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ANALYSIS OF STRATEGY AND IMPLEMENTATION DIFFUSION OF INNOVATION OF QLUE APPLICATION TECHNOLOGY IN JAKARTA SMART CITY

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A B S T R A K

DKI Jakarta has many challenges, so the government should be more effective and efficient to use integrated information and communication technology in every public sector, especially for the realization of a smart city program. Qlue presents as one of the innovations of communication technology to answer society's needs of media. It is reporting all problems that happened in the neighborhood. The purpose of this research is to analyze the strategy and implementation of the diffusion of innovations that PT. Qlue Performa Indonesia has done to support the Jakarta Smart City program. This research uses qualitative methods with interviews, observation, and literature review. Then, described descriptively and analyzed with Everett Rogers' (1983) Diffusion of Innovations theory are innovation, communication channels, time, and a social system. The result is the strategy and implementation of diffusion of innovations from Qlue need to be improved on knowledge and persuasion stage until the people of DKI Jakarta knowing about the impact of using Qlue for their daily life. In the end, the research shows that the development of the new communication technology which is more interactive has been influenced by the values of users and basic human needs.

INTRODUCTION

The emergence of social technology is basically prompted by the needs of sending messages without time and space constraints (Noegroho, 2010). The improvement of communication modes is the result of the changes in communities' pattern of life (Siregar, 2001). That is what has happened to Jakarta as the capital of the Unitary State of the Republic of Indonesia, whose population is increasing each year. According to the data from the Indonesian Central Statistics Agency (BPS), Jakarta had a population of around 9.6 million in 2010, and increased to 10 million in 2014 (*www.bps.go.id*), causing Jakarta to have various complex problems. Therefore, one of the solutions for such predicament is that the government in Jakarta needs to be more effective and efficient in harnessing integrated information technology and communication in every public sector. Thus, Jakarta is starting to develop Jakarta Smart City concept by making use of communication technology (*http://smartcity.jakarta.go.id/about*).

A smart city, according to Sainz Pena (2011, as cited in Hajduk, 2016), is a city embracing information and communication technologies to make its critical infrastructure, elements, and public services more interactive, efficient, and noticeable for its people. Officially launched on 15 December 2014, Jakarta Smart City is believed to be able to help Jakarta Provincial Government apparatus swiftly respond to citizens' complaints (Rudi, 2014). In order to support Jakarta Smart City, Jakarta Provincial Government partners up with third parties, one of which is Qlue that enables

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each Jakarta citizen to report an issue in their areas.

Qlue is a social-media-like application that has a feature to express real-time complaint aspirations. Through Qlue, citizens can report any incidents, such as traffic, flood, damaged roads, piles of garbage, or even bed availability in a hospital (Rudi, 2014). Each report is set as a notification for apparatus responsible for the area, so that the issue can be immediately handled. The handling of each report can also be easily monitored through an application or Jakarta Smart City portal (Nugroho, 2015). To date, Qlue application always attempts to improve the features and provide more user-friendly application with simpler design and report filing procedure.

As reported on *www.sinarharapan.co* on 30 September 2015, a number of Jakarta citizens are not aware of Qlue, a public complaint application. Muhammad Rizki, for example, a resident of Tanah Abang, Central Jakarta, admitted that he has never heard of Qlue, an application that can be used to file a complaint for several issues in Jakarta, despite the fact that he was using a smartphone. He only knew that a Jakarta Smart City application can be accessed through his smartphone. A similar response was also given by Supriyanto, RT 08/RW 02 Tanjung Barat resident, South Jakarta, who also did not know that there is an application to immediately file a report and complaint for issues happening in the society.
Those facts reveal that individuals in a social system do not embrace an innovation at the same time. Rogers (2003, as cited in Simin and Jankovic, 2014) pointed out that many innovations require a certain timespan before they are adopted by a wider range of users or population. There are several factors affecting whether an individual is to adopt an innovation or not. Therefore, the focus of this research is to analyze the strategies and implementation of technology innovation diffusion of Qlue application in Jakarta Smart City.

LITERATURE & METHODOLOGY

Communication technology is now indispensable to modern communities. The terms, such as ‘new communication technology’, ‘new media’, or ‘interactive communication’, indicate that fundamental changes have occurred in the way humans communicate (Rogers, 1986). Looking back to the history of communication development, Paisley (1985) concludes that technological change has caused communication to lead the social revolution.

In his book, Rogers (1983) expressed that diffusion is a process where an innovation is communicated over a period of time among the members of a similar social system. The communication occurred in diffusion is a process where each member creates and shares information with each other in order to reach common understanding. Thus, diffusion is a special form of communication that focuses more on communicating new ideas.

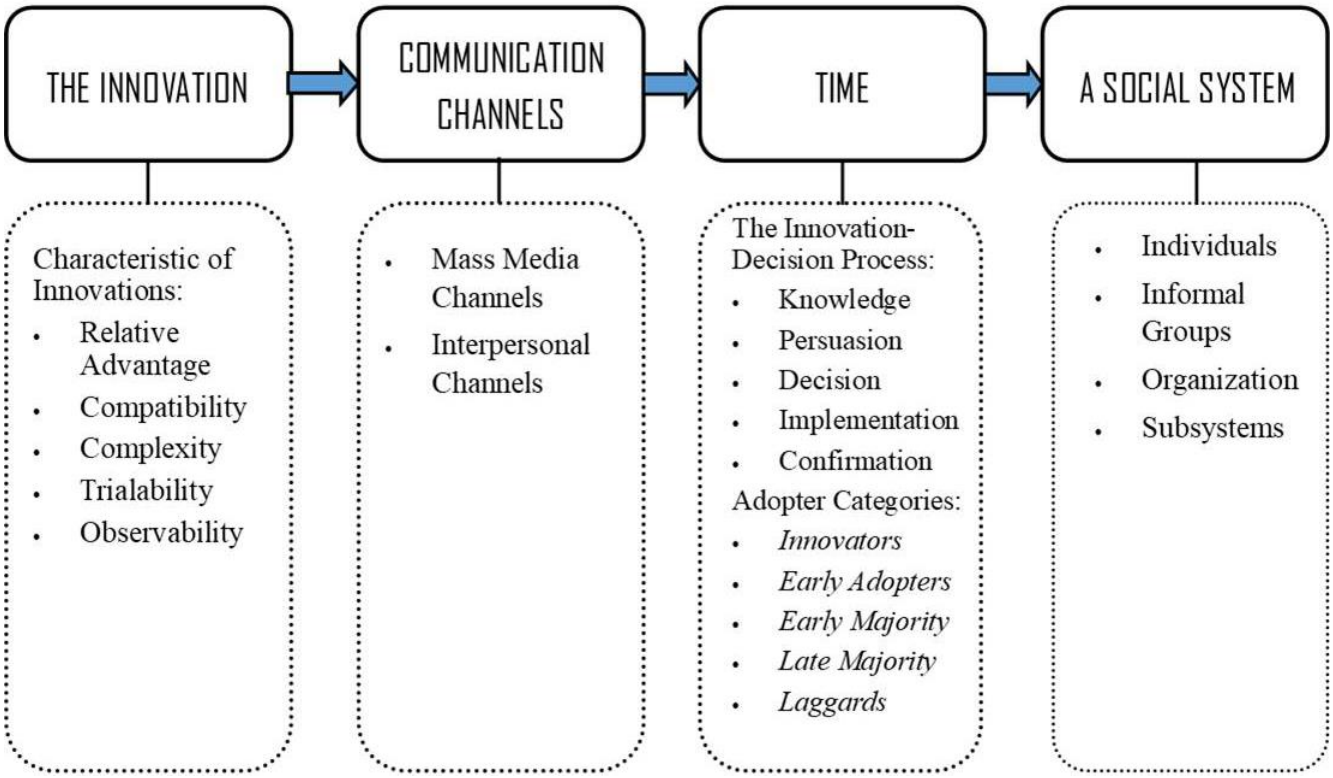
The researchers will analyze the strategies and implementation of Qlue application technology innovation diffusion using Rogers’ (1983) Diffusion Innovation theory paradigm. The main elements of innovation diffusion—innovations, adopters, communication channels, time, and social systems—are a process from strategies to implementation of a new idea. The process is initiated by a new idea or innovation. The adoption rate of an innovation is determined by innovation characteristics, i.e. relative advantages, compatibility, complexity, trialability, and observability.

Relative advantages are measured by the extent to which an innovation is better than the existing practices. Compatibility is the extent to which an innovation is consistent with the existing values, past experience, and the needs of potential adopters. Complexity is measured by the extent to which an innovation is considered difficult to understand and to use. Trialability is the extent to which an innovation can be trialed on a limited basis. Observability is the extent to which the results of an innovation is noticeable for other people.

Then, an innovation communicated through communication channels, which are mass media and/or interpersonal channels as illustrated by a one-way arrow to the right in Figure 2.1. Communicated over a period-of-time, the innovation diffusion then enters-into an innovation-decision process—i.e. knowledge of the innovation, formation of behavior toward the innovation (persuasion stage), decision to either adopt or reject the innovation,

implementation of new ideas, and confirmation of the innovation-decision that one has made. Then, the innovation decision process creates an innovation's adopter categories, encompassing early adopters, early majority, late majority, and laggards. The communication process overtime is also illustrated by a one-way arrow to the right.

Finally, the innovation which has been communicated through communication channels over a period of time is implemented in a social system consisting of individuals, informal groups, organizations, and/or subsystems. Innovation implementation in a social system is illustrated by a one-way arrow to the right. Then, the researcher's flow of thoughts is as illustrated in Figure 1 below.



Source: Jakarta Smart City

Figure 1 Diffusion Strategy and Implementation of Qlue

This research uses qualitative methods. The phrase *qualitative methodology* refers in the broadest sense to research that produces descriptive data, including people's own written or spoken words and observable behaviour (Taylor, Bogdan, and DeVault, 2015). Burgess in Shaw (1966) stated that qualitative research allows researcher to know someone more personally and their daily experience in the community. Based on that statement, researcher choose qualitative methods to get know about the strategy and implementation of diffusion of innovations from Qlue in a deeper understanding. As stated by Koentjaraningrat (1991), the descriptive research provides an accurate overview about individual, situation, phenomenon, or specific groups.

There were six informants interviewed: Qlue's Head of Marketing Communication and Chief Operations Officer, and four Qlue application's users: college student (using Qlue since mid of 2016), fresh graduate (using Qlue since October 2015), secretary (using Qlue since July 2015), and lecturer (using Qlue since January 2015).

Head of Marketing Communication was chosen as this research's informant based on her knowledge about the strategy of diffusion of innovations that PT. Qlue Performa Indonesia has done in Qlue application and communicated it to the society. Chief Operations Officer was chosen as another informant in this research to give an information about the strategy of diffusion of innovations that PT. Qlue Performa

Indonesia will do through their new design of Qlue application. Meanwhile, four users interviewed to show the implementation of strategy that has been done by PT. Qlue Performa Indonesia.

The primary data in this research was collected using interviews and observation technique. The interviews are fit for this research to provide a deeper information about the strategy and implementation of diffusion of innovations. Meanwhile, the observation uses to compare the data that has gotten from the interviews. For the secondary data was collected with literature data, such as books, journals, and videos about Qlue and Jakarta Smart City.

RESULTS & DISCUSSION

Qlue Innovation

The strategies and the implementation of Qlue technology innovation diffusion starts with an innovation itself. According to Rogers (1995, as cited in Straub, 2009), an innovation is an idea, practice, or object perceived as something new by individuals or other adopters.

Previously, in Indonesia there was actually a complaint report application on a social media basis similar to Qlue, namely LAPOR! (Layanan Aspirasi dan Pengaduan Online Rakyat/Community's Online Aspirations and Complaint Services) in 2011. LAPOR! provides channels for citizens to file a complaint and their aspirations related to public services and national development program (Hartanti, 2014). Similar to LAPOR! Qlue application has a number of advantages and innovations that distinguish it from other similar applications.
Furthermore, in terms of the innovation characteristics, the elaborations are as follows:

Relative Benefits

The first innovation characteristic is defined by Rogers (1983) as the extent to which a new innovation is considered better than the existing ones. In this case, Qlue application offers more benefits compared to other similar applications. The benefits, among others, are providing a real-time report, having integrated dashboard, and accommodating actual reporting since its users are not allowed to file a report using photos from their photo gallery. The dashboard is like a map containing various reports in each spot in Jakarta and other surrounding areas. The report is indicated by red, yellow or green color depending on the report status. Red color indicates a new report; yellow color indicates that the report has received a response from a related department; green color indicates that the issue has been followed up. In addition, the filed reports are said to be accountable since each relevant department which is to follow up a report has to elaborate the issue descriptions and attach pictures of the situation after the issue has been followed up.

Several other subdimensions of relative benefits such as reducing the sense of discomfort and saving time and effort can also be found in Qlue application. There is no need to file complaint reports through RT/RW as Qlue users could file their reports themselves using the application (Qlue). Reducing the level of discomfort is also one of the Qlue app goals, which is to give satisfactory feeling to citizens by providing public facilities and private services in their surrounding areas and by following up their complaint reports.

Compatibility

According to Rogers (1983), compatibility is the extent to which an innovation is considered consistent with the existing social values, past experience, and needs of potential adopters. Along the same line with the previous statement, Qlue social values such as community services also align with values existing in the society. Moreover, Qlue also meets the citizens' needs to report problems arising in their surrounding areas. Before Qlue was invented, citizens were confused about to whom they had to send their complaints whenever they encountered problems. Since Qlue app was invented, the citizens' needs to gain their rights to comfortable and quality public facilities can be met because Qlue provides a means for citizens to file reports regarding problems in their surrounding areas.

Complexity

Complexity is defined as the extent to which an innovation is considered as something difficult to understand and to use (Rogers, 1983). Qlue has been designed similar to other social media, so that it is easy to use and user friendly. Qlue report filing procedure is

relatively easy to understand and carry out. QLUE Indonesia YouTube account has uploaded a video about how to file a report in Qlue. The video with a duration of 1 hour and 55 minutes explains how to submit a report in Qlue using a simple language, so that it can be easily understood by the citizens. The blog in official Jakarta Smart City portal (smartcity.jakarta.go.id/blog) also wrote about the procedures of using Qlue application. Starting from how to download, register an account, file a report, and monitor report procedure. All the explanations are written using a simple language supported by pictures showing how Qlue application works.

Trialability

The other characteristic of innovation according to Rogers (1983) is trialability—the extent to which an innovation can be trialled on a limited basis. As the name suggests, Qlue allows users to have a trial use, before really using it, through a user testing, which was conducted on 3 May 2017. The user testing was conducted in order to test the updated version of Qlue which is currently designed by the team. The execution of the user testing indicates that Qlue wishes to get input in the form of critics and suggestions from their users toward the display and how the application works. The input will later be used by the Qlue team to improve the display and how the app works, so it can be more easily understood and used by the users or citizens.

Observability

Observability refers to the degree to which the results of an innovation can be seen by others (Rogers, 1983). Qlue users will get a notification each time their report is being processed or it has been followed up. Moreover, through mycity.qlue.co.id website, citizens are able to see various reports in each area that has been filed in Qlue application. Then, the data of the largest reports which have been followed up per three months is then posted by Qlue on its social media account such as Twitter and Instagram.

Qlue Communication Channels

According to Rogers (1983), there are two types of communication media which can be used to channel an innovation: mass media and interpersonal channel. In communicating an innovation and a message, Qlue makes use of both channels. It is clear that Qlue's mostly used mass media channel is their social media such as Twitter, Instagram, and Youtube. The three social media accounts are used by Qlue to spread information and innovations to citizens. Furthermore, a digital content is published on blog.beraniberubah.id. In addition to the previously mentioned social media, Qlue also harnesses printed media as its mass media channel in promulgating their information and innovations. One of the printed media collaborating with Qlue is Jawa Pos. The collaboration is in the form of public relations activities, and not advertisement.

Intrapersonal channel is also utilized by Qlue to spread information and innovations. For the time being, Qlue has not recruited any specific agents assigned to spread their information and innovations. Qlue still depends on their internal team, i.e. the marketing team, to help citizens know and use Qlue application. Moreover, Qlue has also established relations with communities such as Indorelawan and Turun Tangan. The communities' members play a role as one of the agents of change who indirectly guide citizens. Researchers have also found the roles of opinion leaders, such as Basuki Tjahaja Purnama, the then Deputy Governor of Jakarta, and peer groups in spreading information and innovations about Qlue application.

Qlue Innovation Diffusing Time

Later, the innovations communicated through such communication channels will go through time after time. The time dimension involved in the innovation diffusion is the innovation decision process which will later create the innovation adopter categories. Innovation decision process:

Knowledge

According to Rogers (1983), in this stage, individuals or other innovation adopter units are aware of the existence of the innovation and develop understanding of how it works. Out of four users who were interviewed, they know that Qlue is a public complaint application. They were aware of Qlue's existence in 2015—

2016. In addition, they know how to file a report through Qlue as they have used it more than once.

Persuasion

In this stage, individuals establish positive and negative attitudes towards the innovation. They will be actively looking for information about the innovation, such as the impacts, advantages and disadvantages for themselves (Rogers, 1983). The four users being interviewed develop positive attitudes towards Qlue application due to their curiosity to try out the new application. The curiosity to try out the new app surfaces due to the influence from their close relatives/friends such as their peers, opinion leaders, and online news.

Decision

Subsequently, individuals will be involved in activities that lead them to either adopt or reject the innovation (Rogers, 1983). During this stage, Qlue management team implement a communication strategy with the theme #BERANIBERUBAH (Dare to change), which is an initiative movement departing from citizens who start to become ignorant of their own cities. The aim for #BERANIBERUBAH is to encourage and challenge young generations to care more and start to change by reporting issues in their surroundings and actively changing and developing their city.

The four respondents decide to adopt and use Qlue application. Two of them decide to adopt Qlue because they believe that the application allows them to easily report an issue, while for the other two, it is because they receive fast responses in their first attempt to report an issue.

Implementation

The next stage is when individuals use the innovation. In this stage, they want to know how to use an innovation and the possible operational issues that they may encounter (Rogers, 1983). All the respondents said that they have encountered some operational issues when using the application, one of which is the difficulty to file a report due to poor signal. Besides that, they also said that Qlue app in the IOS system has an unfriendly design for users.

Confirmation

In the confirmation stage, individuals are seeking affirmation for the innovation decision they have made, and they may change their decision if they find an opposing message of the innovation (Rogers, 1983). Adopters can stop using Qlue. It is proven by two out of four respondents who have stopped using Qlue and have uninstalled the app from their phone because they feel that they rarely find issues to report. Furthermore, their initial purpose of using the app was just to have some fun with their friends. It means that their reason for stopping adopting Qlue is not because they find an opposing factor, but because they feel that they no longer need Qlue app on their phones.

Innovation adopter categories

Subsequently, out of the four Qlue app users being interviewed, researchers find that the respondents belong to two innovation adopter categories: innovators and late majority. The 'innovators' category encompasses individuals who are extremely eager to try out new ideas. It means that they dare and play an important role in the diffusion process when an innovation is launched into the society (Rogers, 1983). Those who belong to the 'late majority' category are individuals who adopt a new idea after the majorities of their social system members use it and they may be enticed by the benefits of the innovation or receive pressure from their close peers to adopt the innovation (Rogers, 1983).

Qlue Social system

The innovation diffusion process that has been communicated by Qlue through certain communication channels from time to time takes place in a social system consisting of individuals, informal groups, organizations, and/or subsystems. Individuals targeted by Qlue are tech-savvy young generations. Informal groups targeted by Qlue are all informal communities located in Jakarta, such as Bebas Sampah, Osoji Clun, Indorelawan, Turun Tangan, and Indorunners, whereas organizations which become Qlue's target are government organizations located in and around Jakarta.

This research finds that the problem causing only a few Jakarta citizens' being aware

of Qlue application lies in the innovation decision process, particularly in the knowledge and persuasion stages. The problem is caused by the lack of promotion and education to the technologically-challenged population. The minimum promotion to the society is ascribed to the lack of social spirit to influence others to develop and change their cities into a better place.

In response to that, Qlue proposes a communication strategy #BERANIBERUBAH. Qlue cooperates with PT Transjakarta to promulgate the initiative movement by sticking a #BERANIBERUBAH sticker on almost every new bus owned by PT Transjakarta. However, such measure may be misunderstood by the society as they may think that the initiative movement is initiated by PT Transjakarta. Another factor causing the society to be unaware of Qlue application is an internal factor from the individuals themselves. According to the data obtained from the Qlue manager, out of 9 million Jakarta population, only 650,000 Jakarta citizens are Qlue application users. This is not surprising, given that the issue Qlue app has to face is not culture, but needs. Upon being asked why they did not install Qlue, they simply said that it was because they did not know the benefits for them. Again, this shows the lack of strategy in the knowledge stage.

In the end, Qlue app comes as one of the forms of new and interactive communication technology as it accommodates the citizens to report problems in their surrounding areas and promotes better communication between the citizens and the government. Rafaeli (1984) pointed out that the effectiveness of interactive communication is always associated with higher communication costs and measured by the amount of time required. Therefore, in the end, linear communication model, which is one way in nature, will be replaced by convergent communication model—i.e. a communication process where participants create and share information each other to reach common understanding—due to the interactiveness of the new media. The presence of Qlue app in Jakarta will shift the linear communication model, which is one way in nature, towards the convergent communication model when the government and the citizens create information (complaints and responses) to reach common understanding, which is when a complaint made through Qlue app is settled. Qlue application also comes as one of the communication technology innovations that make use of media to report every problem arising in one's surroundings.

CONCLUSION

The strategy and implementation diffusion of innovation of Qlue application technology has been implemented well and correctly.

Nevertheless, there is a need for improvement in the knowledge and persuasion stage. Many Jakarta citizens are still not aware of how to use Qlue and what are the benefits for them because Qlue is still lack of agents of change (such as campus ambassador) who are specifically designated for spreading information regarding the application and because there is lack of advertisement of Qlue application in mass media, causing the innovation diffusion process in the knowledge and persuasion stage to be hampered.

Ultimately, the present research reveals that communication technology has given a huge impact on the way humans communicate. Each day, new and interactive communication technology will be more developed. Furthermore, the development of such communication technology has been affected by the values of the users and humans' basic needs.

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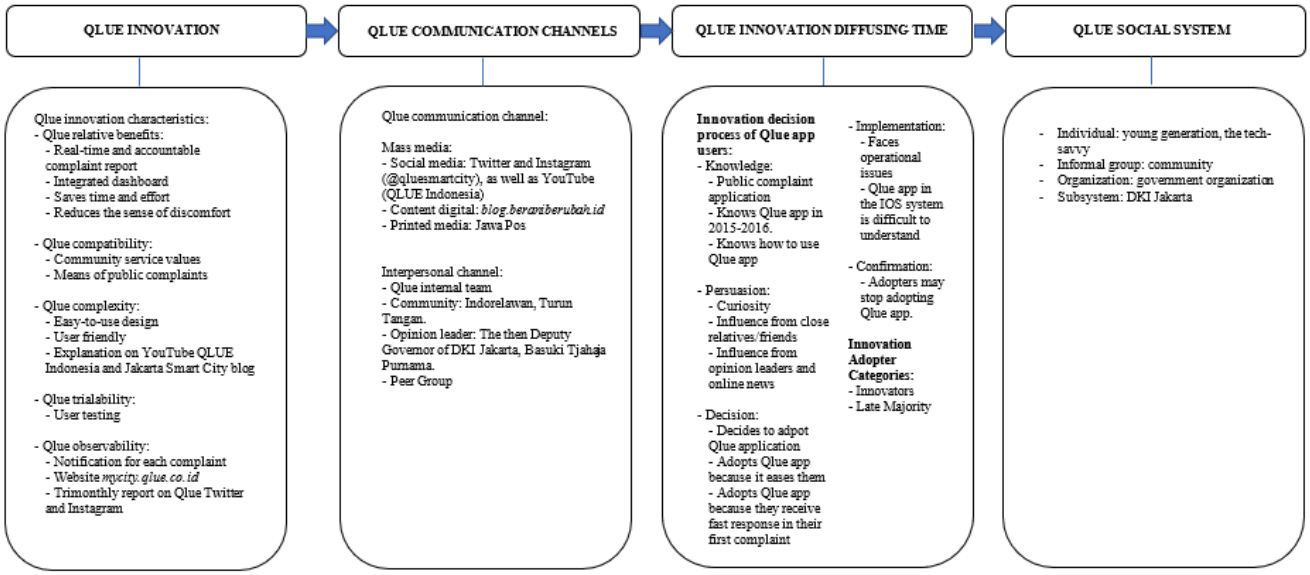
APPENDIX



Source: Jakarta Smart City documentation

Graphic 2. Qlue Communication Strategy and Implementation Process Flow