Comparative Analysis of Public Officials’ Innovation Capacity Between Central and Regional Agencies in Indonesia

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Abstract—As one of the initiators of the public sector’s innovation, public officials, both in central and regional government agencies, must have a strong innovation capacity to deliver innovations that are beneficial to society. The purpose of this study is to further explore on how is public officials’ innovation capacity in central and regional agencies and whether there are differences in the innovation capacity between them. This research uses a quantitative approach. The population in this study are all public officials from central and regional government agencies who completed the Leadership Training in Puslatbang PKASN LAN. The sample is public officials who completed that training in 2019. The data is secondary data processed by the SPSS program version 23. The analysis technique is the Mann - Whitney test. The results showed that the innovation capacity of public officials in central and regional agencies are satisfying and did not differ significantly. Public officials in central agencies have the same innovation capacity as public officials in regional agencies. It means that innovations built by them will have the same quality. By continuing to implement transformative leadership supported by organizational structure and culture could preserve sustainability and increase the innovation capacity.

Keywords—innovation, leadership, public sector

I. INTRODUCTION

Indonesia’s Global Innovation Index was ranked 85th out of 131 countries from 2018 to 2020. This rank is far below the neighboring countries such as Singapore (8th), Malaysia (33rd), Vietnam (42nd), and Thailand (44th). It is believed that this index indicates the innovation capacity of a country. To assess the degree of innovation in these countries, 80 indicators are grouped into seven pillars. The five pillars consist of innovation inputs, while the other two are innovation outputs. The inputs consist of institutions, human capital and research, infrastructure, market satisfaction, and business satisfaction. The outputs consist of science and technology output and creativity output. The biggest weakness in innovation in Indonesia is primarily affected by institutional factors in this case, government agencies as well as the knowledge factors held by Human Resources [1].

Innovation is a priority and a key factor in achieving customer value. Innovation in public sector organizations should be seen as a core activity because innovation is one of the tools for improving the service quality through changes in the effectiveness, efficiency, and level of government responsiveness [2]. It is likely that in the eyes of the world, Indonesia’s innovation can’t be aligned with other developing countries. However, even though they are on a local scale, public service innovations were able to compete in the nationwide. This was shown by the continuity of central and regional agencies to involved in innovation competition organized by Ministries/Public Sector Institutions, such as Innovative Government Awards (IGA) held by the Ministry of Home Affairs, Inovasi Administrasi Negara (INAGARA Awards) held by the National Institute of Public Administration, Kompetisi Sistem Informasi Inovasi Pelayanan Publik (SINOVIK Competition) held by Ministry of Administrative and Bureaucratic Reform and many more. These programs are carried out to foster the public sector’s innovations which ultimately leads to the increase of public services quality.

The concern of central and regional agencies in improving the quality of the public services can’t be separated from the role of innovation initiators. One of them is public officials, who must have a strong innovation capacity. A public official, as a leader, has a very significant role in the existence and advancement of the organizations says Kieman [3]. Leaders are one of the key success factors in building organizations’ innovation culture. A leader must be responsive in reacting to changes that arise [4]. A leader must always provide support for the goals set so that the atmosphere is favorable to carry out these innovations. A leader is required to conduct monitoring and assessment to evaluate progress and innovation efficacy and to ensure that a reward system is maintained to increase creative thinking [5].
Innovation in the public sector seeks to improve services, improve human resources quality, improve organizational performance, and accelerate bureaucratic reform [6]. The public sector’s innovation must continue to be improved, both from the organization’s capacity and the individual’s capacity. This is very critical, especially in terms of an organization’s improvement.

Leadership is the most critical aspect in fostering organization’s culture in this case, innovation culture, forming an education and training system, performance appraisal system, and reward system related to innovation performance. It takes firmness of rules, courage, open, adaptive and positive attitude, optimistic, appreciative, democratic and moral and material support to get used to renewal or innovation and renewing habits [7]. Innovation culture will strengthen the organization’s innovation capacity shown by individuals’ innovation capacity, both leaders and employees.

The organization’s culture affects a person’s innovative behavior [8]. The innovative behavior of leaders can differ according to the organization’s culture. Public officials, as leaders, are required to have innovative behavior that indicates the innovation capacity they have, which means the ability to generate innovation and ensure the sustainability of it.

In this digital era, the public sector’s innovation is transforming into digital-based service innovation. For example, e-Health services [9], e-Samsat [10], My Police [11] and many more. This innovation is a form of public service based on information and communication technology. The public sector’s innovation is strongly influenced by the innovation capacity of its human resources as an innovator.

Based on the argument described, the research questions in this study are: (1) How is the public officials’ innovation capacity in central agencies and regional agencies? (2) Are there any differences in innovation capacity between public officials in central agencies and regional agencies?

There have been many research related to innovation culture and public sector’s innovation. From a gender perspective, there is no difference in innovation capacity [12], however, there have been few research that explores public officials’ innovation capacity and how is the comparison between central and regional agencies has not been detailed. Therefore, the aims of this research are (1) to identify and map the public officials’ innovation capacity; (2) to determine whether there are differences in innovation capacity between public officials in central and regional agencies and provide recommendations to improve it.

II. LITERATURE

A. Innovation

Innovation has a long history of research and has been studied in several distinct disciplines. Due to that, innovation has many definitions that are hard to describe and measure. Some interpret innovation as a result, while others as a process. Innovation comes from an organizations’ ability to manage, maintain, and create knowledge [13,14]. The innovation process is the result of the knowledge process owned by the organization and it’s an important component of a long-term innovation success [13].

In carrying out their roles and functions, public sector organizations are expected to innovate, most of which are linked to community services. The ability to innovate is lower and the risks are higher in the public sector than in the private sector. The public sector’s innovation is classified as “the creation and implementation of processes, products, services and delivery methods that result in significant improvements in efficiency, effectiveness or quality of results” [15].

Innovation takes place across the public sector spectrum, from establishment laws to execute programs, regulatory mechanisms to use technology, human capital improvement and promote organization’s innovation to provide new services and/or to enhance the quality of existing services [15]. The process may be “top-down” or “bottom-up”. Ministers, public officials and groups consisting of academics push the “top-down”, while “bottom-up” is driven by employees or the stakeholders as customers. Users and beneficiaries must also engage in this process [2].

The public sector needs special attention as its entities are expected to build innovations that offer solutions to problems faced by various stakeholders. Emerging issues outside the public sector also hinder the innovation process. The presence of multiple stakeholders, organizational control, diverse viewpoints in evaluating relationships, and growing attention from the private sector to public policies and regulations are some of the issues that are oftentimes faced by public sector organizations related to the innovation process. These are some of the things that can hinder the growth of innovation capacity in the public sector.

Good policies, contributions from public officials to facilitate, and support innovation, cooperation from related stakeholders, Human Resources, collaboration, and community/civil society participation which encourages the dynamism of the political process to be more conducive are some of the things that support public sector’s innovation success. This can be seen from the policy, innovation governance and individual factors [16].

There are several elements and variables in innovation governance so that innovation can be sustainable and show great benefits, namely the presence of integrated management between the organization, business, and technology. Changes in the organizational structure must have an impact on more effective organizational behavior. Management of innovation is often influenced by the organizational environment consisting of government, socio-culture, economic factors, technology, resources, and finance. There’s a need to build an innovation culture. Innovation culture will emerge when all individuals are allowed to find new ways that are consistently effective that go beyond their capabilities.
Various parties, both the private/business sector, the wider society, and the government itself have felt the implementation of public sector’s innovation. Technology is used as means to develop, implement, maintain, and improve product quality and productivity. The use of technology often provides a simplified method in the integration system, applies and distributes knowledge related to changes in the organizational environment. The government also promotes the use of technology in various fields of government services to enhance the efficacy of its activities through various related policies [16].

According to Scott and Bruce in Yigit and Aksay [17] innovation is a multi-level process that involves certain behaviors and actions at each level. Innovation as a sectional activity where each individual can be involved at any level is compared to activities that consist of different and successive levels. The innovative behavior of an individual can be defined as the activity of finding ideas and solutions, development, and application. A certain pattern of thought is necessary for innovative behavior, including (1) generating ideas; (2) convey other significant things; (3) sell ideas effectively; (4) planning the development process and (5) overcoming obstacles (time, money, relevance) [7].

Halversen in Dhewanto et al. [15] reveal that there are 6 types of public sector’s innovation, namely:

- New services/improvements to existing services;
- Process innovation (changes in service procedures);
- Administrative innovations (e.g. the adoption of new policies);
- System innovation (new systems/fundamental changes to existing systems, for example, a change in organizational structure or the establishment of a new organization);
- Conceptual innovation (changes in actors followed by the use of new concepts);
- Radical changes (a shift in world views or a change in the perspective of employees/mentality).

B. Leadership and Innovation Capacity

The theory of leadership develops through various types of approaches, including personality approaches, skills approaches, behavioral approaches, and situational approaches. The leadership style used depends on the situation, employee, task, organization, and other environmental variables [18].

Leadership is certainly an active condition. Leadership is the result of an active relationship between the leader and his group members. A leader’s characteristics include promoting a sense of responsibility and task completion, being passionate and persistent in pursuing goals, having the courage to take risks, having originality, encouraging initiative behavior in social situations and conditions, having self-confidence and a sense of personal identity, willing to accept the consequences of each decision and action, have the readiness to accept interpersonal stress, willing to tolerate frustration and tardiness, able to influence the attitudes and behavior of others, and can construct systems of social interaction. Everything was done with due regard to the intended purposes [19]. Leaders must be able to inspire, control, make employees loyal, increase commitment, provide job satisfaction, enhance performance, and provide welfare [20]. Leaders need to understand the scope of empowerment with its supporting elements, provide opportunities for employees to grow, build trust, conduct evaluation, and follow-up by assessing the progress of employee empowerment [7].

Leaders’ strategies that are effective in achieving goals will institutionalize change/innovation by developing conditions in which their organizations will be sustainable and accustomed to responding and anticipating changes [21]. Leadership integration works together to increase innovation when leaders promote and seek to transform values to continue learning and transfer their knowledge, both tacit knowledge and explicit knowledge [16]. Leadership is a catalyst for inspiration, mentoring, setting examples, building a mutual trust and respect environment, shaping a creative culture, creating visions, listening, learning, teaching, and knowledge sharing [22].

A leader plays a role in fostering an organizational learning culture. Leaders who have a transformational leadership style support this by encouraging and facilitating the learning process, ensuring that each individual can collaborate and share knowledge optimally which ultimately affects the innovation capacity. Leadership may directly influence the innovation capacity or affect the creation of conditions that foster innovation such as those related to learning organizations. Learning organizations are characterized by building a learning culture and developing an organizational structure leading to a learning organization. Both of these things are enabled by leaders with a transformative leadership style which in turn affects the innovation capacity. The innovation capacity may not be directly related to innovation creation, but leads to opportunities and procedures that lead to innovation [23].

The essence of a transformational leadership style is empowerment/involvement of members to work effectively by building their commitment to new values, improving their skills and beliefs, creating a supportive atmosphere for the creation of innovation and creativity. Its primary role is to serve as a change agent/catalyst, not as a change controller [18]. Development and training of transformational behavior will enhance the ability to manage and increase innovation. Creativity and innovation will emerge by increasing and exploring the capacity for knowledge and abilities through education and training, formal and informal education [16].

Public officials, as the leader in the public sector, has a very wide area, not only concerning the public environment, public values but also to provide ideas that are highly relevant to leadership theory in general. The definition of public leadership is “change”, which reflects the changes in society and the role
of various groups and institutions in polycentric government conditions [24].

In the public sector, a variety of governmental and non-governmental organizations are the substantial environment that supports innovation. Non-governmental organizations consist of business organizations (public/private partnerships), universities, voluntary organizations, and many others. These organizations act as innovation sources and channels. However, politics and bureaucracy continue to play a major role in supporting innovation. They control resources and assert authority over conflicts that occur. Therefore, strategic planning and policy-making can act as a catalyst for successful innovation [15].

III. RESEARCH METHODS

The research method is quantitative. The Centre of Training and Development and Competency Mapping for Government Apparatus (Puslatbang PKASN) National Institute of Public Administration (LAN) is the location of this study. The research period is 2019. The population in this study were all public officials who attended leadership training in the PKASN LAN Puslatbang. While the sample used is public officials who have attended Supervisory Leadership Training (PKP), Administrator Leadership Training (PKA), and National Leadership Training Level II (PKN Tk. II) organized by Puslatbang PKASN in 2019. The samples were 280 public officials. The reason for this sampling because the Leadership Training participants in Puslatbang PKASN LAN came from central and regional agencies in Indonesia.

The data used for determining the level of the innovation capacity of public officials are the value of the change action design seminar when participating in leadership training. These data illustrate the mastery (capacity) of innovation of public officials by designing types of innovation, the scope of benefits of innovation, the clarity of stages of innovation, and the stakeholder mapping. These data are secondary data obtained from the database which has an ordinal scale.

The data were processed using the SPSS version 23 program and analyzed through the Mann-Whitney test. The Mann - Whitney test is a non-parametric equivalent of the two-sample t-test and used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed [25].

The next step is hypothesis testing, the criteria for rejecting or accepting a hypothesis based on the P-value obtained from SPSS program output, are as follows, if P-value <\( \alpha \), then H0 is rejected, while if P-value \( \geq \alpha \), then H0 is accepted. The hypotheses are as follows:

H1.1: the types of innovations made by public officials in central agencies are the same as regional agencies

H1.2: the scope of benefits of innovation determined by public officials in central agencies are the same as regional agencies

H1.3: the clarity of stages of innovation designed by public officials in central agencies are the same as regional agencies

H1.4: the stakeholder map determined by public officials in central agencies are the same as regional agencies

IV. ANALYSIS AND DISCUSSION

A sample of 280 public officials, consisting of 196 men and 84 women was used in this research. From the agencies' origins, as many as 75 public officials came from central agencies and 205 people came from regional agencies. They are grouped into the supervisor, administrator, and echelon ii. This sample can be considered representative of different regions of Indonesia (western, central, and eastern part). The following table 1 is the distribution of these public officials based on central regional agencies:

```
<table>
<thead>
<tr>
<th>Position</th>
<th>Central Agencies</th>
<th>Regional Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisor</td>
<td>12</td>
<td>68</td>
</tr>
<tr>
<td>Administrator</td>
<td>12</td>
<td>66</td>
</tr>
<tr>
<td>Echelon II</td>
<td>51</td>
<td>71</td>
</tr>
</tbody>
</table>
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Data on the innovation capacity of public officials consists of four variables, i.e. the type of innovation, the scope of benefits of innovation, the clarity of innovation stages, and the stakeholder maps. In the following table 2, the descriptive statistics of each variable for each public official are presented:
TABLE II. THE DESCRIPTIVE ANALYSIS OF INNOVATION CAPACITY

<table>
<thead>
<tr>
<th>Description</th>
<th>Public Officials in</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Central Agencies</td>
<td>Regional Agencies</td>
<td></td>
</tr>
<tr>
<td>Type of innovation</td>
<td>Min = 75</td>
<td>Min = 70</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max = 90</td>
<td>Max = 94</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean = 83.55</td>
<td>Mean = 82.32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stdev = 4,415</td>
<td>Stdev = 4,983</td>
<td></td>
</tr>
<tr>
<td>The scope of benefits</td>
<td>Min = 75</td>
<td>Min = 71</td>
<td></td>
</tr>
<tr>
<td>innovation</td>
<td>Max = 95</td>
<td>Max = 94</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean = 84.08</td>
<td>Mean = 82.99</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stdev = 4,549</td>
<td>Stdev = 4,927</td>
<td></td>
</tr>
<tr>
<td>The clarity of innovation</td>
<td>Min = 75</td>
<td>Min = 70</td>
<td></td>
</tr>
<tr>
<td>stages</td>
<td>Max = 91</td>
<td>Max = 95</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean = 83.67</td>
<td>Mean = 82.86</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stdev = 4,409</td>
<td>Stdev = 5,192</td>
<td></td>
</tr>
<tr>
<td>The stakeholder maps</td>
<td>Min = 75</td>
<td>Min = 70</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max = 91</td>
<td>Max = 95</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean = 83.80</td>
<td>Mean = 83.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stdev = 4,359</td>
<td>Stdev = 5,066</td>
<td></td>
</tr>
</tbody>
</table>

Based on the table above, the four variables of innovation capacity has an average in the range between 82 to 85. This shows that the innovation capacity of public officials is in the satisfactory category. The table also shows that the descriptive statistical values (minimum, maximum, mean, and standard deviation) for all of the variables have a value that is not too far apart between central public officials and regional public officials. This indicates that there is little disparity in the innovation capacity of central public officials and regional public officials. However, to find out further whether there is no significant difference, it is necessary to use the Mann-Whitney test.

Before analyzing the data through the Mann-Whitney test, first, the normality test was carried out on the variables forming the innovation capacity. The results of the normality test on the four variables in the innovation capacity of public officials can be seen in the following table 3:

TABLE III. THE RESULTS OF THE NORMALITY TEST

<table>
<thead>
<tr>
<th>Pejabat, Publik</th>
<th>Kolmogorov-Smirnov*</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jenis_Inovasi</td>
<td>Stat</td>
<td>df</td>
</tr>
<tr>
<td>Pusat</td>
<td>.149</td>
<td>75</td>
</tr>
<tr>
<td>Daerah</td>
<td>.114</td>
<td>205</td>
</tr>
<tr>
<td>Cakupan_Manfaat_Inovasi</td>
<td>.180</td>
<td>75</td>
</tr>
<tr>
<td>Daerah</td>
<td>.081</td>
<td>205</td>
</tr>
<tr>
<td>Kejelasan_Tahapan_Inovasi</td>
<td>.184</td>
<td>75</td>
</tr>
<tr>
<td>Daerah</td>
<td>.113</td>
<td>205</td>
</tr>
<tr>
<td>Peta_Pema, Keputra, Kepe, Notingan</td>
<td>.182</td>
<td>75</td>
</tr>
<tr>
<td>Daerah</td>
<td>.102</td>
<td>205</td>
</tr>
</tbody>
</table>

Table 3 above shows that data on the innovation capacity of public officials consisting of four variables that are not normally distributed. This can be seen from the significance value of the Kolmogorov-Smirnov and Shapiro-Wilk test which shows a value below 0.05. So it can be concluded that the data on the innovation capacity of central public officials and regional public officials are not normally distributed.

The Mann-Whitney test was conducted on data that had an ordinal scale and came from data that were not normally distributed. This test is to analyze the comparison of the innovation capacity of public officials between central and regional agencies. Based on the results of the Mann-Whitney test, the following table 4 is results were obtained:

TABLE IV. THE RESULTS OF THE MANN-WHITNEY TEST ON PUBLIC OFFICIALS’ INNOVATION CAPACITY

<table>
<thead>
<tr>
<th>Description</th>
<th>Mann–Whitney U</th>
<th>Wilcoxon on W</th>
<th>Z</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of innovation</td>
<td>7280,500</td>
<td>28395,500</td>
<td>.035</td>
<td>0.404</td>
</tr>
<tr>
<td>The scope of benefits of innovation stages</td>
<td>7423,000</td>
<td>28338,000</td>
<td>0.549</td>
<td>0.583</td>
</tr>
<tr>
<td>The clarity of innovation stages</td>
<td>7282,500</td>
<td>28977,500</td>
<td>0.846</td>
<td>0.398</td>
</tr>
<tr>
<td>The stakeholder maps</td>
<td>7430,000</td>
<td>28565,000</td>
<td>.040</td>
<td>0.624</td>
</tr>
</tbody>
</table>

First, based on the Mann-Whitney test on the types of innovation aspects made by public officials in central regional agencies, it gives a Z value of -0.835 with a P-value (Asymp.Sig (2-tailed)) of 0.404. Because this P-value is greater than the significance level α = 0.05, the hypothesis stated that the types of innovations made by public officials in central government agencies are the same as the types of innovations made by public officials in regional government agencies are accepted. This suggests that there are no differences in the types of innovations made by public officials in central government agencies and regional government agencies.

Second, based on the Mann-Whitney test on the scope of benefits of innovation aspects made by public officials in central regional agencies, it gives a Z value of -0.549 with a P-value (Asymp.Sig (2-tailed)) of 0.583. Because this P-value is greater than the significance level α = 0.05, the hypothesis stated that the scope of benefits innovations made by public officials in central government agencies is the same as the scope of benefits innovations made by public officials in regional government agencies are accepted. This suggests that there are no differences in the scope of benefits innovations made by public officials in central government agencies and regional government agencies.

Third, based on the Mann-Whitney test on the clarity of innovation stages aspects made by public officials in central regional agencies, it gives a Z value of -0.846 with a P-value (Asymp.Sig (2-tailed)) of 0.398. Because this P-value is greater than the significance level α = 0.05, the hypothesis stated that the clarity of innovation stages made by public officials in central government agencies are the same as the clarity of innovation stages made by public officials in regional government agencies are accepted. This suggests that...
there are no differences in the clarity of innovation stages made by public officials in central government agencies and regional government agencies.

Fourth, based on the Mann-Whitney test on the stakeholder maps aspects made by public officials in central regional agencies, it gives a Z value of -0.490 with a P-value (Asymp.Sig (2-tailed)) of 0.624. Because this P-value is greater than the significance level α = 0.05, the hypothesis stated that the stakeholder maps made by public officials in central government agencies are the same as the stakeholder maps made by public officials in regional government agencies are accepted. This suggests that there are no differences on clarity of innovation stages made by public officials in central government agencies and regional government agencies.

V. CONCLUSION

From the description above, it can be inferred that public officials’ innovation capacity in central and regional agencies is significantly the same. In other words, there is no difference in the innovation capacity between the central and regional agencies. The Public officials in central agencies have the same capability for innovation as public officials in regional agencies.

This is corroborated by the results of the change project undertaken by these public officials. This project is related to policy innovation and public services’ innovation. This is in line with what was conveyed by Suwarno in Narsa [26] which states that at least two types of innovation are often carried out by the public sector, namely policy innovation and public services’ innovation.

Based on the results, public officials/leaders, in general, should be continuing to practice transformational leadership supported by the existing organizational structure and culture with expectations to preserve sustainability and increase the innovation capacity. Further research is expected to add broader data such as data from the innovation competition held by Ministries/Agencies, or other relevant data regarding innovations carried out by public officials, along with observation and/or interview methods.

REFERENCES


