related to data on activities/activities that utilize space and the dynamics of land use in Jakarta.

### 4.2 Collaboration in the formulation of urban governance policies

Reports from the results of Jakarta Satu participation in the preparation of the Jakarta PZ RDRTW had become the database for planning and following up on spatial planning policies. In this aspect, it could be seen that the role of the application of ICT in urban management is very important, in terms of helping to facilitate the involvement of urban planning policy actors. [44]. The role of ICT is said to be successful in urban planning where it can provide space for stakeholders and citizen participation in discussing problems, which are then developed through the visualization of virtual reality (3DVR) environmental development proposals [45]. The Jakarta Satu application provides public space, aiming to explore proposed amendments to planning proposals through interactive visuals through location-based web and applications that use mobile phone location data. Therefore, policy actors can consider these activities in formulating urban governance policies in Jakarta, based on public participation. This response can be seen from the narrative responses of public actors in determining policy formulations and agendas [46]–[49].

**Fig 3. ICT Mechanism Jakarta Satu in Urban Governance Policy Making**

The Jakarta Satu app adopted an agile system development methodology, in which application activities ran concurrently and went through several cycles (technical, data integration, and scenario formulation). Figure 3 shows that the whole process begins with community participation, civil society, and business, which carry out reports and aspirations in determining the DKI Jakarta RDTRZ. The participation stage shows that there are city problems submitted by the community related to land conversion. The public sees that the misuse of land conversion causes urban problems in DKI Jakarta. Then, the second stage is a solution offered by the public, namely, Changes to the RTRW Development Planning Document and Changes to Green Open Space which is to be given ample space in DKI Jakarta. The last stage is the formulation and role of actors in responding to public demands, so the main benefit of this agile methodology is regular stakeholder involvement at various stages of tools and applications.
5. CONCLUSION

Urban development continues to get better and must be followed by a collaborative and participatory urban development planning process. Complex and diverse urban problems cannot be solved through one actor approach, but must be supported by all actors who occupy the city, one of which is the public, as a database. The Jakarta Government developed Jakarta Satu, integrated through the Jakarta One Map, One Data, and One Policy, and it is one of the transparent and participatory urban planning strategies. Through Jakarta Satu, based on ICT development, the government has been able to increase the participation of stakeholders and public actors in integrating accurate data information as a requirement for planning materials. The use of ICT in the urban development planning process is considered effective and efficient as well as participatory based, and has been able to make urban planning no longer a top-down or political elite policy. Jakarta Satu node service can realize the implementation of integrated and accountable website-based urban planning in creating public trust. Community involvement in the formulation of urban governance development policy planning has increased, in addition, this role is very much needed by the Jakarta Government as the main actor in following up on zoning aspirations from the community. Based on the final results of Jakarta Satu, the Jakarta Government followed up on community participation through the Jakarta Satu platform, via a revised scheme for Jakarta’s Spatial and Regional Planning Policy Document (RTRW).

REFERENCES


