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Research Article

Indonesian Public Service Innovation Trends: An Analysis Based on Public Service Innovation Competition Top Innovations 2014-2019

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Abstract.
In the last few years, Indonesia and many other countries have been increasing their innovations. As an appreciation of the implementation of innovations carried out by Government agencies, in 2014, the Ministry of State Apparatus Empowerment and Bureaucratic Reform began to hold the Public Service Innovation Competition (KIPP). The purpose of the studies is to describe the trend of public service innovation in 2014-2019 based on the innovators, innovation categories, and sectors. The archival method is used to analyze top public service innovations from the KIPP annual event held by the Ministry of State Apparatus Empowerment and the Bureaucratic Reform Republic of Indonesia in 2014-2019. Furthermore, the innovation data were filtered based on the innovators and focused on innovations from Ministries, Government Institutions, and Regional Governments, while the innovations initiated by state-owned companies were excluded. Finally, the data were analyzed based on three keywords: innovators, innovation categories, and sectors. The results showed that based on innovators, the Provincial Government group is the most innovative agency, followed by the Ministry and the Municipal Government. In terms of innovation category, it was found that technological innovation dominated top public service innovation, followed by process innovation and product/service innovation. Finally, in the sector keywords, it can be seen that the health sector is leading the innovation creation, followed by the agriculture/plantation/livestock sector and the environment and forestry sector.

Keywords: innovation, public sector, public service

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1. Introduction

Nowadays, the development of technology toward digitalization is increasing rapidly. These developments have disrupted various activities [1], especially in information technology utilization. Furthermore, innovation has been considered as a central process that promotes sustainable economic growth and competitiveness in both the private sector and countries and encourages sustainable global development [2]. Consequently, public sector innovation is needed as a response to all changes. Innovation in the public sector aims to improve the quality of public services and the organization's capacity to face society's challenges and global competition [3]. The old perspective sees innovation as a complicated procedure and does not bring any change [4] in the bureaucracy, as well as considering bureaucracy as a slow and outdated organization [5]. Therefore, innovation must provide significant differences [6] to the bureaucracy.

In the last few years, many countries have been increasing their innovations. For example, Brazil created artificial intelligence to control taxes [7], and Singapore used trace contacts technology for citizens affected by covid-19 [8]. It means that information technology has a significant impact on improving public services.

Innovation is often associated with technology. However, innovation is not always related to technology. The term innovation was introduced by Rogers and described as the change process to ensure everything goes well by adding something new to increase added value for society [9]. Innovation can also be referred to as something new or an improvement of a product and/or process that differ from the previous in both product and process. The innovation scope ranges from incremental minor additions to disruptions or transformations that could change processes or services [10]. Therefore, the impact of innovation will differ in each organization.

The competition for public service innovation has been conducted internationally to encourage innovation creation. The United Nations Public Service Awards (UNPSA) is the most recognizable public service innovation competition, a prestigious international award in the public service field, organized by the United Nations (UN). Indonesia has participated in the event several times.

Furthermore, to maintain the sustainability of the emergence of innovation, Indonesia took the initiative in the public sector transformation movement to create a transparent and effective government. "Open Government Indonesia" (OGI) in 2011 is one of the movement strategies that aim to build a more open, participatory, innovative government to create transparent, effective, democratic, and reliable governance with innovation as one of the pillars (ogi.bappenas.go.id) [11]. Moreover, the government also created "One

Agency One Innovation" movement to encourage an organization to create at least one innovation every year [12]. The movement is also a breakthrough step to accelerate the improvement of public service quality [13]. In addition, the movement is also to cultivate innovation in every public service provided to the community.

In the policy aspect, the government also issued a ministerial regulation from Minister of State Apparatus Empowerment and Bureaucratic Reform (PERMENPAN & RB) Number 30 of 2014, later updated as Minister of State Apparatus Empowerment and Bureaucratic Reform regulation number 91 of 2021 concerning public service innovation. In this regulation, public service innovation is a public services breakthrough in the form of ideas and/or adaptations/modifications that provide direct or indirect benefits to the community. The government also issued a policy through Presidential Regulation Number 38 of 2017 concerning regional innovation to accelerate innovation in the regions.

Legal aspects ensure that innovation brings a positive trend in improving public services and government agencies' performance. For example, an innovation initiative from Government of North Kalimantan Province called "SIPELANDUKILAT SMART Program". The innovation aims to ease the administration process of population administration documents precisely, accurately, completely, and free of charge, especially for those living in Disadvantaged, Frontier, and Outermost areas [14]. Furthermore, the Natuna Regency Government initiated maternity service innovation for pregnant women with safe, comfortable, and free charges services called "Si Beres Natuna".

As an appreciation of the implementation of innovations carried out by Government agencies, in 2014, the Ministry of State Apparatus Empowerment and Bureaucratic Reform began to hold the Public Service Innovation Competition (KIPP). The innovation competition was attended by Ministries, Institutions, Regions, state-owned companies and regional-owned companies that provide public services. The competition encourages government agencies to produce innovation. The competition started in 2014 with the top 9 public services until 202, and led to the top 99 public service innovations and increased the government agencies' enthusiasm in terms of innovation, which can be seen from the high number of participants in KIPP, in 2019 alone there were 3,156 innovations, compete for the award. The number is higher compared to 2018, with 2,824 participants. The competition assessed the substantial perspective of the innovation with at least five criteria: novelty, effective, useful, easy to apply and spread, and sustainable.

Based on the innovation types, Bekker, in the "Innovation in The Public Sector" [15], distinguishes innovation into seven types, as follows:

1. Product or service innovation, focused on creating new public services or products.

2. Technological innovations emerge through the creation and use of new technologies.

3. Process innovations focus on improving the quality and efficiency of internal and external business processes and redesigning service delivery processes.

4. Organizational and management innovations focused on creating new organizational forms, new management methods and techniques, and new working methods.

5. Conceptual innovations. These innovations introduce new concepts, frames of reference or even new paradigms that help reframe the nature of specific problems and their possible solutions.

6. Governance innovations are directed at developing new forms and governance processes to address specific societal problems, such as the governance practices that attempt to enhance the self-regulating and self-organizing capacities of policy networks.

7. Institutional innovations are fundamental transformations in the institutional relations between organizations, institutions and other actors in the public sector, and more specifically in public administration.

Agreeing with Bekker [15], OECD defines innovation as a process, product, and organization [16]. From both OECD and Bekker, it can be seen that they have a similar definition of innovation types.

However, Kahn sees innovation from three perspectives, namely innovation as an outcome, innovation as a process and innovation as a mindset [17]. Innovation as an outcome emphasizes a new product or service, usually known as product innovation. In terms of innovation, the outcomes include product, process, marketing, business model, supply chain, and organizational innovation.

From the explanation above, this article will discuss the trend of public service innovation in Indonesia in 2014-2019 based on top public service data released by the Ministry of State Apparatus Empowerment and the Bureaucratic Reform Republic of Indonesia. The results of the innovation mapping are based on seven types of innovations by Bekker [15].

In the discussion related to public service innovation, the development of public service innovation is more likely to address information technology development. Jalonen &

Helo [18] argue that developing information technology can minimize the gap between service providers and recipients. It is because information technology can provide a close relationship in both communication and supervision.

Other research discussed the development trend of public service innovation from the public service innovation competition organized by the Ministry of State Civil Apparatus Empowerment and Bureaucratic Reform. Primary [19] emphasizes geographical perspectives, innovators, sectors, types of innovation and innovation outputs. This research analyzes the innovations in the top 99 public service innovations from 2014 to 2016. Moreover, Suranto et al [20] observed the trend of public service innovation from 2018-2020 based on google trends.

This paper analyzes the top innovation from the first annual public service innovation competition in 2014 until 2019. In addition, the analysis performed is also different. Innovation trends are analyzed based on Bekker's type of innovation, sector and the innovator/initiator of innovation. These three things are the novelty of this paper. Furthermore, this paper would like to answer three research questions:
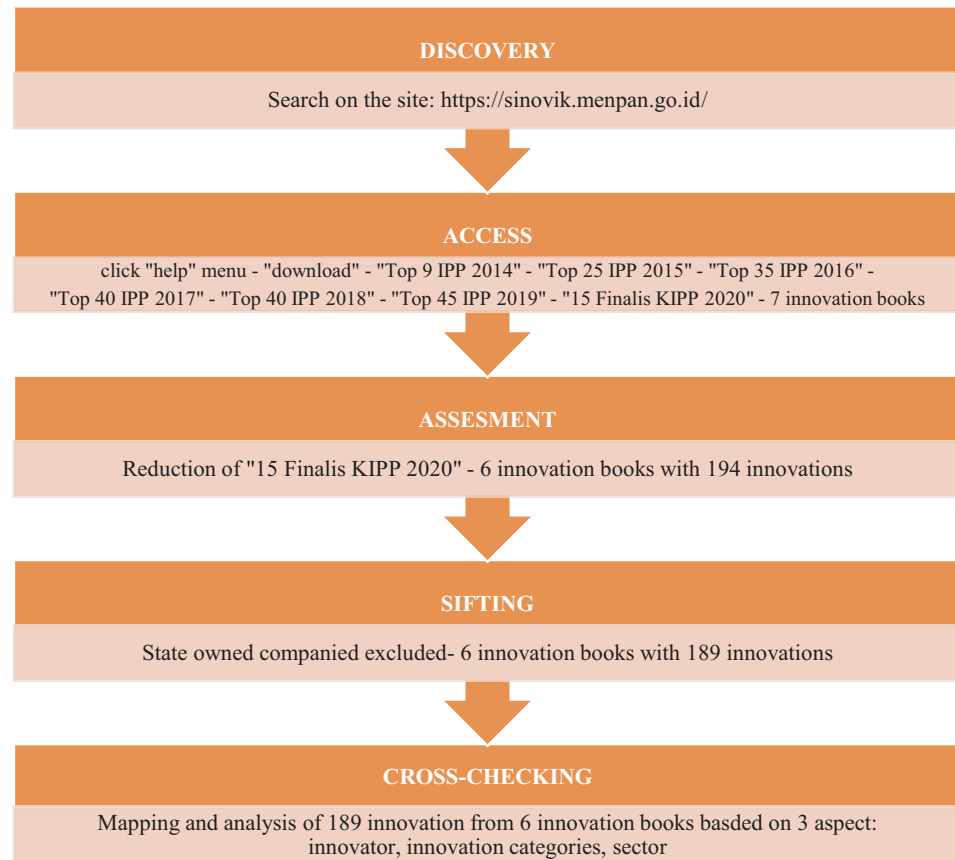
1. How are Indonesian public service innovations trends based on innovators from 2014 to 2019?

2. How are Indonesian public service innovation trends based on innovation categories/types from 2014 to 2019?

3. How are Indonesian public service innovation trends by sector from 2014 to 2019?

2. Method

The study used the archival research method. In this study, the author used archival data as the primary source. As argued by Das, archival data may include census data, court proceedings, credit history, annual reports of companies, personnel files, etc. [21]. Archival data is collected and stored before the start of the research, which is intended for later use.

The data used in this study are innovations awardees from top public service innovations in the Public Service Innovation Competition (KIPP) held annually by the Ministry of State Apparatus Empowerment and the Bureaucratic Reform Republic of Indonesia since 2014. This study was limited between 2014-2019 because data from 2020-2021 were not appropriate/not found. Furthermore, innovation data for these six years were filtered based on the innovators and focused on innovations initiated by Ministries, Institutions and Regional governments, while innovations from state-owned companies

are excluded. Finally, data are analyzed based on innovators, innovation categories and sectors. The following protocol was carried out in this study, referring to Welch's archival research protocol [21] :

DISCOVERY

Search on the site: https://sinovik.menpan.go.id/

ACCESS

click "help" menu - "download" - "Top 9 IPP 2014" - "Top 25 IPP 2015" - "Top 35 IPP 2016" - "Top 40 IPP 2017" - "Top 40 IPP 2018" - "Top 45 IPP 2019" - "15 Finalis KIPP 2020" - 7 innovation books

ASSESMENT

Reduction of "15 Finalis KIPP 2020" - 6 innovation books with 194 innovations

SIFTING

State owned companied excluded- 6 innovation books with 189 innovations

CROSS-CHECKING

Mapping and analysis of 189 innovation from 6 innovation books basded on 3 aspect: innovator, innovation categories, sector

Figure 1: Archives Research Protocol.

The mixed method was carried out in the data analysis. In the quantitative approach, researchers map the number of innovations per year based on innovators, categories, and sectors. Furthermore, qualitatively, researchers analyzed the contents of the Top Public Service Innovation documents/books in 2014-2019. The following is a summary of the indicators used in each aspect of the discussion:

3. Findings and Discussions

This section presents the results of public service innovations mapping from top public service innovations in the Public Service Innovation Competition (KIPP) starting in 2014-2019. The numbers of top innovations for each year are as follows:

    a. Top 45 Public Service Innovations of 2019

    b. Top 40 Public Service Innovations of 2018

TABLE 1: Operational Definition.

No.	Aspects	Indicators
1	Innovator	Ministries, Institutions, Provincial Governments, District Governments, Municipalities
2	Innovation Category	Product/Service Innovation, Technology Innovation, Process Innovation, Organizational and Management Innovation, Conceptual Innovation, Governance Innovation, Institutional Innovation
3	Sector	Sectors following government affairs include health, education and culture, population and civil registry, archives, plantations/agriculture/animal husbandry, spatial planning & land, etc.

Source: data processed by authors, 2022

c. Top 40 Public Service Innovations in 2017

d. Top 35 Public Service Innovations in 2016

e. Top 25 Public Service Innovations of 2015

f. Top 9 Public Service Innovations of 2014

Furthermore, the top 6 books for public service innovation in 2014-2019 will be mapped and analyzed based on three aspects: innovators, innovation categories and sectors.

3.1. Top Innovation Trends Based on Innovators in 2014-2019

Based on the innovator mapping of innovations from top public service innovations, it is known that several groups of agencies are identified as innovators, namely Ministries, Institutions, Provincial Governments, Regency Governments, City Governments, and state-owned companies. However, in this article, the author only discusses the government sectors, so the discussion of innovation by state-owned companies are excluded. The following table showed the results of innovators mapping in 2014-2019:

TABLE 2: The number of Top Public Service Innovation based on Innovators in 2014-2019.

Agency	2014	2015	2016	2017	2018	2019	TOTAL
Ministries	2	3	3	7	5	9	29
Institutions	-	-	2	1	2	4	9
Provincial Government	4	5	7	10	8	5	39
District	-	10	14	13	15	15	67
Municipality/City	3	7	6	8	10	11	45
TOTAL	9	25	32	39	40	44	189

Source: data processed by authors, 2022

Table 2 shows that the regency has the highest number of innovators compared to any other group agency. It also means that regency governments achieve more top public service.

However, we must consider that the number of regencies in Indonesia is undoubtedly more than the number of agencies in other groups. Based on data from the Ministry of Home Affairs Republic of Indonesia, it is known that Indonesia has 34 provinces, 416 regencies, and 98 cities [22]. Meanwhile, based on data from the Ministry of State Apparatus Empowerment and Bureaucratic Reform, the central government consists of 34 ministries and 127 institutions [23]. Since the number of the regency is higher than other groups, the number of innovations from the regency government is always higher than the other groups.

Furthermore, to be more acceptable and fair, the authors analyze the government agency performance in innovation initiators by the percentage of agencies in each group. This percentage compared the number of government agencies with innovations to the number of agencies in their group to find the ratio of the government agency in the top innovation award. For example, to see the ministries' performance, we compare the number of awarded ministries in the top innovation with the number of all ministries in Indonesia. Finally, the percentage data from each group of agencies is essential to see which group of agencies dominates the top public service innovation. The results of the percentage calculation for each group can be seen in Figure 2.
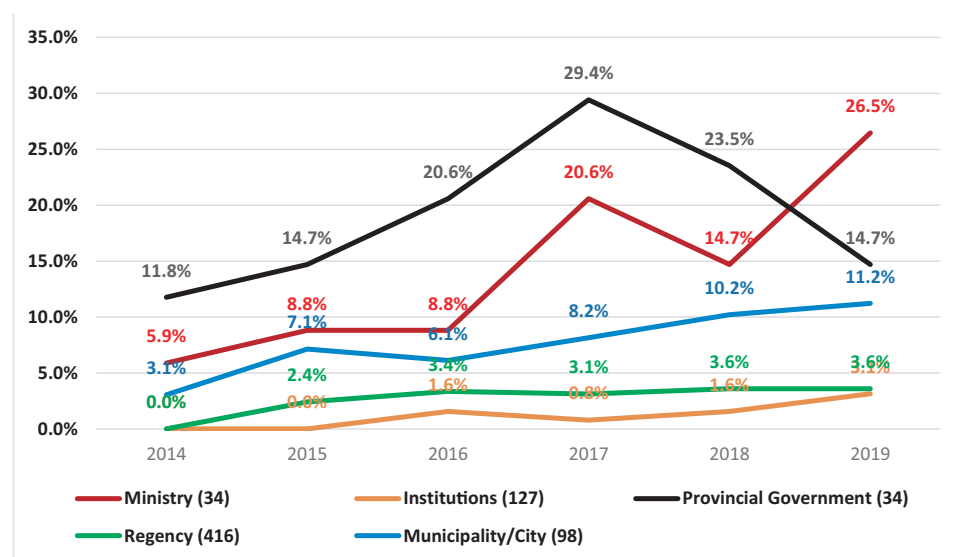

Figure 2: The Percentage of Innovators in Public Service Innovation in 2014-2019.

From the Figure 2 above, the Provincial Government has the best performance in top public service innovations, especially in 2014-2018, and peak in 2017, 29.4% (10 out of 34) provinces have awarded the top public service innovation. In the second position is a

group of Ministries that took the Provincial Government position as the most performing innovator in 2019. Next are the City, Institutional and Regency Government governments are in the third, fourth and fifth positions.

The regency government has the highest innovators compared to other groups in terms of numbers. However, based on the performance, the number of regencies as the initiator in the top innovations is small compared to others.
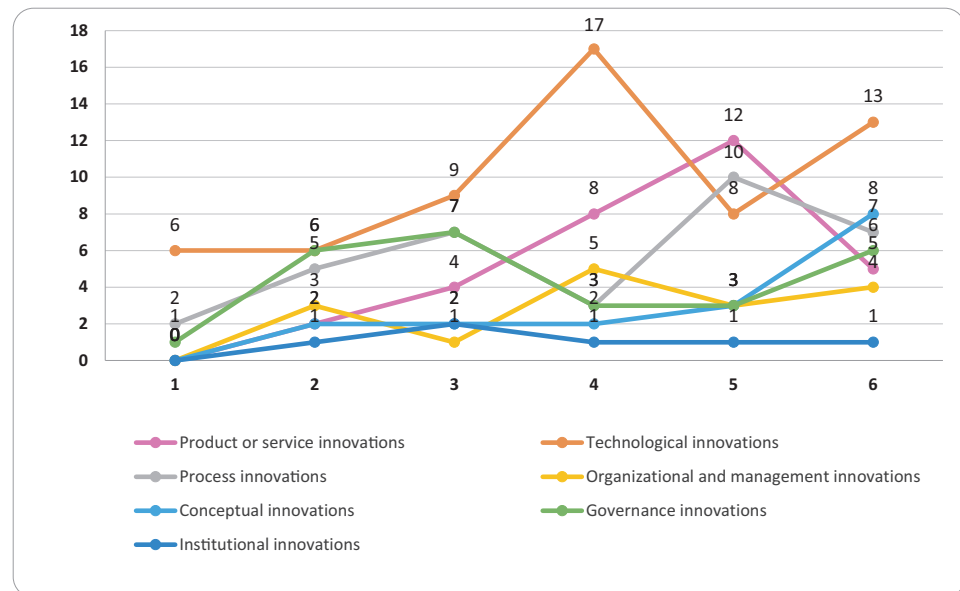
3.2. Top Innovation Trends based on innovation categories in 2014-2019

TABLE 3: The Number of Top Public Service Innovations based on Innovation Categories in 2014-2019.

Category	2014	2015	2016	2017	2018	2019	Total
Product or service innovation	0	2	4	8	12	5	31
Technological innovation	6	6	9	17	8	13	59
Process innovation	2	5	7	3	10	7	34
Organizational and management innovations	0	3	1	5	3	4	16
Conceptual innovation	0	2	2	2	3	8	17
Governance innovation	1	6	7	3	3	6	26
Institutional innovation	0	1	2	1	1	1	6
Total	**9**	**25**	**32**	**39**	**40**	**44**	**189**

source: data processed by authors, 2022

From 2014 to 2019, the Ministry of State Apparatus Empowerment and the Bureaucratic Reform Republic of Indonesia announced 189 innovations in the top public service innovations, with the highest number of innovations in 2019 with 44 innovation programs and the lowest in 2014 with nine innovation programs. In terms of the innovation category, technological innovation is the most widely applied innovation and dominated the innovation category from 2014-2019 with 59 innovations, followed by process innovation in the second position, with 34 innovations, and product or service innovations in the third position with a total of 31 innovations. Next, the 4th position is occupied by governance innovations with 26 innovations, followed by conceptual innovations in the fifth position with 17. While in the 6th position, there are organizational and management innovations with 16 innovations and institutional innovations in the last place with six innovations.

Figure 3: Trends of Top Public Service Innovations in 2014-2019 Based on Innovation Categories.

Based on Figure 3, the technological, product or service, and conceptual innovation trends tend to increase. Technological innovations reached a peak in 2017 with 17 technological innovations. Furthermore, as indicated by the small number of innovations per year, conceptual innovations are relatively rarely applied by the initiator. However, conceptual innovation increased significantly in 2019 with eight innovations. Meanwhile, the least applied category is institutional innovation, with 6 out of 188 innovation initiatives. Institutional innovations also always come up with a small proportion every year. The trends of other categories change dynamically from year to year. For example, the process innovation started from 2 in 2014, then rose to 5 in 2015 and 7 in 2016, then dropped to 3 in 2017 before rising to 10 in 2018 and down to 7 in 2019. This trend pattern also occurs in organizational and management innovations and governance innovations.

Technological innovation is the most needed innovation in the public service sector in the industrial era 4.0. That is why technological innovation became the most applied innovation and dominated the types of innovations in 2014-2019. This condition encourages by the demands of the community in the industrial era, with faster, more responsive, accessible and all-digital services. Therefore, government agencies must adapt and innovate to meet society's needs. Moreover, the majority of the three categories with the most innovations are innovations with direct contact with the community: technological, process, and product/service.

According to Bekker, technological innovation is the creation and use of new technologies. For example, "Publication of notary position formations in real time" by the

Ministry of Law and Human Rights in 2016. The innovation helps to provide bureaucratic services related to the appointment/transfer of notaries throughout Indonesia, in transparent, real-time information and open access for all levels of society anywhere and anytime through the website HTTP: // ahu.go.id/.

On the other hand, technological innovation is also a boomerang for government agencies. Finance Minister Sri Mulyani complained that 24,000 government applications made the budget wasteful [24]. Many applications are similar to those made by similar agencies—for example, an application for population administration. Of course, the services are the same among regions, but each region makes its application with a different name. Other regions should be able to replicate existing innovations instead of claiming the new one as an innovation.

In addition, the large number of innovations in the technological innovation category shows that people in the public sector in Indonesia still think that innovation is synonymous with technology. Even though many experts say that innovation is not only limited to the creation of technology. In the future, understanding the concept of public sector innovation and its categories must be extended to various government agencies.

Furthermore, process innovation is needed to improve the quality and efficiency of business processes internally and externally. Most innovations in this category are related to trimming down the process with direct services to the field. For example, in 2016, Bali Provincial Government introduced an innovation, "KAMI DATANG, PENGLIHATAN TERANG" to provide cataract surgery outside the hospital building and services to the community using Mobile Eye Clinic.

Moreover, the innovation of a product or service is the creation of a new public service or product. In product/service innovation, there are many innovations related to the provision of services, for example, "SILAM-SAT (One-Stop Eye Health Service System)," created by the Bangka Regency Government in 2016. SILAM-SAT Service Innovation provides convenient service under one roof, affordable eye health service, supported by reliable human resources and complete medical support facilities.

From the analysis above, it can be concluded that technological innovations, process innovations and product/service innovations were the most needed by society in 2014-2019. Meanwhile, organizational/management innovation, governance innovation, conceptual innovation and institutional innovation rarely appeared in this period.

1. (a) **Top Innovation Trends by Sector in 2014-2019**

This paper also identifies sectors in top innovations based on government affairs sectors. Based on the analysis of the top inventions of KIPP of the Ministry of State

Apparatus Empowerment and the Bureaucratic Reform Republic of Indonesia in 2014 - 2019, 33 sectors are identified out of 189 top innovations.

The table above shows that the health sector has the highest number of innovations in top innovations based on KIPP in 2014 - 2019, with a total of 55 innovations. The second position is occupied by the agricultural/plantation/livestock sector with 14 innovations, followed by the environment and forestry (12 innovations) in third place. In the fourth position are the education and financial sectors with the same number of innovations, with ten innovations. Meanwhile, the social sector is in fifth place with eight innovations.

The top five sectors with the highest number of innovations are very practical and close to the community's needs as recipients of public services. For example, the health and education sectors are in the primary services category. It means that government agencies at every level know that innovation is needed in both sectors to improve services to the community. The agriculture/plantation/livestock sector and the environment & forestry are the sectors closest to the community's daily activities. The environment &forestry sector mostly innovate in waste management and environmental management. Likewise, the agricultural/plantation/livestock sector has many innovations in managing agriculture/plantations/livestock. Furthermore, the financial sector in the government is very rigid, so many innovations have emerged from this sector to facilitate and help the job in the financial sector.

Furthermore, eight sectors consistently occupied the top innovations at least five times from 2014 to 2019: law & human rights, environment & forestry, social, health, agriculture/plantations/animal husbandry, communication & informatics, education & culture, and finance. Furthermore, based on the analysis above, it can conclude that the overall trend of innovation initiated by the sector in top innovation is led by innovation in public services in general, especially health in the first ranks of top innovations of 2014 - 2019.

4. Conclusions

Discussions related to the trends in Indonesian public service innovation in 2014-2019 based on innovators, categories/types of innovations, and sectors that have been discussed above can be concluded as follows:

Table 4: Top Innovation Trends by Sector in 2014-2016.

No.	Sector	2014	2015	2016	2017	2018	2019	Total
1	Law and Human Rights	1	1	1	1	1		5
2	Environment and Forestry		2	1	3	2	4	12
3	Abroad				1	2	1	4
4	Social	1	2	1		2	2	8
5	Public Security and Order			1	1	2	1	5
6	Health		5	15	11	14	10	55
7	Agriculture/Plantation/Animal Husbandry		2	4	4	3	1	14
8	Employment		1			1		2
9	Communication and Informatics	1		1	1	1	1	5
10	Education		1	1	1	4	3	10
11	General Government/ Village Government				3	1		4
12	Food					1	1	2
13	Personnel					1		1
14	Population Administration and Civil Registry		2		1	1	3	7
15	Public Works, Settlements & Housing	1	1			1	1	4
16	Energy and Mineral Resources			2	3			5
17	Finance	2	3	2	1		2	10
18	Marine and Fisheries			3		1	2	5
19	Trade & Industry				1		2	3
20	Statistical						1	1
21	Research and Innovation						2	2
22	Culture						4	4
23	Fire						1	1
24	Disaster				1		1	2
25	Spatial Planning & Land		1				1	2
26	Archives				1			1
27	Goods & Services				1			1
28	Transportation	1	1		2			4
29	Cooperatives & MSMEs				1	2		3
30	Women's Empowerment and Child Protection		1		1			2
31	Planning	1	1					2
32	Tourism		1					1
33	Licensing	1						1
	TOTAL	9	25	32	39	40	44	189

source: data processed by authors, 2022

4.1. Indonesia's public service innovation trends are based on innovators

Based on the number of innovations, the regency government group becomes an innovator by initiate to more top innovations than other agencies. However, comparing the number of agencies that innovate with the number of agencies in their group, it turns out that the Provincial Government group has the best performance in bringing up top public service innovations—followed by the Ministry agencies in the second position. Furthermore, groups of Municipal Government agencies, Institutions and District Governments occupy the third, fourth and fifth positions.

4.2. Indonesian public service innovation trends based on innovation categories/types

Overall, the Indonesian public service innovation trend based on the category/type of innovation is changing yearly. All categories/types of innovations experience ups and downs. Technological innovation is the most widely applied innovation and dominates the innovation category. It is followed by process innovation in the second order and product or service innovation in the third. Then, there are governance innovations, conceptual innovations, organizational innovations and management in the fourth, fifth, and sixth positions. Meanwhile, institutional innovation is the least applied category.

4.3. Trends in Indonesian public service innovation by sector

On top innovations based on KIPP, the health sector with the most innovation got the first position, followed by the agricultural/plantation/livestock sector in second place. Furthermore, the environment and forestry sector is in third place. Then in fourth and fifth place are the education and financial sectors. Of all sectors, eight sectors have consistently been awarded the top innovation at least five times in the 2014-2019 period, namely the legal &human rights sector, the environment &forestry sector, the social sector, the health sector, the agriculture/plantation/livestock sector, the communication &informatics sector, the education & culture sector, and the financial sector.

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