

The Factors of Innovations Implementation and Information Technology Utilization in the Health Sector to Quality of Services at the DKI Jakarta Provincial Health Centre during the COVID-19 Pandemic for the Year 2020-2021

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Abstract: Health is a complex field with highly dynamic environmental conditions, where quality improvement needs to be done continuously. Thus, the application of renewal or innovation in health organizations is needed supported by technology and information in its application. Along the development of the situation and conditions of the pandemic, the Emergency Response Status for the COVID-19 Outbreak of the DKI Jakarta Province in 2020 requires innovation in improving the quality of public services and the performance achievements of each health care. This type of research is mix method, with the independent variables include leadership, innovation culture, resource training, communication channels, networks and partnerships, reward, complexity and relative advantage, perceived usefulness, and perceive ease of use, as well as the dependent variable consisting of quality aspect with a structure, process, and output approach. The research was conducted in Community Health Center Mei-June 2021. The research locations in 5 Regencies in DKI Jakarta Province. There was a relationship between innovation implementation factors and the use of information technology (leadership, innovation culture, reward, network and partnership) on the quality of services during the COVID-19 pandemic at the DKI Jakarta Provincial Health Center for the 2020-2021 Period.

1 INTRODUCTION

Health services have a significant impact on an individual's quality of life and well-being, both individually and in groups (Ostrom et al. 2015). Every day, the health sector must confront new hopes and challenges as calls for modernization and reorganization, but this has not been matched by the sector's ability to adapt quickly to change (Dias 2018). Health is a complicated sector with highly dynamic environmental conditions, necessitating continuous quality improvement. Thus, the application of renewal or innovation in health organizations is critical and must be supported by technology and information (IT) in order to realize public services with good governance that ensures transparency, accountability, and efficiency, and impactiveness in administering government. Meanwhile, innovation is defined in Permenpan-RB No. 3 of 2018 as "creative ideas or notion and/or adaptations/modifications that can benefit the

community both directly and indirectly, particularly in public services."

While most health care organizations claim to engage in Quality Improvement (QI) activities, just a handful consistently and sustainably improve the quality of health care (Strome 2013). Frequently, the service quality In general, innovation as an assessment of service innovation and quality management is less concerned, both in theory and practice (Mu, Bossink, and Vinig 2019). Additionally, the failure rate for implementing complex innovations is fairly high, ranging between 30% and 90%, depending on the scale of the change organization, the definition of failure, and the assessment criteria. Healthcare innovations frequently fail in part due to inimpactive implementation, which might result from significant uncertainty, risk, and the clinical discretion required (Jacobs et al. 2015).

1.1 Background

According to the 2020 Global Innovation Index (GII) report, Indonesia was ranked 85th out of 113 countries, a position that appeared to have remained stagnant from the previous year and was still lower than other ASEAN countries such as the Philippines, Thailand, Malaysia, and Singapore. At the national level, the Government has enacted Government Regulation No. 38 of 2017, which includes indicators of regional innovation indexes with assessment criteria based on renewal, benefits, public interest, local government affairs and authorities, replication, and application. The indicators are divided into aspects of local government units and innovation units and include seven variables, including. The instrument is composed of 35 indicators for assessing the regional innovation index.

The government has implemented a regional innovation policy to accelerate the achievement of community welfare through reforms and the implementation of Regional Government, as stated in Government Regulation No. 18 of 2017. This policy was also revealed in the DKI Jakarta Provincial Health Office's Strategic Plan for 2017-2022 through a decree jointly to become a quality organization in the implementation of health efforts as a regulator in the implementation of sustainable quality management and in accordance with applicable regulations, using the jargon "One Agency One Innovation" with a target of 95%. In 2020, the percentage of SKPD/UKPD in health affairs will have innovation in the health sector. Concerning various other efforts to enhance the quality of health services, including fostering and assisting in the accreditation, maintenance, and development of the ISO quality management system, community satisfaction surveys of internal and external customers, and various sustainable quality cultures.

The Provincial Government of DKI Jakarta frequently conducts activities related to innovation in the health sector for its institutions, which include 6 Health Sub-Departments, 44 District Health Centers, 32 RSUD/RSKD, and four Technical Implementing Units. These activities include: Quality Control Group, Contributing Suggestions, Quality Control Projects, and various other health service activities. The following table summarizes health innovation data from 2017-2019 by agency type:

Table 1: Innovation in the Health Sector of DKI Jakarta Province in 2017-2019

No.	Region	Agency	Number of Innovations		
			2017	2018	2019
1	Central Jakarta	Health Centre	15	13	13
		Hospital	2	1	3
		AGD	1	-	2
		PPKP	1	1	1
		Labkesda/ Training Centre	-	1	-
2	North Jakarta	Health Centre	7	7	7
		Hospital	1	1	2
3	West Jakarta	Health Centre	28	32	29
		Hospital	5	3	3
4	South Jakarta	Health Centre	14	14	15
		Hospital	3	4	4
5	East Jakarta	Health Centre	15	21	20
		Hospital	1	-	3
		Puslatkesda/ Training Centre	1	-	-
6	Thousand Islands	Health Centre	-	-	2
		Hospital	1	1	1
Total			95	99	105

Source: DKI Jakarta Provincial Health Office 2019

According to the data above, the Jakarta Health Office Strategic Plan target of increasing productivity and innovation in the health sector has been achieved, as well as an increase in innovation produced or developed from previous innovations each year, even though the health sector is still dominated by agencies originating from health centre as Health Facilities First Level (FKTP). There are several strategic health challenges in DKI Jakarta Province, one of which is Triple Burden Disease, in which Communicable Diseases (CD) remain high, but Non-Communicable Diseases (NCD) are increasing, besides Emerging Infectious Diseases (EID) / Re-Emerging and / or New Emerging. According to the Republic of the Indonesia Ministry of Health, PIE got special attention due to its serious impact on health and socio-economics, particularly in the current digital era and globalization.

The WHO recommends a population density of 9,600 km², whereas DKI Jakarta has reached 17,000 km². This circumstance undoubtedly has a significant impact on changes in public health conditions, making environmental conditions a difficulty (DKI Jakarta Health Office, 2019). Along with the evolution of the pandemic's situation and conditions, establishing the Emergency Response Status for the COVID-19 Outbreak in the DKI Jakarta Province in 2020 will require innovation to improve the quality of public services and increasing each SKPD/UKPD's achievements. This is also supported by the Governor

of DKI Jakarta Province’s Instruction No. 16 of 2020 on enhancing awareness of the risk of COVID-19 virus transmission and the DKI Jakarta Provincial Health Office’s Circular Letter No. 93 of 2020. The DKI Jakarta Provincial Government is attempting to improve service quality through innovations used by hospitals and health centers during the COVID-19 pandemic.

Activities aimed at improving the quality of health services can be implemented through the certification system or the ISO, through mentoring and supporting quality management reviews, and by developing innovations. Additionally, each UKPD/UPT is urged to develop innovations that expedite the handling of COVID-19. According to the results of the DKI Jakarta Provincial Health Office’s innovation recording and reporting system, namely the 2020 Ring-Innovation, there were 48 innovations originating from Health Centre and hospitals, most which were information technology-based and covered a variety of program categories, including SPM, PIS-PK, RENSTRA, Surveillance, Acceleration of COVID-19 Handling, etc. While DKI Jakarta Province has achieved various awards, one of which is being awarded the Most Innovative Province in 2020, advancements in the health sector are represented by only 2% of the Top 99 Public Service Innovations. Because some recommendations and analyses of previous studies’ limitations, as well as proposals to expand research with different sample sizes, enable researchers to compare research characteristics and locations, it is critical for researchers to conduct additional analysis on how innovation implementation can be managed successfully through factor relationship analysis implementation of innovation and utilization of information technology in the health sector on the quality of services during the COVID-19 pandemic at the DKI Jakarta Provincial Health Center for the 2020-2021 Period.

2 LITERATURE REVIEW

2.1 Innovation

Joseph Schumpeter in 1934, one of the researchers in the theory of innovation defining the term innovation in five ways different is the new product, new methods of production, new sources of supply, and the way of how to set business and exploitation the new market (Lundvall 2016). At the level of organization, innovation is defined as the adoption of a product, service, process, technology, new policy, structures or

system administration (Damanpour and Schneider 2006). While it is, The Manual of Oslo in 2018 to distinguish between innovation as result (innovation) and activities that make innovation appears (activity of innovation), where innovation is defined as something that is new or improvement of products or processes (or combination) which differ in significant of unit product or process previously and which has been available to used by the unit.

Innovation system that is innovation in an integrated system that includes the renewal of ways in interacting with the other or can be called also by changes or updates in order to manage administration (changes in governance). There are several things that are needed to be able to generate good acceptance in the community so that later the innovations that have been implemented can be successful. The theory namely Diffusion Innovation that was popularized by Everett M. Rogers in the year 1964. Some authors restrict the term " diffusion " be spontaneous, namely the spread of ideas just are not planned and use the concept of " dissemination " for diffusion are directed and managed. There are four main elements in diffusion: innovation, communication channel, time, and social system.

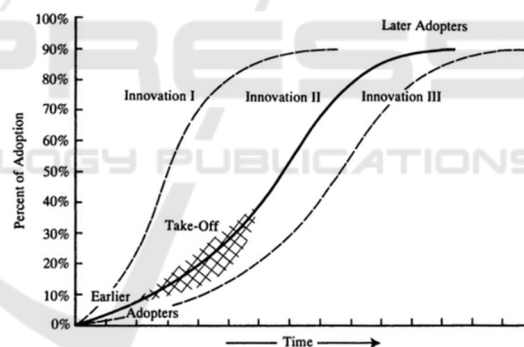


Figure 1: Innovation Diffusion Process

There are several factors that contribute to the implementation of innovation, especially in the health sector. The result of identification obtained the findings of the latest of the results of research Leue & Marxicoff (2017) classifying the concept that became the three levels of analysis, namely: the level of organization, the level of the individual, and the level of innovation. Where the organizational level consists of organizational structure, organizational culture, and communication. Then at the level of individuals associated with the characteristics of the individuals who are involved in innovation, covering the championship, leadership and management. While at the level of innovation describes the characteristics and aspects that are relevant to the process of

innovation that it self (Leue, 2017). The description of the level of factor analysis that facilitates innovation in health services is as follows:



Figure 2: Framework of Factor Facilitating Innovation of Health Services

2.2 Technology Utilization

In the collection of data and Information Health implemented through activities with the use of technology and sources of other appropriate development of science knowledge and technology that can be accounted for. The theory that relate is Technology Acceptance Model (TAM) that found by Davis in the year 1986 to explain the potential intention of behavior for using innovative technology. TAM was developed from the Theory of Reasoned Action (TRA) of Martin Fishbein and Icek Ajzen (1975), although it is less general because it applies specifically to explaining computer usage behaviour. Davis et al stated that the aim of TAM is to provide an explanation of the determinants of technology acceptance in various contexts and be able to explain behaviour users and populations of computing technology. The model that is based on the premise that the use of ICT someone is determined by two variables principal, namely usability are perceived (Perceived usefulness / PU) which is the probability of subjective prospective users that use ICT particular will improve the achievement of work a person within the context of the organization and ease of use are perceived (Perceived Ease of Use (PEOU) which is defined as the extent to which potential users expect ease of use of technology that can be applied in their activities.

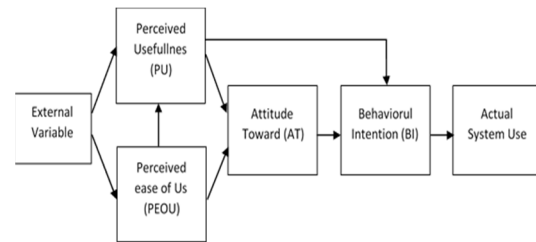


Figure 3: Technology Acceptance Model Framework

2.3 Quality

In point of view the patients, health care are considered and expressed in question such as, "Which is the hospital or provider will give the best health care?" Because the patient wants to receive the affordable and high quality services. Services are qualified into aspects of the most important for the institution of health. Many institutions or organizations of health care risking the reputation of the quality of service for the life of the patient who dependent to them. Hospital, clinics, and other providers who are considered high qualified to attract patients, managed to attract the staff's best (including professional clinical and research), as well as get more profit registered for the investment process improvement for having a reputation that beyond the ordinary. So, most of people have determined themselves to desired the attributes and criteria in identifying the quality of their favorite products and brands (Strome 2013).

According to the Institute of Medicine, the quality is how long the service of health for individuals and populations can increase the degree of health the people who correspond with the science knowledge by the health professional. The definition is expected to have more benefits for the community, where the measurement of quality must reflect the satisfaction of patients, health status, measure the quality of life and / interaction and the process of decision making between patients or providers of health services. Product quality can be characterized by several components which include efficacy, effectiveness, optimality, acceptability, legitimacy and equity. This components can be used by itself or through a combination of the definitions of quality which when measured in a way will indicate the amount of the size (Donabedian 2003). The explanation and description of the quality components are as follows: Assessment of service indicators can use a performance measure approach in the list of steps to be taken. In other words, we need to have a way to determine whether the quality of care has been " good ", " medium ", or " bad ". More than last of 40 years,

has suggested three approaches to improving the quality of service by Avedis Donabedian who are called " structure ", "process" and " results " .

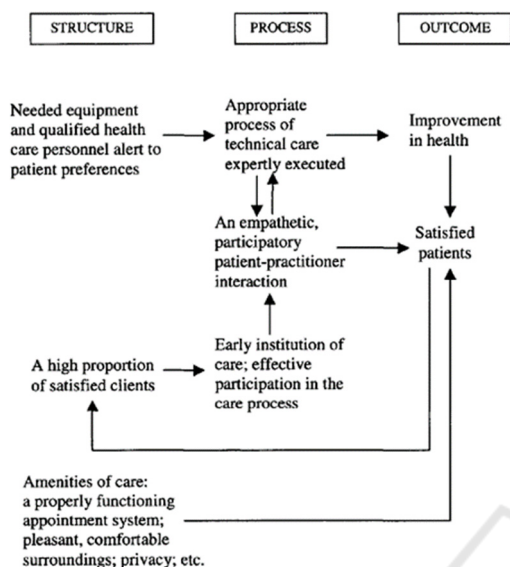


Figure 4: Characteristic of Quality Measurement Approach

As some of the literature indicates several factors influence on the results of the performance of services services health , including that : Factors that Affect effectiveness of Innovation Results by the research of Jacobs (2015) showed that not only the perception of implementation which have the effect of significantly towards the effectiveness of innovation, but the perception of physicians is also related to the implementation of policies the organization, such as the status of job, age, specialist, structural organization of an impact on the effectiveness of the implementation of the innovation services of Health. Leaders look at the ways to improve the effectiveness of the implementation of an innovation with a focus on creating environments that support the physician to generate the perception that positive in its application, such as expectations specifically, support, and appreciation. Factors that affect performance innovative by the results of the study Lundvall (2016) states that the high performance and design organizations to identify the type of organization that differ in placing a relationship between the way companies organize work and capacity innovative. In identifying the type of organization of work specifically, we used the data survey of the conditions of work in building 15 variables that include responsibilities responsibilities and duties of work and then use the analysis cluster to identify four types of primary organization of work. 15 variables consisted of four variables first to

measure the use of the core practices of work -related literature of performance are high, namely: team work, job rotation, responsibilities of employees, control and norms of quality. Two in whom variable captures whether the employees are involved in learning and solving problems, characteristics adhocracy or type of bureaucracy as well as ascertain whether the assignment of work was complex or not, and relevant to the operation of adhocracy.

3 CONCEPTUAL FRAMEWORK

In this study, it will be discussed in depth about the implementation of health service innovations seen through the characteristics and several factors that contribute or facilitate including aspects of technology acceptance which are considered important by researchers to be analyzed further in relation to service quality, especially at the Puskesmas level during the COVID-19 pandemic for the year 2020-2021. The conceptual framework is as follows:

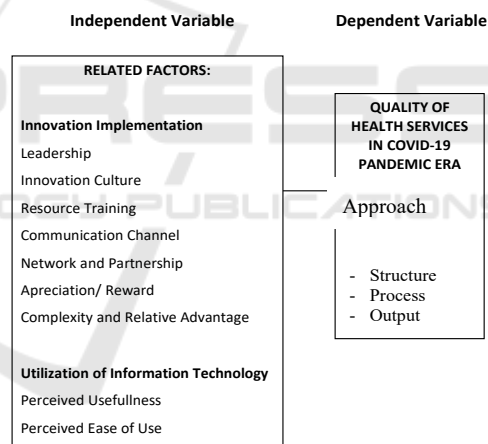


Figure 5: Conceptual Framework of The Research

4 METHOD

The purpose of this form of research is to employ both quantitative and qualitative methods concurrently in order to acquire more comprehensive data. The design of this research is a sequential explanatory type combination, which is a design that begins with the collection and analysis of quantitative data and continues with the collection and analysis of qualitative data, in order to interpret how qualitative data explains quantitative results (Creswell 2013). The research design phase begins with data collection

from respondents who have been determined to provide quantitative data, followed by qualitative data collection from selected informants. The questionnaire have 48 questions with likert scale 1-4 start from strongly disagree until strongly agree for the quantitative and for the qualitative data use semi-structure interview guidelines.

On May-June 2021, the research was conducted in Health Centre under the auspices of the DKI Jakarta Provincial Health Office. The research was conducted in Sub-district Health Centres throughout 5 Regencies/Cities in DKI Jakarta Province, as well as in the head office of DKI Jakarta Provincial Health Office. This study used a technique known as Cluster Sampling, which is a sort of probability sampling in which a sample is selected based on a predetermined population area. In this study, a One Stage Cluster was used to determine sample sizes, with the first stage identifying samples as a result, samples will be collected from staff representatives or employees at Health Centre. Each Health Centre may include up to three innovation teams (see attached calculation), as well as facilitators, coaches, chairpersons, and or implementing members. In-depth interviews with informants were conducted using a purposive sampling technique, in which informants were chosen based on special considerations, namely those who were involved or had in-depth knowledge of the research problems and whose opinions were believed to adequately describe the problem of health innovation on service quality at the DKI Jakarta Provincial Health Center, namely the Head of (Quality of the Jakarta Health Sub-dept., Head of Public Health Center, Community) by virtual meeting app. The sample size calculation for implementing health innovations at the DKI Jakarta Health Center is 78 people.

The analysis was conducted following the collection of all research data in this study. Among the activities associated with data analysis are classifying data according to variables and respondent types, tabulating data according to variables from all respondents, presenting data from each variable studied, performing calculations to resolve the problem formulation, and performing calculations to test hypotheses that have been proposed. The data analysis results will be used as a basis for interpreting the research findings in order to ascertain the meaning of the collected data. Univariate analysis is used to gain an overview of the features of each variable, with the goal of simplifying or summarizing the collected data in order to make it useful. After determining the properties of each variable, further analysis can be conducted. Chi

Square is used to assess the relationship between variables by comparing the percentage difference between two or more sample groups. Then, using logistic regression analysis, proceed to multivariable analysis, which is a complex analysis that is an extension or development of a simple analysis. It tries to visualize the relationship between many independent factors and the dependent variable concurrently. And then a qualitative analysis was conducted to compare the field findings to the literature used as a reference for author.

5 RESULTS

5.1 Validity and Reliability Test

Thirty respondents were used to conduct a validity test. Invalid questions will be excluded from the study's data processing. Correlation analysis was used to determine the questionnaire instrument's validity by comparing the scores for each variable to the total score. The Pearson Product-Moment correlation is used, and the test is valid if the value of $r_{count} > r_{table}$. The r_{table} value is 0.3610 based on the respondent's test sample. The validity test revealed that all questions were valid, specifically 48 with a Cronbach Alfa value ≥ 0.6 , which was 0.975, indicating that the questions are also reliable, as demonstrated in the appendix. Additionally, qualitative data are validated by triangulating data and sources.

5.2 Respondents Characteristics

This analysis summarizes the characteristics of research respondents, specifically employees who implement innovation at the DKI Jakarta Provincial Health Center. Based on the results of the study, it was found that of the 78 respondents, most of them were 20-30 years old and 31-40 years old with a percentage of 44.9% each and the majority worked as doctors (61.5%) with the highest employment status category being BLUD employees or honorary health center (57.7%). The positions of the respondents at the health center were mostly as implementers (46.2%), the largest length of work was starting from 3-5 years (35.9%). Furthermore, the involvement of the most respondents in the team was as a member (39.7%) and the region where most respondents came from was North Jakarta (28.2%).

5.3 Innovation Characteristics

According to the study’s findings, most innovation occurred as health products/services (53.8%), with most programs chosen to develop, namely from basic service standards (53.8%). Most innovation teams inside an agency comprise of four to seven employees (82.1%), with most funds receiving from BLUD Health Centre funds (80.8%). The most gathering time for the innovation team is 1x/week (32.1%) with the most widely used approach to innovation, namely PDCA (Plan, Do, Check, Action) (96.2%). Additionally, the most common level of innovation is associated with fundamental changes in public services in new ways (48.7%), with most ideas emerging from surveys or phenomena in the field (56.4%). Most innovations generated by respondents have been tested (76.9%), and the majority of innovations have taken the form of pilot projects in a single location or region.

5.4 Quality of Health Services

This study will describe each aspect from quality of health services variable by the respondent’s perspective. This variable have 15 questions with the cut off categories is $<(\text{mean}-1\text{SD}) = 3,17$ (Widhiarso, 2010). Majority respondent stated strongly agree with the sustainability of the quality of health services question is about 65%. Then, the data distribution of the variable (structure, process, and output) by the categories are:

Table 2: Distribution frequencies of Quality of Health Services Variables

Quality of Health Services	Total	Presentati on (%)
Good	56	71.8
Not Good	22	28.2
Total	78	100

The result of the quality of health services was quite good is about 71,8%.

5.5 Bivariate Analysis

This analysis was conducted to see the relationship between the factors that influence implementation of innovation and utilization of health technology on service quality during the COVID-19 pandemic by using the Chi Square test. The result is as follows:

Table 3: Bivariate Analysis of Factors Affecting Innovation Implementation and Utilization of Health Technology in Quality of Services During the COVID-19 Pandemic

Variable	Quality of service				Total		p Value
	Not Good		Good		N	%	
	N	%	N	%			
Leadership							
Not Good	11	64.7	6	35.3	17	100	0.001
Good	11	18	50	82	61	100	
Innovation Culture							
Not Good	16	69.6	7	30.4	23	100	0.001
Good	6	10.9	49	89.1	55	100	
Resource Training							
Not Good	6	66.7	3	33.3	9	100	0.013
Good	16	23.2	53	76.8	69	100	
Communication Channel							
Not Good	1	100	0	0	1	100	0.282
Good	21	27.3	56	72.7	77	100	
Appreciation/ Reward							
Not Good	8	66.7	4	33.3	12	100	0.003
Good	14	21.2	52	78.8	66	100	
Complexity and Relative Advantage							
Not Good	13	68.4	6	31.6	19	100	0.001
Good	9	15.3	50	84.7	59	100	
Perceived Usefulness							
Not Good	13	72.2	5	27.8	18	100	0.001
Good	9	15	51	85	60	100	
Perceived ease of Use							
Not Good	2	66.7	1	33.3	3	100	0.190
Good	20	26.7	55	73.3	75	100	

The following table shows the results, which have a p-value <0.05 , indicating that H_a is accepted and H_o is rejected, showing that there is a significant relationship between the independent variables (leadership, innovation culture, resource training, network-partnerships, complexity and relative advantage, perceived of usefulness) on the dependent variable, namely the quality of health services.

5.6 Multivariate Analysis

This study is used to determine the relationship between different variables concurrently using logistic regression in order to select the most relevant relationship. The following table is the findings.

Table 4: The Results of Bivariate Selection in Independent Variable to Dependent Variable

No	Variabel	P Value	OR
1	Leadership	0.001	Continue to multivariate
2	Innovation Culture	0.001	Continue to multivariate
3	Resource Training	0.010	Continue to multivariate
4	Communication Channel	0.109	Continue to multivariate
5	Network and Partnership	0.001	Continue to multivariate
6	Appreciation/ Reward	0.002	Continue to multivariate
7	Complexity and Relative Advantage	0.001	Continue to multivariate
8	Perceived Usefulness	0.001	Continue to multivariate
9	Perceived ease of Use	0.158	Continue to multivariate

Then, all variables with p value >0,25 can entered to the logistic regression model. The following table is the findings.

Table 5: Logistic Regression 1st Model

No	Variabel	B	P Value	OR
1	Leadership	0.886	0.441	2.425
2	Innovation Culture	2.117	0.060	8.304
3	Resource Training	-0.827	0.579	0.438
4	Communication Channel	17.178	1.000	288733 52.819
5	Network and Partnership	3.784	0.004	43.978
6	Appreciation/ Reward	-0.564	0.690	0.569
7	Complexity and Relative Advantage	-0.110	0.932	0.896
8	Perceived Usefulness	0.477	0.734	1.612
9	Perceived ease of Use	1.525	0.516	4.593

Based on the result of multivariate first model analysis, it can be seen that there are 8 variables whose p value < 0,05, namely leadership, innovation culture, resource training, communication channels, appreciation/ reward, complexity and relative advantages, perceived usefulness and perceived ease of use. As for whose p value is the largest, namely communication channel, then the variable is removed from the model. After the 9 times modelling by using the OR Comparison, the variable elimination has been completed. Finally, the last result model is as follows:

Table 6: Final Logistic Regression Modeling

No	Variabel	B	P Value	OR
1	Leadership	0.899	0.433	2.457
2	Innovation Culture	2.092	0.050	8.100
3	Resource Training	-0.765	0.587	0.466
4	Network and Partnership	3.789	0.004	44.203
5	Reward	-0.602	0.655	0.548
6	Perceived Usefulness	0.410	0.724	1.507
7	Perceived Ease of Use	1.542	0.469	4.676

Then, the elimination process has finish but there was suspicious about the interaction between the variables each others. So, we do the interaction test. The following are the findings:

Table 7: Logistic Regression Modeling with Interaction Test

No	Variabel	B	P Value	OR
1	Leadership	-3.055	0.194	0.047
2	Innovation Culture	2.259	0.045	9.573
3	Resource Training	-.443	0.736	0.642
4	Network and Partnership	4.022	0.004	55.831
5	Reward	-3.383	0.077	0.034
6	Perceived Usefulness	.449	0.711	1.567
7	Perceived Ease of Use	1.466	0.566	4.330
8	Leadership by Reward	5.088	0.048	162.021

Multivariate study reveals that the variables that are substantially associated with health service quality are leadership, innovation culture, network and partnership, and appreciation/reward. The most significant factor affecting the quality of health service is the leadership. While the controlling variables are training resources, perceived usefulness, and perceived ease of use. In this analysis, leadership interacted with reward, it means the leadership influence in implementation of innovation to quality of health services depend on the reward that given, the OR value for the variables must be count by the followings:

In the reward variable reward with “not good” categories (code=0). The formulation for counting the OR value is:

$$\begin{aligned}
 &= e^{-3,055+5,088(0)} \\
 &= e^{-3,055} \\
 &= 0,05
 \end{aligned}$$

Then, in the reward variable reward with “good” categories (code=1). The formulation for counting the OR value is:

$$\begin{aligned}
 &= e^{-3,055+5,088(1)} \\
 &= e^{2,033} \\
 &= 7,64
 \end{aligned}$$

The study revealed that someone who received a good appreciation or reward, and good leadership in their institution had the odds/ opportunity of delivering a good quality of health services 7,64 times higher than those who did not receive a good appreciation/ reward and leadership after controlling for the resource training, perceived usefulness, and perceived ease of use variable. While for someone who did not receive a good appreciation/ reward and but get a good leadership had the odds/ opportunity of delivering a good quality of health services 0,05 times higher than those who did not receive a good appreciation/ reward and leadership.

Similarly, it can be interpreted in terms of additional variables that had p value <0,05. The most dominant variable is related with the quality of health care is good appreciation/ reward and leadership.

6 DISCUSSION

6.1 Leadership

Statistical tests revealed a relationship between leadership and health service quality, indicating that the better the leadership, the higher the quality of

health services. The findings of this study corroborate previous research conducted by Asyara et al. (2019) on the impact of knowledge management and service leadership on the service quality of employees at the Air Putih Health Center in Samarinda, which demonstrated that the service leadership variable had a positive and significant impact on service quality. Additionally, Melati (2014) reported a significant relationship between leadership and organizational performance outcomes at Fatmawati Hospital.

The variables of impactive leadership include vision, mission, values, and support for innovation. This is consistent with Muluk’s (2008) statement about the importance of developing legally binding innovation policies through political strengthening and efforts to fulfill the mandate, as well as the vision and mission of the innovation system. However, there are still several areas where improvements can be made, most notably in the management, supervision, and facilitation of innovation efforts. According to Kotter (2001), leadership is defined by motivating, directing, inspiring, and aligning people, such that leader behavior plays a significant role in the implementation of innovation due to its administrative power and visibility inside the organization. Additionally, Leue (2017) revealed that developing people’s ambition and drive, as well as managing teams, are all part of the leadership responsibility. Thus, it can be concluded that if the leader is inimpactive at managing, supervising, and facilitating innovation efforts, this will eventually result in a decrease in the quality of service or innovation itself.

Leadership in innovation, especially in the government sector, is very important in supporting the innovation process. In Permenkes RI No. 43 of 2019 it was stated that leaders at Health Centre generally have a term of office of at least 2 (two) years to lead, mobilize, as well as change their institutions. resources in implementing innovation. This is in line with Kaplan’s 2015 research which states that at the organizational level, management leadership directly influences the quality improvement culture and guides resources and investments for the improvement of a particular project. Thus, all the efforts made by the leadership in implementing innovation will certainly impact the results of the quality of the service.

6.2 Innovation Culture

The study revealed a relationship between innovation culture and service quality. This supported with Kaplan’s (2015), which found that a culture that

promotes quality improvement through values, beliefs, and norms at both the organizational and microsystem levels have a significant impact at all levels of the system. However, the findings of this study are not in line with Anggrawati and Saputra's (2018), which concluded that service culture does not impact on service innovation and has no significant impact on organizational performance. This could be because of the innovation culture in DKI Jakarta institution, every year there was a competition or forum for improve the quality of health services, such as quality convention activities or exemplary health service. Whereas Muluk (2008) asserts that the capacity for innovation can emerge naturally if it is accompanied by the development of the organization's culture, which can be accomplished through education, training, and a variety of other development activities.

6.3 Resource Training

The results of the bivariate analysis stated that there is relationship between resource training and service quality. But, in multivariate analysis just as a controlling variable. This is not under Manurung's (2017) research seen from Malcomm Baldrige's criteria which states that there is a significant relationship between the dimensions of focus on human resources and organizational performance results that can be used as a key process to achieve performance excellence. This can be caused by the lack of optimal resource training because in the pandemic situation and conditions there are many changes in the learning process and other habitual adaptations that can potentially hamper training activities, moreover from the interview results it is known that a lot of budget is diverted for handling the pandemic, so that activities the calling of resource persons or training from outside has not been carried out properly. In addition, the frequency distribution shows quite excellent results in resource training, especially for questions related to learning activities and increasing insight, as well as opportunities to increase self-capacity. However, poor results were obtained on the questions of career planning and development, as well as the training and coaching of special innovation teams. This shows that the resource training activities have been going well, although they have no significant impact. This can be because there are still limited resources based on job analysis and workloads that are not under the number of activities or the Health Centre program.

6.4 Communication Channel

Although the bivariate analysis revealed a relationship between the communication channel and service quality, the multivariate analysis revealed that the communication channel was not the related factors to quality of health services. It is not in line with Sihabudin's (2018), which found a significant association between the type of communication channel used and the success of innovation acceptance. The study's findings indicated that the communication channel for Health Centre innovation was favorable, particularly in terms of the availability of communication services and access to information and communication media, as well as the affordability of online media as a communication channel. However, communication, information, integration, and socializing related to these developments are still lacking in the community. The Health Centre provides innovation communication channels such as print media, e-flyers, online and offline meetings, and WhatsApp, among others. This verifies Cao et al (2011) assertion that impactful implementation of any new technology can demonstrate its use of innovation, implying that more impactful and individualized communication tactics can be developed and deployed to raise patient awareness of a new service such as e-health. Thus, when arranging communication channels, it is vital to consider a variety of factors that may influence innovation adoption, including their socioeconomic status.

6.5 Network and Partnership

Analysis revealed that networks and partnerships had relationship with service quality. This was in line with Merkel's (2018), according to which networks, individuals, and groups are the primary drivers of social innovation in the health industry. According to the study's findings, the Health Centre innovation network and partnership were successful. Integration, collaboration, and cooperation entail a variety of internal and external parties, as well as the role of local communities in implementing innovation in their regions. This is demonstrated by the community's need to support various public health programs in their area, as demonstrated by community leaders, religious leaders, and local cadres. Additionally, both public and private organizations contribute to the Health Centre's innovation implementation. Thus, in the future, health workers must maintain and strengthen networks and broader partnerships, as well as the way by which these networks and partnerships are

developed, in order to maximize support for optimally improving the quality of health services.

6.6 Appreciation/ Reward

Statistical tests showed a correlation between awards and the quality of health services, indicating that the more prestigious the appreciation, the better the quality of health services. The findings of this study confirm Jacobs et al (2015) on the impactiveness of innovation implementation in the health sector, which concluded that perceptions of the implementation climate have a direct positive impact on implementation. The most important predictor is perceptions of organizational recognition and rewards via gifts, incentives, or other forms of appreciation. This is also consistent with the findings of Kristianto et al. (2018), who found that awards influence managerial performance at the Tawangrejo Health Center.

According to the frequency distribution, most respondents believed that the awards for innovation at the Health Centre were still insufficient, particularly in terms of prizes and incentives. However, the appreciation or award granted is sufficient. This is due to a variety of variables, including the situation and conditions during the pandemic, funding transfers, and policies that prohibit the provision of appreciation or special incentives for the adoption of innovations, except for specific national-level events. According to Notoadmodjo (2009), everyone, regardless of their status or position, requires appreciation. Therefore, leaders or agencies must recognize health workers, particularly innovation activists, in any manner, whether it is through simple appreciation or through attention and other forms of support in carrying out health efforts.

6.7 Complexity and Relative Advantage

The analysis showed there is no relationship between complexity and relative advantage to service quality. This contradicts Adnan's (2019) research, which found that innovation contributes positively to community satisfaction in terms of innovation attributes, including complexity and relative advantage. It means that in the future an organisation must have a new way of strategy in order to build a good innovation with good complexity and more benefit for people.

6.8 Perceived Usefulness

The results of statistical tests found that there was no relationship between perceived usefulness and quality of health services, but just as a controlling variable. The results of this study is not in line with Dinata et al's (2020) on evaluating online registration with the Technology Acceptance Model at Wongsonegoro Hospital Semarang which states that aspects of perceived usefulness or usefulness are considered to have considerable benefits in increasing productivity, making work more impactful and faster, as well as aspects of user behaviour interest tend to be satisfied using the online registration system.

Technology Acceptance Model (TAM) is a general guide that has been approved by experts. The theory states that perceived usefulness is one of the important factors that influence a person to accept a technology. As for what is meant by purpose perception, namely the measure by which an individual believes that using a particular technology can cause an increase in their performance (Davis, 1989). Therefore, when implementing innovation, particularly when implementing a new service, it is necessary to consider the aspect of user trust so that they are assured that the technology or innovation they use is confidential, including the views or opinions of individuals or groups who also use the innovation first in the environment, which can affect the perception.

6.9 Perceived Ease of Use

The results stated that there was no significant relationship between the ease of use of innovation and service quality. This is in line with Tasmil (2014) which states that perceived ease of use has a positive relationship with the behaviour of using e-Health Centre applications, but the impact is not significant. The findings contradict the author's hypothesis, which is that there is a significant relationship. It is important for organization in making an innovation based on technology in an easy way a feature for people use.

6.10 Quality of Health Services

The Health Centre' role as the area's point person during the COVID-19 pandemic, including epidemiological investigations, case management and monitoring, specimen collection, cross-sectoral coordination, in-building treatment, healthy visits, and death surveillance, as well as referrals for SMEs and UKP (DKI Jakarta Health Office, 2020). The

measurement of the quality of health services at the DKI Jakarta Provincial Health Center during the COVID-19 pandemic in terms of structure, process, and output reveals favorable results. This is consistent with Haraharap and Utami's (2021) research, which found that the public's assessment of the quality of health care during the COVID-19 pandemic is largely favorable, at 65%, and moderate, at 18%. This is also supported by the Puspita and Mustakim (2020) research on patient perceptions of health service implementation during the pandemic, which found that 52,3% believed technical control was appropriate, 56,1% believed administrative control was appropriate, and 52,3% believed personal protective equipment was appropriate. Additionally, there is additional supporting data from the 2020 Indonesian Political Indicators survey, which shows that up to 55% of the community is quite content with the COVID-19 Cluster's performance, 8,7% is very satisfied, and 24% is less satisfied, dissatisfied 1.9%, and 10.4% do not know/do not respond (Wijaya, 2020). Thus, it can be concluded that there are various examples of the quality of health services provided during the pandemic, particularly in urban areas, although there are still many issues to address.

According to a WHO survey of 155 countries, this pandemic disrupted efforts to prevent and screen for non-communicable diseases, including hypertension in 53% of countries, cardiovascular emergencies in 31% of countries, and diabetes in 49% of countries. This disruption has the potential to exacerbate public health problems associated with specific medical conditions. Additionally, low-income individuals and those who live in areas with fewer health care facilities may find it increasingly difficult to get important health services. Of course, this has a direct impact on the community's quality of life (Nurhaliza, 2020). The scoring results indicate that the variable with the highest value is a service quality in terms of process, while those with the lowest value are structure-related, particularly questions about facilities and infrastructure, human resources, guidelines, and information systems, and those with the highest value in terms of output are performance indicator questions, goals/targets, and a customer satisfaction.

The interview findings indicate that the output of high-quality health services influences public health, although not significantly. Many services innovation-related performance indicators have been met. However, the targets or objectives established for specific health programs have not provided optimal results. This can be attributed to a variety of variables, including population density in DKI Jakarta and

significant population migration (homecoming, leaving town, urbanization), all of which contribute to the risk of transmission. Provision and use of PPE that are not yet impactful and efficient, limited Health Centre buildings that necessitate special strategies for implementing physical distancing in health services or innovations, and a variety of other challenges that require additional coordination and consolidation with relevant stakeholders.

7 CONCLUSION

- a. There is a relationship between the factors of innovation and information technology used in the health sector (leadership, innovation culture, network and partnership, and appreciation/reward) to the quality of services provided at the DKI Jakarta Provincial Health Center during the COVID-19 pandemic in 2020-2021.
- b. The implementation of innovation and utilization of information technology in the health sector on the quality of services during the COVID-19 pandemic at the DKI Jakarta Provincial Health Center for the 2020-2021 period has been good in all variable.
- c. The quality of health services during the COVID-19 pandemic at the DKI Jakarta Provincial Health Center for the 2020-2021 period is quite good at 71,8%, especially in the process aspect. However, it is still lacking in terms of structure and output.

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