MSMEs in Jakarta through Spatial Planning and Stakeholder Collaboration for Sustainability

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Abstract

MSMEs are the backbone of Jakarta's economy, driving employment, innovation, and economic growth. Despite their vital role, MSMEs face significant barriers, including limited access to land, misaligned spatial planning and business licensing regulations, and insufficient support for green and circular economy practices. Jakarta's spatial planning framework, outlined in Regional Regulation No. 7 of 2024 (RTRW) and Governor Regulation No. 31 of 2022 (RDTR), establishes zoning regulations and business licensing requirements that significantly affect MSME operations. However, inconsistencies between these policies create barriers for MSMEs in securing permits and strategic business locations. While MSMEs are essential to Jakarta's urban resilience, research on how spatial planning policies affect their development and sustainability remains scarce in Indonesia. This study addresses this gap by employing Actor-Network Theory (ANT) using UCINET to map stakeholder interactions and power dynamics. The analysis identified 27 key actors involved in MSME development, including government agencies, private sector entities, and civil society organizations. Degree Centrality analysis highlighted the MSME Agency and the Governor as the most connected actors, reflecting their central roles in policy formulation and business coordination. Betweenness Centrality revealed the MSME Agency's position as a key intermediary. A Network Centralization Index of 17.79% indicates a moderately decentralized network, where influence spreads among multiple actors rather than concentrating in a few central players. The findings demonstrate that MSME governance in Jakarta remains state-driven, with government institutions holding dominant positions in the network. However, limited engagement from informal businesses, universities, and private-sector actors weakens policy implementation and reduces MSME competitiveness.

Keywords: Spatial Planning, MSMEs, Actor-Network Theory, Sustainability

INTRODUCTION

MSMEs are pivotal to Indonesia's economy, contributing approximately 60.5% of the national Gross Domestic Product and absorbing more than 90% of the national workforce (Kementerian Koperasi dan UKM, 2024). According to Tambunan (2019), MSMEs serve as a key driver of economic growth, particularly in urban areas where they create jobs, enhance economic resilience, and promote social stability. In Jakarta, MSMEs are a vital part of the urban economy, contributing to the city's economic output, providing employment, and fostering innovation and entrepreneurship (The Jakarta Post, 2024). However, despite their significant contribution, MSMEs in Jakarta face numerous challenges that hinder their growth and long-term sustainability.

A primary challenge is limited access to land and restrictive zoning regulations. Jakarta's spatial planning framework governs development through RTRW and RDTR, which significantly influence the availability and allocation of land for business activities. The RTRW, established under Regional Regulation No. 7 of 2024, outlines Jakarta's spatial structure and patterns for 2024–2044, covering 66,098 hectares of land and 583,325 hectares of water areas. This regulation seeks to balance economic growth with environmental sustainability and social equity by defining land use, infrastructure development, and business activity zones. Article 7 of the regulation emphasizes that Jakarta's spatial planning should enhance business competitiveness and provide a conducive environment for MSMEs by allocating commercial and mixed-use zones tailored to the needs of small businesses. It also encourages the adoption of green and circular economy practices by offering incentives for environmentally friendly business models and promoting resource-efficient infrastructure. However, research indicates that existing zoning policies often prioritize large-scale commercial and industrial developments over MSMEs, limiting their access to strategic business locations (Mitchell & Johnson, 2021). This misalignment constrains the operational capacity and market reach of MSMEs, reducing their overall competitiveness and resilience. Other global cities report similar challenges, as small businesses struggle to compete for strategic land access due to urban planning biases toward large-scale infrastructure and commercial developments (Scott et al., 2022).

Similarly, the RDTR provides specific guidelines on land use, zoning, and building regulations to support Jakarta's position as a global business hub. The RDTR establishes detailed zones for commercial, residential, and mixed-use development, along with infrastructure and green spaces. However, the complexity and inconsistency of RDTR regulations often create barriers for MSMEs seeking business permits. Widiarty (2023) highlight that many MSMEs struggle to secure business permits due to zoning restrictions, even when their activities align with local economic goals. This has resulted in the proliferation of informal businesses operating without legal protection or access to financing (Shinozaki, 2020). Other emerging economies exhibit similar patterns, where informal businesses respond to rigid spatial planning and licensing regulations (Shleifer & La Porta, 2014).

The complexity of business licensing in Jakarta stems from the misalignment between spatial planning regulations and the business permitting system. Indonesia introduced the Online Single Submission (OSS) system to simplify the licensing process and reduce bureaucratic barriers for MSMEs (Nasution & Harahap, 2024). However, in Jakarta, the OSS system's misalignment with spatial planning regulations generates legal uncertainty and increasing compliance costs. For example, MSMEs operating in mixed-use or residential zones often face difficulties obtaining business permits due to conflicting zoning regulations (Murphy, 2024). This misalignment discourages MSMEs from formalizing their operations, which limits their access to financial support, business development programs, and legal protection. Moreover, MSMEs without proper permits are more vulnerable to regulatory penalties and eviction, further undermining business continuity (Sukma & Wibowo, 2021). The lack of a streamlined licensing process also increases operational costs and delays market entry for new businesses, constraining the overall growth potential of MSMEs. Other developing cities report similar challenges, where conflicting regulatory frameworks and zoning restrictions limit small business growth and competitiveness (Edwards, 2021).

Access to infrastructure and financial services remains another critical challenge for MSMEs in Jakarta. Infrastructure, including transportation networks, energy supply, and digital connectivity, is essential for business efficiency and market reach. However, infrastructure provision in Jakarta remains uneven, with peripheral areas often lacking adequate transport links, power supply, and internet connectivity (World Bank, 2021). This uneven distribution limits market access, increases production costs, and reduces MSME competitiveness. Studies in similar urban contexts confirm that inadequate infrastructure directly correlates with lower productivity and business performance among MSMEs (Li et al., 2021). Limited financial access stems from high collateral demands, low financial literacy, and complex loan procedures. (Millennium Challenge Corporation, 2023) report that only 30% of MSMEs in Jakarta have access to formal financing, forcing many to rely on informal lending networks or personal savings. This restricts business expansion, reduces the ability to invest in innovation, and increases vulnerability to market shocks. A study by Kumar et al. (2022) highlights that financial barriers remain one of the primary constraints for MSMEs in developing economies, limiting their capacity to adapt to market dynamics and technological changes.

The transition towards a green and circular economy presents a significant opportunity for MSMEs to improve their competitiveness and resilience. Green economy practices, such as energy efficiency, waste reduction, and renewable energy use, can enhance business performance while reducing environmental impacts (Sukma & Wibowo, 2021). The circular economy model, which emphasizes the reuse, recycling, and repurposing of materials, offers further opportunities for MSMEs to reduce production costs and improve resource efficiency. Saad et al. (2022) highlight that MSMEs engaged in recycling and upcycling activities demonstrate higher profit margins and greater business resilience. However, the adoption of green and circular practices among MSMEs in Jakarta remains low due to limited awareness, technological barriers, and a lack of financial incentives. The absence of targeted policies and market-based incentives further limits the scalability of these initiatives. Studies in other cities show that well-designed green financing schemes and policy incentives can accelerate the adoption of circular economy practices among small businesses (Geissdoerfer et al., 2021).

Selecting Jakarta as the research locus is strategic due to its status as Indonesia's capital and economic center, where MSMEs play a crucial role in urban economic dynamics. Jakarta serves as a national policy barometer and a testing ground for implementing spatial planning policies that directly affect MSME development. Understanding how Jakarta's spatial planning policies affect MSME productivity and sustainability offers valuable insights for replication or adaptation in other urban areas in Indonesia. This study aims to analyze the influence of Jakarta's spatial planning regulations—including the RDTR and the RTRW—on the development and sustainability of MSMEs. It seeks to assess how zoning frameworks, business licensing processes, and infrastructure provision, as defined in the RDTR and RTRW, affect MSME growth and resilience. It also seeks to evaluate the governance network surrounding MSME development using concepts from ANT, particularly by identifying key actors, their relationships, and power dynamics.

Rather than applying ANT as a full sociological theory, the study adopts its core principles as an analytical lens to explore interactions between human actors (e.g., government institutions, private sector entities, NGOs) and non-human actors (e.g., zoning regulations, licensing systems, infrastructure). This approach supports the empirical aim of understanding how governance networks shape MSME-related policy outcomes. By operationalizing ANT within a spatial planning context, the study fills a gap in Indonesian literature, where limited research has explored MSME development through this lens. It offers both a methodological contribution to network-based policy analysis and practical insights for improving institutional coordination. The specific objectives of the study are to:

1. Analyze Jakarta's spatial planning regulations—specifically the RDTR and RTRW—to evaluate how zoning frameworks, land-use policies, and business licensing processes affect MSME development and operational efficiency.
2. Assess stakeholder interactions and power dynamics using ANT to identify key actors, measure influence through centrality values, and uncover collaboration patterns and structural gaps in MSME governance.
3. Provide strategic policy recommendations to enhance MSME competitiveness and resilience by improving infrastructure access, simplifying licensing procedures, and promoting green and circular economy practices within the framework of RDTR and RTRW.

METHODOLOGY

Study Area

Jakarta, Indonesia's capital, is highly urbanized and among the most densely populated cities in the country. According to BPS-Statistics Indonesia's population reached approximately 10.685 million in 2024, reflecting a steady growth trend. The rising urban density and land-use competition have placed pressure on MSMEs, particularly in securing strategic business locations and accessing essential infrastructure. Strengthening spatial planning regulations to facilitate business opportunities for MSMEs, particularly in the green and circular economy sectors, is crucial for enhancing urban resilience and economic inclusiveness.

Data Collection

This study employed a comprehensive document review to gather data on MSME development and spatial planning in Jakarta. Conducted over one month from March to April 2025, the study systematically examined documents from key stakeholders, including government agencies, private sector entities, NGOs, and MSME representatives. The reviewed documents included policy reports, paper journal, and regulatory frameworks. Additionally, the study analyzed spatial planning regulations, including RTRW and RDTR, to evaluate how zoning policies, land-use frameworks, and business licensing requirements influence MSME development and spatial planning. The objective was to identify the key actors, challenges, opportunities, and collaborative strategies influencing MSME development and spatial planning in Jakarta.

This study applied selected principles from ANT as a methodological lens to examine stakeholder relationships, power dynamics, and roles in MSME development and spatial planning in Jakarta. Rather than adopting ANT in its full theoretical sense, the study operationalized key concepts—such as actor translation and network centrality—to explore how both human and non-human elements interact. UCINET software was used to measure actor influence through centrality values (ranging from 0 to 1), while NetDraw visualized the structure of stakeholder networks. This approach enabled the identification of strategic actors, gaps in collaboration, and structural imbalances in governance. The findings inform policy recommendations aimed at strengthening institutional coordination and supporting a more inclusive transition to a green and circular economy through improved MSME integration in Jakarta's spatial planning framework.

Method and Analysis

Public Policy Analysis

The study reviewed relevant policy documents, strategic plans, and reports on MSME development and spatial planning in Jakarta to identify key stakeholders, institutional frameworks, and decision-making processes. Document analysis helped uncover patterns of collaboration, stakeholder roles, and the formal and informal mechanisms guiding MSME governance and spatial policy implementation.

Actor-Network Theory

This study employs ANT as a framework for analyzing stakeholder interactions and power dynamics in the context of MSME development and spatial planning in Jakarta. ANT provides a lens to examine how networks of actors—both human (e.g., government agencies, MSMEs, private companies) and non-human (e.g., regulations, infrastructure, land use)—shape the formulation and implementation of spatial policies (Latour, 2007). It highlights how stakeholder relationships, negotiation processes, and institutional frameworks influence MSME competitiveness and resilience within Jakarta's urban landscape. ANT has been widely applied in the fields of urban planning (Ruming, 2008; Rydin, 2012), environmental governance (Caniglia et al., 2016; Ratnayake et al., 2016), and policy-making (Setiowati et al., 2022; Permana et al., 2018). Ruming (2008) demonstrated how ANT could analyze zoning regulations and infrastructure policies to uncover patterns of stakeholder interaction in urban development. Rydin (2012) used ANT to explain power dynamics and negotiation outcomes in urban redevelopment, showing the role of both human and material actors (e.g., land, and infrastructure) in influencing policy decisions. Similarly, Caniglia et al. (2016) applied ANT to environmental governance, revealing how institutional frameworks and stakeholder coalitions shape policy outcomes. The study will map and analyze stakeholder interactions using UCINET software to assess network structures, actor roles, and relationship strength. ANT allows for the quantification of stakeholder influence and connectivity within the network through centrality measures:

1. High Degree Centrality – An actor's strong connections within the network reflect a pivotal role in information exchange and collaboration.
2. High Betweenness Centrality – Reflects the actor's control over information flow, highlighting its role in bridging different stakeholder groups and facilitating coordination.
3. High Closeness Centrality – Suggests that an actor can quickly access information and resources within the network, enhancing responsiveness and strategic decision-making.

RESULTS AND DISCUSSION

Spatial Planning Policy of MSMEs in Jakarta Province

The Regional Regulation No. 7 of 2024 of Spatial Planning Jakarta 2044

MSMEs play a pivotal role in Jakarta's economy, contributing significantly to employment, economic resilience, and social stability. Recognizing this, RTRW for 2024–2044 establishes a strategic framework to enhance MSME growth and sustainability by addressing structural barriers and fostering a more inclusive business environment. The regulation underscores the importance of MSMEs in strengthening Jakarta's competitiveness as a global business hub while integrating sustainable business practices aligned with green and circular economy principles. The regulation establishes a clear legal basis for MSME development by defining MSMEs, allocating business zones, and improving business licensing procedures. Article 51 defines MSMEs based on the criteria established in Indonesia's national legislation, ensuring consistency in policy implementation and creating a foundation for the regulation and classification of MSMEs. Article 12 mandates the proportional allocation of commercial and mixed-use zones for MSMEs and the informal sector. The regulation requires that adequate business spaces be provided within commercial zones and sub-centers to enhance market access and business competitiveness. Furthermore, Article 92(2)(d) designates the Pulogadung Small Industry Center as a dedicated MSME cluster. This strategic initiative supports community-based economic growth and small-scale industries by offering infrastructure and business support services. These regulatory provisions reflect the strategic intent to integrate MSMEs into Jakarta's broader economic framework, ensuring that business licensing and land use regulations align with the operational needs of small businesses.

The RTRW introduces mechanisms to streamline business licensing and ensure regulatory compliance for MSMEs. Article 173 regulates the assessment of spatial conformity (KKPR) for MSMEs, including independent declarations by MSME actors regarding their business activities. This provision aims to align MSME operations with Jakarta's spatial planning framework. Article 175 outlines procedures for MSME spatial conformity assessments. If inconsistencies are identified in MSME declarations, the local government is obligated to provide corrective guidance rather than impose immediate penalties. Article 176 establishes the legal framework for issuing and revoking KKPR permits. KKPR permits issued without proper procedures are deemed legally void. If KKPR permits are revoked due to changes in spatial planning regulations, MSMEs are entitled to compensation, protecting them from legal uncertainty and ensuring business continuity. Article 179 specifies the criteria, locations, and types of MSME activities that should be prioritized for spatial conformity. Further details are to be defined through a gubernatorial regulation, allowing for adaptive policy adjustments. By simplifying licensing procedures and ensuring alignment with zoning regulations, the RTRW aims to reduce compliance costs and create a more conducive environment for MSME growth.

Access to strategic business locations and infrastructure remains a key challenge for MSMEs in Jakarta. The RTRW addresses these barriers through several targeted measures. Article 92(2)(d) includes provisions for the development of MSME-friendly infrastructure within the Pulogadung Small Industry Center. This initiative aims to improve market access and business efficiency by providing shared facilities, such as logistics hubs and co-working spaces. Furthermore, the regulation encourages the use of Green Open Space for MSME-related activities. Specific locations identified for such initiatives include Jakpreneur Kiosks in strategic public spaces such as Jl Raya Lenteng Agung, Jl Pemuda, and Taman Joging 1 in Kelapa Gading. Enhancing infrastructure in peripheral areas, including transportation networks, energy supply, and digital connectivity, is identified as a strategic priority to improve MSME market reach and operational efficiency. These measures aim to improve MSME visibility, enhance customer engagement, and strengthen business integration into Jakarta's urban fabric. Financial access remains a critical barrier to MSME growth in Jakarta. High collateral requirements and complex loan application processes limit access to formal financing, forcing many MSMEs to rely on informal lending networks or personal savings. According to Tambunan (2021), only a limited percentage of MSMEs in Jakarta have access to formal financing, which restricts business expansion and increases vulnerability to market shocks. To address this, the RTRW encourages the introduction of targeted financial products and incentives. Government-backed loan guarantee schemes for MSMEs engaged in green and circular economy practices are proposed to reduce financial risk and improve access to capital. The regulation also supports the development of specialized financial products to reduce collateral requirements and simplify loan application procedures. Establishing partnerships with private financial institutions is expected to increase credit availability for MSMEs, enhancing business resilience and growth potential.

The transition toward a green and circular economy presents a significant opportunity for MSMEs to improve their competitiveness and environmental performance. The RTRW promotes sustainable business models through several strategic initiatives. Incentives for environmentally friendly business models are proposed, including tax benefits and financial incentives for MSMEs adopting resource-efficient production processes. The regulation also introduces market-based mechanisms such as carbon credit and recycling incentives to encourage waste reduction and material reuse among MSMEs. Furthermore, capacity-building programs are planned, with government agencies and business associations tasked with providing technical assistance and training on green and circular economy practices. Despite these opportunities, the adoption of green and circular practices among MSMEs in Jakarta remains low due to limited awareness, technological barriers, and the absence of market incentives. Strengthening institutional support and expanding financial incentives could accelerate the transition to more sustainable business models.

Despite the strategic framework established by the RTRW, MSMEs in Jakarta continue to face several structural barriers. Limited access to strategic business locations remains a major challenge, as zoning regulations often prioritize large-scale commercial and industrial developments over MSMEs, limiting the availability of affordable business spaces. MSMEs located in residential or mixed-use zones face difficulties obtaining business permits due to restrictive land-use policies and high land acquisition costs. The complexity of business licensing remains another significant barrier, stemming from the misalignment between the OSS system and local zoning regulations. This inconsistency creates legal uncertainty and increases compliance costs for MSMEs, discouraging business formalization and limiting access to financial support, business development programs, and legal protection. Infrastructure gaps and uneven resource distribution further constrain MSME competitiveness, particularly in peripheral areas where access to transportation, energy, and digital connectivity remains inadequate. These deficiencies increase operational costs and limit market access for MSMEs. Financial constraints also persist, as high collateral requirements and complex loan procedures restrict access to formal financing, particularly for MSMEs adopting green and circular economy models.

The Governor Regulation No. 31 of 2022 on the Detailed Spatial Plan

MSMEs drive Jakarta's economy, playing a crucial role in creating jobs, strengthening economic resilience, and fostering social stability. To support their growth and sustainability, RDTR outlines a strategic framework that aligns with the broader RTRW. The RDTR takes a practical approach by improving access to commercial spaces, streamlining business licensing, enhancing infrastructure provision, and promoting green and circular economy practices. Several key articles within the RDTR directly address MSME development, reinforcing Jakarta's commitment to building an inclusive and competitive business environment. The RDTR provides a strong legal foundation for MSME regulation by aligning with Indonesia's national legislation. Article 143 defines MSMEs using national criteria, ensuring consistency in policy implementation. This provision enables Jakarta's government to develop targeted policies and support systems that address the specific needs of MSMEs. By standardizing definitions, the RDTR simplifies the implementation of business development programs and ensures fair regulatory treatment across sectors. To improve market access and visibility, the RDTR mandates dedicated business spaces for MSMEs. Article 16(14)(r) requires developers to allocate proportional spaces for MSMEs and informal sector businesses within commercial areas. This strategy integrates MSMEs into Jakarta's economic hubs, giving them better exposure and greater customer reach.

The RDTR also prioritizes MSME-friendly infrastructure. Article 16(15)(k) calls for the creation of co-working spaces, shared logistics hubs, and public facilities in sub-centers to enhance MSME competitiveness. These facilities aim to reduce infrastructure costs, improve operational efficiency, and foster collaboration among businesses. By encouraging the development of MSME clusters, Jakarta strengthens business networks and promotes innovation. The RDTR outlines clear implementation guidelines for developing these facilities. It sets standards for the design, location, and management of MSME spaces to ensure that infrastructure meets business needs. By offering detailed guidance, the RDTR helps MSMEs access strategic business locations, expand their customer base, and improve long-term sustainability.

The RDTR simplifies the complex licensing process by aligning business permits with spatial planning regulations. Article 173(1) allows MSMEs to apply for business licenses through the OSS system. The regulation directs local authorities to provide technical support and regulatory guidance, making the licensing process more accessible for small business owners. To minimize conflicts between zoning rules and business licensing, Articles 174(1) and 174(2) require the government to align OSS procedures with RDTR zoning guidelines. This measure prevents legal uncertainty, reduces compliance costs, and creates a stable environment for MSME growth. The RDTR introduces a structured licensing system that outlines key requirements for land-use compatibility and environmental compliance. Article 211 states that businesses must secure a KKKPR (Conformity of Space Utilization Activities) document, which verifies that business activities match Jakarta's zoning plan. MSMEs must also obtain a Perling document, which ensures environmental compliance through permits like the SKKLH (Environmental Feasibility Decree), SPKPLH (Environmental Management Statement), and SPPL (Environmental Management and Monitoring Statement). Additionally, the regulation requires MSMEs to secure construction permits, including a PBG (Building Permit) and an SLF (Certificate of Feasibility for Functionality) to confirm that business facilities meet safety and operational standards. By integrating these processes into the OSS system, the RDTR eliminates excessive bureaucracy and accelerates business formalization.

The RDTR encourages MSMEs to adopt sustainable practices that align with Jakarta's green economy goals. Article 16(14)(o) introduces incentives such as tax breaks and financial support for businesses that implement environmentally friendly practices. These initiatives aim to reduce operational costs, improve resource efficiency, and enhance MSME resilience. Despite these efforts, green and circular economy adoption among MSMEs remains limited. Many business owners lack awareness of sustainable practices, while others face financial and technical challenges in adopting eco-friendly solutions. High upfront costs for energy-efficient equipment and waste reduction systems discourage MSMEs from transitioning to greener models. Additionally, MSMEs struggle to access the RDTR's green business incentives due to complex application processes and unclear eligibility criteria. To improve adoption rates, Jakarta's government should introduce low-interest green loans, expand tax incentives, and provide technical assistance for MSMEs adopting sustainable models. Market-based incentives, such as carbon credits and waste recycling benefits, would further encourage businesses to embrace circular economy practices. While the RDTR aims to expand MSME opportunities, zoning challenges remain. Zoning regulations often prioritize large-scale commercial and industrial developments, limiting MSMEs' access to prime business locations. Many MSMEs face difficulty securing affordable spaces in high-traffic areas, while inconsistent zoning interpretations create confusion about where businesses can legally operate.

Stakeholder Mapping with UCINET

A document review identified 27 key actors involved in MSMEs management, with their roles and responsibilities detailed in Table 1 and the MSMEs network in Jakarta in Figure 1. The analysis then examined stakeholder interactions, focusing on knowledge exchange and decision-making processes, validated through relevant literature. Actor mapping identified individuals and organizations actively sharing information and shaping policies, highlighting their influence within the network. Building on Boelens & Coppens (2015), discussions and iterative engagement helped shape self-organizing collaborative networks.

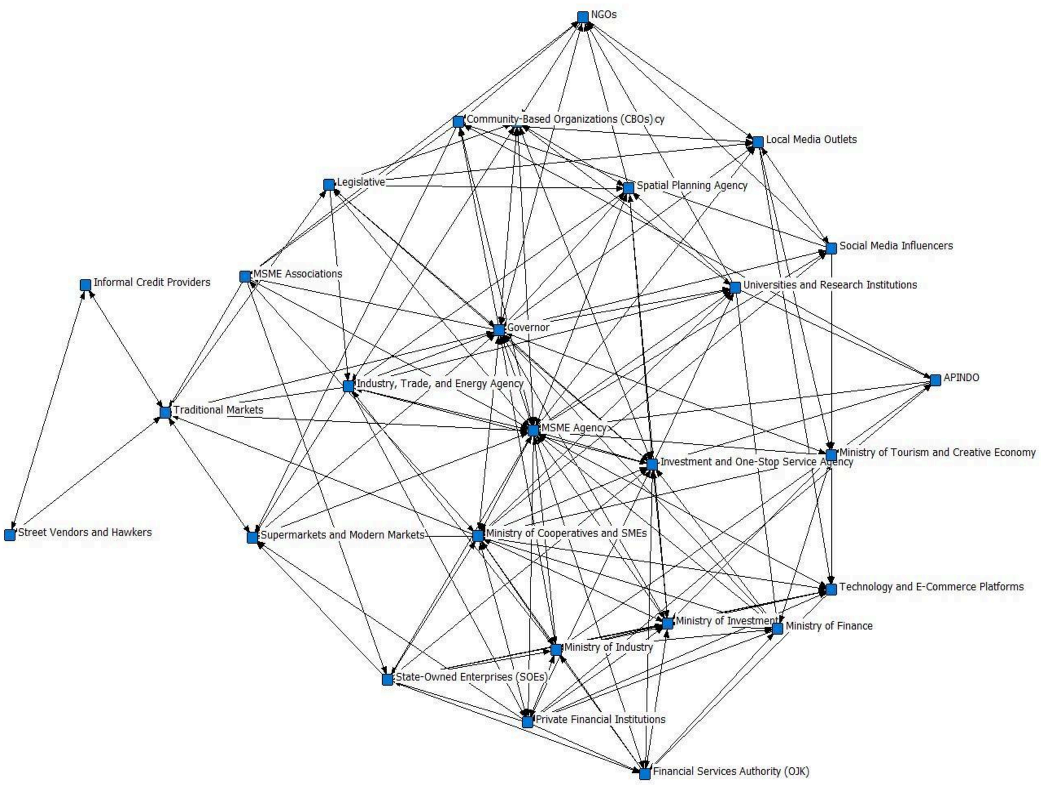

Figure 1. Network of MSMEs in Jakarta Province

The study quantified narrative descriptions of actor interactions using a structured scoring system to enhance relationship visualization. UCINET analyzed the binary dataset, measuring Degree, Betweenness, and Closeness Centrality. Actors in the translation phase aligned interests and integrated stakeholders (Alagic et al., 2017). Degree Centrality identified the most connected actors, with InDegree measuring influence based on how often others sought them out and OutDegree reflecting their outreach efforts. Betweenness Centrality assessed an actor's role as a bridge, facilitating interactions and information flow. Closeness Centrality measured how quickly an actor could reach others, indicating communication and engagement efficiency. This analysis identified key influencers and uncovered opportunities to strengthen collaboration in Jakarta's MSME management governance.

Table 1. Stakeholders in MSMEs Policy in Jakarta, Indonesia

No.	Cluster	Actors	Roles
1	Local Government	Governor	Head of Local Government – Leads and oversees the implementation of MSME policies at the provincial level. Directs strategic planning and resource allocation.
		Legislative	Legislative body – Involved in policy formulation, approval, and monitoring of MSME regulations. Provides legislative support for business incentives and infrastructure projects.
		Development Planning Agency	Strategic Planning – Develops the Jakarta Provincial Development Plan (RPJMD). Ensures that MSME development aligns with urban planning and economic strategies. Coordinates cross-sectoral integration of MSME-related policies.
		Spatial Planning Agency	Regulator & Enforcer – Develops and enforces zoning regulations. Allocates commercial and mixed-use zones for MSMEs. Monitors land-use compatibility and issues business permits.
		MSME Agency	Capacity Building & Incentives – Manages MSME support programs and financial assistance. Facilitates capacity building and market access. Supports cooperative formation and trade promotion.
		Industry, Trade, and	Policy Integration & Funding – Manages trade policies and facilitates MSME participation in industrial zones and trade

No.	Cluster	Actors	Roles
		Energy Agency	expos. Provides infrastructure and energy access for MSMEs. Oversees product development and market expansion.
		Investment and One-Stop Service Agency	Business Licensing – Manages business licensing through the OSS system. Facilitates business permits and land-use approvals. Provides regulatory guidance and advisory services for MSMEs.
2	National Government	Ministry of Cooperatives and Small and Medium Enterprises	National Policy Maker – Develops national strategies for MSME empowerment. Provides financial support and market access programs. Coordinates with regional governments for MSME alignment.
		Ministry of Investment	Investment – Facilitates domestic and foreign investment for MSMEs. Develops incentives and tax breaks for MSMEs. Manages licensing through OSS.
		Ministry of Finance	Financial Support – Develops financial support programs, including microcredit and tax incentives. Provides state-backed loan guarantees for MSMEs. Oversees tax benefits for MSMEs adopting green business practices.
		Ministry of Industry	Industrial Development – Supports MSMEs in manufacturing and industrial zones. Provides technical assistance and product development programs. Develops industrial clusters and infrastructure for MSMEs.
		Ministry of Tourism and Creative Economy	Tourism and Creative Economy – Supports MSMEs in the tourism and creative sectors. Facilitates partnerships with major tourism operators and promotional events. Manages licensing and certification for creative businesses.
		Financial Services Authority (OJK)	Financial Regulation – Regulates financial institutions to improve MSME access to credit. Supports peer-to-peer lending and financial literacy programs. Oversees financial technology development for MSMEs.
3	Private Sector	APINDO (Employers' Association of Indonesia)	Advocacy & Partnership – Advocates for MSME-friendly policies. Facilitates business partnerships and market access. Provides training and mentoring for MSMEs. Supports sustainable business practices.
		Private Financial Institutions	Financial Support – Provide loans, working capital, and financial advisory services to MSMEs. Develop financial products tailored to MSMEs. Facilitate access to credit and investment opportunities.

No.	Cluster	Actors	Roles
		State-Owned Enterprises (SOEs)	Financial and Infrastructure Support – BRI, BNI, Bank Mandiri – Provide microfinance and business loans. PT Telkom – Provides digital infrastructure and connectivity. PT PLN – Provides stable electricity access. Perum Perhutani – Supports MSMEs involved in forestry-based industries.
		Technology and E-Commerce Platforms	Market Access & Digital Support – Tokopedia, Shopee, Bukalapak, Lazada – Provide market access and cashless payment options. Gojek and Grab – Facilitate logistics and supply chain efficiency. Improve market visibility through online platforms.
		Traditional Market	Local Trade – Provide market spaces for MSMEs. Facilitate business interactions between small vendors and consumers. Encourage direct engagement with local buyers.
		Supermarket and Modern Market	Retail Access – Allow MSMEs to distribute products through formal retail channels. Provide shelf space and product promotion opportunities for MSMEs.
4	Civil Society and Non-Governmental Organizations (NGOs)	NGOs	Advocacy & Public Engagement – Advocate for MSME-friendly policies and business incentives. Provide training and capacity-building support. Support green and circular economy initiatives for MSMEs.
		Community-Based Organizations (CBOs)	Local Engagement – Facilitate local partnerships and market access for MSMEs. Support community-level business development initiatives. Promote social inclusion and local economic development.
		MSME Associations	Business Representation – Represent MSME interests in policy discussions. Provide networking, capacity building, and market access support. Monitor business challenges and advocate for policy improvements.
5	Informal Sector	Informal Credit Providers	Quick Capital – Provide quick capital for MSMEs operating outside the formal banking system. Support cash-based business operations. Fill financial gaps not covered by formal institutions.
		Street Vendors and Hawkers	Street vendors and hawkers provide essential goods and services, create jobs, and support local economies, but their informal status limits their access to financial and legal support.
6	Media and Marketing Channels	Local Media Outlets	Promotion & Visibility – Promote MSME products through media coverage and advertising. Support market visibility through

No.	Cluster	Actors	Roles
			trade fairs and exhibitions. Facilitate consumer awareness and product recognition.
		Social Media Influencers	Digital Promotion – Promote MSME products and brands through social media. Increase market visibility and customer engagement. Facilitate brand recognition and market penetration.
7	Academia	Universities and Research Institutions	Research & Policy Support – Provide technical expertise and policy recommendations for MSME development. Offer training and innovation support. Develop research on MSME challenges and sustainable business models.

The study reveals that spatial planning regulations, stakeholder interactions, and infrastructure accessibility significantly influence MSME development in Jakarta. The analysis using ANT highlighted key actors and the complex power dynamics shaping business opportunities and spatial planning outcomes. These findings align with and expand on existing literature, providing both theoretical and practical insights into MSME development within the context of urban governance. The study reveals that spatial planning regulations, stakeholder interactions, and infrastructure accessibility significantly influence MSME development in Jakarta. The analysis using ANT highlighted key actors and the complex power dynamics shaping business opportunities and spatial planning outcomes. These findings align with and expand on existing literature, providing both theoretical and practical insights into MSME development within the context of urban governance.

Influence of Spatial Planning on MSME Development

The study confirms that Jakarta's RTRW and RDTR significantly affect MSME operations by defining land use and business zoning patterns. Other global cities report similar patterns, where restrictive zoning and urban planning biases toward large-scale commercial and industrial developments limit small business growth (Scott et al., 2022). Scott et al. (2022) highlight that zoning regulations in major metropolitan areas often prioritize large infrastructure projects, reducing the availability of affordable commercial space for small businesses. In Jakarta, the misalignment between the zoning framework and business licensing requirements discourages MSMEs from securing strategic locations, thereby reducing competitiveness and market access (Widita & Lechner, 2024). Moreover, the study identified that inconsistencies between the OSS system and Jakarta's spatial planning regulations create further barriers for MSMEs. Other emerging economies exhibit similar regulatory mismatches, where complex permitting systems and zoning conflicts increase compliance costs and limit business formalization (International Labour Organization, 2014). Ohnsorge & Yu (2021) found that the absence of coordinated zoning and business licensing frameworks leads to the proliferation of informal businesses and reduced market competitiveness.

The study highlights that uneven infrastructure provision, including transportation networks, energy supply, and digital connectivity, remains a significant barrier for MSME growth in Jakarta. Li et al. (2021) document similar challenges, reporting that inadequate infrastructure in peripheral urban areas constrains business efficiency and market access. In Jakarta, limited access to infrastructure increases production costs and reduces market competitiveness, particularly for MSMEs operating in mixed-use or informal zones (Widita & Lechner, 2024). Financial access remains another critical barrier. The study found that only 30% of MSMEs in Jakarta have access to formal financing due to high collateral requirements and complex loan application processes. This is consistent with Kumar et al.'s (2022) findings that financial barriers are one of the primary constraints for MSMEs in developing economies, limiting their capacity to invest in innovation and adapt to market changes. Strengthening financial literacy and introducing tailored financing schemes could enhance MSME resilience and competitiveness.

The transition toward a green and circular economy presents strategic opportunities for MSME development in Jakarta. The study identified that MSMEs engaged in recycling and upcycling activities demonstrated higher profit margins and greater business resilience. This supports the findings of Geissdoerfer et al. (2021), who reported that circular economy practices enhance business efficiency and reduce environmental impacts in small business operations. However, limited awareness and technological barriers remain key obstacles to the broader adoption of circular economy practices in Jakarta. Providing targeted incentives, such as tax benefits for resource-efficient production and access to green financing, could accelerate this transition. Furthermore, integrating circular economy principles into Jakarta's spatial planning framework could strengthen MSME resilience and environmental performance. European cities have adopted similar strategies, using supportive zoning regulations and green financing schemes to facilitate the growth of circular business models (Geissdoerfer et al., 2021).

Stakeholder Dynamics and Power Structures

The application of ANT revealed the central role of government agencies and private sector entities in shaping MSME development policies. High degree centrality values for government agencies indicate that they act as key information hubs and decision-makers within the network. This aligns with Rydin's (2012) findings that public institutions often dominate urban planning networks, influencing negotiation outcomes and resource allocation. However, the study also identified structural gaps in stakeholder coordination. High betweenness centrality values for private sector actors suggest that they serve as crucial intermediaries, facilitating information flow and policy negotiation. This reflects Caniglia et al. (2016) observation that private actors often play a strategic role in connecting different stakeholder groups, thereby shaping policy outcomes. Despite their strategic position, NGOs and MSME associations exhibited lower closeness centrality, indicating limited direct access to decision-making channels. This imbalance reduces the capacity of smaller stakeholders to influence spatial planning decisions and advocate for MSME-friendly policies.

The power in social network analysis stems from relationships rather than personal attributes (Hanneman & Riddle, 2005). The level of power depends on network structures—dense networks enhance influence, while loosely connected ones limit it. Power functions at both macro (system) and micro (actor) levels, with a fixed total amount distributed unequally. Actors in strategic positions with greater access to resources hold more influence, negotiation power, and recognition. ANT is widely used in governance and policy studies to examine power structures, stakeholder interactions, and policy effectiveness. Studies highlight network centrality as crucial in understanding governance dynamics, particularly in business and economic development (Prell et al., 2009; Bodin & Crona, 2009). This study applies Degree, Betweenness, and Closeness Centrality to analyze Jakarta's MSMEs management network. Degree Centrality measures an actor's influence based on direct connections, with higher values indicating greater interaction and resource access. Betweenness Centrality identifies actors who bridge others by controlling information flow. Closeness Centrality assesses how quickly an actor can reach others, with higher values enabling faster information dissemination. These measures reveal key actors' roles and strategic positions in the network.

Degree Centrality

The Degree Centrality analysis highlights key actors based on their number of connections (Figure 2). Larger node sizes indicate greater influence within the MSME network. Jakarta's Governor and the MSME Agency are the most connected actors, with the highest out-degree (17) and in-degree (15 and 17), respectively. This reflects their central role in shaping policies and coordinating MSME-related strategies. The Ministry of Cooperatives and the Ministry of Investment also hold significant influence, with high in-degree and out-degree values (14/13 and 11/11), indicating their active role in both influencing and being influenced by other stakeholders. Intermediaries such as the Planning Development Agency and the Investment and One-Stop Service bridge government policies with economic sectors, ensuring feasibility and effective implementation. The Investment and One-Stop Service has a higher in-degree (13) than out-degree (6), reflecting its function as a key recipient of influence rather than an initiator of actions. Peripheral actors, including Informal Credit Providers and Street Vendors and Hawkers (with out-degree and in-degree values of 2), have limited direct influence but could play a larger role in expanding access to financial and market opportunities. Strengthening these connections could improve MSME engagement and policy adoption.

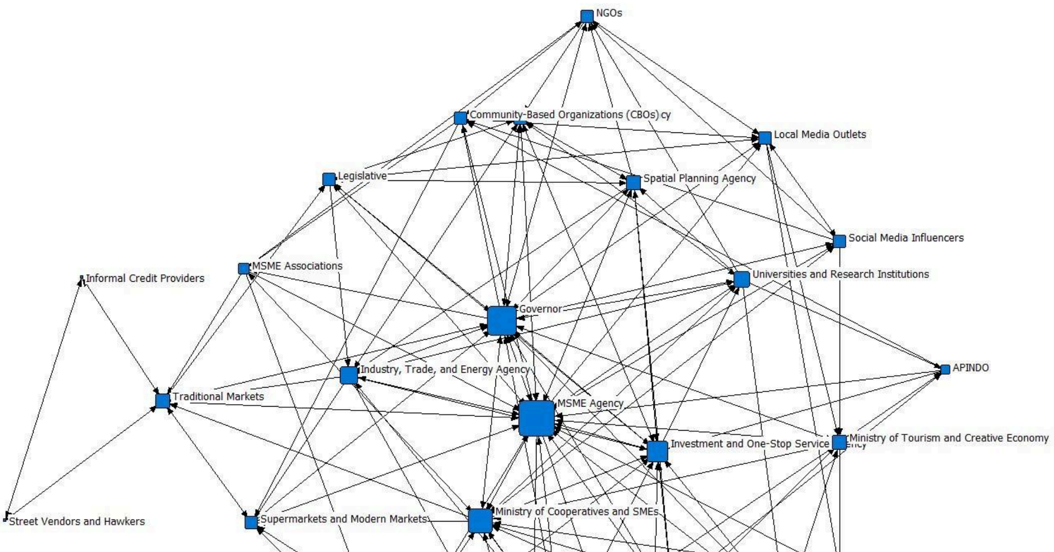

Figure 2. Degree Centrality

The network reveals strong collaborations between government agencies, businesses, and financial institutions. Ministries establish regulations, while business entities and financial institutions influence MSME development and market access. The prominence of the Governor and MSME Agency aligns with findings from previous studies (e.g., Bodin & Crona, 2009; Ernstson et al., 2010), where government agencies hold the highest Degree Centrality due to their regulatory authority. However, the significant influence of the Ministry of Cooperatives and the Ministry of Investment in the MSME network suggests that government-business collaboration is a key driver of MSME growth, particularly in response to evolving market demands and regulatory pressures. Jakarta's MSME network maintains moderate centralization, with Out-Degree and In-Degree Centralization at 0.3861, reflecting balanced interaction flow where key actors hold influence without a single entity dominating the network. A more centralized network (closer to 1) would indicate dominance by a few actors, while a decentralized one (closer to 0) would reflect more evenly distributed influence. Government agencies and key ministries drive Jakarta's MSME development, with intermediaries facilitating stakeholder engagement. Strengthening collaboration among public, private, and grassroots stakeholders, including MSME associations and informal credit providers, could enhance network resilience and policy impact.

Betweenness Centrality

The Betweenness Centrality analysis identifies key intermediaries in Jakarta's MSME network (Figure 3). Betweenness Centrality measures the extent to which an actor bridges different stakeholders, facilitating interactions and information flow. Higher scores indicate greater influence in connecting groups and shaping policy coordination. The MSME Agency holds the highest Betweenness Centrality score (134.733), positioning it as the most influential actor in connecting government agencies, businesses, and financial institutions. This underscores its central role in facilitating cooperation and shaping MSME development policies. The Governor of Jakarta (110.023) and Traditional Markets

(98.641) rank high, acting as key mediators in coordinating business activities and market operations.

The high score for Traditional Markets reflects their strategic role in facilitating business transactions and connecting producers, retailers, and consumers. As vital distribution hubs, traditional markets serve as entry points for MSMEs to access local markets and customer bases. Their influence highlights the importance of market-based solutions in strengthening MSME competitiveness. Other key actors include the Ministry of Cooperatives and SMEs (65.552) and the Ministry of Tourism and Creative Economy (22.823), which play significant roles in linking businesses with government policies, facilitating market access, and supporting business development. The Ministry of Investment (20.259) and the Investment and One-Stop Service Agency (15.696) also act as critical facilitators for business licensing and investment, strengthening the regulatory framework for MSMEs. Technology and E-Commerce Platforms (15.891) and Private Financial Institutions (15.719) demonstrate notable influence in connecting government and market players, enabling the expansion of digital solutions and financial services for MSMEs. Universities and Research Institutions (14.216) hold moderate Betweenness Centrality, contributing to knowledge dissemination and evidence-based policymaking. Strengthening ties with government and private actors could enhance their impact on policy innovation and business development.

Other influential actors include MSME Associations (14.547) and the Ministry of Industry (14.153), reflecting their role in representing business interests and facilitating sectoral development. However, peripheral actors such as Social Media Influencers (6.595), NGOs (10.220), and Local Media Outlets (9.795) have lower Betweenness Centrality scores, limiting their direct policy influence. Nevertheless, they play essential roles in advocacy, market awareness, and public engagement. Strengthening their ties with core government and private-sector actors could increase their contribution to MSME development strategies. Statistical analysis shows a mean Betweenness Centrality of 23.370 with a normalized mean (nBetweenness) of 3.595, indicating moderate control over information flow. A high standard deviation (34.725) reflects significant variation in influence, with some actors serving as key connectors while others remain marginal. The maximum value of 134.733 highlights dominant intermediaries, while the minimum value of 0.000 reflects peripheral actors such as Informal Credit Providers and Street Vendors and Hawkers. A Network Centralization Index of 17.79% indicates a moderately decentralized network, with influence spread among multiple actors rather than concentrated in a few central players. This suggests that Jakarta's MSME network relies on a broader range of stakeholders, unlike more centralized models where government or industry leaders dominate decision-making.

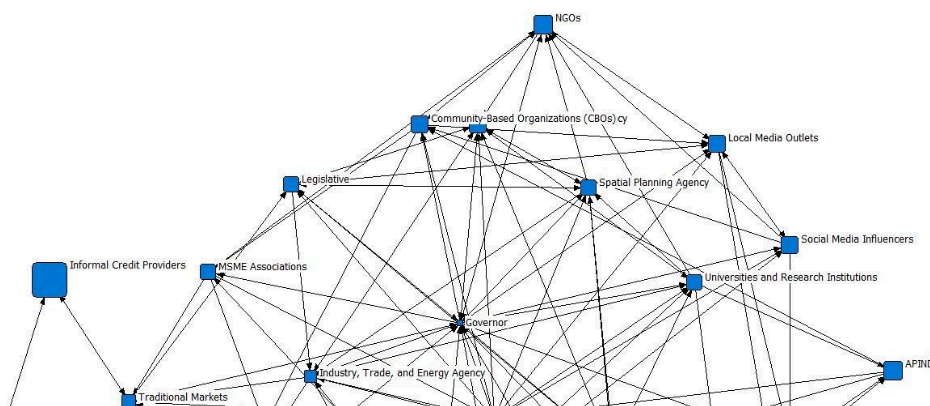

Figure 3. Betweenness Centrality

These findings align with global studies emphasizing the role of planning agencies as key facilitators (Newig et al., 2010; Olsson et al., 2007). However, unlike decentralized models where NGOs and communities play bridging roles (Fischer & Leifeld, 2015), Jakarta's network remains relatively state-centered. Strengthening civil society's role in policy networks could enhance participatory governance and long-term sustainability (Agamuthu & Herat, 2014). This analysis underscores the importance of improving the connectivity of peripheral actors and strengthening intermediary roles to enhance coordination and policy effectiveness in Jakarta's MSME network.

Closeness Centrality

The Closeness Centrality analysis identifies the most strategically positioned stakeholders in Jakarta's MSME network, as shown in Figure 4. A higher closeness score indicates that an actor can quickly access and share information, facilitating efficient coordination and decision-making. The Governor of Jakarta, the Legislative, the Spatial Planning Agency, and the Planning Development Agency hold the highest closeness centrality scores across all calculation methods. This reinforces their central role in policy formulation, regulation, and cross-sector coordination within the MSME network. Their high centrality reflects strong access to and influence over information flow, enabling them to integrate MSME-related policies into broader urban planning and economic strategies.

In contrast, the MSME Agency, the Industry, Trade, and Energy Agency, the Ministry of Cooperatives, and other national-level ministries (e.g., the Ministry of Investment, the Ministry of Finance, and the Ministry of Industry) exhibit low or zero closeness centrality. This suggests that despite their formal mandates, they are structurally distant within the network, limiting their ability to influence or receive direct information from other stakeholders. Private sector actors, including APINDO, financial institutions, state-owned enterprises, and technology companies, also exhibit low closeness centrality. Similarly, grassroots and civil society actors, such as NGOs, community-based organizations, MSME associations, and informal credit providers, remain peripheral. This weak positioning reduces their capacity to influence policymaking and participate in coordinated MSME development efforts. Universities and research institutions also show low closeness centrality, reflecting limited direct engagement with core government actors. Strengthening ties between research institutions, government agencies, and private sector stakeholders could improve knowledge transfer and foster innovation in MSME development. Additionally, traditional markets, supermarkets, and street vendors are weakly connected, highlighting gaps in integrating local market dynamics into broader policy frameworks.

Quantitative analysis supports these findings. The Governor, Legislative, Spatial Planning Agency, and Planning Development Agency consistently score highest in both OutCloseness and InCloseness across all methods, indicating a strong capacity to disseminate and absorb information. The Governor holds the highest closeness score (1.000), along with the Legislative, Spatial Planning Agency, and Planning Development Agency, indicating that these government actors are highly central and well-connected within the network. This strategic positioning enables them to facilitate communication and coordination across the network. In contrast, NGOs and universities exhibit closeness scores of 0.000 across all methods, reflecting their peripheral positioning and limited direct influence within the network. Similarly, private sector actors (e.g., APINDO, financial institutions, state-owned enterprises, and technology companies) and grassroots actors (e.g., MSME associations and informal credit providers) also have closeness scores of 0.000, highlighting their structural disconnection from the core network. Jakarta's MSME network reflects a highly centralized structure, dominated by key government actors. This concentration of closeness centrality underscores the pivotal role of government agencies in influencing and directing the network's overall connectivity.

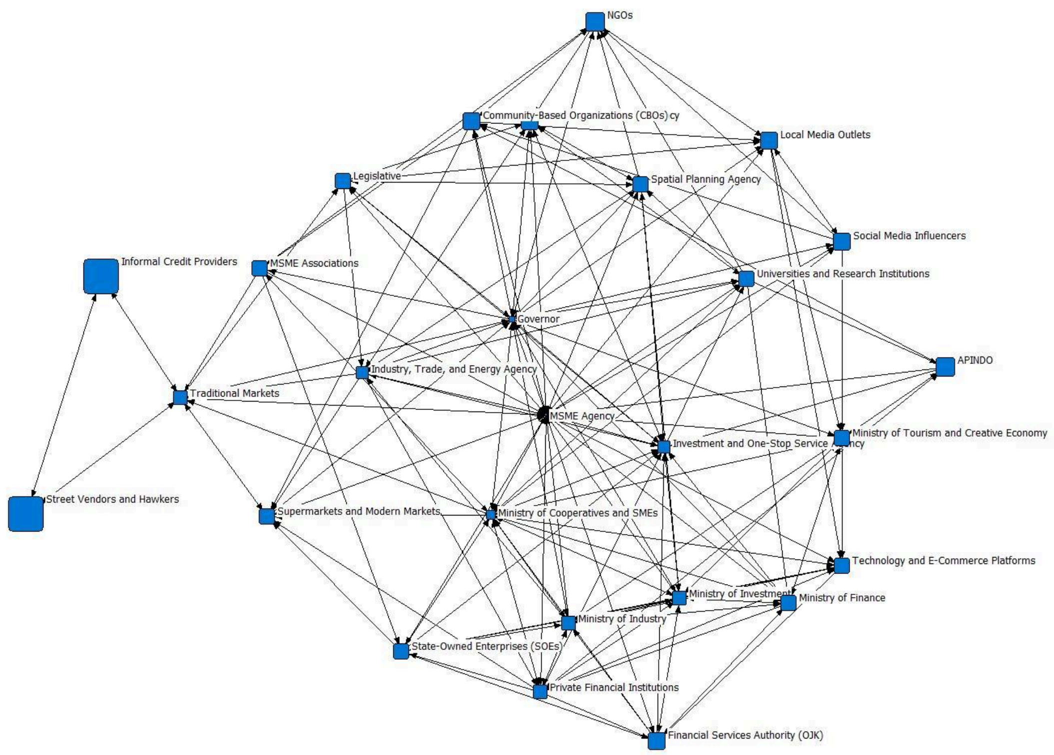

Figure 4. Closeness Centrality

Overall, Jakarta's MSME network reflects a moderately decentralized structure dominated by government agencies. Bridging the connectivity gap between the private sector and community stakeholders presents an opportunity to enhance network efficiency, policy responsiveness, and long-term sustainability in MSME development. The findings highlight that Jakarta’s MSME network is moderately decentralized around government institutions, reflecting a state-centric governance model. This aligns with previous research showing that central government agencies often dominate policy networks (Borgatti & Everett, 2006; Prell et al., 2009). Jakarta’s MSME network relies on government-led coordination, unlike decentralized governance models where non-state actors hold greater influence (Duit & Galaz, 2008). To improve network efficiency and resilience, the study recommends several strategic interventions:

1. Strengthen Public-Private Partnerships – Enhancing collaboration between government agencies and private-sector actors (e.g., APINDO, financial institutions) can increase market access and financial support for MSMEs.
2. Empower Grassroots and Community-Based Organizations – Integrating local actors like MSME associations, informal credit providers, and street vendors into the policy network could enhance bottom-up engagement and operational efficiency.
3. Enhance Knowledge Transfer and Innovation – Closer collaboration between universities, research institutions, and government agencies can drive innovation and evidence-based policymaking in MSME development.
4. Promote Market-Based Solutions – Strengthening the role of traditional markets and supermarkets as key hubs for MSME activities can improve supply chain efficiency and consumer access.

The findings reveal several strategic opportunities to enhance MSME competitiveness by aligning spatial planning and business policies. First, streamlining business-permitting processes will reduce regulatory uncertainty and improve market access for MSMEs. Aligning the OSS system with Jakarta’s RDTR and RTRW will simplify licensing and resolve conflicts between business activities and zoning regulations. Second, improving infrastructure in Jakarta, especially in peripheral areas, will increase MSME market reach and operational efficiency. Expanding transportation networks, improving energy supply, and strengthening digital connectivity will create a more supportive business environment. Third, creating a multi-stakeholder platform will strengthen stakeholder collaboration by facilitating dialogue and policy coordination among government agencies, MSMEs, and private sector actors. This platform will help resolve conflicts, improve policy implementation, and foster more inclusive decision-making. Finally, supporting green and circular business models presents a strategic opportunity to enhance MSME resilience and environmental performance. Introducing targeted incentives, such as tax breaks and green financing schemes, will encourage MSMEs to adopt circular economy practices, including resource efficiency, waste reduction, and renewable energy use. Aligning these strategies with Jakarta’s spatial planning framework will create a more sustainable and competitive urban economy.

This study strengthens the application of ANT in urban planning and economic development by showing how stakeholder interactions and power dynamics shape MSME outcomes. The ANT framework identified strategic actors, structural gaps, and opportunities for policy improvement. The findings support Rydin (2012) argument that power asymmetries and institutional structures significantly shape urban development outcomes, highlighting the dominant role of government agencies and the bridging function of private actors. Additionally, the study extends Caniglia et al. (2016) insights on the role of private actors in facilitating policy innovation by showing how intermediary stakeholders can strengthen stakeholder collaboration and improve resource access. This integrated approach enhances understanding of the complex stakeholder dynamics driving MSME development and spatial planning, providing a model adaptable to other urban contexts.

Strategic Policy Recommendations for MSMEs

To enhance the competitiveness and resilience of MSMEs in Jakarta, several strategic policy interventions are recommended. These recommendations are based on the findings from the ANT analysis and the evaluation of Jakarta's spatial planning regulations, including the RTRW and the RDTR. The proposed strategies aim to address structural barriers, improve market access, strengthen stakeholder collaboration, and promote sustainable business practices.

Revising Zoning Policies and Enhancing Spatial Planning Frameworks

Jakarta's RDTR and RTRW establish the legal foundation for MSME development by defining land use, business licensing, and infrastructure provision. However, the ANT analysis revealed significant misalignment between business licensing procedures and zoning regulations, which creates barriers for MSMEs in securing strategic business locations and obtaining operational permits. Article 12 of the RTRW mandates the proportional allocation of commercial and mixed-use zones for MSMEs, but inconsistent enforcement of zoning policies and restrictive land-use regulations have limited MSMEs’ access to prime business locations. To address these challenges, the Jakarta government should introduce more flexible zoning policies that prioritize MSME-friendly zones in strategic areas. Encouraging developers to allocate dedicated spaces for MSMEs within large-scale commercial and residential projects would improve market access and business visibility. Additionally, streamlining the business licensing process by harmonizing the OSS system with RDTR and RTRW zoning regulations would reduce compliance costs and encourage MSME formalization. Article 175 of the RTRW, which outlines the procedures for MSME spatial conformity assessments, should be reinforced to ensure consistent interpretation and enforcement across government agencies.

Strengthening Infrastructure Provision and Market Connectivity

The ANT analysis highlighted that infrastructure gaps—particularly in peripheral areas—limit MSME operational efficiency and market reach. MSMEs in underserved areas face limited access to transportation networks, energy supply, and digital connectivity, increasing operational costs and reducing competitiveness. Article 92(2)(d) of the RTRW designates the Pulogadung Small Industry Center as a dedicated MSME cluster, but similar infrastructure development has not been replicated in other strategic locations. To improve infrastructure access, the Jakarta government should prioritize expanding transportation networks, improving energy supply, and strengthening digital infrastructure in peripheral areas. Establishing MSME business hubs with shared logistical, technical, and marketing support would reduce operational costs and create business networking opportunities. Providing financial incentives for infrastructure investment in underserved areas would further encourage private sector participation and accelerate infrastructure development.

Improving Access to Finance and Business Development Support

The ANT analysis revealed that high collateral requirements and complex loan procedures limit MSME access to formal financing, forcing many businesses to rely on informal lending networks or personal savings. According to Tambunan (2021), only a small percentage of MSMEs in Jakarta have access to formal financing, which restricts business expansion and increases vulnerability to market shocks. To address these financial barriers, the Jakarta government should introduce targeted financial products for MSMEs, including government-backed loan guarantees and microfinance schemes. Establishing partnerships with private financial institutions to develop specialized MSME financial products, such as working capital loans and green business incentives, would increase credit availability and encourage business expansion. Additionally, expanding financial literacy programs and business development support would strengthen MSME's capacity to manage financial resources and adopt sustainable business practices.

Promoting Green and Circular Economy Models

Jakarta's spatial planning framework supports the adoption of green and circular economy practices among MSMEs, but implementation remains limited due to financial and technical barriers. Article 16(14)(o) of the RDTR introduces incentives for environmentally friendly business practices, including tax breaks and financial support for energy-efficient infrastructure and waste reduction initiatives. However, the ANT analysis highlighted that many MSMEs lack the technical knowledge and financial capacity to transition to sustainable business models. To accelerate the adoption of green and circular economy practices, the Jakarta government should strengthen market-based incentives such as carbon credits and waste recycling benefits. Providing technical assistance and training programs on green production methods, energy efficiency, and waste reduction would enhance MSME's capacity to implement sustainable business practices.

Expanding access to green financing through low-interest loans and tax incentives would further support MSMEs' transition to circular business models.

Enhancing Stakeholder Collaboration and Institutional Coordination

The ANT analysis identified the MSME Agency (134.733) and the Governor (110.023) as the most connected actors in Jakarta's MSME governance network, highlighting their central role in policy formulation and business coordination. High betweenness centrality values for private actors indicate that they serve as strategic intermediaries, facilitating cross-sector collaboration. However, the analysis also revealed structural gaps in stakeholder coordination, particularly among universities, research institutions, and MSME associations. To strengthen stakeholder collaboration, the Jakarta government should establish a multi-stakeholder platform that includes government agencies, MSMEs, private sector actors, and academic institutions. This platform would facilitate policy dialogue, improve coordination among stakeholders, and enhance the flow of information. Encouraging private sector participation in MSME development initiatives through public-private partnerships would further strengthen business networks and improve market access for MSMEs.

CONCLUSION

This study applied selected principles from ANT to examine how stakeholder relationships and institutional coordination influence MSME development in Jakarta. The analysis highlighted the dominant roles of government actors, particularly the MSME Agency and the Governor, while NGOs and academic institutions remain under-engaged. Although ANT was not used as a full theoretical framework, its principles helped reveal how both human and non-human elements—such as regulations, licensing systems, and infrastructure—shape policy outcomes in spatial planning.

The findings underscore the critical influence of Jakarta's spatial planning regulations in determining MSME access to business opportunities and long-term resilience. Misalignment between business licensing frameworks and spatial planning policies—especially between the OSS system, RDTR, and RTRW—creates legal uncertainty and hinders MSMEs from securing strategic locations and formal permits. Rigid zoning rules and uneven enforcement further limit MSME access to commercial zones. Additionally, infrastructure gaps and financing barriers continue to constrain MSME growth, particularly in peripheral areas. The study also found that the adoption of green and circular economy practices remains low due to technical limitations and a lack of targeted financial incentives. The ANT-based network analysis confirms that MSME governance in Jakarta is largely state-driven. The MSME Agency (centrality score 134.733) and the Governor (110.023) emerged as the most influential actors, playing key roles in policy coordination and information flow. However, weak connectivity among academic institutions and NGOs highlights coordination gaps that undermine inclusive and knowledge-based policy development. Strengthening multi-stakeholder collaboration and aligning spatial policies with MSME needs will be essential to support Jakarta's transition to a more sustainable and inclusive urban economy.

This study addresses a critical gap in the literature on MSME development and spatial planning in Indonesia. While previous studies have examined MSME competitiveness and business licensing frameworks, limited research has explored the intersection of spatial planning policies and MSME growth, particularly through the lens of ANT and this study provides a novel framework for understanding how zoning regulations, business licensing, and infrastructure support shape MSME development and stakeholder interactions. The findings offer valuable insights for policymakers and urban planners seeking to improve MSME competitiveness and promote sustainable business practices. To address these challenges and strengthen MSME competitiveness, the study recommends:

1. Aligning business licensing with spatial planning regulations to reduce compliance costs and improve market access for MSMEs.
2. Improving infrastructure and market access by expanding transportation networks, energy supply, and digital connectivity, particularly in underserved areas.
3. Strengthening stakeholder collaboration by establishing a multi-stakeholder platform to improve coordination and policy alignment.
4. Promoting green and circular economy models through targeted incentives, financial support, and technical assistance.
5. Expanding access to finance by introducing specialized financial products and simplifying loan requirements.

Future studies could build on this research by conducting comparative analyses across different urban areas in Indonesia to assess how spatial planning policies influence MSME development in varying economic and geographic contexts. In-depth interviews and focus group discussions with MSME stakeholders could provide additional insights into the operational challenges faced by MSMEs and the effectiveness of policy interventions. Moreover, exploring the role of digital platforms and technology-driven business models in enhancing MSME resilience and market competitiveness would further contribute to the body of knowledge on urban economic development. Expanding the scope to include the influence of regional and national policies on Jakarta's MSME ecosystem would also provide a broader perspective on regulatory coherence and market integration. These strategic interventions aim to create a more supportive and competitive business environment for MSMEs. Strengthening stakeholder collaboration and improving regulatory coherence will enhance MSME resilience and contribute to Jakarta's transition toward a sustainable urban economy.

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