

PUBLIC SECTOR INNOVATION ON COVID-19 IN SOUTH SUMATRA: CALLING FOR A MORE SUSTAINABLE INNOVATION

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ABSTRACT

On the one hand the COVID-19 is considered as momentum to urge the public organizations to be more innovative and adaptive in adapting to various types of new conditions and adjustments. Many studies have explored public sector innovation, especially in normal circumstances. While studies on the public sector innovation in a critical situation have not caught much attention from academics. This study aimed to fill the gap by analyzing the public sector innovation in South Sumatra as one of the provinces with the highest number of COVID-19 cases in Indonesia. There was a total of 16 innovations in this study. Content analysis was conducted to determine the types, categories, innovators, and challenges faced. The researchers found that the organizations that innovate (innovators) consisted of city governments, regency governments, provincial governments, central government representatives, and the community. Meanwhile, for the innovation category, the researchers found more innovations with types of public services and health information. Lastly, the challenges in implementing the innovation which includes public awareness, human resources, financial, facilities and infrastructure, and time. Academically, this study contributes to the understanding of public sector innovation in a critical situation, that innovation in such condition is an innovation that was made for pragmatic purposes and it won't last. It is only adjusted to the situations that force people to implement physical distancing to each other.

A. INTRODUCTION

On the one hand the COVID-19 pandemic has implications for the economy, society, and the environment. It leads humans to a series of risks and conditions full of uncertainty either from economic, social, and environmental aspects (McKee, Gill and Wollaston, 2020; Shereen *et al.*, 2020). On the other hand, the COVID-19 pandemic, as a form of crisis, offers opportunities for various innovations driven by the crisis as a form of response and readiness of public organizations (Gao and Yu, 2020). Further, this is a response to many different kinds of disruption to public services in the sector of education, health, economy, and so on (James *et al.*, 2020). The response of the public sector in such circumstances is a form of the adaptive and innovative capacity of the public sector (Chen *et al.*, 2020). COVID-19 has led public organizations into a state full of uncertainty in terms of organizational capabilities, resources to deal with crises, and supply chains. This is worsened by the COVID-19 pandemic that occurred in unpredictable waves in time and space (Gao and Yu, 2020).

Specifically, during the COVID-19 pandemic, people's demands and behavior have fundamentally changed (Dryhurst *et al.*, 2020). For example, people isolate themselves at home and refuse physical contact to prevent exposure to this virus (Desai and Patel, 2020; Weible *et al.*, 2020). This makes the

government have to innovate, change the old ways of providing public services (Gao and Yu, 2020). As a result, public services must be provided online. Some of the governments use various types of e-government applications, some are developing new applications or some are still opening offline services with various strict health protocols (OECD, 2020).

Public sector innovation is defined as the commitment of public organizations to involve new or significantly improved methods of providing public services that enable public organizations to efficiently use their resources to meet public demand (De Vries, Bekkers and Tummerts, 2016; Kattel *et al.*, 2018). In the context of COVID-19, public sector innovation is various forms of providing public goods and services using new methods to obtain the same results as services in normal circumstances or even added value.

The government will always face various critical situations either health, economy, and social. However, evidence that the government is a learning organization that is adaptive to critical situations is still minimal (Mergel, 2016). Basically, people face crisis many times without any proper preparation (Carrel, 2000). Furthermore, the dual-track governance system to respond to how the government works in normal situations and critical situations is still does not concern the government.

For the government, COVID-19 is either danger or an opportunity. Overcoming a crisis into an opportunity is an option for public organizations. Public organizations that continue to perform well are those that can innovate to adapt quickly to chaotic, uncertain, and ambiguous environments (Codreanu, 2016). On the contrary, crises, one of which is COVID-19 offer opportunities for the government to be creative through crisis-driven innovations. Innovation in crisis situations is rapid action using proactive strategies and collecting resources to combat crisis situations and reduce impacts in the context of public management (Gao and Yu, 2020).

The literature on crises has emphasized that public organizations need to find survival mechanisms and innovation capabilities as key mechanisms for organizational growth and renewal (Datta, 2020). In a disaster situation, public organizations need to realize the need for innovation to withstand the various impacts caused by the disaster (Fan, 2015). In the context of a sudden disaster such as COVID-19, innovation in the ICT field may not work immediately because it takes long-term research and development. While what people currently need is an innovation that can be implemented quickly to adapt to new and changing public demands (De Vries, Bekkers and Tummerts, 2016). Therefore, public sector innovation is an effective strategy to maintain the sustainability of public organizations in crisis situations. Thus, this study will identify and discuss the public service innovation strategy chosen by the government to provide public services more effectively.

Under normal circumstances, innovation in the public sector has recently received increasing attention from academics and practitioners (Jason Potts; Tim Kastle, 2010; De Vries, Bekkers and Tummerts, 2016; Budy, 2019). Practically, public sector innovation has become a political and administrative agenda in developed countries. As a result, it is starting to grow, adopted, and its benefits are being anticipated in developing countries (Budy, 2019; Kusumasari *et al.*, 2019). Public organizations receive various benefits by implementing innovation including improving the quality of public services, improving service performance, and also achieving effectiveness and efficiency in the use of technology and resources (Bekkers and Tummerts, 2018). The importance and virtue of public sector innovation have urged governments around the world to adopt it to reduce the various negative impacts caused by COVID-19.

However, the efforts that have been made to comprehensively investigate public service innovations in the era of COVID-19 are still limited (Gao and Yu, 2020). Therefore, only a few explanations are known about public service innovation in Indonesia in the era of COVID-19, especially to find out what it looks like, and its implications for society. This is necessary because innovation studies in the era of COVID-19 still focus on a western perspective in the scope of health studies and it emphasizes more on case studies (Woolliscroft, 2020). This study has not been able to capture the overall view of public service innovation in Indonesia, especially in crisis situations such as COVID-19.

The COVID-19 crisis as a global disaster has had a negative and significant impact on how public services are to be delivered. There have been several studies that have investigated how the government can stimulate economic activity both locally and nationally (Chen *et al.*, 2020; Gao and Yu, 2020; Weible *et al.*, 2020), but there have not been many studies that discuss what the government should do to survive this disaster. This sudden crisis certainly requires the government to formulate and implement an appropriate strategy for crisis management. One of them is by creating various types of innovations.

Previous studies have recognized the impact of innovation in the public sector on helping governments survive from the risks (De Vries, Bekkers and Tummars, 2016). However, previous research has focused more on normal circumstances, or situations in which the government is busy with regular rigorous activities (De Vries, Bekkers and Tummars, 2016; Kusumasari *et al.*, 2019; Pratama, 2020). Meanwhile, studies on innovation in crisis situations such as how innovations are created in the fastest possible time, how innovations are implemented and developed, and how these innovations work to overcome the various negative effects of the crisis still does not receive much attention from academics.

In response to these research gaps, especially in the contexts in which public sector innovation occurs, there is a strong motivation to study public service innovation in non-western public administration settings. Besides, there is also a need to showcase innovations in other sectors such as the economy and social welfare, and governance. The objective of this study was to conduct a comprehensive analysis of the characteristics of public sector innovation in Indonesia, especially South Sumatra in the era of COVID-19. This study intends to capture the landscape of public sector innovation in South Sumatra during COVID-19. Understanding the landscape of public service innovation in the COVID-19 era can improve our understanding of how innovation is implemented and how these innovations can reduce the negative impacts arising from this type of crisis situations. It is interesting to discuss the context of South Sumatra in the study of public sector innovation, especially related to COVID-19. Apart from the rich cultural, social, and geographical aspects of South Sumatra, the various negative impacts due to COVID-19 have urged the government at the provincial or regency/city level and the community to be present to reduce many different types of vulnerabilities caused by this situation.

B. METHOD

This study used a combination quantitative methods with archival research as a research strategy (Budy, 2019). The quantitative design will be used in the form of simple descriptive statistics in the form of a percentage of map distribution of innovation in the COVID-19 era which will be categorized based on several parts such as (1) sector or type of innovation; (2) the level of government that makes innovation; (3) the approach used.

In this quantitative design, the researchers used an archival research strategy that includes various activities implemented to facilitate the investigation of documents and textual material produced by and about the organization. This study used archives from the Ministry of Administrative and Bureaucratic Reform on innovations of COVID-19. The Public Service Innovation Network (JIPP). JIPP is a form of cooperation between institutions that have an interest in developing public service innovations. The Public Service Innovation Network contains innovations made by Ministries/Institutions and Regional Governments, Universities, Non-Governmental Organizations, and Development Aid Agencies. The scope of the Public Service Innovation Network includes information, planning, budgeting, operations, sustainability, replication and capacity building, and community participation. Cooperation networks can form relations and collaborations in terms of regional, national, and international. The Public Service Innovation Network (JIPP) is under the Ministry of Administrative and Bureaucratic Reform. In the era of COVID-19, the Public Service Innovation Network (JIPP) built a database containing various types of innovations to recover from COVID-19.

For data analysis, the researchers used content analysis (Krippendorff, 2013). Content analysis, coding, and analysis were carried out in three stages (Bellström *et al.*, 2016). The first stage is to assign the first writer to conduct an initial round of coding. The second writer separately conducts the second round of coding using the same method. The first writer and the second writer then discuss to match the coding results. The different results became the subject of discussion until both writers have an agreement. The last round of coding was conducted by a research assistant who was not involved in this research, and whose job was to ensure that tweets and posts were coded appropriately.

C. RESEARCH FINDING AND DISCUSSION

This section discusses the condition of COVID-19 in South Sumatra as of January 4, 2020, to describe the severity level of COVID-19 in South Sumatra. Some of the information described in this section includes COVID-19 confirmed cases in Indonesia, the highest percentage of COVID-19 recovery in Indonesia, the current situation of COVID-19 development in South Sumatra Province from each Regency and City in South Sumatra, and the Number of people tested with the PCR COVID-19 tests per 1000 population in regencies or cities in South Sumatra.

The highest number of COVID-19 confirmed cases in Indonesia on January 4th, 2021

This section contains information regarding the COVID-19 cases in Indonesia to show the severity level in South Sumatra. In general, the province with the highest COVID-19 cases in Indonesia is DKI Jakarta with 191,075 cases. Following DKI Jakarta are West Java, East Java, and Central Java, respectively. These four provinces are located on the island of Java, an island where infrastructure development is much faster than other islands in Indonesia. Moreover, other provinces in Java Island are also included in the top 16, namely Banten and the special region of Yogyakarta (DIY), which are in 9th and 14th place, respectively.

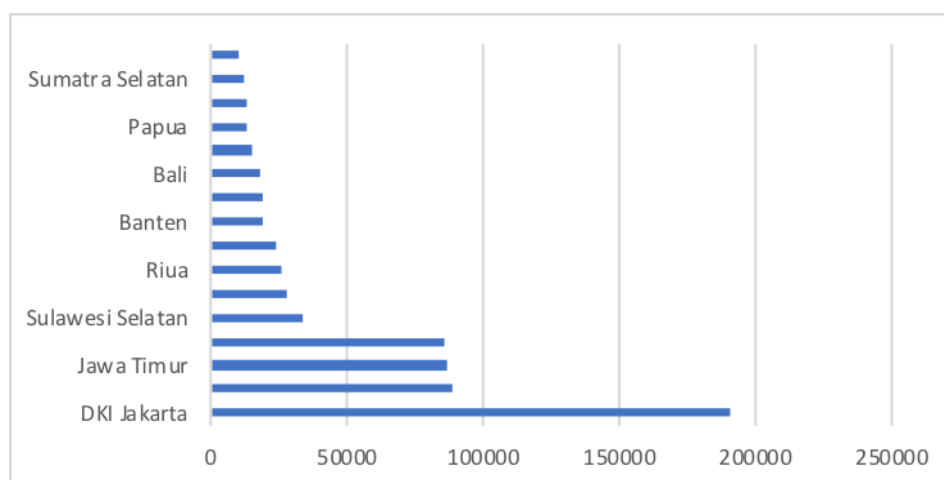


Figure 1. Provinces with the highest COVID-19 Confirmed Cases in Indonesia

Source: South Sumatra Provincial Health Office, 2021

In fifth place, there is South Sulawesi Province with 33,292 cases. This was followed by East Kalimantan, Riau, and West Sumatra. Next are Banten, North Sumatra, Bali, South Kalimantan, Papua, and the special region of Yogyakarta (DIY), South Sumatra, and Central Kalimantan. South Sumatra Province is in 15th place with 12,052 cases. To provide a complete description of COVID-19 in South Sumatra, the following section contains the highest percentage of COVID-19 recovery in Indonesia.

The highest percentage of COVID-19 recovery in Indonesia

Figure 2 shows the provinces with the highest percentage of COVID-19 recovery in Indonesia. Generally, Riau is in 7th place with the highest COVID-19 confirmed cases and is the province with the highest percentage of recovery at 93.13%. Followed by West Papua, Bali, South Kalimantan, DKI Jakarta, and West Kalimantan with a percentage still above 90%.

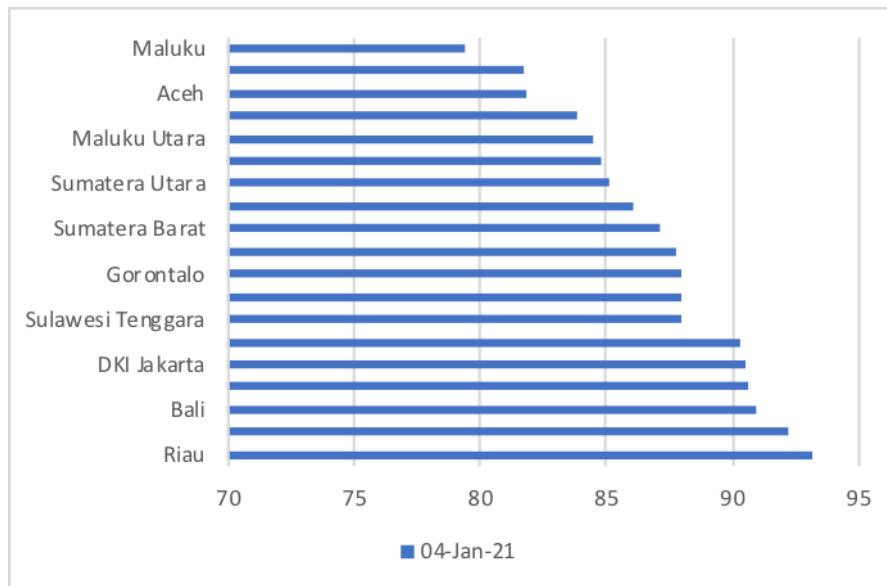


Figure 2. Provinces with the highest percentage of COVID-19 recovery in Indonesia as of January 4, 2021

Source: South Sumatra Provincial Health Office, 2021

Next, with a percentage between 80%-90% are Southeast Sulawesi, Riau Islands, Gorontalo, South Sulawesi, West Sumatra, East Java, North Sumatra, West Java, North Maluku, East Kalimantan, Aceh, and South Sumatra, respectively. Lastly, with a percentage of 79, 42% is Maluku. South Sumatra is in 18th place with a percentage of recovery of 81.84%.

The current situation of COVID-19 development in South Sumatra Province from each Regency and City in South Sumatra

Table 1 shows the number of cases, recovered, and deaths in South Sumatra. In general, out of 12,052 cases, 9,845 patients were declared recovered and 615 of them died. The rest were patients who were in the process (either being treated or isolated independently) with a total of 1,592. South Sumatra reported 54 new cases and 65 patients were recovered.

Table 1. Number of Cases, Recovered, and Death Patients in South Sumatra

City/ Regency	Case		Number of Case		Recovered		Process		Total
	Asymptomatic	Symptomatic	Cumulative	New Case	Cumulative	New Case	Treated	Self-isolation	
Kota Palembang	1797	3812	5609	24	271	0	320	629	949
Kabupaten OKI	65	51	116	0	9	0	8	3	11
Kabupaten Lahat	316	173	489	19	30	0	16	65	81
Kabupaten OKU	97	100	197	4	19	0	9	7	16
Kabupaten Muba	309	428	737	0	30	0	67	25	92
Kabupaten Muara Enim	457	566	1023	0	51	0	23	85	108
Kabupaten Musi Rawas	196	173	369	2	14	0	10	18	28
Kabupaten Banyuasin	291	216	507	0	45	0	7	14	21
Kabupaten Ogan Ilir	103	62	165	0	9	0	2	3	5
Kota Prabumulih	145	350	495	2	23	0	38	18	56
Kota Pagaralam	73	39	112	1	8	0	4	4	8
Kota Lubuk Linggau	481	690	1171	2	39	0	47	72	119

Kabupaten OKU Timur	176	96	272	0	14	0	7	21	28
Kabupaten OKU Selatan	11	22	33	0	4	0	6	0	6
Kabupaten Empat Lawang	34	53	87	0	7	0	0	0	0
Kabupaten Pali	250	142	392	0	26	0	10	54	64
Kabupaten Musi Rawas Utara	52	188	240	0	15	0	0	0	0
Total	4870	7182	12052	54	615	0	574	1018	1592

Source: South Sumatra Provincial Health Office, 2021

In more detail, the highest number of cases is in Palembang City with 5,609 cases and the least number of cases is 33 people in South OKU Regency. Furthermore, the most number of patients who recovered is 4,389 people in Palembang City. Meanwhile, regencies/cities with the lowest recovered patients are in South OKU Regency with 23 people. Most cases of death are also in Palembang City, with 271 people. While the lowest is in South OKU Regency with 4 people.

The number of people tested for PCR COVID-19 per 1000 inhabitants in regencies or cities in South Sumatra

To provide a complete description of COVID-19, figure 3 contains the number of people who have been tested for PCR COVID-19 per 1000 population in regencies/cities in South Sumatra Province up to January 4, 2021. In general, even though the highest cases of COVID-19 was located in Palembang City, the highest number of people tested for PCR COVID-19 was in the City of Lubuk Linggau.

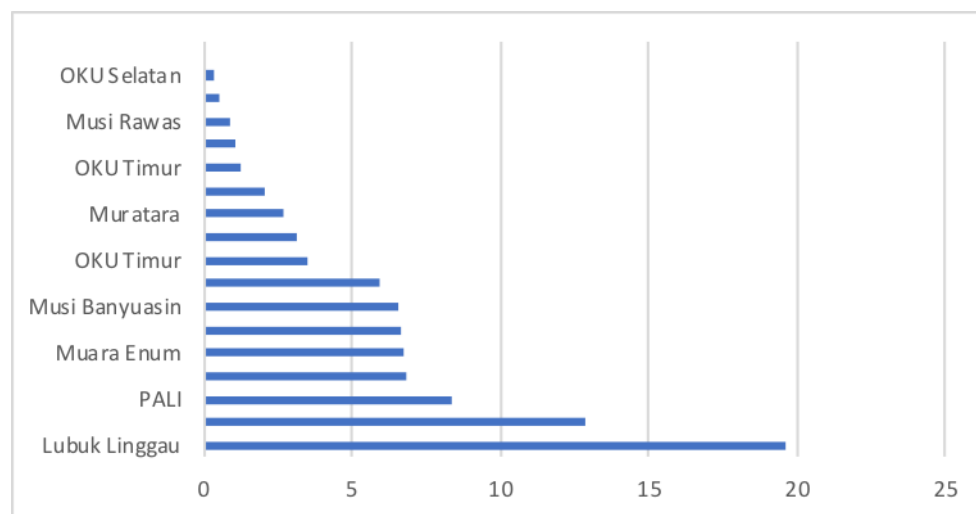


Figure 3. Number of people tested for PCR COVID-19 per 1000 population in regencies/cities

Source: South Sumatra Provincial Health Office, 2021

To clarify Figure 3, the researchers divide it into two parts, namely cities or regencies that have implemented PCR COVID-19 above the recommended level and below the recommended level. Cities/regencies that conducted the PCR COVID-19 test above the recommended level include Lubuk Linggau, Pali, Kahat, Muara Enim, Prabumulih, Musi Banyuasin, Pagaralam, and East OKU. Meanwhile, cities/regencies that are below the average include Musirawas Utara, Banyuasin, OKU, Empat Lawang, OKU, and South Oku.

The Impact of COVID-19 on Income

This section discusses the impact of COVID-19 on people's income in South Sumatra. As shown in Figure 4, in general, most of the people of South Sumatra experienced a decline in income.

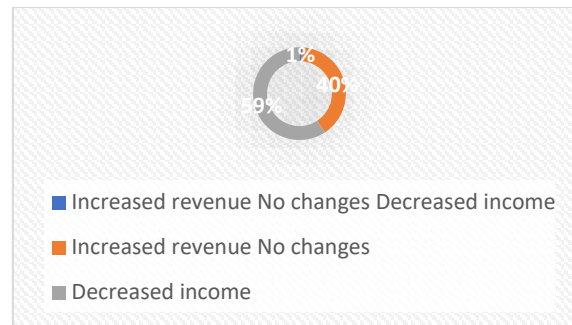


Figure 4. Impact of COVID-19 on Income

Source: South Sumatra Central Bureau of Statistics, 2021

In further detail, 0.93% of respondents experienced an increase in income. While 39.80% of the respondents' income are normal or did not decrease and 59.20% experienced a decrease in income due to COVID-19. Further, 63.64% of female respondents experienced a decrease in income. While 56.11% of male respondents experienced a decrease in income. The next section contains the income groups most affected by COVID-19. In general, the poor, vulnerable to poverty, and those who work in the informal sector are the people most affected by COVID-19.

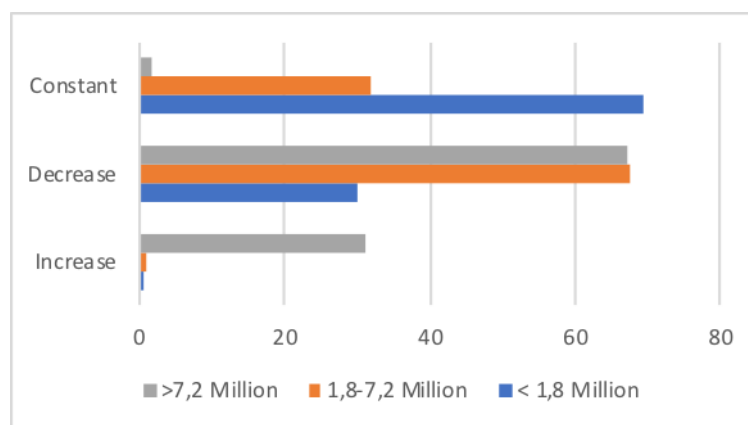


Figure 5. The Most Affected Income Groups

Source: South Sumatra Central Bureau of Statistics, 2020

In more detail, 69.40 percent of respondents who earn less than 1.8 million rupiahs per month admit that their income has decreased since the COVID-19 pandemic. 31.82 percent of respondents with an income of 1.8 - 7.2 million rupiah per month claimed to have experienced a decrease in income since the COVID-19 pandemic. The COVID-19 pandemic has resulted in a decline in the performance of various economic sectors. Hence, those who work in the affected sectors in turn experience a decrease in income. Six business fields in South Sumatra with a decrease in income of more than 50 percent include the Agriculture, Forestry and Fisheries; Water Resource Management, Wastewater Treatment; Wholesale and Retail Trade, Automobiles and Motorcycles Repair Shop; Transportation and Warehousing; Provision of Accommodation and Provision of Food and Beverage; and Real Estate (Central Bureau of Statistics, 2020).

Further, 100 percent of respondents who work in the business fields of Water Resource Management, Wastewater Treatment, Waste Management and Recycling and Remediation Activities have experienced a decrease in income due to the COVID-19 Pandemic. 91.70 percent of respondents who work in the Wholesale and Retail Trade, Automobiles and Motorcycles Repair Shop experienced a decrease in income due to the COVID-19 pandemic. 80 percent of respondents who work in the Transportation and Warehousing business experienced a decrease in income due to the COVID-19 Pandemic. 100 percent of respondents who work in the Real Estate business have experienced a decrease in income due to the COVID-19 pandemic.

Public Sector Innovations for COVID-19 in South Sumatra

This section discusses the typology of public sector innovation for COVID-19 in South Sumatra. Some of the information presented in this section includes the amount of information for each city/regency, the typology of each innovation, the innovation category, and the problems under study through public sector innovation for COVID-19. Based on our findings, of 1203 innovations, 14 of which were from South Sumatra. The fourteen innovations are as follows:

As shown in Table 2 (attached), most innovations for COVID-19 were initiated by the Government, either at the city, regency, or even central government representatives in the regions. The Department of Population and Civil Registration in several regions has become the agency that has issued the most innovations, especially concerning population administration services. Some innovations were also found to be initiated by the community.

Innovators

Table 3 shows the innovators during the COVID-19 pandemic in South Sumatra. The researchers divide it into four main categories, namely city government, regency government, the provincial government, and central government representatives. Generally, this study found that most innovations were initiated by regency governments.

Table 3. Innovators in South Sumatra

Innovators	Total	Initiators
City Governments	4	Palembang City and Lubuklinggau City
Regency Governments	5	PALI Regency, Ogan Ilir Regency, Musi Banyuasin Regency, Muara Enim Regency
Provincial Governments	2	South Sumatra Provincial Government
Community	3	Tanjung Indah Urban Village, Pandai 13 Ulu Village, the Alumni Association of Faculty of Public Health, Sriwijaya University (IKA FKM Unsri)
Central Government Representatives	2	South Sumatra Regional Police (Polda), Palembang National Agency of Drug and Food Control (BPOM)

Source: processed by author, 2021

More specifically, four innovations were initiated by the City Government, namely Palembang and Lubuk Liggau. Two of them were produced by the Provincial Government of South Sumatra. Two Central Government representatives are the Regional Police and the National Agency of Drug and Food Control (BPOM). The last is innovations issued by the community from Tanjung Indah Urban Village, Pandai 13 Ulu Village, and the Alumni Association of Faculty of Public Health, Sriwijaya University (IKA FKM Unsri)

Innovation Category

The researchers divide the innovation category into seven categories, namely public services, emergency services, health services, Desa Tangguh COVID-19 (Strong Village of COVID-19), e-Government, economics, and health information. In general, the researchers found the most number of innovations in the public service category among other innovations, namely six innovations.

Table 4. Innovation Category for COVID-19 in South Sumatra

Innovation Category	Total	Innovation
Emergency Services	1	Sinergi Palembang Siaga 112 (Emergency Service) and KIM, DALANG CUPRIT (Come Directly or Stay At Home with Permission)
Strong Village for COVID-19	1	KAMPUNG TANGKAL COVID 19 (Village for COVID-19 Prevention)
E-Government	1	PORTAL GEOGRAPHIC INFORMATION SYSTEM CORONA VIRUS DISEASE (GISCOVID)-19 OF PALEMBANG CITY

Economics	1	GERAK PAGIKU (Move to Build Food Independence and Family Nutrition)
Health Services	2	Rumah Sehat Covid-19 (COVID-19 Healthy Home), Outdoor Isolation Rehabilitation Using Holistic Therapy, ¹
Health Information	4	“BOCIL PESONA” (Little Boy Pioneering Corona Education), Communication, Information, and Education around the Street to Educate Society (KOREAN DRAMA), Child Mobile Counseling (Pangling): Increasing COVID-19 Awareness and Information in 13 Ulu Village, Palembang, Moving Through Media and Action: Modeling, Virtual Discussions, COVID-19 Creative Posters in South Sumatra
Public Services	6	Pedekate BOS #StayAtHome (Population Documents Delivery Using Online Motorcycle Taxi and Post Services) #StayAtHome, Door to Door Population Services During the COVID-19 Pandemic (Lemper and Model), Lope Capil (Civil Registration Online Service of Ogan Ilir Regency), KAMI MASIH PACAK, Implementation of the COVID-19 Pandemic Health Protocol, Library and Archives Office of Palembang City

Source: processed by author, 2021

Following public services is health information with four innovations. Innovations related to health care with two innovations. Finally, emergency services, strong village for COVID-19, e-government, and economics with one innovation, respectively.

Types of Innovation

In this section, there are three types of innovation, namely mass/social resilience, quick response/quick wins, and public knowledge. Quick Response/Quick Wins are innovations that emerged as an initial response to the spread of COVID-19 in Indonesia. Public knowledge is innovations that are made to increase knowledge, awareness, and change people’s behavior regarding COVID-19 and its prevention efforts. Mass/social resilience are innovations on prevention or mitigation of emergencies and with a wide range of benefits both in the short and long term.

Table 5. Types of Innovation for COVID-19 in South Sumatra

Types	Total	Innovation
Mass/Social Resilience	6	PeDeKaTe BOS #StayAtHome (Population Documents Delivery Using Online Motorcycle Taxi and Post Services) #StayAtHome, Door to Door Population Services During the COVID-19 Pandemic (LEMPER AND MODEL), Outdoor Isolation Rehabilitation Using Holistic Therapy, GERAK PAGIKU (Move to Build Food Independence and Family Nutrition), “BOCIL PESONA” (Little Boy Pioneering Corona Education)
Quick Response /Quick Wins	6	LOPE CAPIL (Civil Registration Online Service of Ogan Ilir Regency), Sinergi Palembang Siaga 112 (Emergency Service) and KIM, KAMI MASIH PACAK, Rumah Sehat Covid-19 (COVID-19 Healthy Home), GERAK PAGIKU (Move to Build Food Independence and Family Nutrition), Implementation of the COVID-19 Pandemic Health Protocol, Library and Archives Office of Palembang City, DALANG CUPRIT (Come Directly or Stay At Home wIth Permission)

Public Knowledge	4	Communication, Information, and Education around the Street to Educate Society (KOREAN DRAMA), Child Mobile Counseling (PANGLING): Increasing COVID-19 Awareness and Information in 13 Ulu Village, Palembang, Moving Through Media and Action: Modeling, Virtual Discussions, COVID-19 Creative Posters in South Sumatra, PORTAL GEOGRAPHIC INFORMATION SYSTEM CORONA VIRUS DISEASE (GISCOVID)-19 OF PALEMBANG CITY
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Source: processed by author, 2021

Mass/social resilience and quick response are the most categories with six innovations for each category. While public knowledge has four innovations.

Challenges

This section discusses various challenges faced by each innovator. Overall, the researchers identified six types of challenges, namely public awareness, financial, time, human resources, and facilities and infrastructure. Public awareness occupies the highest position with 12 innovations.

Table 6. Challenges of Implementing Innovations for COVID-19 in South Sumatra

Challenges	Total
Time	1
Facilities and Infrastructure	4
Financial	5
Human Resources	8
Public Awareness	12

Source: processed by author, 2021

Following public awareness is human resources challenges with eight innovations. Followed by financial challenges with five innovations, and facilities and infrastructure with four innovations. The last is time challenge with one innovation.

Discussion

The objective of this study was to discuss public sector innovations on COVID-19 in South Sumatra by finding out the categories, types, initiators/innovators, and challenges. Despite the many negative impacts of COVID-19, it is useful as an effective catalyst for public sector innovation. This study found that COVID-19 brings public organizations into crisis situations and this forces public organizations to survive by carrying out various innovations. Public sector innovation is mainly carried out by cutting various bureaucracies that may not be found in normal circumstances (Brouder, 2020; Joaquin, Biana and Dacela, 2020, 2020).

In this situation, the innovations that emerge are a specific response to COVID-19 which is a disruption. This also proves that public organizations are adaptive organizations with dynamic capabilities that are almost non-existent in the literature (Secco *et al.*, 2017; Venuleo, Gelo and Salvatore, 2020). Unfortunately, these types of innovations are only temporary innovations as an organizational strategy to remain sustainable and productive with various service arrangements. The innovations made are generally not long-term innovations used to improve the quality of performance of public organizations. In the literature, innovation with such pragmatic purpose completes the overall description of public sector innovation that in crisis situations public organizations are challenged to become adaptive organizations in various ways. One of the ways is what was found in this study, namely to carry out various innovations.

In contrast to a normal situation where innovation in health services is more common (Budy, 2019; Kusumasari *et al.*, 2019), this study finds that innovation in the public service sector is the most common. This is because, in the era of the COVID-19 pandemic, various government health agencies cannot innovate much. After all, they are bound by complicated rules regarding various health protocols. Meanwhile, in public services, various bureaucracies can adapt themselves to various new habits. Hence, unnecessary bureaucracy can be cut to produce effective and efficient services.

Many types of challenges found in normal situations are also found in such crisis situations (Osborne and Brown, 2011; Lawrence, 2017; Van De Ven, 2017). These challenges include public awareness, human resources, finance, facilities and infrastructure, and time. Concerning public awareness, this research confirms the fact that changing people's habits is difficult. In associations with human resources, flexible, adaptive, and dynamic human resources are also difficult to find and therefore many innovations are faced with challenges.

D. CONCLUSION AND RECOMMENDATION

The key objective of this paper is to identify various characteristics of the COVID-19 innovation during the COVID-19 pandemic. The researchers found that the organizations that initiated innovation (innovators) consisted of city governments, regency governments, provincial governments, central government representatives, and communities. Meanwhile, for the innovation category, the researchers found more innovations with types of public services and health information. For the innovation category, the researchers also found three types of innovation categories in South Sumatra including mass/social resilience, quick response/quick wins, and public knowledge. Lastly, the challenges in implementing the innovation which includes public awareness, human resources, financial, facilities and infrastructure, and time.

Academically, this study contributes to the understanding of public sector innovation in a critical situation that innovation in such condition is an innovation that was made for pragmatic purposes and it won't last. It is only adjusted to the situations that force people to implement physical distancing to each other. Meanwhile, practically, public managers can learn from the results of this study to develop other various types of innovations. For example, the economic sector is the most affected because innovation in the economic sector is still lacking.

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