

# A text analytics study on the alignment of an Indonesian Muslim community's municipal corporation policy with Sustainable Development Goals

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## Abstract

**Purpose** – This study analyses the supervision policy of Municipal Corporations (MCs) in the Indonesian Muslim community regarding its alignment with the United Nations Sustainable Development Goals (SDGs).

**Design/methodology/approach** – As a single case study, purposive sampling was adopted to select a municipal corporation policy issued by Ciamis Regency, West Java, Indonesia. A novel mixed methods approach, combining computer analytics and human intelligence, was introduced to perform text analytics.

**Findings** – Text mining identified the most frequently occurring words — e.g., *'perumda'* (municipal corporation), *'daerah'* (regional), *'pengawas'* (supervisor), *'peraturan'* (regulation) — from the sample but found no single word indicating business alignment with SDGs. Further qualitative inductive analysis was conducted, revealing the critical role of MCs' supervisory boards in business planning, execution, and reporting to align the MC businesses with local SDG initiatives.

**Originality/value** – Aligning MC business activities with local SDG actions is entirely within the authority of supervisory boards which demands transformational leadership. This research pioneered an innovative blend of computer-assisted techniques and human reasoning to investigate the supervision policies of MCs concerning local SDG actions, with evidence from a Muslim community in Indonesia.

**Keywords** BUMD, Ciamis, Indonesia, Municipal Corporation, SDGs, Text analytics

**Paper type** Research paper

## Introduction

Municipal Corporations (MCs) play a strategic role in achieving Sustainable Development Goals (SDGs). In many countries, MCs' core businesses are primarily engaged in providing essential services, e.g., water supply, sanitation, and waste management, making them critical for realising some goals, e.g., good health and well-being (SDG 3), clean water and sanitation (SDG 6), and sustainable cities and communities (SDG 11) (UNDP, 2019). Furthermore, MCs hold significant potential in empowering the local economy through



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The initial version of this paper entitled *'Analisis Strategi Kebijakan Pengawasan Perusahaan Umum Daerah Dalam Aksi Sustainable Development Goals di Kabupaten Ciamis: Pendekatan Text Analytics'* was presented at Universitas Galuh, Ciamis, Indonesia on 27 December 2022 for the selection of the Board of Directors and Board of Supervisors of the Municipal Corporation of Ciamis Regency (Perumda Galuh Perdana).



various means, e.g., creating employment, supporting local businesses, and promoting sustainable production practices (UNDP, 2019).

In Indonesia, Presidential Decree No. 59 of 2017 integrated SDGs into national development plans. This regulation outlines a roadmap for implementing SDGs at national, provincial, and municipal levels. The Minister of National Development Planning (PPN/Bappenas) is appointed to coordinate SDG action plans at both national and regional levels. Framed within SDGs, Indonesia's development plan is established on four pillars, i.e., the advancement of society, economic growth, ecological sustainability, and the progression of legislative frameworks (Hudaefi, 2020). This work aims to examine the extent to which the contents of MCs' policies in Indonesia align with local SDG actions. In doing so, this study focuses on an MC policy from a Muslim community, with a specific case study from Ciamis Regency – one of the regencies in West Java, Indonesia.

West Java is a province on Indonesia's western Java Island, home to almost 50 million people, making it the most populous province in the country. It encompasses a wide range of communities, e.g., rural farmers, urban professionals, etc., and hosts several important industries, e.g., manufacturing, agriculture, and tourism. West Java consists of 27 administrative divisions (18 regencies and 9 municipalities) and thus SDGs may provide a comprehensive framework for addressing its socioeconomic issues. In 2022, the West Java government initiated its SDGs West Java Awards (in local terms: Jabar/Jawa Barat Awards), attracting participation from 16 local governments. Among the attendees, Garut Regency, Ciamis Regency, Indramayu Regency, Bogor City, and Bandung City were recognised as winners of this award (DPMD, 2022).

This study purposefully sampled Ciamis Regency for a single case study to investigate the supervision of MCs in relation to the SDGs through one of its recently published MC policies. The selection of this regency and the sampled policy for text analytics is elaborated in the Research Method section.

### **Sustainable Development Goals and Indonesia's achievement**

Extant studies have predominantly focused on MCs' business operations rather than analysing policy contents and SDG initiatives. Other studies have examined the adaptation of SDGs, international collaboration, and private sector involvement, but with no attention to the regulatory oversight of MCs concerning SDGs. With limited research on how MCs' supervision policy aligns with local SDG actions, this study aims to fill this gap.

SDGs comprise 17 global goals with 169 sub-goals initiated by the United Nations (UN) General Assembly in 2015 as part of the 2030 Agenda. These goals aim to address the world's most persistent challenges, such as poverty, inequality, climate change, environmental degradation, and more (UNDP, n.d.). This global initiative replaced the previous Millennium Development Goals (MDGs) (UNDP, n.d.). In September 2015, representatives from 193 UN member countries, including Indonesia, signed the document "Transforming Our World: The 2030 Agenda for Sustainable Development" at the UN General Assembly in New York, USA.

According to an independent report on SDGs by Sachs *et al.* (2022), Indonesia ranked 82<sup>th</sup> out of 163 countries in achieving SDGs in 2022. Figure 1 illustrates this achievement, indicating a moderate commitment score of 69.2 (Sachs *et al.*, 2022). This commitment is characterised by three trends: i.e., a moderate upward trend in nine goals (SDG 1, SDG 2, SDG 3, SDG 5, SDG 7, SDG 9, SDG 10, SDG 13, and SDG 16), a stagnating trend in four goals (SDG 11, SDG 14, SDG 15, and SDG 17), and an on-track trend in four goals (SDG 4, SDG 6, SDG 8, and SDG 12).

#### *Municipal Corporations (MCs) and SDGs*

In Indonesia, the term MCs refers to BUMD (*Badan Usaha Milik Daerah*). BUMD Persero and Perumda are MCs characterised by a minimum government ownership of above 50 percent





Source: Sachs *et al.* (2022)

**Figure 1.**  
Indonesia's  
Achievement of SDGs  
in 2022

and 100 percent full government ownership of shares, respectively, with BUMD Persero allowing partial ownership by external entities, e.g., corporates, private companies, or the general public through the Indonesian Stock Exchange. MCs operate in various business sectors, including utilities (e.g., water, electricity), transportation (e.g., public transportation), waste management, and social services (Paul and Cumbers, 2023; Voorn *et al.*, 2017). As commercial entities, MCs generate revenue from their services and cover their operating costs (Paul and Cumbers, 2023; Sharma and Prince, 2023).

One advantage of MCs is that they enable local governments to exercise greater control over public service provision, helping them achieve specific goals, e.g., improving access to essential services and creating job opportunities (Krause and Swiatczak, 2020). Given Indonesia's recent achievement in SDGs, this study particularly investigates the degree to which supervisory policy content of MC supports local SDG actions.

There is a notable scarcity of studies discussing the supervision of MCs in the context of SDGs, highlighting the need for scholarly work to better understand whether the supervision of MCs has been integrated into local SDG initiatives. While some studies in the Indonesian context (e.g., Pahlevi, 2022; Susanti, 2022) have addressed MC issues, they primarily worked on the business activities of MCs, lacking substantial discussion of SDG actions, particularly regarding supervision policy analysis.

## Literature review

Previous studies have explored SDGs within various contexts yet with no relation to the supervision of MCs in achieving SDGs. Notable research includes the SDG adaptation path approach (Butler *et al.*, 2016), international collaboration for forest restoration (Bastos Lima *et al.*, 2017), the involvement of the private sector in achieving SDGs, e.g., Islamic fintech (Hudaefi, 2020), and company report analysis on contributions to SDGs (Gunawan *et al.*, 2020). There is a gap in the literature specifically addressing the policy supervisory strategies of MCs in relation to SDGs. While there exists scholarly literature addressing Indonesian MCs in SDGs — e.g., MC Tirta Medal Sumedang in SDG 6 (clean water and sanitation) by Susanti (2022) and Perum Damri in SDG 8 (economic growth) by Pahlevi (2022) — these studies primarily analyse business practices rather than investigating the regulatory oversight of MCs in local SDG actions.

*SDGs in municipal administration*

Some studies have examined SDGs within the framework of municipal development, with evidence from some cities in European countries and United Kingdom (UK). For instance, [Gustafsson and Ivner \(2018\)](#) explored the roles and preconditions of municipalities in SDG implementation process, focusing on the strategic planning and management of Region Östergötland in Sweden. They derived practical implications for leveraging existing organisational qualities in management and working procedures to effectively implement SDGs at local administration.

Similarly, [Krantz and Gustafsson \(2021\)](#) analysed an integrated approach — i.e., aspects of structure, leadership, coordination, flexibility, organisational learning, timing, and the challenge of management systems, budgets, and employee motivation across organisational levels — to better understand the steps of SDG localisation in a Swedish municipal organisation. They argued that such an integrated approach is critical for Swedish municipalities to review their organisations through a broad perspective on sustainability.

Furthermore, [Fox and Macleod \(2023\)](#) critically reflected on SDG ‘localisation’, presenting findings from an action research project in Bristol, UK. Their study facilitated the integration of SDGs into local policy and urban monitoring through a university-city partnership, highlighting SDGs’ local convening power, role in building international city networks, and use by cities to signal global ambitions and progressive identities. They emphasised that new monitoring methods and frameworks are necessary to fully realise the emerging ‘subnational turn’ in global policies.

**Research question**

Although previous studies have discussed SDGs within the context of municipalities, there remains a prominent scarcity of research investigating the alignment of MCs’ businesses oversight with local SDG actions in Indonesia.

MCs are among the keys to the progress of the local economy, and therefore they have the potential to accelerate SDGs. In Indonesian context, it is crucial to examine the supervision of MCs in relation to SDGs as governed by local regulations, given that Presidential Decree No. 59/2017 has established a legal framework for integrating the SDGs with municipal development. Based on this context, this study assesses the MCs’ oversight strategy in terms of its alignment with SDG actions. This study aims to address the following research question:

To what extent have the supervision policies of MC businesses aligned with local SDG actions?

**Mixed methods research**

In this study, the author combined text analytics (applying quantitative methods) with human qualitative reasoning. This approach first evaluates the content of MC’s policies through quantitative text analytics, i.e., clustering and word analytics. Then, human intelligence reasoning is applied through inductive analysis, as guided by [Table 1](#).

*Single case study of Ciamis Regency*

A single case study from Ciamis Regency was conducted to better understand the alignment between MC’s supervisory policy materials and local SDG actions. A single case study is deemed suitable for exploring a new perspective on an issue that is not well understood, involving a limited data source for proposition development ([Baxter and Jack, 2008](#)). Case

	Questions	Types of Inquiry
1	What is the scope of the supervision of MC outlined in the sample?	General inquiry
2	To what extent does the sampled local regulation respond to the Presidential Regulation concerning local SDG actions?	Evidence inquiry
3	Are there specific articles and clauses that address the supervision of MC businesses in alignment with SDGs?	General inquiry
4	If such provisions are absent, what are the content and clauses related to the supervision of MC businesses that could legitimise their operations to be carried out in accordance with local SDG actions?	Evidence inquiry

Source: By author

studies encompass a single case or a small number of cases (Dul and Hak, 2008), allowing researchers to examine multiple facets of the phenomenon and conduct a systematic investigation (Stake, 1995), which is practical for policy analysis (Cheung and Yu, 2020).

Ciamis Regency is an administrative area situated in the southern part of West Java province, Indonesia, covering approximately 1,597.67 square kilometers. As of 2022, its population was estimated at around 1.3 million people. This regency is renowned for its natural attractions, e.g., waterfalls, and produces a significant portion of its gross regional domestic product (GRDP) from agriculture, forestry, and fisheries. The regency is subdivided into 27 districts, with the Town of Ciamis serving as its administrative hub. The regent, elected by the local populace, oversees governance in this regency.

This regency was selected for a single case study due to the stark contrast between its poverty issues and its recognition with the West Java SDGs Best Practice Awards in 2022. Despite witnessing a 3 percent reduction in the poverty rate and a 0.6 percent decline in open unemployment from 2021 to 2022 (as per data from <https://ciamiskab.bps.go.id/>), significant challenges persist in the local industry. This disparity underscores the need for concerted efforts from local stakeholders to address such socioeconomic issues in the region. Therefore, analysing recent MC policies issued by the local government is imperative for local stakeholders to understand the policy content's alignment with the SDGs.

### *Local regulation as data texts*

Analysing policy content can reveal unforeseen outcomes and increase accountability for policymakers, which helps create policies that are more efficient, equitable, and beneficial for all stakeholders involved (Goodwin, 2011). This study purposefully examined the published local regulation of Ciamis Regency Municipal Corporations (MCs), specifically Local Regulation No. 3 of 2022, which governs the Municipally-Owned Enterprise of *Galuh Perdana*. The regulation was enacted on January 28, 2022, by the Regent of Ciamis, Heridiyati Sunarya (2019-2024). This sampled policy is written in Bahasa Indonesian and was selected using purposive sampling, aiming to choose relevant policy material that can offer pertinent information to address the research questions.

### **Text analytics**

Text analytics is a part of big data analytics that focuses on analysing unstructured or semi-structured text data. Similar techniques that combine computer analytics and human analysis have emerged to discover practical knowledge (Hudaefi *et al.*, 2022; Shergis *et al.*, 2015; Sukanya and Biruntha, 2012; Zhang *et al.*, 2015). The text mining approach used in this

study is based on the following frameworks, i.e., information retrieval (IR), information extraction (IE), data visualisation (DV), and knowledge discovery (KD). The machine learning tool used in this study is Orange Data Mining, developed by Demšar *et al.* (2013). Specifically, this study employs text mining techniques, i.e., word clouds, word clustering, and word analytics.

The formula presented below outlines the foundation of the wordcloud visualisation employed in this study:

$$\frac{sel_w / sel_{tot}}{(net_w / net_{tot})k} \quad (1)$$

The  $sel_w$  denotes the number of selected nodes,  $sel_{tot}$  represents total number of nodes,  $net_w$  is the number of nodes in the entire network,  $net_{tot}$  is the total number of nodes in the network, and  $k$  is the network normalisation coefficient (Hudaefi *et al.*, 2023; Oesper *et al.*, 2011).

Furthermore, for word clustering, the cosine distance metric is applied, which can be understood as follows, where  $x$  and  $y$  are two vectors for comparison:

$$sim(\mathbf{x}, \mathbf{y}) = \frac{\mathbf{x} \cdot \mathbf{y}}{\|\mathbf{x}\| \|\mathbf{y}\|} \quad (2)$$

Han *et al.* (2012) explain that  $\|\mathbf{x}\|$  is the Euclidean norm of vector:

$$\mathbf{x} = (x_1, x_2, \dots, x_p) \quad (3)$$

It is further defined as:

$$\sqrt{x_1^2 + x_2^2 + \dots + x_p^2} \quad (4)$$

where theoretically, it forms as the length of the vector (Han *et al.*, 2012). Likewise,  $\|\mathbf{y}\|$  is the Euclidean norm of vector  $y$  (Han *et al.*, 2012; Hudaefi *et al.*, 2023).

In addition, for word analytics, a scatter plot is employed to identify the relationship between word frequency and the ratio of total identified words to frequently occurring words in the sample. The logic of the scatter plot is as follows:

$$y = mx + b \quad (5)$$

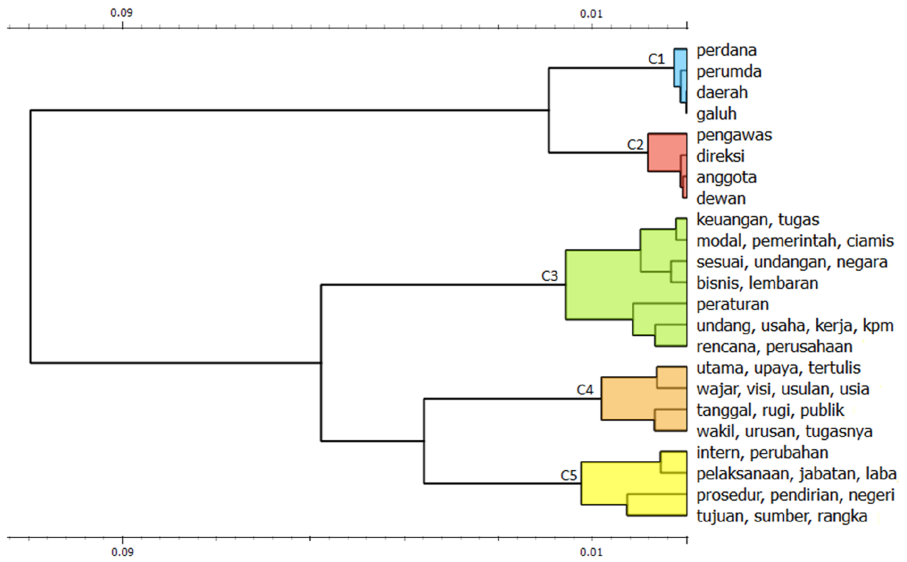
where  $y$  is the dependent variable,  $x$  is the independent variable,  $m$  is the slope of the line, and  $b$  is the  $y$ -intercept.

## Text analytics results

### *Descriptive statistics of the data*

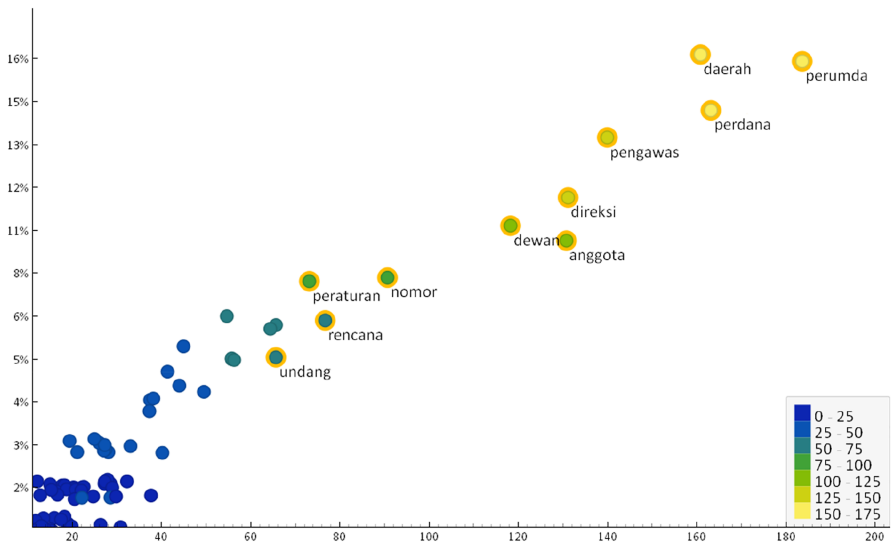
The sample comprises 45 pages and contains approximately 10,588 words. Figure 2 is a word cloud visualisation that exemplifies the sample, where words such as 'perumda' (MC), 'daerah' (regional), 'galuh', 'perdana', 'pengawas' (supervisor), 'direksi' (directors), 'peraturan' (regulation), and 'dewan' (council) are depicted as larger than the remaining words. This indicates the frequency of word occurrences in the sample, i.e., meaning the larger the word size, the more often it appears. These words are fundamentally important for explaining the substance of the sampled policy.





**Figure 3.**  
Hierarchical Clustering  
of Words

Source: Author's analysis via Orange Data Mining. Distance Metric: Euclidean. Linkage: Ward. Adjustment was made for better readability.



**Figure 4.**  
Scatter Plot of Word  
Count to Ratio of  
Total Words

Source: Author's analysis via Orange Data Mining. Only words with significant occurrence are highlighted for better visualization.



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(supervisor) in relation to the supervisory role of MC Galuh Perdana in Ciamis Regency. The prominence of this word indicates a notable level of attention given to supervising the MC, as it constitutes 15 percent of the total frequency of identified words. This may suggest the practice of MC supervision is highly crucial in its operations.

### Qualitative analysis

The qualitative method of human reasoning, i.e., inductive reasoning, was further employed to discover the role of MC's supervisory board as potentially governed in the sampled regulation. In this qualitative analysis, the framework of 'What's the Problem Represented to be' (WPR)?' by Bacchi (2009) was used as the basis for further investigating MCs supervision and SDG local actions. This framework provides a systematic approach to explore discursive aspects of policy, examining how policy problems are represented and how policy subjects emerge as a consequence of these representations (Bacchi, 2009; Goodwin, 2011). Table 1 outlines the author's approach to inductive reasoning.

#### *Qualitative analysis results*

The author's inductive analysis identified 13 out of 91 articles (14 percent) that could legitimise the supervision of MC business operations to be aligned with local SDG actions. The overarching provisions governing the supervisory board and its strategic role in delineating duties and authorities are fundamental aspects enabling the implementation of MC oversight in addressing SDG-related initiatives.

Generally, the outcomes stemming from qualitative analysis can be categorised into three primary themes, i.e., (1) oversight of business planning, (2) supervision of business activities, and (3) the role of reporting in business oversight. Regarding business planning, various provisions empower the supervisory board to inspect business plans crafted by the board of directors, utilizing SDG indicators as a reference framework for evaluation and recommendation. In the supervision of business practices, several provisions have been identified as potentially enabling the supervisory board to advocate for the implementation of business collaborations with other entities and the establishment of business Standard Operating Procedures (SOPs) aligned with SDG indicators. In the reporting role, certain critical provisions may authorise the incorporation of SDG indicators in monitoring reports, thereby serving as a basis for voluntary SDG reporting. Table 2 details the author's analysis.

### Discussion

The analysis of MC business supervision in local SDG actions within Ciamis Regency regulations reveals several insights. While the term 'supervision' emerges as significant (Figure 4), there is a notable absence of explicit emphasis on aligning MCs business supervision with specific SDGs in policy content. Despite comprising 16 chapters and 91 articles, Local Regulation No. 3/2022 of Ciamis Regency lacks clear references to local SDG actions, especially concerning business supervision.

This finding is significant, especially considering this regency's recognition for its accomplishment in the Jabar Award 2022 for Sustainable Development Goals (SDGs). The discrepancy between the lack of explicit regulatory alignment and the municipal SDGs award underscores the necessity for a more robust and coordinated approach to integrating SDGs into municipal business supervision. Collaborative efforts among relevant stakeholders, e.g., local government, industry representatives, and civil society, are crucial, as explained by Fox and Macleod (2023), particularly in integrating SDGs into local regulations. Given this finding, it follows that supervisory boards have the jurisdiction to synchronise MC business operations with local SDG actions, which leads to the practical

Chapter, Article (Verse)	Content of Ciamis' MC Policy No. 3 of 2022	Interpretation of MC Supervision in Local SDG Actions
Chapter I, Article 1 (9)	The Supervisory Board is the organ of MCs Galuh Perdana that is tasked with supervising and providing advice to the Directors in carrying out the management of regional public companies.	The legal role of the Supervisory Board includes incorporating SDG indicators in the supervision of MCs Ciamis.
Chapter IV Article 5 (3)	The implementation of the type of business in the form of a partnership and/or cooperation with other parties, as referred to in paragraph (3), is carried out by the Board of Directors with the approval of KPM through the Supervisory Board.	The Supervisory Board may use SDG indicators in approving MCs' business with other parties. Analysis can be carried out using several SDG indicators, such as SDG 8, SDG 11, SDG 13, and others.
Chapter VI Article 16 (1)	The Supervisory Board is an organ of MCs Galuh Perdana that supervises the management policies and operations of the business.	Oversight of MCs' business policies can be aligned with regional actions and SDG indicators, as outlined in the SDGs Bappenas action guidebook.
Chapter VI Article 23 (1)	The Supervisory Board is in charge of: a. supervising MCs Galuh Perdana; and b. supervising and advising the Board of Directors in managing MCs Galuh Perdana.	Oversight tasks can be contextualised within regional SDG actions.
Chapter VI Article 36 point (b)	Establish the organisational structure and work procedures of MCs with the approval of the Supervisory Board.	The Supervisory Board can approve efficient work procedures aligned with regional SDG actions.
Chapter VIII Article 56 (3)	The Board of Directors submits a draft business plan to the Supervisory Board for joint approval.	The Supervisory Board can recommend aligning SDG indicators with the MCs' business plan.
Chapter VIII Article 58 (2)	The Supervisory Board may review and request the Board of Directors to refine the draft Business Plan according to the review results within 15 working days, as referred to in paragraph (1).	
Chapter VIII Article 63 (3)	The Board of Directors submits the work plan and budget to the Supervisory Board by the end of November for joint approval.	
Chapter VIII Article 64 (2)	Changes to the Annual Work Plan and Budget (RKA), as referred to in paragraph (1), are submitted by the Board of Directors to the Regent for approval after being approved by the Supervisory Board.	If there is a change in the RKA, the Supervisory Board can first identify related changes and their relevance to regional SDG actions.
Chapter VIII Article 65 (2)	The standard operating procedures referred to in paragraph (1) are prepared by the Board of Directors and approved by the Supervisory Board.	For several business units, SOPs can be contextualized with various SDGs.
Chapter VIII Article 68 (1)	MCs Galuh Perdana can cooperate with other parties with the approval of the Supervisory Board.	Before giving approval, the Supervisory Board can analyze the impact of MCs' business collaboration with other parties on the achievement of SDGs.

**Table 2.**  
Qualitative Analysis  
Results

*(continued)*

Table 2.

Chapter, Article (Verse)	Content of Ciamis' MC Policy No. 3 of 2022	Interpretation of MC Supervision in Local SDG Actions
Chapter VIII Article 71 (2)	The Supervisory Board report, as referred to in paragraph (1), at least contains: a. implementation of the Business Plan and RKA; b. factors affecting the performance of MCs Galuh Perdana; and c. efforts to improve the performance of MCs Galuh Perdana.	Monitoring reports can be integrated with SDG/TPB objectives as outlined in the Bappenas SDG/TPB action guidebook. These reports can also serve as a reference for voluntary SDG reporting.
Chapter VIII Article 73 (1.e)	Report on the supervisory duties carried out by the Supervisory Board during the past financial year.	

Source: Author's qualitative analysis

implications for administrative accountability. This further calls for the urgency of transformational leadership for the MC supervisory board members.

#### *The need for transformational leadership*

Burns (1987) explained transformational leadership as an approach to inspire and motivate followers to achieve exceptional performance beyond their immediate self-interests, and is applicable to organisational management. Thus, given the absent emphasis on business supervision with SDGs, transformational leadership provides practical implications for aligning MC supervision regulation with local SDG actions.

Supervisors have a strategic position to create innovative solutions and best practices to translate the local regulation into MC business strategies that are aligned with local SDG actions. Therefore, the recruitment process for supervisory boards should set aside political interests. In Indonesia, the practice of political patronage is pervasive, in particular within the appointment of MCs' top management positions. This politically driven appointment often results in those who lack the necessary competencies taking the top management positions, causing chaos in the business. This political patronage has caused the continuity of structural corruption in emerging Southeast Asian countries, including in Indonesia (Quah, 2021).

One of the supervisory board's key responsibilities is to guarantee administrative accountability. That is, fighting corruption from the outset of supervisory board nominations is essential to good governance. Intergenerational conflicts of interest among political leaders have contributed considerably to the survival of corruption in Asian countries, including Indonesia (Quah, 2021). This emphasises the need of transformational leadership and highlights the necessity of honest politicians. This is especially important when it comes to SDG actions, as institutional constraints in other developing nations, e.g., Bangladesh, have impeded progress in their achievement (Rahman, 2021), as structural corruption has caused such institutional bottlenecks.

#### **Conclusion**

This study has examined one of MCs' policies in a Muslim community, i.e., Ciamis Regency, regarding its alignment with SDG actions. In doing so, this study employed a combination of computer-assisted and human intelligence text analytics to explore the degree to which the sampled policy contents support local SDG actions. The text mining analytics found no

words evidencing policy content that supports this global action. A further qualitative approach with inductive analysis was carried out, identifying three major themes that could legitimise MC's supervisors for aligning the businesses with local SDG actions. These findings suggest the practical implications for transformational leadership among the MC's stakeholders.

The text analytics primarily identified significant terms — e.g., *'perumda'* (municipal corporation), *'daerah'* (regional), *'pengawas'* (supervisor), *'peraturan'* (regulation) — related to the supervision of MCs but found no substantial references to SDG oversight. Further qualitative analysis, conducted through an inductive method, revealed that the supervisory board is tasked with overseeing MCs for SDG compliance within 14 percent of the policy's provisions. This strategic oversight encompasses business planning, practices, and reporting.

This study is limited to a single case and thus, the findings highlight the need for further research in this area. In particular, the findings from the qualitative analysis — i.e., (1) business planning oversight, (2) business practice supervision, and (3) the significance of reporting in business supervision — can theoretically serve as a framework for future research to examine MC supervision in relation to local SDG actions. Additional case studies are deemed essential to broadly understand MCs' oversight methods concerning local SDG initiatives. This work pioneers a mixed-method strategy combining human and machine learning analytics, which is crucial for future studies dealing with unstructured or semi-structured data.

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