WASTE MANAGEMENT-BASED BUSINESS DEVELOPMENT STRATEGY TO REALIZE GREEN ENTREPRENEURSHIP A LITERATURE STUDY

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ABSTRACT

The escalating waste problem in Medan City presents a strategic opportunity to develop waste management-based businesses that foster green entrepreneurship. However, implementation remains hindered by low public awareness, limited institutional capacity, and a lack of digital marketing skills among MSMEs. This study aims to examine strategies for developing waste management businesses through a literature review approach.

Based on a synthesis of the literature, three propositions were formulated: waste management fosters circular economy practices (P1), the circular economy drives green entrepreneurship (P2), and waste management directly influences green entrepreneurship (P3). The findings indicate that all three propositions are supported by empirical evidence. The study offers a theoretical contribution by integrating three theories to explain the transformation of waste into entrepreneurial resources, and a practical contribution by providing strategic recommendations for business operators and local government to promote sustainable waste management in Medan City.

Keywords*: Waste Management; Circular Economy; Green Entrepreneurship; Literature Review*

INTRODUCTION

The continuously rising volume of waste generation poses an urgent environmental challenge for many cities, including Medan (Wilson, 2015). This phenomenon is particularly relevant when viewed through the lens of the circular economy a concept emphasizing resource efficiency and the reuse of raw materials to minimize waste (Kirchherr et al., 2020). In response, waste management practices centered on "waste banks" have begun to take root in the region. In Medan, the Sicanang Central Waste Bank (BSIS) accepts and processes sorted waste from the community, simultaneously enhancing the economic value of waste and raising residents' environmental awareness (Auliani, 2020). A comparable initiative operates in neighboring Deli Serdang, where the Diski Mandiri Waste Bank has adopted green economy principles in its waste management activities. Together, these two cases BSIS in Medan and Diski Mandiri in Deli Serdang provide the empirical anchor for this study, illustrating how waste bank models are being locally adapted even as

citywide management capacity continues to fall short of overall needs.

This gap creates an opportunity for the growth of "green entrepreneurship" entrepreneurial practices oriented not only toward financial profit but also toward environmental and social dimensions (Ardianingsih & Meliana, 2022) through the application of reduce, reuse, and recycle principles within business operations (Damayanti & Oktariani, 2023). Yet despite the promise demonstrated by BSIS and Diski Mandiri, implementation more broadly remains hindered by low public literacy regarding the sorting of waste with economic value and a lack of sustained institutional support.

Studies specifically mapping development strategies for waste-management-based businesses to foster green entrepreneurship particularly within the local context of Medan remain relatively limited. Grounding the discussion in the concrete cases of BSIS and Diski Mandiri establishes a clear empirical boundary for this study. Therefore, this research aims to examine such strategies through a literature review, with the goal of formulating actionable recommendations for business operators and policymakers in Medan.

THEORETICAL REVIEW

The Resource-Based View (RBV) as Foundation for Managing Waste as Business Resource

The Resource-Based View (RBV) proposed by Barney (1991) explains that sustained competitive advantage stems from firm resources possessing four key characteristics: they are valuable, rare, difficult to imitate, and non substitutable. Barney (1991) asserts that: "sustained competitive advantage derives from the resources and capabilities a firm controls that are valuable, rare, imperfectly imitable, and not substitutable" (Barney, 1991, p. 99).

In the context of this study, waste traditionally viewed merely as refuse can be repositioned as strategic resource for MSMEs, provided that business operators can transform it into products that offer economic value, are difficult to imitate, and support business differentiation. The RBV is employed to explain the relationship between waste management (the independent variable) and the sustainability or competitive advantage of environmentally oriented businesses (the dependent variable), as the theory provides a framework for understanding how an input perceived as valueless can be transformed into a competitive resource.

Circular Economy Theory as Framework for Transforming Waste into Economic Value

The Circular Economy theory developed by Kirchherr, Reike, and Hekkert (2017) provides a conceptual framework for how economic systems can be designed to close resource use loops through the principles of reduce, reuse, and recycle. Kirchherr et al. (2017) found that: "the circular economy is most frequently depicted as combination of reduce, reuse and recycle activities" (Kirchherr et al., 2017, p. 221). This theory is relevant for explaining the mechanisms by which waste management can simultaneously generate economic and environmental value, serving as conceptual bridge to green entrepreneurship practices. In other words, the circular economy acts as mediating variable that explains how waste management inputs can lead to outcomes characterized by a sustainable business orientation.

Sustainable Entrepreneurship Theory as the Basis for the Green Entrepreneurship Concept

The Sustainable Entrepreneurship Theory developed by York and Venkataraman (2021) explains the relationship between entrepreneurial activity and environmental issues as space for innovation amidst uncertainty. York and Venkataraman (2021) state that: "entrepreneurial action can simultaneously address environmental degradation and generate economic value" (York & Venkataraman, 2021, p. 108). This theory is used to explain the dependent variable in this study namely green entrepreneurship defined as form of entrepreneurial behavior that simultaneously integrates economic, social, and environmental dimensions (Ardianingsih & Meliana, 2022). Thus, the theory serves as the basis for the argument that appropriate waste management strategies can foster the development of environmentally oriented entrepreneurial behavior.

RESEARCH METHOD

This study employs a qualitative approach utilizing a literature review method, which involves examining, analyzing, and synthesizing findings from various sources to address the research problem.

The research data is derived from secondary sources, including national and international journal articles, conference proceedings, institutional reports (e.g., Medan City Environmental Agency, BRIN, the World Bank), and books relevant to the topics of waste management, the circular economy, and green entrepreneurship, published between 2015 and 2026.

Literature searches were conducted via databases such as Google Scholar, Scopus, and Garuda, using the keywords "waste management," "circular economy," and "green entrepreneurship." Inclusion criteria comprised: (a) relevance to the topic, (b) indexing or official publication status, and (c) the presence of clear empirical or

conceptual data. Exclusion criteria covered articles lacking a clear methodology or those inaccessible in full-text format.

Analysis was performed using content analysis and thematic synthesis techniques, utilizing a synthesis matrix to organize and code concepts that recurred across various sources. Literature findings were categorized by theme (waste management strategies, MSME challenges, circular economy practices, and green entrepreneurship indicators), then compared and synthesized to derive comprehensive conclusions. The reviewed literature focuses on the context of Medan City and North Sumatra, with supporting literature from national and international contexts used for comparative purposes.

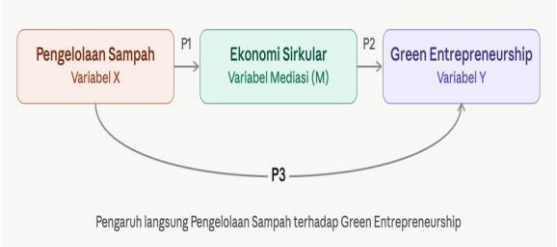

Figure 1 Conceptual Framework

RESULTS AND DISCUSSION

Waste Management and the Circular Economy (P1)

The literature review indicates that waste management practices in Medan City such as those at the Sicanang Central Waste Bank (BSIS) and the Diski Mandiri Waste Bank in Deli Serdang have implemented waste sorting and "saving" mechanisms aligned with the reduce, reuse, and recycle principles (Auliani, 2020). However, this management capacity remains highly limited relative to the volume of waste generated by the city; consequently, the implementation of the circular economy has not yet occurred systemically but remains partial and community-based.

This pattern is not incidental. It reflects a structural mismatch between the scale of waste generation and the institutional design of waste banks, which were originally conceived as community-level, voluntary initiatives rather than city-wide infrastructure. Because waste banks depend on manual sorting by residents and limited collection points, their throughput is inherently capped so the "partial" nature of circular economy adoption is a direct consequence of institutional design, not merely a temporary implementation gap. This explanation is consistent with Kirchherr et al. (2017), who found that most on-the-

ground practices worldwide address only the 3R aspects rather than achieving a comprehensive systemic shift, and it extends that finding by showing the same mechanism capacity constrained, community-based infrastructure operating specifically in the Medan/Deli Serdang context. Proposition P1 is therefore supported, with the caveat that the strength of this relationship is constrained by institutional capacity factors.

Circular Economy and Green Entrepreneurship (P2)

The literature indicates that circular economy implementation through the use of economically valuable recycled products contributes to the development of an environmentally friendly business orientation among MSMEs. Kusumawardani et al. (2024) found that readiness to adopt green standards is closely linked to business sustainability performance, although limited technical and digital marketing skills remain major obstacles.

The reason this relationship is conditional rather than automatic can be explained through a resource-based lens: circular economy practices only translate into entrepreneurial value when MSME operators possess the complementary capabilities (technical processing knowledge, digital marketing skills) needed to convert recycled material into a marketable product or service. Where those capabilities are absent, circular inputs remain a cost-saving activity rather than a source of competitive advantage which explains why the literature shows adoption of green standards varying with business capacity rather than with material availability alone. This finding reinforces the P2 proposition while underscoring that the relationship between the circular economy and green entrepreneurship is mediated by capacity and literacy, not direct.

Direct Influence of Waste Management on Green Entrepreneurship (P3)

Certain cases, such as the Green Smart Business model in community-based waste banks, demonstrate that waste management can directly foster green entrepreneurial behavior without necessarily passing through a mature circular economy stage for instance, through environmental education and multi-stakeholder collaboration that immediately shape eco-friendly business awareness and practices.

This direct pathway can be explained by the fact that entrepreneurial orientation is shaped as much by exposure and socialization as by material resource flows: repeated participation in waste-sorting activities appears to cultivate an environmental disposition among participants that predates, and does not require, a functioning circular material market. This is consistent with York and Venkataraman (2021), who argue that

entrepreneurial action can simultaneously address environmental issues and generate economic value that is, the entrepreneurial response can emerge in parallel with environmental engagement rather than strictly downstream of it. Proposition P3 is therefore supported, indicating a direct influence pathway that operates alongside, rather than only through, the circular-economy-mediated pathway identified under P2.

General Discussion

Table 1 summarizes the extent of support for each proposition and the corresponding constraining factors identified in the literature.

Proposition	Relationship	Support Status	Constraining Factor
P1	Waste management → Circular economy	Supported (partial)	Institutional capacity
P2	Circular economy → Green entrepreneurship	Supported (mediated)	Technical & digital marketing literacy
P3	Waste management → Green entrepreneurship (direct)	Supported	Depends on education & multi-stakeholder collaboration

Source: Author's synthesis (2026).

Table 1 Summary of Proposition Testing Based on Literature Synthesis

CONCLUSION

This study aims to examine business development strategies based on waste management to foster green entrepreneurship, utilizing a literature review approach. Based on a synthesis of the three proposed concepts, it can be concluded that waste management serves as strategic foundation that drives circular economy practices and, in turn, shapes environmentally conscious entrepreneurial organizations whether through an incremental path (via the circular economy) or a direct one. Thus, the research propositions (P1–P3) are conceptually confirmed by empirical evidence from the reviewed literature, underscoring that the success of this transformation relies heavily on institutional readiness and the capacity of business actors, rather than solely on the availability of waste resources themselves.

The study's key findings indicate that the success of waste-based green entrepreneurship in Medan City is not determined by a single factor but by the interaction of three elements: technical readiness for waste management, maturity in implementing circular economy practices, and sustained institutional support. The

absence of any of these elements as evidenced by the limited capacity of the Sicanang Central Waste Bank relative to the city's waste volume, or the low level of waste sorting literacy in certain communities acts as major barrier to achieving optimal business transformation.

Theoretical Implications, This study reinforces the relevance of the Resource-Based View, Circular Economy Theory, and Sustainable Entrepreneurship Theory as complementary frameworks for explaining the transformation of waste into entrepreneurial resources, while also providing new empirical context from North Sumatra a region previously underrepresented in the national green entrepreneurship literature.

Practical Implications, For MSME players and waste bank operators, these findings underscore the importance of strengthening technical processing capabilities and digital marketing skills. For local governments, policies supporting the scaling up of waste banks are needed, alongside incentives for MSMEs that adopt eco-friendly practices.

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