Innovation Adoption and Communication Strategies in Implementing The Smart Governance Program (Case Study of Simpus Utilization at Bogor City Community Health Center)

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Abstract. This research aims to analyze the adoption of SIMPUS innovation carried out by the Bogor City Health Office for Community Health Center (Puskesmas). Sistem Informasi Manajemen Puskesmas (SIMPUS) or Community Health Center Management Information System has become one of the most prospective smart governance programs in Bogor City. The qualitative research method was used through case studies with an in-depth interview, observation, and literature studies. The results of this study indicated that SIMPUS innovation is useful for Puskesma for systematizing patient data. However, the benefits have not been optimized for both health care providers (Puskesmas) and the community (patients). It was found at least three obstacles in SIMPUS implementation: 1) the internet as an important means to run SIMPUS is not yet available or the signal is not even good for some regions/locations, 2) lack of budget/funds available to procure SIMPUS working equipment, 3) lack of skillful human resources. The communication strategy is carried out in a top-down manner from the City Government, the Health Office, and then the Puskesmas employees. However, subordinates also often provide input and advice to their superiors because they know better about the practice in the field (bottom-up). Interpersonal communication channel was also found important for maintaining the internal relationship among SIMPUS users.

Keywords: Smart Governance, Communication Strategies, Innovation Adoption, SIMPUS.

1 Introduction

A smart city is more than a trend. Cities are digitally transforming to improve governance and social aspects of society life. The actual values that shape smart cities are based on a balance of factors such as smart environmental practices, smart governance, smart living, smart mobility, smart people, and smart economy. These principal key elements work together to exploit the technologies that help bring about the realization of a smart city [1]. Smart governance is the main key to implementing a smart city.

The goal of smart governance is to create effective, efficient, communicative governance of regional government. It is a continues improvement of bureaucratic performance through integrated technology innovation adoption [2].

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In 2017 the Indonesian Government through the KEMKOMINFO Jakarta held a movement of 100 smart cities throughout Indonesia. Bogor City was chosen as one of 25 cities that became a pilot project to become a smart city. Regional Organizations under the Mayor of Bogor then determined the quick win pilot project proposed to make Bogor City as a smart city. Quick win selected pilot projects in the health sector, one of which is SIMPUS (Puskesmas Management Information System). Puskesmas is Society Health Center where are available in each region of the city.

SIMPUS is an integrated and multi-user information system that is prepared to handle the entire management process of Puskesamas. SIMPUS utilizes information technology to support health services in the digital era. In SIMPUS there is an E-SIR (Electronic Healthy Bogor Referral Information System) [3]

The population of Bogor City in 2016 was 1,064,687 people consisting of 540,288 men and as many as 524,399 women. Compared to 2015, the population of Bogor City in 2016 increased by 16,765 people, an increase of 1.60% [2]. With the rapid growth of the population of Bogor City, systematic efforts are needed in the health sector.

According to the Mayor of Bogor, Bima Arya in the Pikiran Rakyat newspaper online, the government of Bogor City has not maximally realized the concept of a smart city. Bima Arya stated that the obstacle was due to a lack of human resources who mastered information technology expertise. In the internal environment, Civil Servants are not easy to find people who understand IT. [4]

In line with Bima's statement and based on the researchers' observations, the existence of SIMPUS has not been evenly distributed well in health centers in the city of Bogor. Many people are still waiting in line to register manually to get services at several health centers in the city of Bogor.

Previous relevant researches got quite similar findings. One of the factors that caused the ineffective Puskesmas (SIMPUS) management information system was due to the low involvement of Puskesmas employees [5]. Nisaa identified the factors that led to low involvement of employees and organizations, and analyze alternative steps of the Brebes District Health Department (Brebes DKK) to increase the involvement of Puskesmas employees. In fact, Wibowo stated that Community Health Centers as providers of health care facilities are required to provide health services that are fast, precise and accurate. Therefore, Puskesmas must take advantage of information technology in meeting the demands of these services. [6]

Rusmiarti evaluated the process of adopting work culture by civil servants using the Everett M. Rogers Innovation Diffusion Process theory. The evaluation aims to make the process of diffusion of innovation run continuously until there is a change in the behavior of civil servants. This study used a qualitative approach, with a case study research strategy. The results of the study revealed that the use of communication channels, dimensions of the time period and leadership behavior and commitment was important for civil servants in adopting, changing their mindset and behavior in accordance with the prevailing work culture. Evaluating communication channels for the diffusion process of innovation influenced the achievement of organizational goals [7]

The Diffusion Theory Innovation of Rogers basically explains the process of how an innovation is delivered (communicated) through certain channels all the time to a group of members from the social system. This is in line with the notion of diffusion from Rogers, namely "as the process of innovation is communicated through certain channels over time among the members of a social system." Further explained that diffusion is a form of communication that is specifically related by disseminating messages in the form of new

ideas, or in Rogers' terms diffusion involves "which is the spread of new ideas from the source of creation or the creation of its ultimate users or adopters."[8].

Members of the social system can be divided into adopter groups (recipients of innovation) according to their level of innovation (speed in receiving innovation). One group that can be used as a reference is grouping based on the adoption curve, which has been tested by Rogers (1961) in [8]. The description of adopter grouping can be seen as follows:

1. Innovators: About 2.5% of individuals who first adopted innovation. Characteristics: adventurers, risk takers, mobile, smart, high economic ability.
2. Early Adopters (Pioneers): 13.5% are pioneers in receiving innovation. Characteristics: exemplary (opinion leaders), respected people, high access inside.
3. Early Majority: 34% of the initial followers. Characteristics: full consideration, high internal interaction.
4. Late Majority: 34% who become the final followers in receiving innovation. Characteristics: skeptical, accepting due to economic considerations or social pressure, too cautious.
5. Laggards (Old-fashioned / Traditional Groups): The last 16% are conservative / traditional. Characteristics: traditional, isolated, limited insight, not opinion leaders, limited resources.

Based on the description above, the purpose of this study was to analyze the adoption of SIMPUS innovations carried out by the Bogor City Health Office for Puskesmas, find out the obstacles that occur in the use of SIMPUS, and find out communication strategies in implementing and optimizing the use of SIMPUS by Puskesmas in Bogor City.

2 Methods

Operationally this research used qualitative research methods with a case study approach. A case study is used as a comprehensive explanation relating to various aspects of a person, a group, an organization, a program, or a social situation studied, sought and studied as deeply as possible. Case studies have a detailed understanding of a social unit in a certain period of time. Case studies [9] are an empirical inquiry that investigates phenomena in real life, where boundaries between phenomena and contexts do not appear explicitly so that multiple sources of data as evidence can be utilized. As an inquiry, case studies do not have to be done for a long time and do not have to depend on ethnographic data or participant observation.

The key informants of this study were selected purposively based on the criteria set as follows:

1. Informants who directly experienced situations or events related to the topic of research.
2. Informants were able to explore and explain the process of utilizing SIMPUS in the Bogor City Health Center.
3. Informants were willing and had sufficient time to be interviewed and provide information.
4. Informants agreed to the results of this study were published.

In this study researchers conducted in-depth interviews with 2 key informants and 5 informants who are the users/patients of Community Health Center (*Puskesmas*) at Bogor city. The interview approach was conducted in an unstructured manner, where the researcher selected a list of questions or topics to be discussed. The researchers conducted participatory

observation which was collecting data through observation of the object by being in the situation and communication activities carried out by the informants. The study of documents was carried out by the researcher on documents or articles related to previous relevant research, documents in the form of reports on the implementation of smart governance in the city of Bogor, and audio recorded during the interview.

Researchers used technical data analysis in accordance with the opinion of Creswell in conducting qualitative data analysis, i.e. researchers are bound to processes that move in the analytic cycle. The data analysis technique was taken by the researchers through 4 stages, namely starting from the stage of providing data, reducing or selecting data, displaying or presenting data, and drawing conclusions [10].

3 Results And Discussion

3.1 Adoption of SIMPUS Utilization Innovations at the Bogor City Health Office

In 2017 the Indonesian Government through the KEMKOMINFO Jakarta held a movement of 100 smart cities throughout Indonesia. Bogor City was chosen as one of 25 cities that became a pilot project to become a smart city. The Bogor City Government finally brought in a supervisor who collaborated with IKTI (Information Technology Consultant Association). Supervisor and IKTI explained and guided the Bogor City regional device on how to form a smart city.

The technical guidance was conducted eight times and was followed by all the DPOs (Regional Device Organizations) which were under the Mayor of Bogor City. From these stages the OPD must determine the quick win pilot project that was proposed to make Bogor City a smart city. Quick win was selected as pilot projects in the health sector, one of which is SIMPUS (Puskesmas System). In SIMPUS there is E-SIR (SIM referral to hospital).

"SIMPUS is the champion to make Bogor City a smart city."[1]

Bogor City Government after doing 8 times technical guidance and then presenting at the KEMKOMINFO. As a result, the Bogor City government was included in the top 10 smart cities in 2017. Smart city and smart governance are not only problems of system or use of applications using computer devices but also good behavior of the apparatus and the community in making it happens.

"Smart city is not only about people can operate computers but also they do things wisely. This means that the adoption of innovation such as SIMPUS is not only employees can use the application but also how people serve the community well and politely. "[2]

The Health Office and Community Health Centers in Bogor City area accepted SIMPUS as a useful innovation. The community also received the benefits of service more quickly. According to the Republic of Indonesia Decree No. 932 of 2000, the *puskesmas* carried out health management in three functions, namely the functions of patient management, institutional management, and system management. Quality information in patient management provides data certainty for more accurate and effective efforts for patient health and treatment. SIMPUS makes people easier and faster to access services because this system

[1] Interview result with Y, Diskominfostandi of Bogor City, dated 22 November 2018
[2] Interview result with Y, Diskominfostandi of Bogor City, dated 22 November 2018

is already online from registering, checking, and getting the drug (pharmacy). Patients only need to mention the name that matches their ID card. If the name is the same as somebody else name, it can be confirmed by the patient's address or date of birth. SIMPUS shortens patients waiting for queues and services.

The Puskesmas employees as implementing parties have different reactions to SIMPUS innovations. They can be categorized into what Rogers called adopters of innovation. Some adopter categories are based on the first time that *Puskesmas* employees used SIMPUS innovations, namely innovators, early adopters, early majority, late majority, and laggards. The characteristics of adopters that exist in employees of *Puskesmas* in Bogor City in accepting and using SIMPUS innovations are as follows:

Table 1. Adopters Characteristics End User of SIMPUS at Bogor City

Adopter	Rogers Adopters	Conditions at the Bogor City Health Center
Innovator	About 2.5% of individuals first adopted innovation. Characteristics: adventurers, risk takers, mobile, smart, high economic ability.	Superiors and structural officials at the Health Office and *Puskesmas* understand the need for speed in services, especially those who understand the importance of systemization in services.
Early adopters,	Pioneer / Pioneer: 13.5% are pioneers in receiving innovation. Characteristics: exemplary (opinion leaders), respected people, high access inside.	Employees who have an educational background in the field of computers or those who like and can be applications on a computer. In general, employees are young between 25-35 years old.
Early majority	Early Followers: 34% of those who become early followers. Characteristics: full consideration, high internal interaction.	Employees who have educational backgrounds outside the computer field are eager to learn new innovations that can simplify their work.
Late majority,	Final Followers: 34% who are the final followers in receiving innovation. Characteristics: skeptical, accepting because of economic considerations or social pressure, too cautious.	In general, civil servants who have approached retirement age and lack the skills to operate computers but are still required to operate SIMPUS.
Laggards	Traditional / Traditional groups: The last 16% are conservative / traditional. Characteristics: traditional, isolated, limited insight, not opinion leaders, limited resources.	In general, civil servants who have approached retirement age and do not have the skills to operate computers.

Source: Interview with W on December 18, 2018

According to Y, the public's reaction to SIMPUS's existence was very positive:

> "SIMPUS make our job faster because if there is a referral to the hospital you don't have to wait for referral manually. In SIMPUS, there is an E-SIR, which is

a hospital reference if they want to get surgery, they just need to be on the phone and were sent to hospital "[3]

The Health Office has Public Relations who inform the public about the existence of E-SIR (Electronic Referral Information System) by the way they make banners or in the form of brochures. SIMPUS itself is actually a development for recording and reporting patients. SIMPUS has actually been piloted in several *Puskesmas* in the city of Bogor since 2014. In 2018 the number of *Puskesmas* in Bogor City that has used SIMPUS reaches 80%. SIMPUS is a system created for the interests and needs of the Puskesmas. The community receives a positive impact. They do not need to long queue because the data is already systemic and online. The condition is that the patient has a KTP.

3.2 Obstacles in the Implementation of SIMPUS

SIMPUS operation requires high mbps or strong internet network (minimum 30 mbps). If the internet network is less than 30 mbps the process of using SIMPUS is often slow and error.

"Every *Puskesmas* must have 5 computers for registration, general practitioners, dentists, midwives, and pharmacies. Some health centers that use SIMPUS well are in East Bogor, Central Bogor, Tanah Sareal, Cipaku. In West Bogor Health Center like Sindangbarang there is no internet so it has not used SIMPUS. In Semplak Sub district the internet is not yet strong because it uses a network that does not support SIMPUS. In addition, the *Puskesmas* building made of good concrete is also often on and off."[4]

Table 2. Identification of Obstacles in SIMPUS Application at Bogor City

Human Resources	Infrastructures	Budget
▪ Employees who are approaching retirement age and are less / unfamiliar to operate computers consider SIMPUS burdensome ▪ Employees who are capable of running SIMPUS are limited ▪ *Puskesmas* need employees who understand the SIMPUS application and computer systems that are employed and paid for by the *Puskesmas* income.	▪ Some *Puskesmas* do not have good networks (internet) and there is even no internet access because the *Puskesmas* building is old and cannot be connected to the internet. ▪ Computer devices those are sometimes problematic. ▪ Lack of computer devices	▪ The budget for buying a computer device is not yet available so the *Puskesmas* does not have a computer device ▪ Lack of budget to hire IT personnel who can help them operate the SIMPUS program or when SIMPUS has problems.

Source: Interview with W on December 18, 2018

Patients who receive services from *Puskesmas* stated that SIMPUS will only beneficial for them if the internet connection is running well. If for some reason, the internet connection drops, in trouble or very slow respond, the services of *Puskesmas* is worse.

[3] Interview result with Y, Diskominfostandi of Bogor City, dated 22 November 2018
[4] Interview result with Y, Diskominfostandi of Bogor City, dated 22 November 2018

"We have to wait for long time process… one to two hours just because registration is done manually."[5]

Problems that occurred just because of the internet problem are not often solved quickly due to unskillful employees who operate the system/program.

"It's ok …sometimes internet might be drop …let say because of the bad weather… but it should be solved quickly."[6]

All informants (patients) expected services of *Puskesmas* using SIMPUS getting much better and faster in the future. Not only the SIMPUS but also the man behind the system which is expected to be excellent in services.

3.3 Communication Strategy in Utilizing SIMPUS at Bogor City Health Office

Since the beginning of Mayor Bima Arya administration in 2014, Bogor Communication and Information Technology have built an information system in all fields including SIMPUS. SIMPUS is discussed with the OPD (Regional Device Organization) then with the Health Office. After being agreed upon, SIMPUS was distributed to *Puskesmas* in the Bogor City area. Bogor City has 26 health centers spread in 6 sub-districts [11]

SIMPUS is basically an internal system of *Puskesmas* to make it easier for *Puskesmas* officers to do their jobs. This system has an impact on service to the community.

The communication strategy carried out by the Bogor Health Office on the *Puskesmas* in the Bogor City area besides structurally (top down) also through the interpersonal communication channel. Communication strategy refers to a way or approach to overall communication in order to achieve goals. Various approaches can be made depending on the situation and conditions [12].

According to Mohr and Nevin communication strategies are as a combination of communication facets which include the frequency of communication, communication formalities, content of communication, communication channels [13]

In communication strategies need to consider various components of communication because those components support the communication process. Communication strategy is a management activity to communicate so that it can lead to an understanding in preparing a long-term plan. Interpersonal communication is considered to be very effective because the communication process is direct and dialogue. The interpersonal communication channel was used as one of the communication strategies at the stage of creating knowledge and disseminating information in the innovation adoption process. Change agents and leaders (opinion leaders) play an important role in the stage of creating audience knowledge of the program. Leaders are used to bridge differences and social distance between change agents and target targets. In the stage of positive behavior persuasion the target is influenced by the relative benefits of the innovation. While in the implementation phase the acceptance of innovation by the target is based on collective decisions/authority made by several individuals in a system that has certain power, status or technical expertise.

[5] Interview with U, patient at Merdeka Puskesmas, dated 30 November 2018
[6] Interview with E, patient at Atang Senjaya Puskesmas 30 November 2018

5 Conclusions

The adoption of SIMPUS innovations is generally well accepted by users, namely *Puskesmas* as well as patients who receive services from *Puskesmas*. There are 2 dominant adopters of SIMPUS, the early majority and the late majority. Early majority are employees who have non-computer educational backgrounds but eagerly to learn new innovations that can facilitate their work. Late majority in general are civil servants who are approaching retirement age and lack of the skills to operate computers but are still required to operate SIMPUS. The implementation of SIMPUS has benefits for *Puskesmas* and the community. However, the utilization is not optimal because of several obstacles. Barriers that occur because of the lack of skillful HR in operating SIMPUS, lack of facilities and infrastructure, and the budget that is not yet available. The communication strategies to implement SIMPUS are a top down instructed or directed from superiors to executors. In this case, starting from Mayor, Communication and Information, OPD, Health Office, to *Puskesmas*. As implementers, *Puskesmas* can provide input and advice to the Health Office because they face more practice in their workplace (bottom up).

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