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Research Paper

Analysis of Supporting Factors for Implementing the Open Innovation Strategy at the Regional Development Planning, Research, and Innovation Agency in Southeast Sulawesi

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Abstract

Open Innovation is an approach that utilizes ideas, knowledge and external resources to increase innovation and organizational competitiveness. Through development and innovation at the regional level, local communities can be actively involved in the decision-making process, make real contributions, and experience the impact of development directly. This research aims to analyze the factors that support the implementation of the Open Innovation strategy at the Regional Development Planning, Research and Innovation Agency (called BAPPERIDA) in Southeast Sulawesi, Indonesia. This research was conducted in 5 cities/regencies in Southeast Sulawesi, Indonesia, namely Kendari City, North Konawe Regency, Bombana Regency, Kolaka Regency, and South Konawe Regency. Data analysis was carried out using a quantitative approach with instruments tests, namely the KMO and Bartlett's Test Anti Image Correlation, Communalities, Total Variance Explained and Rotate Image Matrix to analyze the factors that support the implementation of the open innovation strategy in BAPPERIDA cities/districts in Southeast Sulawesi. A questionnaire was distributed to 75 BAPPERIDA employees to obtain valid data regarding the implementation of the open innovation strategy. The findings of this research show that the implementation of open innovation at BAPPERIDA is supported by organizational policy factors, innovation culture, involvement of external parties, and knowledge management.

Keywords: *Strategy, Open Innovation, BAPPERIDA*

INTRODUCTION

Development and innovation at the regional level have an important role in driving the wheels of national development. The regional level is the main backbone where various development policies and programs can be implemented in accordance with local characteristics, needs and potential (Dahlander & Gann, 2010). Through development and innovation at the regional level, local communities can be actively involved in the decision-making process, make real contributions, and experience the impact of development directly (Chesbrough, 2019).

One of the extensions of the central government to develop innovation at the regional level is the Regional Development Planning, Research and Innovation Agency (called BAPPERIDA). BAPPERIDA, especially in Southeast Sulawesi, has a big responsibility to formulate and implement sustainable development policies and promote innovation to improve community welfare. Southeast Sulawesi is the focus of this research because this region has unique characteristics and dynamics compared to other regions in Indonesia. In particular, development in Indonesia has not been evenly distributed, and Southeast Sulawesi faces special challenges related to non-participation in development. Innovation can be a tool to overcome development gaps and increase access to basic services such as education, health and infrastructure. Apart from that, innovation studies can help identify local economic potential that can be developed, such as the agricultural,

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fisheries, tourism and creative industry sectors (Gawer & Cusumano, 2014). Innovation can be a catalyst for increasing productivity and competitiveness in these sectors. Through its active role, BAPPERIDA is expected to be able to identify the unique potential and challenges faced by regions in Southeast Sulawesi. Furthermore, BAPPERIDA must develop innovative strategies that can empower local economic sectors, encourage investment, and increase regional competitiveness at the national and international levels. In this context, innovation is not only seen as technological development, but also includes innovation in policy, governance and business models that can provide added value to regional development.

By combining the functions of development planning, research and innovation, BAPPERIDA is a driving force for formulating holistic and sustainable solutions. BAPPERIDA's success in its duties will have a positive impact on regional economic growth, improving people's living standards, and making a real contribution to achieving national development goals. Therefore, understanding and supporting BAPPERIDA's strategic role in Southeast Sulawesi is an important key in creating inclusive and sustainable development at regional and national levels. In facing increasingly complex global challenges and local dynamics, implementing an Open Innovation strategy is a necessity to accelerate the innovation and development process in the region. This is one of the unique things about this research because not many people have researched open innovation strategies in regional government.

Open Innovation is an innovation paradigm that collaborates with external parties, such as companies, research institutions and the general public, in the process of developing ideas, technology and policies (Laursen & Salter, 2006). Even though this concept has been widely recognized as an effective solution for increasing competitiveness and creativity, its implementation within BAPPERIDA in Southeast Sulawesi still requires an in-depth understanding of the supporting factors that can optimize the implementation of the Open Innovation strategy.
Several issues that need to be considered include the social, economic and cultural conditions of the people in Southeast Sulawesi which may influence the success of Open Innovation. Apart from that, the availability of human resources who have the competencies and skills in accordance with the demands of Open Innovation is crucial (Gassmann, Enkel, & Chesbrough, 2010). Understanding of effective networking with external parties, such as research institutions, universities and industry players, also needs to be deepened to ensure successful collaboration in the development and implementation of innovation (Vanhaverbeke, Van de Vrande, & Chesbrough, 2008).

From the description of this phenomenon, this research has a problem formulation as the aim, which is to know and to analyze "What are the supporting factors for implementing the Open Innovation strategy at the Regional Development Planning, Research and Innovation Agency in Southeast Sulawesi?"

LITERATURE REVIEW

Chesbrough (2003) is known as one of the initiators of the Open Innovation concept. Chesbrough differentiated between open innovation and closed innovation. Open innovation proposes that organizations can and should use external ideas and exploit the market for technologies that are not used in the internal context. The Open Innovation paradigm according to Chesbrough states that organizations do not have to rely entirely on their own internal resources and knowledge in order to develop innovation. Instead, they should look outside the organization for new ideas and technologies. According to Chesbrough, Vanhaverbeke & West (2006). The main focus in open innovation is on "inter-organizational collaboration" and "networks" as key elements in supporting open innovation practices.

Curley & Salmelin (2017) with the concept of "Open Innovation 2.0" describes the stages of further evolution of Open Innovation. West's concept involves active participation from various

parties, including individuals, organizations, and governments, in a larger innovation ecosystem. One of the main concepts of Open Innovation according to Joel West is the idea that organizations can and should seek innovation not only through internal efforts, but also through external collaboration. This includes an "opening of organizational boundaries" approach where companies no longer limit themselves to internal resources alone.

Open Innovation theory, especially in the context of regional government, has not been widely researched or reviewed in national or international journals, but the theory outlined by Osborne and Gaebler (1992) regarding "Government Reinvention" is related to the principles of Open Innovation in the context of regional government. Osborne and Gaebler promoted the idea of innovation in government administration, including a more open approach to external thinking and participation. The concept of open and participatory government that they put forward can be considered an initial approach to the principles of Open Innovation. Despite differences in terminology, these principles are relevant in the conversation about how local governments can utilize external ideas and contributions to improve effectiveness and public services.

Open Innovation Strategy is an approach that includes active engagement with various external parties to create, develop and adopt innovations. The goal is to utilize resources, ideas and knowledge that exist outside the boundaries of the organization to increase creativity, accelerate innovation and success in the market (Latouche, 2020). The elements tied to the implementation of an open innovation strategy include openness to ideas and external sources, partnerships and involvement of external partners, flexibility in managing intellectual property, community and user participation, use of digital technology, responsiveness to market and technological changes, measuring the success of innovation, open and collaborative culture, sustainability and risk management, increased efficiency and productivity, high level leadership and commitment, participation in the innovation ecosystem, external collaboration support tools, training and development, and software or open source development.

RESEARCH METHOD

This research was conducted in 5 cities/regencies in Southeast Sulawesi, Indonesia, namely Kendari City, North Konawe Regency, Bombana Regency, Kolaka Regency, and South Konawe Regency. The types of data in this research are quantitative data and qualitative data. The data sources in this research are primary data and secondary data.

The data collection technique used in this research is field research, where the data collection technique is by preparing statements on each questionnaire in the form of closed statements. Giving a score or value to the answers in the questionnaire that has been provided is divided into five alternative answers that have been graded by giving weighted values (scores). The answer criteria in the questionnaire are based on a Likert scale.

The population in this study were all BAPPERIDA employees in 5 (five) cities/regencies in Southeast Sulawesi with a total of 183 employees. The sample used in this research was purposive sampling. The considerations that are worthy of being used as samples in this research are permanent employees (ASN) and those who have a middle/top management position at BAPPERIDA. So the number of samples that met the criteria in this study was 75 people.

The analytical tool used in this research is factor analysis. Factor analysis is used to reduce or summarize many variables into one or several factors. Reduction is carried out by looking at the interdependence of several variables that can be combined into one, which is called a factor. So that dominant or important variables or factors are found for further analysis (Sugiyono, 2017). This research uses instrument tests, namely the KMO and Bartlett's Test Anti Image Correlation, Communalities, Total Variance Explained and Rotate Image Matrix.

FINDINGS AND DISCUSSION

KMO and Batrlett's Test

Table 1. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		,861
Bartlett's Test of	Approx Chi Square	28111,211
Sphericity	df	74
	Sig	000

Source: 2023 Data Processing Results

Conclusions about whether factor analysis is appropriate can only be statistically valid using the KMO (Kaiser-Meyer-Olkin) test and the Barlett Test of Spericity. The KMO test whose value ranges from 0 to 1 question the appropriateness of factor analysis. If the index value is high (ranging from 0.5 to 1.0), factor analysis is appropriate. On the other hand, if the KMO value is below 0.5, factor analysis is not feasible and according to the results of calculations using SPSS Statistics 25, the KMO and Bartlett's test figures are 0.861 with a significance of 0 and because the KMO and Bartlett's test results are already above 0.5 and significance is below 0.05, then the existing sample can be analyzed using factor analysis.

Anti-Image Correlation

Anti-Image correlation is the result for the MSA test. In the MSA (Measure of Sampling Adequacy) there are several rules, including:

1. MSA = 1, the variable can be predicted without error by other variables.
2. MSA > 0.5, the variable can still be predicted and can be analyzed further.
3. MSA <0.5, the variable cannot be predicted and cannot be analyzed further, or excluded from other variables.

Here is the following results:

X1 = Openness to ideas and external sources (0.756)
X2 = Partnership and involvement of external partners (0.826)
X3 = Flexibility in managing intellectual property (0.811)
X4 = Community and user participation (0.731)
X5 = Use of digital technology (0.722)
X6 = Responsiveness to market and technological changes (0.745)
X7 = Measurement of innovation success (0.812)
X8 = Open and collaborative culture (0.891)
X9 = Sustainability and risk management (0.831)
X10 = Increased efficiency and productivity (0.877)
X11 = High level of leadership and commitment (0.761)
X12 = Participation in the innovation ecosystem (0.743)
X13 = External collaboration support tools (0.787)
X14 = Training and development (0.799)
X15 = Software development (open source) (0.763)

From these results it can be seen that all the variables used have passed the test and are then taken to the next stage.

Communalities

Table 2. Communalities

	Initial	Extraction
Openness to external ideas and sources	1,000	,869

Partnerships and involvement of external partners	1,000	,312
Flexibility in managing intellectual property	1,000	,559
Community and user participation	1,000	,411
Use of digital technology	1,000	,813
Responsiveness to market and technological changes	1,000	,811
Measuring innovation success	1,000	,712
Open and collaborative culture	1,000	,721
Sustainability and risk management	1,000	,461
Increased efficiency and productivity	1,000	,815
High level of leadership and commitment	1,000	,781
Participation in the innovation ecosystem	1,000	,314
External collaboration support tools	1,000	,517
Training and development	1,000	,561
Pengembangan perangkat lunak (open source)	1,000	,441

Source: 2023 Data Processing Results

Communalities is the amount of variance of an initial variable that can be explained by existing factors. The communalities value obtained in the formation of the highest factor is the innovation culture variable of 0.869, which means that organizational policies, in this case the use of digital technology, measuring the success of innovation and increasing efficiency and productivity can explain 81.3%, 71.2% and 81.5%. variance of factors formed and the value of communalities.

Total Variance Explained

Table 3. Total Variance Explained

	Initial Eigenvalues			Extraction Sums Squared Loadings			Rotation Sums Squared Loadings		
Component	**Total**	**%Variance**	**Cumulative%**	**Total**	**%Variance**	**Cumulative%**	**Total**	**%Variance**	**Cumulative%**
1	8,08	40,402	40,402	8,08	40,402	40,402	4,571	22,856	22,856
2	2,222	11,11	51,512	2,222	11,11	51,512	3,045	5,224	38,08
3	1,482	7,411	58,923	1,482	7,411	58,923	2,976	14,88	52,959
4	1,372	6,545	65,468	1,372	6,545	65,468	2,151	10,754	63,714
5	1,24	6,211	71,679						
6	0,955	4,777	76,456						
7	0,802	4,009	80,465						
8	0,656	3,278	83,743						
9	0,544	2,722	86,465						
10	0,523	2,613	89,078						
11	0,407	2,037	91,115						
12	0,334	1,766	92,891						
13	0,288	2,44	95,331						
14	0,227	2,136	97,467						
15	0,205	2,533	100						

Source: 2023 Data Processing Results

In the total variance explained table it can be explained that the eigenvalues numbers show the relative importance of each factor in calculating the 15 variables analyzed and it is important to remember that the eigenvalues numbers are always sorted from largest to smallest using the eigenvalues number criteria. From the table above, interpretations can be made regarding the total

cumulative variance of the sample. If these variables are summarized into several factors, then the total value of variance that can be explained is as follows:

1. If the 15 variables are extracted into 1 factor, the total variance that can be explained is 40.402%.
2. If the 15 variables are extracted into 2 factors, the total variance that can be explained is 2.222/20 x 100% = 11.110% and the cumulative total variance for the 2 factors is 40.402% + 11.110% = 51.512%
3. If the 15 variables are extracted into 3 factors, the total variance that can be explained is 1.482/20 x 100% = 7.411% and the cumulative total variance for the 3 factors is 40.402% + 11.110% + 7.411% = 58.923%
4. If the 15 variables are extracted into 4 factors, the total variance that can be explained is 1.372/20 x 100% = 6.858% and the cumulative total variance for the 4 factors is 40.402% + 11.110% + 7.411% + 6.858% = 65.781%

By extracting the initial variables into 4 factors, a fairly large cumulative total variance was produced, namely 65.781%, meaning that the 4 factors formed can represent 15 variables which explain approximately 65.781% of organizational policy, innovation culture, involvement of external parties. and knowledge management. Thus, the extraction of the 4 factors obtained can be stopped and has fulfilled the second criterion.

Scree Plot

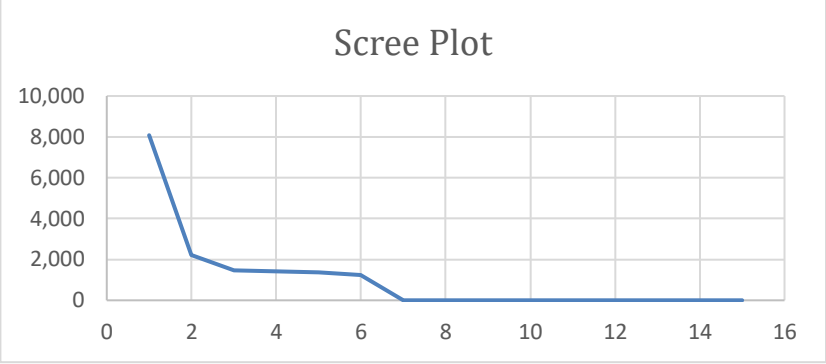

Figure 1. Scree Plot

The third criterion is determination based on the scree plot. A scree plot is a plot of eigenvalues against the number of factors extracted. The point at which the scree begins to occur indicates the exactnumber of factors. This point occurs when the scree begins to appear flat. In the scree plot image, it is known that the scree plot starts to flatten when the initial variables are extracted into 4 factors.

Rotated Component Matrix

Table 4. Rotated Component Matrix

	Component			
	1	**2**	**3**	**4**
Openness to external ideas and sources	,664	,413	,331	,442
Partnerships and involvement of external partners	,544	,456	,561	,557
Flexibility in managing intellectual property	,002	,059	-,012	,011
Community and user participation	,101	,091	-,102	,111
Use of digital technology	,561	,610	,102	,615
Responsiveness to market and technological changes	,621	,568	,510	,556
Measuring innovation success	,699	,522	,402	,609

Open and collaborative culture	,476	,566	,644	,513
Sustainability and risk management	,022	,013	,011	,012
Increased efficiency and productivity	,613	,671	,675	,410
High level of leadership and commitment	,567	,641	,412	,321
Participation in the innovation ecosystem	,151	,110	,015	,012
External collaboration support tools	,041	,102	,101	,106
Training and development	,102	,109	,070	,108
Software development (open source)	,101	-,101	,102	,079

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization
Source: 2023 Data Processing Results

There are several factors that are formed based on the table above, grouping a variable into a member of a factor is based on the factor loading of the largest variable which is in 4 factors. The innovation culture variable is included in factor 1 (one) because it has the highest factor loading on the factor to (X1, X6, X8, X11) then the third factor (X2, Organizational Policy & Innovation Culture variables for each factor group. Thus, it can be said that the Organizational Policy & Innovation Culture variable can be included as component factor 1 (one), and so on.

Carry out the process of rotating the factors formed. This aim is to clarify/sharpen the factor loadings on each variable that is included in a particular factor, or to increase the factor loadings on one factor and reduce the factor loadings on other factors. In rotation research, it is carried out using the varimax method because this method is a method that is widely used in research. From the results of the factor rotation above, we can see a clear grouping of variables in it, so that there are no longer any variables that are positioned between the 2 factor groups, for example the flexibility variable which previously was still in factor groups 1 and 3, namely Culture of Innovation and Party Involvement External. Meanwhile, Knowledge Management and Organizational Policy are the lowest factors from the results of this research. Now the clarity is visible and it is included in the fourth factor group as well as the other variables.

CONCLUSIONS AND FURTHER RESEARCH

The conclusions in the research: which consists of the use of digital technology, measuring the success of innovation, increasing efficiency and productivity are the most important factors. dominant in this research as well as Knowledge Management which consists of Flexibility in intellectual property management, Sustainability and risk management, External collaboration support tools, Training and development are the variables with the lowest factor dominance in this research. So that further research can investigate in more depth the role of organizational factors and knowledge management in supporting Open Innovation strategies.

This research is limited to BAPPERIDA in Southeast Sulawesi, so the results may not be directly applicable to other contexts or regions. Apart from that, the number and variety of respondents involved in this research were only limited to BAPPERDA employees, so it did not receive valid information from other stakeholders. Future research can use a wider scope of Bapperida so that the research results can be generalized to all Bapperida in Indonesia

The implications of research regarding the Analysis of Supporting Factors for Implementing the Open Innovation Strategy at the Regional Development Planning, Research and Innovation Agency in Southeast Sulawesi can have a significant impact on the development of innovation and regional development where the Organizational Policy: consisting of the use of digital technology, measuring the success of innovation, Increasing efficiency and productivity has the biggest implications for implementing the open innovation strategy at the Regional Development Planning, Research and Innovation Agency in Southeast Sulawesi.

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