Unlocking regional innovation: The role of management and organizational participation in boosting original income

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A R T I C L E   I N F O

A B S T R A C T

This study explores the factors influencing the innovation process and examines regional innovation management in regency and city level organizations in Indonesia. Using secondary data from financial and innovation sources, the research adopts a qualitative descriptive approach. The sample is made up of 383 regencies and 95 cities in Indonesia. The POEMS framework, which assesses five elements, is used in the analysis: Person, Object, Environment, Message/Media, and Service. The findings highlight the importance of various dimensions, including leadership, vision, and mission; income levels and regional capital spending; transparent governance and accountability mechanisms; regulatory environment; and efficient service delivery. By contextualizing the findings within the existing literature, the study adds to the body of knowledge on regional innovation management. However, limitations include relying on secondary data and focusing on specific organizational levels in Indonesia. Future research should consider primary data collection and broader samples. In designing effective strategies and policies to promote regional innovation, the findings of the study provide insights for policy makers, practitioners, and researchers.

1. Introduction

Regional innovation is a significant factor driving regional organizations to enhance their performance. The implementation of regional innovation has experienced several changes in response to the COVID-19 pandemic. The pandemic has had a significant impact on various aspects of regional innovation, including the use of technology, collaboration, and resource allocation. Organizations have been forced to adapt to the new environment, which has required them to be more innovative and agile in their approach to regional innovation. The importance of resilience, adaptability, and rapid response to changing circumstances has been highlighted by the COVID-19 pandemic. Consequently, regional organizations must continually assess and adapt their approach to regional

innovation to maintain competitiveness and ensure continued growth. The concept of innovation, with its many perspectives and dynamics of performance in institutions around the world, has also received considerable attention from the academic and global community such as [1–19]. In Indonesia, as well as globally, the impact of innovation on regional income has been discussed and explored in various scholarly references with different perspectives and focus for example [20–25]. There is a paucity of literature that analyses and explains these challenges.

This condition also occurs in Indonesia, the assumption of low management in managing innovation is one of the important topics in this article. Management has shown a contribution to improvement in various organizational concepts, scientific attention to sharpening management which awards innovation, and budget is a topic that has been reviewed, such as [26–35]. Effective management practices enable organizations to leverage their resources and capabilities to drive innovation and enhance performance. In the context of regional innovation, management is essential in coordinating and aligning efforts among various stakeholders, including government agencies, academic institutions, and businesses. A well-managed regional innovation ecosystem can foster collaboration and knowledge sharing, leading to the creation of new ideas and solutions that benefit the region as a whole.

This study aims to compare innovation processes within regency and city level organizations in Indonesia. The focus is on measuring organizational management through regional innovation parameters, which consist of sixteen parameters for the parent unit. These parameters include vision and mission, level of research and development institutions, regional budget, quality of licensing improvement, total income per capita, open unemployment rate, total investment increase, total regional original income increase, opinion of the Supreme Audit Agency, performance accountability achievement value, human development index value, supporting for innovators, number of research or studies support innovation, regional innovation system roadmap, poverty reduction, and number of regional innovations. In addition, there are twenty parameters for the organizational innovation unit, including regional innovation regulations, availability of human resources for regional innovation, budget support, use of IT, innovation guidance, regional apparatus innovation programs and activities in regional development activity plans, innovation networks, replication, technical guidelines, implementation of regional innovation, ease of service information, complaint service complaints, involvement of innovation actors, ease of produced innovation process, online system, speed of innovation, benefits of innovation, monitoring, and evaluation of regional innovation, socialization of regional innovation, and quality of regional innovation. The study distinguishes between different forms of regional innovation. These include regional governance innovation, public service innovation, and other forms of innovation in the field of government affairs falling under regional authority.

This research is significant because it provides insights into the innovation processes of regency and city level organizations in Indonesia. It compares and analyses their approaches to identify differences, similarities, and potential areas for improvement. It differs by focusing on the governmental level and the unique contexts in which they operate. This research can contribute to academic research and inform practical strategies to improve local innovation by generating new knowledge and understanding. The significance of the study extends beyond academic research as it has practical implications for regional governance and public service delivery. The findings can guide policymakers and organizational leaders in developing strategies to foster innovation, improve resource allocation, and enhance overall performance. By addressing the gaps identified in the study, regional organizations can strengthen their innovation ecosystem and effectively respond to the challenges and opportunities of the ever-changing environment.

2. Methods

This study used a mixed methods approach to research and collect data, mainly using secondary data. The data was obtained from financial data on the general service function of the regional income and expenditure budget at the Ministry of Finance, Republic of Indonesia, and innovation data from the Ministry of Home, Republic of Indonesia. A qualitative descriptive approach, a rigorous and reflective method for empirical research, was used in the research. This approach involves the active involvement of the individuals as the subjects of and contributors to the research process. Quantitative analysis was also used to help visualize the data used in the research.

This study sampled 383 regencies and 95 cities in Indonesia. The analysis tool used in this research was POEMS (people, object, environment, message, and service), a methodological approach to the study of service interaction activities. POEMS [36] is an observational framework for understanding the elements present in a given context. It consists of five elements: Person, Object, Environment, Message, and Service. These include: broadening thinking about dynamic performance, encouraging completeness by identifying under-utilized items in a performance process, encouraging process focus by providing clear boundaries for each item, facilitating understanding of context through measurable levels, and focusing on the detail within each item used as a metric. Five-point Likert scales, ranging from one for the Embryo response to five for the Sustainable response, were used to visualize the results of the analysis. The analysis determined the role of the people, object, environment, message, and service elements by comparing the baseline values in the radar curve.

3. Results and discussion

3.1. Budget versus local innovation

The budget capacity of each region is different based on the needs proposed through a standardized mechanism, meanwhile, in innovation, there are differences based on the understanding of human resources who manage the government. The amount of a large budget is not directly proportional to the number of innovations produced. Fig. 1 shows that 379 regencies have had innovations. The number of innovations produced is not the same as the number of innovations reported, starting with several regencies reporting one

innovation up to the number of innovations being the most, reaching 419 innovations. Every innovation reported refers to the provisions of the Domestic Regulation of the Republic of Indonesia number 116 of 2018, at least contains the Name of the Innovation, the name of the innovator, Stages of Innovation, Initiator of Innovation, Type of Innovation, Form of Regional Innovation, COVID-19 Cluster, Regional Innovation Affairs, Design and Development, and Principal Changes Made, Regional Innovation Goals, Benefits Obtained, Innovation Results, Regional Innovation Trial Time, Regional Innovation Implementation Time, Budget, Business Profile and Maturity of the resulting Innovation (see Fig. 2).

Within the limits of the budget sourced from the function of public services, regencies have the largest amount of 2375 trillion IDR while the smallest budget is 0.21 trillion IDR. Two regencies have a budget portion and the results of innovation that can be said to be balanced because they are in quadrant four are Ngawi regency (kab 247) with a description of the number of innovations as many as 382 innovation units and the budget they have is 601.87 billion IDR. The next area is the Tanggamus Regency with a total of 419 innovation units and a budget of 790.76 billion IDR.

In this study, the sample cities were ninety-five regions, with the highest budget of 1.82 trillion IDR and the lowest budget is 0.17 trillion IDR, while the most innovations produced were 322 and the least was one innovation in five cities. In the quadrant image, it can be described that the city has almost the same character in the relationship between the government budget and the results of innovation which is dominated by being in the third quadrant. Three cities are in quadrant four, namely, city39 is Magelang City with 182 innovation units, Kota67 is Salatiga City with 248 innovation units, Kota61 is Pekanbaru City with 322 innovation units, meanwhile, one city is located in quadrant three, namely Palembang City with a total of 196 innovation units.

Furthermore, for the regional innovations produced, the description in this study is an accumulation of organizations that report the results of regional innovations with different amounts between one regional government and another. In the innovation phase, the resulting innovation consisted of 1426 regional innovations, trials of 697 regional innovations, and 9014 regional innovations implemented, with a total of 11,137 regional innovations. Then in the form of other Regional Innovations by Government Affairs under the authority of the Regions, 2970 regional innovations were identified, 6665 regional innovations in public services, and 1500 regional government governance were identified. There are 4150 regional innovations of digital types, 6685 regional types of non-digital innovations, and 302 technological innovations.

3.2. Discussion

The POEMS process has an input stage with the identification of the situation through direct and indirect observations. Meanwhile, the output obtained is in the form of organized observations about the context aspect. The application of the POEMS framework [36] encourages research on these elements independently and in interrelated systems. For example, a team researching a particular product using the POEMS framework will look beyond the objects (products) of services, messages, environments, and people as they relate to the broader context in which the product is used. From a broader perspective, frameworks help to think about context as a system of related elements.

POEMS mechanism in Ref. [36] technically consists of four steps which are carried out as follows: Step 1: Preparation of the field. Creation of note-taking templates and being able to record and categorize observations according to the POEMS Framework which supports user observations or interviews. Pandemic conditions have an impact on secondary data-based online communication approaches. Step 2: Observation of the field. Observing or involving people in the interaction process. Observing or asking about the activities of people, the objects they use, their environment, the information they interact with, and similar aspects. Inventory records are based on observations or responses from people. Step 3: Understand the context through POEMS conducted during observation. This step examines every element in POEMS.
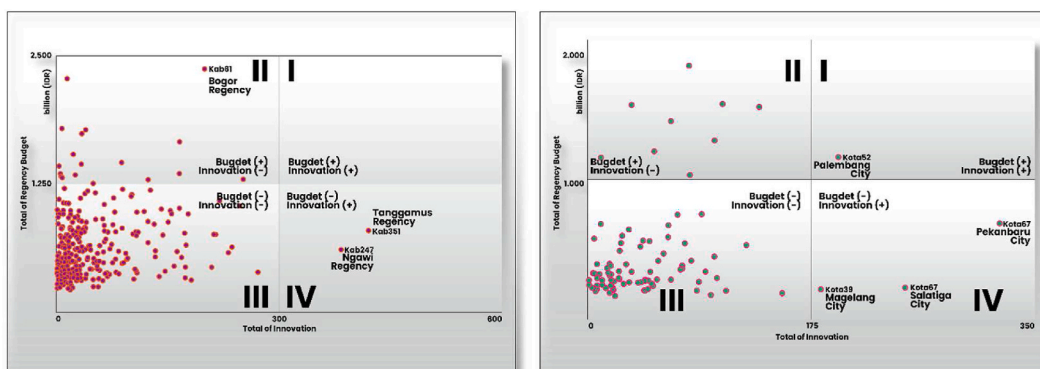

Fig. 1. Quadrant about Total of Innovation dan Total of Budget Regency and City in Indonesia.
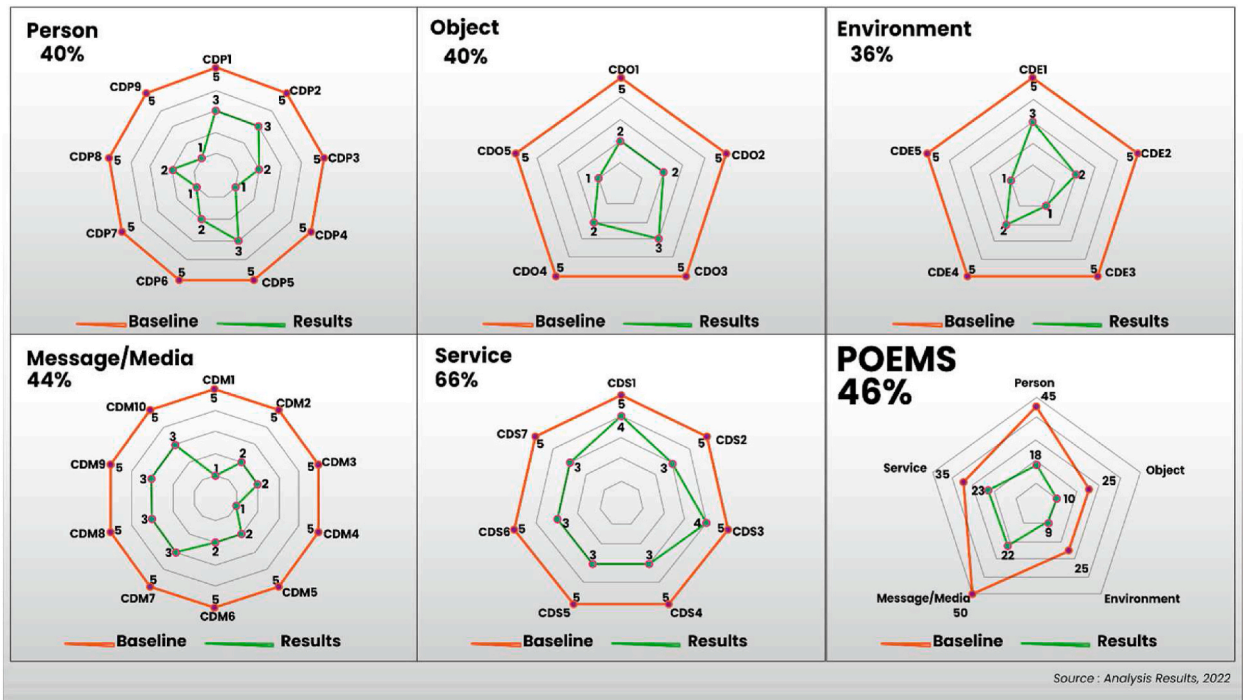Source: Ministry of Home Affairs – Ministry of Finance processed, 2021

Fig. 2. POEMS analysis results.

a. People: Who are the different types of people in context? In the context of libraries, it can be mentioned as librarians and librarians. What seems to be the reason they are there? Trying to catch the different types of people present. Record them in the prepared place.

b. Objects: What are the various objects, for example, books, magazines, newspapers, and both internal and external facilities? What is the broader category of objects? The relationship between objects to each other?

c. Environment: What are the different settings in which the activity takes place? Meeting rooms, reading rooms, prayer rooms, bathrooms, and various things related to the environment. Define different environments in that context.

d. Message: What messages are being communicated in the context, and how are they transmitted? The availability of library operational information, the structure of library management, data and information on the availability of books, library visitors, and library operational reports are part of the messages that can be identified.

e. Services: What are the different services offered in the library? Library cleaning? Sending borrowed and returned books? The media used in improving the service? Take note of the types of services available and take note of them.

The government parent unit and the innovation organization unit are distributed in POEMS parameters. The government unit has sixteen parameters, namely Vision and Mission, R & D Institution Level, Regional Budget, Quality of Licensing Improvement, Total Income Per capita, Open Unemployment Rate, Total Investment Increase, Total Regional Original Income Increase, Opinion of the Supreme Audit Agency, Performance Accountability Achievement Value, Value Human Development Index, support for Innovators, Number of research or studies that Support Innovation, Roadmap for Regional Innovation Systems, Poverty Reduction and Number of Regional Innovations. An organizational innovation unit that has twenty parameters consisting of Regional Innovation Regulations, Availability of Human Resources for Regional Innovations, Budget Support, Use of IT, Innovation Guidance, Regional Apparatus Innovation Programs and Activities in Regional Development Activity Plans, Innovation Networks, Replication, Technical Guidelines, Implementing Regional Innovation, Ease of Service Information, Complaint Service Complaints, Involvement of innovation actors, Ease of Produced Innovation Process, Online System, Speed of Innovation, Benefit of Innovation, Monitoring, and Evaluation of Regional Innovation, Socialization of Regional Innovation and Quality of Regional Innovation. After taking measurements on a Likert scale, the results are as shown in Table 1 below.

The measurement results of the five elements of the POEMS framework provide valuable insights into the process of regional innovation in regency and city-level organizations in Indonesia. By examining each dimension of the elements it is possible to gain a comprehensive understanding of the factors that influence innovation. When comparing these findings with previous research, it was found that there is a significant overlap in the dimensions identified as important for regional innovation management. For example, studies [37–40] have highlighted the important role of strong leadership, vision, and mission in driving innovation in organizations. This study is in line with these findings, as we observe that the CDP1 and Level of CDP2 dimensions score high, indicating a focus on developing and maintaining a clear vision of innovation and building research and development institutions in the region. This study

Table 1
Measurement results of the five elements of POEMS.

Element	Dimension	Code Dimension	Respond	Results	Baseline
Person	Vision and mission	CDP1	Develop	**3**	5
	R&D Institution Level	CDP2	Develop	**3**	5
	Open Unemployment Rate	CDP3	Grow	**2**	5
	Award For Innovators	CDP4	Embryo	**1**	5
	Number of studies or studies that support Innovation	CDP5	Develop	**3**	5
	Poverty Reduction	CDP6	Grow	**2**	5
	Availability of Human Resources for Regional Innovation	CDP7	Embryo	**1**	5
	Regional Innovation Executor	CDP8	Grow	**2**	5
	Involvement of innovation actors	CDP9	Embryo	**1**	5
			Total	18	45
Object	Budget on time	CDO1	Grow	**2**	5
	Total Income Per capita	CDO2	Grow	**2**	5
	Amount of Investment Increase	CDO3	Develop	**3**	5
	Total Regional Original Income Increases	CDO4	Grow	**2**	5
	Number of Regional Innovations	CDO5	Embryo	**1**	5
			Total	10	25
Environment	The Supreme Audit Agency's Opinion	CDE1	Develop	**3**	5
	Performance Accountability Achievement Value	CDE2	Grow	**2**	5
	Regional Innovation System Roadmap	CDE3	Embryo	**1**	5
	Budget Support	CDE4	Grow	**2**	5
	Regional Apparatus Innovation programs and activities in Regional Development Activity Plans	CDE5	Embryo	**1**	5
			Total	9	25
Message/ Media	Regional Innovation Regulation	CDM1	Embryo	**1**	5
	IT Usage	CDM2	Grow	**2**	5
	Innovation Guide	CDM3	Grow	**2**	5
	Replication	CDM4	Embryo	**1**	5
	Ease of the resulting innovation process	CDM5	Grow	**2**	5
	Online System	CDM6	Grow	**2**	5
	Benefits of Innovation	CDM7	Develop	**3**	5
	Regional Innovation Monitoring and Evaluation	CDM8	Develop	**3**	5
	Regional Innovation Socialization	CDM9	Develop	**3**	5
	Regional Innovation Quality	CDM10	Develop	**3**	5
			Total	22	50
Service	Quality of Licensing Improvement	CDS1	Mature	**4**	5
	HDI Value	CDS2	Develop	**3**	5
	Innovation Network	CDS3	Mature	**4**	5
	Technical Guide	CDS4	Develop	**3**	5
	Ease of Service Information	CDS5	Develop	**3**	5
	Complaint Service Resolution	CDS6	Develop	**3**	5
	Innovation Speed	CDS7	Develop	**3**	5
			Total	23	35

Source: Researcher analysis, 2023

identified the Open Unemployment Rate (OIR) as an important dimension affecting regional innovation. This finding is in line with research conducted by Refs. [41–43], which emphasizes the importance of addressing unemployment issues in fostering an innovative environment. By recognizing this dimension, regional organizations can strategically align their innovation efforts with job creation initiatives, thus creating a synergistic impact on economic and social development. In the Objective element, the findings of this study highlight the dimensions of CDO2 and CDO4 as key drivers of regional innovation. These dimensions have been widely acknowledged in previous studies [41,44–48], which emphasize the positive relationship between income levels and innovation capacity. This study contributes to the literature by providing empirical evidence on the influence of these dimensions in the Indonesian context.

In the Environment element, the dimensions of CDE1 and CDE2 emerged as significant factors in regional innovation. These dimensions are in line with previous research [49–51], which emphasizes the importance of transparent governance and accountability mechanisms in driving innovation. The research in this study reinforces these findings and underlines the need for effective governance practices to support the innovation process. Within the Message/Media element, the findings of this study highlight several dimensions that play an important role in regional innovation, such as CDM1 and CDM8. These dimensions have been explored in previous studies [52–54], which emphasize the importance of regulatory frameworks and evaluation mechanisms in promoting innovation. This study, therefore, reinforces the perspective and provides empirical evidence of their relevance in the Indonesian regional context. Finally, within the Services element, dimensions such as CDS1 and CDS7 emerged as important factors impacting on regional innovation. Previous studies [55–58] have emphasized the importance of efficient service delivery and streamlined processes in supporting innovation. This study is in line with those findings, highlighting the need for organizations to prioritize service quality and speed to

enhance their innovation capabilities.

Furthermore, it can be shown on the radar curve the position and role of each element which is limited by the baseline in the maximum number according to the weight of each element, as shown in the following figure.

The overall results still reach 46 % on a 100 % scale describing that the organization's management is not fully ready or in a growing condition, then in detail, the people element has a score with an achievement of 40 % indicating that basically, the existing human resources do not have a good understanding. Alear and complete on the form of regional innovation, then the object element reaches 40 % which means the low target of regional innovation is explored even though in reality there is potential for innovation that has been carried out, the environment is the lowest element with a result of 36 % indicating that environmental heterogeneity has an impact on the low quantity and the quality of regional innovations produced despite having a proportional budget, messages/media reaching a score of 44 % meaning that there are no media that can be used to increase regional innovations that are relevant to the budget, and lastly for services, it has the highest score of approx. ar 66 % explained that the efforts made within the service boundaries have developed quality towards maturity.

By using the POEMS framework to examine the dimensions that influence innovation in regency and city level organizations in Indonesia, this study contributes to the literature on regional innovation management. It has highlighted the added value of this research in advancing the theoretical understanding of the regional innovation process by contextualizing the findings of this study within the existing literature. The study has confirmed the strength and generalizability of the findings by identifying overlaps with previous research. Moreover, it also highlights unique dimensions specific to the Indonesian context that shed light on the landscape of regional innovation in Indonesia.

It is important to acknowledge its limitations. First, this study relied on secondary data sources. This may have limitations in terms of data accuracy and availability. To gain a deeper understanding of the innovation process at the regency and city level, future research could consider collecting primary data through surveys or interviews. Second, this study focused on regency and city level organizations in Indonesia, which limits the generalizability of the findings. To gain a more comprehensive understanding of local innovation management, future research could include a broader sample covering different administrative levels and countries.

Based on the limitations identified, there are several avenues for future research in the field of regional innovation management. First, valuable insights into the drivers and barriers to innovation in this context would be provided by qualitative studies exploring the experiences and perspectives of innovation actors at the regency and city levels. Second, cross-country comparative studies can shed light on differences in regional innovation practices and identify best practices that can be shared and adopted across regions. Finally, longitudinal studies, which follow regional innovation processes through time, offer a dynamic perspective. Future research should address these gaps to improve the theoretical understanding of regional innovation management.

4. Conclusion

In summary, this study aimed to compare the innovation processes of organizations at the regency and city levels in Indonesia using the POEMS framework. Insights into the factors influencing regional innovation management were gained by examining the dimensions of the POEMS elements. Findings contribute to delisting literature on regional innovation and provide valuable insights for policymakers, practitioners, and researchers. The results of this study point to several important dimensions that have a significant impact on regional innovation in Indonesia. These dimensions include the role of strong leadership, vision, and mission (the people element), the influence of regional income and investment levels (the object element), the importance of transparent governance and accountability mechanisms (the environment element), the role of regulatory frameworks and evaluation mechanisms (the message/media element), and the importance of efficient service delivery and streamlined processes (the service element). This study has highlighted the theoretical and practical value of these findings by contextualizing them within the literature. This research aligns with previous studies identifying the same dimensions as important innovation drivers. This adds to the body of knowledge on regional innovation management and confirms the robustness and generalizability of our findings. Despite its limitations, this study contributes to the regional innovation management literature by providing insights into dimensions driving innovation in regencies and city organizations in Indonesia. The findings can inform policymakers and practitioners in designing effective regional innovation strategies and policies. Future work could address the identified limitations and better understand regional innovation and how it affects economic and social development.

CRediT authorship contribution statement

Andjar Prasetyo: Writing – review & editing, Writing – original draft, Supervision, Formal analysis, Conceptualization. **Abdul Hamid:** Writing – original draft, Funding acquisition, Data curation. **Herrukmi Septa Rinawati:** Writing – original draft, Project administration, Investigation. **Bambang Riawan Eko:** Writing – original draft, Software, Resources. **Ari Sasmoko Adi:** Writing – original draft, Resources, Methodology. **Sugiono:** Writing – original draft, Visualization, Validation, Data curation, Writing – original draft, Visualization, Validation, Data curation. **Hasim Ashari:** Writing – original draft, Visualization, Formal analysis, Data curation.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:Unlocking Regional Innovation: The Role of Management and Organizational Participation in Boosting Original Income Except for the author with the name Bekti Putri Harwijayanti, because the author is currently unable to move, the name Bekti Putri

Harwijayanti is not included as an author in this article.

Appendix

Data availability

Table 2
Amount of budget by function and number of local governments.

No	Function	Amount of budget (billion IDR)
1	General service function	294.210,79
2	Order and security function	12.896,21
3	Economic function	54.793,11
4	Environmental function	18.611,49
5	The function of housing and public facilities	117.010,43
6	Health function	149.338,73
7	Tourism and culture function	6.692,30
8	Education function	226.841,72
9	Social protection function	12.282,21

Source: Ministry of Finance processed, 2021

The data in Table 2 is the result of the accumulation of regional expenditure grouped according to nine functions in the Local Government group at the district/city level, released by the Ministry of Finance of the Republic of Indonesia.

Table 3
Local government innovations in Indonesia in 2020.

Regional	Less Innovative	Innovative	Very Innovative	Grand Total
Regency	308	73	2	383
City	67	22	3	92
Grand Total	401	95	5	475

Source: Ministry of Home Affairs processed, 2021

Table 3 data is the result of grouping regional innovations at the city district level in Indonesia with three groups ranging from regions with low innovation, innovative regions and the most innovative regions sourced from the Ministry of Home Affairs of the Republic of Indonesia.

References

[1] K. Davis, A. Snider, T. Archibald, B. Grove, S. Babu, Organizational innovation in times of arises: the case of fxtension and ldvisory services, J. Int. Agric. Ext. Educ. 28 (1) (2021) 6–14, https://doi.org/10.5191/jiaee.2021.28101.

[2] H. Barth, P. Ulvenblad, P.O. Ulvenblad, M. Hoveskog, Unpacking sustainable business models in the Swedish agricultural sector– the challenges of technological, social and organisational innovation, J. Clean. Prod. 304 (2021), 127004, https://doi.org/10.1016/j.jclepro.2021.127004.

[3] J.V. Aliazas, J.F. Panoy, A.L. del Rosario, J. Madrideo, Critical success factors of the Flexible iearning delivery as organizational innovation of one state university in the Philippines, International Journal of Educational Management and Development Studies 2 (3) (2021) 61–77, https://doi.org/10.53378/348736.

[4] X. Xiao, Y. Zhu, Y. Zhu, Q. Zhao, How does the external lntegration and internal sharing of mig data influence organizational innovation? The roles of strategic rearning and Market oesponsiveness, IEEE Access 9 (2021) 192–203, https://doi.org/10.1109/ACCESS.2020.3046641.

[5] H.F. Rad, S. Shahi, A. Fazeli, The role of transformational leadership and knowledge management in organizational innovation of schools, Education and Self Development 16 (1) (2021) 40–53, https://doi.org/10.26907/esd16.1.05.

[6] D. Thatrak, Human capital crientation, employee Creativity development, organizational innovation capabilities, and mutstanding performance of SMEs businesses in Thailand, International Journal of Economics and Business Administration IX (2) (2021) 126–142, https://doi.org/10.35808/ijeba/693.

[7] S.A. Basit, The effect of external knowledge sources on organizational innovation in small and Medium enterprises in Germany, Bus. Syst. Res. 12 (1) (2021) 60–79, https://doi.org/10.2478/bsrj-2021-0005.

[8] X. Li, C. Shi, H.A. Alterazi, M.Y. Abo Keir, Application of RBF model in the relationship between organisational innovation and organisational performance of HEM enterprises, Applied Mathematics and Nonlinear Sciences 6 (2) (2021) 331–338, https://doi.org/10.2478/amns.2021.2.00049.

[9] C.F. Gómez Muñoz, A.M. Romero, Organisational innovation in bureaucracies: an impossible mission? Direccion y Organizacion 74 (74) (2021) 54–66, https://doi.org/10.37610/DYO.V0I74.602.

[10] W. Sung, C. Kim, A study on the effect of change management on organizational innovation: focusing on the mediating effect of members' innovative behavior, Sustainability 13 (4) (2021) 1–26, https://doi.org/10.3390/su13042079.

[11] L. Valenzuela-Fernández, N. Peñaloza-Briones, K. Barajas-Portas, E. Marinao-Artigas, Organizational innovation capabilities. Empirical evidence from B2B contexts, Estud. Gerenciales 37 (161) (2021) 647–656, https://doi.org/10.18046/j.estger.2021.161.4309.

[12] G. Ni, et al., Influence mechanism of organizational flexibility on enterprise competitiveness: the mediating role of organizational innovation, Sustainability 13 (1) (2021) 1–23, https://doi.org/10.3390/su13010176.

[13] F. Alfawaire, T. Atan, The effect of strategic human resource and knowledge management on sustainable competitive advantages at Jordanian universities: the mediating role of organizational innovation, Sustainability 13 (15) (2021), https://doi.org/10.3390/su13158445.

[14] Y.J. Fan, S.F. Liu, D.B. Luh, P.S. Teng, Corporate sustainability: impact factors on organizational innovation in the industrial area, Sustainability 13 (4) (2021) 1–24, https://doi.org/10.3390/su13041979.

[15] A. Nugraha, Irwansyah, Purwadi, How digital knowledge sharing affects innovation work behavior and organizational innovation capability in term of sustainability development goals, IOP Conf. Ser. Earth Environ. Sci. 716 (1) (2021), https://doi.org/10.1088/1755-1315/716/1/012058, 0–10.

[16] H. Makkonen, Information processing perspective on organisational innovation adoption process, Technol. Anal. Strateg. Manag. 33 (6) (2021) 612–624, https://doi.org/10.1080/09537325.2020.1832218.

[17] S. Lee, H.Y. Oh, J. Choi, Service design management and organizational innovation performance, Sustainability 13 (1) (2021) 1–18, https://doi.org/10.3390/su13010004.

[18] C. Rupietta, J. Meuer, U. Backes-Gellner, How do apprentices moderate the influence of organizational innovation on the technological innovation process? Empirical Research in Vocational Education and Training 13 (1) (2021) 1–25, https://doi.org/10.1186/s40461-020-00107-7.

[19] R. Parthasarathy, M. Garfield, A. Rangarajan, J.L. Kern, The case of organizational innovation capability and health information technology implementation success: as you sow, so you reap? Int. J. Healthc. Inf. Syst. Inf. 16 (4) (2021) 1–27, https://doi.org/10.4018/IJHISI.20211001.oa21.

[20] R. Alkatiri, N.E. Mokodompit, R. Oktavianus, The effect of totor behicle bax on regional original income (PAD) Bone Bolango district, Journal Dimensie Management and Public Sector 1 (2) (2020) 40–49, https://doi.org/10.48173/jdmps.v1i2.118.

[21] R. Putra, R.R. Wijayanti, O. Ardhiarisca, Measurement of regional government financial performance in Indonesia, Jurnal Bisnis dan Akuntansi 22 (1) (2020) 83–94, https://doi.org/10.34208/jba.v22i1.619.

[22] D.A. Aruan, D.P. Purba, Efforts to Improve Regional Original Income of Medan City through Hotel Taxes, 2020, pp. 99–104, https://doi.org/10.31098/jibm.v1i1.224.

[23] A. Hutomo, T. Marditama, N. Limakrisna, I. Sentosa, J. Lee, K. Yew, Green human resource management, Customer Environmental Collaboration and the Enablers of Green Employee Empowerment: Enhancing an Environmental Performance 1 (2) (2020) 358–372, https://doi.org/10.38035/DIJEFA.

[24] A. Wijaya, D.C. Darma, T. Pusriadi, How contribute and the erowth of regional original income? A aypology empirical, Int. J. Acad. Res. Account. Finance. Manag. Sci. 10 (2) (2020) 140–156, https://doi.org/10.6007/ijarafms/v10-i2/7404.

[25] A. Astuti, Analysis of tffectiveness and contribution of Advertisement iax collection on original regional income, JASa (Jurnal Akuntansi, Audit dan Sistem Informasi Akuntansi) 4 (3) (2020) 338–346, https://doi.org/10.36555/jasa.v4i3.1478.

[26] W. Xia, B. Li, S. Yin, Identification of influencing factors for sustainable development: evaluation and management of regional innovation performance in heilongjiang, China, Sustainability 12 (7) (2020), https://doi.org/10.3390/su12072739.

[27] K. Malik, L. Mach, M. Szewczuk-Stepien, P. Bebenek, Specialization entegrated Strategy of innovations: effective model for emerging regional Economy development? European Research Studies Journal XXIII (2) (2020) 78–97, https://doi.org/10.35808/ersj/1581.

[28] F. Pollák, M. Konečný, D. Ščeulovs, Innovations in the management of e-commerce: analysis of customer interactions during the covid-19 pandemic, Sustainability 13 (14) (2021), https://doi.org/10.3390/su13147986.

[29] O. Iermakova, et al., Glocalization of regional innovation development, Manag. Theor. Stud. Rural Bus. Infrastruct. Dev. 43 (2) (2021) 195–205, https://doi.org/10.15544/mts.2021.16.

[30] H.R. Seddighi, S. Mathew, Innovation and regional development via the firm's core competence: some recent evidence from North East England, Journal of Innovation and Knowledge 5 (4) (2020) 219–227, https://doi.org/10.1016/j.jik.2019.12.005.

[31] G. Weiss, E. Hansen, A. Ludvig, E. Nybakk, A. Toppinen, Innovation governance in the forest sector: Reviewing concepts, trends and gaps, For Policy Econ 130 (December 2020) (2021), 102506, https://doi.org/10.1016/j.forpol.2021.102506.

[32] L. Greenhill, T.A. Stojanovic, P. Tett, Does marine planning enable progress towards adaptive governance in marine systems? Lessons from Scotland's regional marine planning process, Maritime Studies 19 (3) (2020) 299–315, https://doi.org/10.1007/s40152-020-00171-5.

[33] D. Yu Sakhanevich, To the iuestion about the droblems of management of functioning of the regional innovation enfrastructure in the context of vigitalization of the Economy on the example of the Vologda region, Bulletin of Kazakh National Women's Teacher Training University 1 (1) (2021) 92–105, https://doi.org/10.52512/2306-5079-2021-85-1-92-105.

[34] A. Samoylov, V. Abannikov, I. Zhulega, A. Budagov, Innovation management of regional economics (in terms of economic indicators of Saint Petersburg), E3S Web of Conferences 157 (2020), https://doi.org/10.1051/e3sconf/202015704016.

[35] P. López-Rubio, N. Roig-Tierno, A. Mas-Tur, Regional innovation system research trends: toward knowledge management and entrepreneurial ecosystems, Int. J. Qual. Innovat. 6 (1) (2020), https://doi.org/10.1186/s40887-020-00038-x.

[36] V. Kumar, 101 Design Methods A Structured Approach for Driving Innovation in Your Organization, New Jersey, 2013.

[37] W. Kucharska, Leadership, culture, intellectual capital and knowledge processes for organizational innovativeness across industries: the case of Poland, J. Intellect. Cap. 22 (7) (2021) 121–141, https://doi.org/10.1108/JIC-02-2021-0047.

[38] Wahid Nur, Sangkala, Sadik Nur, Nurdin Nara, Local government innovations related to the application of visionary leadership and super leadership styles, Turkish Journal of Computer and Mathematics Education 12 (6) (2021) 296–302, https://doi.org/10.17762/turcomat.v12i6.1369.

[39] Wahid Nur, Sangkala, Sadik Nur, Nurdin Nara, Implementation of leadership ityle in increasing local government innovation, 98Copyright © 2020, Journal of Asian Multicultural Research for Social Sciences Study, Under the license CC BY-SA 4.0Journal of Asian Multicultural Research for SocialSciencesStudy 1 (2) (2020) 98–106.

[40] L.L. Gorman, Leadership and Organizational Cultural Values that Influence Organizational Learning, Fostering Double Loop Learning, 2004.

[41] S.Y. Christianto, D. Prasetyani, T. Rawidyo Putr, The effect of mnflation rate, economic wrowth rate and einimum jages on open unemployment rate in yast Java rear 2013–2021, International Journal of Economics, Business and Management Research 6 (12) (2022), https://doi.org/10.51505/ijebmr.2022.61204.

[42] R. Putra, S. Wahyuning Tyas, M.G. Fadhlurrahman, Geographically weighted eegression with the best jernel function on open unemployment rate data in past Java Province, Enthusiastic : International Journal of Applied Statistics and Data Science (2022), https://doi.org/10.20885/enthusiastic.vol2.iss1.art4.

[43] A.R.D. Prayitno, D. Kusumawardani, Open unemployment rate in the jrovince of East Java, The Winners 23 (1) (2022), https://doi.org/10.21512/tw.v23i1.7047.

[44] M. Maryono, N. Nuraini, A. Murdiyanto, The Effectiveness of Local Tax Law in Increasing Regency/City Regional Tax Revenue in Central Java Province, 2022, https://doi.org/10.4108/eai.27-7-2021.2316895.

[45] X. Chen, How does local autonomy shape the revenues of small municipalities? Evidence from Illinois home rule municipalities, Chinese Public Administration Review 13 (1–2) (2022), https://doi.org/10.1177/15396754221104381.

[46] F. Yang, Y. Jiang, W. Zeng, Livelihood capitals on income inequality among rural households: evidence from China, Ciência Rural. 50 (2) (2020), https://doi.org/10.1590/0103-8478cr20190461.

[47] K.A. Wójtowicz, S. Hodžić, Financial resilience in the jace of iurbulent times: evidence from Poland and Croatian cities, Sustainability 14 (17) (2022), https://doi.org/10.3390/su141710632.

[48] V. Deby Alsya, N. Triwahyuningtyas, S. Murtatik, Analysis of factors affecting poverty level in Java Island, International Journal of Social Service and Research 1 (2) (2021), https://doi.org/10.46799/ijssr.v1i2.29.

[49] G. Zheng, S.E. Fancsali, S. Ritter, S.R. Berman, Using instruction-embedded formative assessment to predict state summative test scores and achievement levels in mathematics, Journal of Learning Analytics 6 (2) (2019), https://doi.org/10.18608/jla.2019.62.11.

[50] E. Prasetyaningsih, G. Yuhalifiyah, H. Susanto, Internal control system leakness and non-Compliance to the provision of iegislation in practicing Audit of local government in Indonesia, Open J. Polit. Sci. 4 (4) (2014), https://doi.org/10.4236/ojps.2014.44028.

[51] A.S. Romera, Local Performance Analysis in Increasing the Opinion of Audit Board for Local Finance Report at Mappy Regency Papua Province, vol. X, Jurnal Ilmiah Administrasi Pemerintahan Daerah, 2018.

[52] E. Dushime, S. Muathe, L. Kavindah, The Interplay of entrepreneurial innovation, government regulation and performance: any Lessons for the SMEs. A theoretical review, European Scientific Journal ESJ 17 (12) (2021) 235–257, https://doi.org/10.19044/esj.2021.v17n12p235.

[53] U. Fratesi, Regional innovation and competitiveness in a dynamic representation, J. Evol. Econ. 20 (4) (2010) 515–552, https://doi.org/10.1007/s00191-009-0169-1.

[54] I. Ramos-Vielba, M. Fernández-Esquinas, E. Espinosa-de-los-Monteros, Measuring university–industry collaboration in a regional innovation system, Scientometrics 84 (3) (2010) 649–667, https://doi.org/10.1007/s11192-009-0113-z.

[55] A. Prasetyo, H. Wahyudianto, A. Hartopo, Strategy for developing institutional service models for regional innovation in Indonesia, Advances in Social Science, Education and Humanities Research Proceedings of the 3rd Borobudur International Symposium on Humanities and Social Science 2021 (Dec. 2022), https://doi.org/10.2991/978-2-494069-49-7_27. *BIS-HSS 2021)*.

[56] N. Kuznetsov, S. Tyaglov, M. Ponomareva, N. Rodionova, K. Sapegina, Development Priorities for the regional innovation system based on the best available cechnologies, Sustainability 14 (3) (Feb. 2022), https://doi.org/10.3390/su14031116.

[57] A. Prasetyo, et al., Comparison of innovation processes in the perspective of local government policy and regional competitiveness, Riset Ekonomi Pembangunan 5 (1) (2020), https://doi.org/10.31002/rep.v5i1.

[58] Jinghua Li, Shuyao Wan, Li Gou, Analysis of the role of government in the Construction cross-regional innovation system, E3S Web of Conferences 2037 (292) (2021).