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Circular economy practices by upcycling waste product creation at local coffee shop

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Article Info	Abstract
<p>Keywords: Circular Economy, Upcycling, Coffee Waste, Local Coffee Shop, MSME, Sustainability</p>	<p><i>The rapid expansion of Indonesia's coffee industry has intensified waste challenges, particularly from coffee grounds and single-use packaging. This study examines how local coffee shops adopt circular economy principles through upcycling practices that convert operational waste into value-added products. Using a qualitative case study involving 21 participants (managers and regular consumers), data were analyzed through manual thematic coding. Findings reveal three key themes: (1) Circular Economy Principles implemented through waste reduction efforts, eco-friendly material substitution, and standardized waste management routines; (2) Waste Transformation Processes carried out through a five-stage upcycling workflow in collaboration with local MSMEs, processing 1.8–3.5 tons of waste monthly; and (3) Upcycled Product Creation involving eco-bags, compost, and furniture panels. These practices reduce environmental impact while generating social and economic benefits for surrounding communities. For MSMEs, this research confirms that upcycling is not only an environmental strategy, but also an effective way to build brand identity, reduce operational costs, and reach new markets through eco-friendly products.</i></p>

1. INTRODUCTION

The coffee industry in Indonesia has experienced rapid growth, reflecting a shift in consumer culture where coffee has become an integral part of everyday life. This phenomenon, which has made coffee one of the most traded agricultural commodities, also poses significant challenges in terms of waste management. Based on consumption data, more than 2.25 billion cups of coffee are consumed globally every day, or the equivalent of 600 million cups per day (Mayson & Williams, 2021). The daily operational activities of this industry produce large volumes of solid waste, such as coffee grounds and disposable packaging, which are often overlooked. According to National Geographic (2018), only 12% of plastic waste decomposes, leaving 89% of waste that has the potential to pollute the environment in the long term.

The growing global awareness of environmental issues has boosted the relevance of the circular economy (CE) approach. Unlike the linear economic model that focuses on “take-make-dispose,” the circular economy seeks to extend the useful life of materials and promote sustainable reuse practices. This principle not only aims to reduce waste through recycling,



but also to create added value from residual materials by redesigning product cycles in a regenerative manner (Geissdoerfer et al., 2018). In the context of the coffee industry, the application of a circular economy is crucial given the significant volume of solid waste. Karmee (2018) revealed that every ton of green coffee beans can produce around 650 kilograms of coffee grounds, not including packaging waste that is difficult to decompose naturally. These findings indicate the great potential for waste optimization through recycling and reuse strategies within the circular economy framework.

One of the key strategies in implementing a circular economy, especially in the Micro, Small, and Medium Enterprises (MSME) sector, is upcycling. This method is a creative process of transforming waste into products with higher value, both in terms of function and aesthetics. Examples include processing coffee grounds into fertilizer or aromatherapy candles, and reusing old banners to make bags. Upcycled products not only offer practical uses, but also have a higher selling value because they incorporate stories and messages of sustainability. This approach creates synergy between waste management and value creation, while empowering communities and increasing consumer engagement in the sustainability movement (Mayson & Williams, 2021).

Previous research has highlighted the importance of advancing circular economy practices, yet most studies remain focused on large-scale industries or global value chains. Mayson & Williams (2021) proposed using coffee grounds as an energy source for coffee production, but their framework does not address the operational constraints of micro and small coffee shops. Jayasinghe et al. (2021) examined environmental entrepreneurship through plastic recycling and developed a TBL framework, though their work excludes organic waste and overlooks the dynamics of local coffee sectors. Similarly, VanKeulen and Kirchherr (2020) explored circularity within global coffee value chains but did not examine micro-level practices among independent shops. Sorin and Sivarajah (2021) further indicate that circular economy research within hospitality MSMEs remains underexplored.

Current research sets on a smaller scope to fill the gaps of previous research described above. This research focus on a small-scale business, mainly local coffee shops. This study address local coffee shops activities that adopt circular economy principles through upcycling practices to convert operational waste into value-added products. Based on the research gaps, questions to be addressed in this study are (1) How are circular economy principles and upcycling activities applied in these coffee shops?; (2) What are the challenges faced and strategies implemented by business actors in implementing the circular economy in these coffee shops?; and (3) How do consumers respond to the implementation of circular economy practices and upcycling activities in these coffee shops?

Present study offers novel empirical insights into how local coffee shops in Indonesia implement circular economy principles through structured, collaborative upcycling practices. By documenting waste transformation processes, MSME–community collaborations, and consumer responses, the study advances understanding of how circular strategies can be operationalized within small business settings. The findings contribute to the literature by demonstrating that upcycling can serve as a viable, replicable sustainability mechanism for resource-constrained MSMEs, while simultaneously fostering environmental, social, and economic value.

2. LITERATURE REVIEW

Circular Economy

The circular economy is an economic model that aims to maximize the sustainable use of resources through recycling and waste reduction at every stage of a product's life cycle (Kirchherr et al., 2023). This concept was first proposed by Boulding (1966) and later developed into the 6R principle (Reuse, Recycle, Redesign, Remanufacture, Reduce, Recover) (Ghisellini et al., 2016; Winans et al., 2017). The Ellen MacArthur Foundation describes the circular economy as a restorative and regenerative industrial system, where the highest value of goods, components, and materials can be maintained (Jones & Wynn, 2019). This main principle emphasizes the integration of economic growth with environmental sustainability and wise management of natural resources (Suárez-Eiroa et al., 2019).

As concerns about the impact of the linear economic model grow, the circular economy has emerged with a closed-loop system that allows materials to return to the production chain and extends product life through sustainable design (Huamao & Fengqi, 2007; Gardetti, 2018). The implementation of this concept is not only about material efficiency, but also the transformation of production and consumption systems to support long-term social and economic regeneration (Kirchherr et al., 2023; Strippoli et al., 2024). Thus, the main objective of the circular economy is to create a system that is both environmentally friendly and economically resilient by minimizing ecological impacts (Winans et al., 2017; Suárez-Eiroa et al., 2019).

The tourism sector is one area with great potential for the application of the circular economy. Strippoli et al. (2024) show that the 4R principle (reduce, reuse, recycle, recover) applied to hotels and restaurants, for example in the management of single-use plastic waste, food waste, and water use efficiency, has been proven to significantly reduce environmental impact. Kasavan et al. (2022) add that the implementation of sustainable food waste management (SFWM) in the hospitality industry has the potential to provide significant savings, while Leverenz et al. (2021) emphasize that reducing breakfast buffet food waste by 64.3% can save thousands of euros per year. This means that integrating a circular economy not only maintains the sustainability of tourist destinations but also provides tangible economic benefits for industry players.

Various industrial sectors, including food and beverages, tourism, and hospitality, have begun to adopt circular economy principles (Han, 2021; Manniche et al., 2021). However, studies on the implementation of circular economy at the MSME level, particularly local coffee shops, are still limited. The literature shows that MSME actors face structural barriers that differ from those of large-scale industries, such as a lack of technical capacity in waste management, limited access to technology and financing, and a lack of adequate logistical support (Mayson & Williams, 2021; Nikolaou et al., 2021). These limitations emphasize that the success of the circular economy in the MSME sector requires policy support and capacity building, particularly in the areas of waste management, technological innovation, and partnership development. Thus, the literature highlights the importance of a more

contextual approach to understanding how circular economy practices can be operationalized in small businesses with limited resources.

The adoption of CE practices in the MSME and F&B sectors, however, also faces structural barriers, including limited infrastructure, cost constraints, and inconsistent stakeholder awareness (Vargas-Sánchez, 2018; Filimonau et al., 2019). These constraints highlight the need for continued capacity-building and collaborative approaches to support small-scale businesses in implementing circular initiatives effectively. This shows that the successful transition to a circular economy in the tourism sector requires multi-level collaboration between the government, businesses, and the community (Gardetti, 2018; Suárez-Eiroa et al., 2019).

Upcycling

Upcycling now occupies an important position in the circular economy discourse because it offers a technical approach that focuses not only on waste management, but also on improving material quality. Singh et al. (2019) emphasize that this approach allows waste materials to acquire new qualities so that they do not simply return to the production cycle, but instead become products with added value. Technically, upcycling expands opportunities for innovation in material processing, especially in the context of small industries that need creative ways to reduce waste without large investments.

However, upcycling also holds a broader symbolic meaning in circular economy practices. It is not only understood as a process of material transformation, but also as a representation of sustainability, creativity, and ecological responsibility. Wilson (2016) shows that upcycling can be seen as a form of green technology that expresses a commitment to energy efficiency, emission reduction, and toxicity minimization. Thus, upcycling serves not only as a technical solution but also as a symbol of a shift in mindset from viewing waste as a burden to seeing it as a source of potential. In this framework, upcycling acts as a social narrative that strengthens brand identity, community values, and sustainability image across various sectors, including MSMEs.

This view is in line with Bhatt et al. (2019) who emphasize that upcycling involves design creativity to extend the life of a product. Bridgens et al. (2018) even position upcycling as a strategy for design for sustainability, where waste is viewed not merely as residue, but as a potential resource that can create products with higher commercial value than the original material. In other words, unlike recycling, which often reduces quality, upcycling is oriented towards improving quality.

The creative dimension of upcycling has been the focus of various conceptual studies. Research by Sung (2019) describes it as a form of creative modification that produces products with better aesthetic value, function, or quality than their constituent materials. This is reiterated in the study Sung (2023), which emphasizes that upcycling is not merely a form of reuse, but a design strategy that can extend the life cycle of products and give materials a “second life.” In the context of sustainable tourism, Martín et al. (2022) emphasizes that the practice of upcycling is complex because it encompasses cultural, economic, and technological aspects. The findings of this study show that upcycling cannot be viewed as a

stand-alone phenomenon, but rather as the result of the dynamic interaction of various factors that influence each other.

Furthermore, [Coppola et al. \(2021\)](#) highlights that upcycling has two strategic dimensions. First, as a technical approach to minimize waste and maximize material use. Second, as a symbolic strategy that helps businesses build a sustainable brand image through product narratives. Research by [Adigüzel & Donato \(2021\)](#) adds that this narrative can enhance consumer perception, especially when they learn that the product is made from discarded materials that have been given new life. Thus, upcycling not only influences the production process but also consumption patterns and market preferences.

Various literature also highlights the multidimensional benefits of upcycling. From an environmental perspective, upcycling helps reduce waste, conserve energy, and is more efficient in water use compared to industrial recycling processes ([Isaac-Bamgboye et al., 2025](#)). From a social perspective, this practice encourages community involvement, enhances creativity, and strengthens a culture of sustainability ([Martín et al., 2022](#); [Sung, 2019](#)). Meanwhile, economically, upcycling opens up new business opportunities and creates market differentiation. [Coppola et al. \(2021\)](#) emphasize that upcycling-based innovation provides a competitive advantage through the creation of aesthetic value, while [Wilson \(2016\)](#) sees it as a strategy to reduce production costs while expanding the base of environmentally conscious consumers.

The implementation of upcycling practices has been applied across various sectors. In the textile industry, for example, used clothing can be reprocessed into fashion products with higher aesthetic and commercial value ([Adigüzel & Donato, 2021](#)). In the manufacturing sector, [Singh et al. \(2019\)](#) documented how low-value products are transformed into new products through repair or reconstruction. [Bridgens et al. \(2018\)](#) even gave an example of building a cafe with used materials, which not only presents a unique aesthetic for tourists but also serves as a means of public education on sustainability. Meanwhile, in the food and beverage industry, [Isaac-Bamgboye et al. \(2025\)](#) noted the use of vegetable and fruit waste as functional food ingredients. Another notable example is the use of coffee grounds or spent coffee grounds (SCG), which can be processed into organic fertilizer, cosmetic ingredients, and even renewable energy briquettes ([Coppola et al., 2021](#)).

Based on the conceptual foundations discussed in the preceding sections, the interrelation between circular economy principles, upcycling practices, and sustainability outcomes becomes evident. Circular economy principles serve as the initial driver, emphasizing waste minimization, resource efficiency, and regenerative material flows within small-scale coffee enterprises. These principles shape the upcycling processes, wherein operational waste, such as coffee grounds and packaging materials, is systematically transformed into higher-value products through structured procedures and collaborations with local MSMEs.

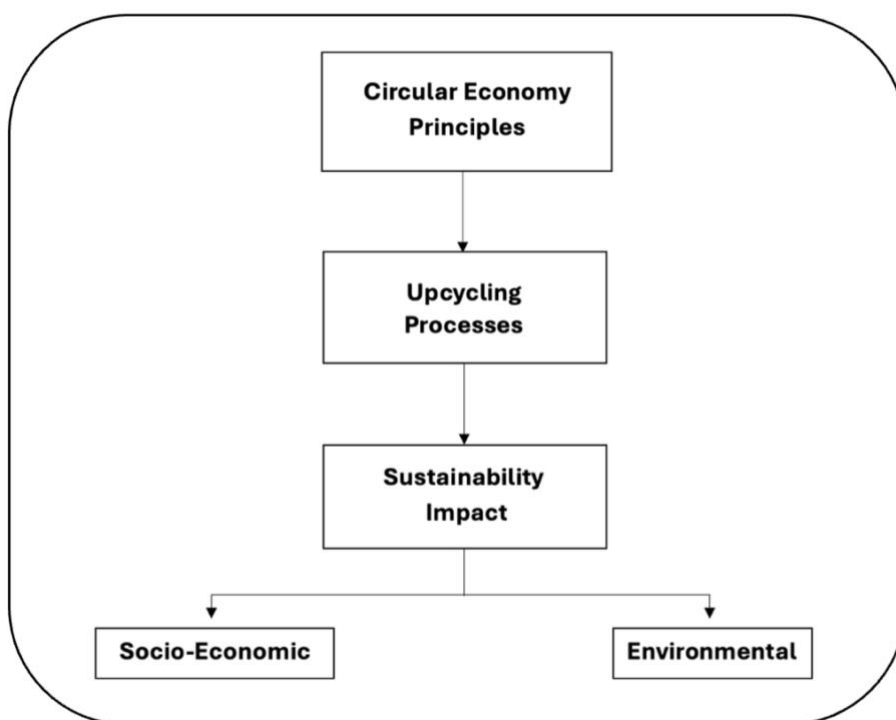


Figure 1. Conceptual Framework

The resulting sustainability impact reflects the combined environmental and socio-economic outcomes generated through these practices. As illustrated in Figure 1, the framework positions circular principles as the foundational mechanism that enables upcycling, which subsequently contributes to sustainability outcomes by reducing waste streams, enhancing community involvement, and supporting responsible consumption in urban settings.

3. RESEARCH METHOD

This study uses a qualitative approach with a case study design to explore circular economy practices at several local coffee shops, namely Kopi Tuku, Fore Coffee, Kopi Nako Daur Baur, and Work Coffee. The coffee shops were selected purposively, taking into account several strategic aspects. The four coffee shops have demonstrated their commitment to environmentally friendly practices through waste management, the use of environmentally friendly packaging, and recycling and upcycling programs that support sustainable development (Chen, 2010). In addition, these shops highlight product innovations based on local produce and empower communities in supporting a sustainable supply chain.

The case study approach was chosen because it provides an in-depth understanding of phenomena in a real context and allows researchers to examine the complex relationships between the factors involved (Flyvbjerg, 2011). The research focuses on the implementation of operational waste upcycling as part of a sustainability strategy that can reduce waste while creating economic and social added value (Lindsey, 2011).

Research participants were selected using purposive sampling techniques by establishing clear inclusion and exclusion criteria, so that the data obtained was relevant and of sufficient quality for the research objectives (Ahmed, 2024). A total of 21 participants were involved in this study, consisting of 17 regular consumers of local coffee shops and 4 local coffee shop managers with diverse job positions, including Chief Operating Officer (COO), ESG Senior Officer, Project Manager, and Supervisor Staff. The consumer participants were aged approximately 20–28 years, while the managers ranged from 25–35 years old.

The inclusion criteria included regular consumers who visited the coffee shop at least twice a month for the past six months, were aged 20 years and above, and had knowledge of the sustainable programs run by the coffee shops, particularly those related to upcycling practices. The exclusion criteria were new or irregular consumers who made fewer than the minimum number of visits, were under 20 years of age, and did not know or understand the sustainability and upcycling programs. To further illustrate participant characteristics, the following table summarizes the name, gender, age range, and research role of each participant group:

Table 1. Profile Informant Table

Name	Gender	Age	Role As a Informant
VA	Female	24	Consumer
OK	Female	23	Consumer
TKP	Female	23	Consumer
NPE	Female	21	Consumer
HAF	Male	21	Consumer
RP	Female	26	Consumer
CN	Female	24	Consumer
PA	Female	25	Consumer
MF	Male	25	Consumer
AH	Female	28	Consumer
CV	Female	21	Consumer
AP	Female	21	Consumer
GD	Female	21	Consumer
AR	Female	21	Consumer
PTC	Male	21	Consumer
MH	Male	23	Consumer
MCH	Female	27	Consumer
PYA	Female	33	An esg senior officer representative from one of local coffee group
RR	Male	30	A coo representative from one of local coffee shops
AR	Male	27	A project manager representative from one of local coffee shops
SD	Female	28	A supervisor staff representative from one of local coffee shops

Source: Author (2025)

Primary data collection was conducted through semi-structured interviews with owners/managers, operational staff, sustainability division employees, and consumers. This method was chosen because it is flexible in exploring participants' experiences while maintaining the consistency of the research theme (Adeoye-Olatunde & Olenik, 2021). The interviews focused on the informants' understanding of circular economy practices, waste management strategies, and upcycling-based product innovations. Interviews were chosen because this method allows researchers to obtain in-depth information directly from participants' experiences (Alshenqeeti, 2014). In addition, this study also combined secondary data in the form of company reports, media articles, and sustainability program documents, which, according to Johnston (2014) are useful for strengthening the validity of findings through source triangulation.

Data analysis in this study used a manual narrative coding approach, which allowed researchers to engage directly and deeply with the participants' narratives. The analysis process was carried out through three stages of coding. First, open coding was used to identify the initial units of meaning from the interview transcripts. This stage helped capture experiences, perceptions, and practices that emerged spontaneously from the data. Second, axial coding was used to group these codes into broader categories and trace the relationships between them. Third, selective coding was used to synthesize the main categories, forming three main themes that are presented in the findings section.

The choice of manual coding was intended to allow researchers to maintain proximity to the narrative data and understand the context of each statement holistically. Analytical rigor was maintained through researcher triangulation, repeated comparisons between codes and raw data, and memo writing used to trace the interpretive decision-making process throughout the analysis.

The data were analyzed using a narrative analysis approach, which emphasizes the interpretation of participants' experiences in the form of stories. Narrative analysis is understood as a way of organizing human experiences into meaningful structures, thereby revealing the meaning, identity, and social context of a phenomenon (Smith, 2016). This approach is relevant in qualitative research because narratives not only convey facts, but also show how individuals and organizations construct their social reality (Mura & Sharif, 2017). Therefore, this analysis was chosen to provide a comprehensive overview of the contribution of coffee shops in developing sustainability practices in the F&B sector, as well as how this commitment is articulated in daily interactions with consumers and the community.

4. RESULT AND DISCUSSION

Circular Economy Practices and Upcycling Processes in Local Coffee Shop

The application of circular economy principles in local coffee shops shows a paradigm shift from a linear production system to a more sustainable system, with an emphasis on resource efficiency and regenerative value. The four coffee shops studied Kopi Tuku, Fore Coffee, Kopi Nako Daur Baur, and Work Unusual implement different waste management

strategies but share the same goal: to minimize environmental impact and create new economic value from operational waste.

Interviews with operations managers and relevant officials revealed that all cafes have implemented core circular economy practices, such as waste sorting at source, the use of environmentally friendly materials, and the reprocessing of waste into new products through upcycling. These practices are not only a form of environmental responsibility, but also part of the brand identity and sustainability-based marketing strategy. One ESG official emphasized that they strive to ensure waste does not simply end up in landfills by sorting it and sending some materials to recycling partners, while others are reprocessed into valuable products.

Tabel 2. Summary of Findings from Thematic Coding of Circular Economy Practices and Upcycling Processes in Local Coffee Shop

Main Theme	Sub-theme	Representative Codes	Key Findings (Field Data)	Supporting Literature	Interpretation / Discussion
Circular Economy Principles	Waste minimization philosophy	<i>Material selection for recycling; Environmental responsibility; Waste sorting commitment</i>	Managers and staff emphasize environmental responsibility through waste sorting and recycling initiatives across outlets.	(Geissdoerfer et al., 2018); (Ghisellini et al., 2016)	Reflects a cultural and operational shift from linear to regenerative business practices in local coffee shops.
	Operational system	<i>Standardized waste management SOPs; In-store sorting; Waste audits</i>	Implementation of clear waste handling SOPs and internal monitoring systems ensures process consistency.	(Kirchherr et al., 2023); (Suárez-Eiroa et al., 2019)	Demonstrates institutionalization of sustainability routines as part of daily business operations.
	Eco-friendly materials	<i>Eco-packaging; Material substitution; Plastic-free campaigns</i>	Shops substitute single-use plastics with biodegradable and recyclable materials.	(Geissdoerfer et al., 2018); (Winans et al., 2017)	Indicates increasing awareness of sustainable procurement and material circularity.
Waste Transformation Process	Recycling	<i>Transforming waste into new products; Upcycling cycle; Waste repurposing</i>	Coffee grounds and plastic waste are converted into usable products through	(Wilson, 2016); (Adıgüzel & Donato, 2021); (Singh et al., 2019)	Shows that small businesses can operationalize circular principles through practical, small-scale waste conversion.

Main Theme	Sub-theme	Representative Codes	Key Findings (Field Data)	Supporting Literature	Interpretation / Discussion
Upcycling Product Creation			structured upcycling activities.		
	Transformation stages	<i>Cleaning; Shredding; Pressing; Finishing; Assembly</i>	Waste transformation follows a five-stage production flow, producing consistent outputs from used materials.	(Coppola et al., 2021); (Bridgens et al., 2018)	Demonstrates systematic waste valorization suitable for MSME implementation.
	Production capacity	<i>1.8–3.5 tons/month; 8–15 planks/batch; Focus on plastic cups and coffee grounds</i>	On average, each coffee shop processes 1.8–3.5 tons of waste per month into panels, furniture, or merchandise.	(Karmee, 2018)	Reflects scalability of waste transformation processes and measurable environmental impact.
	Product innovation	<i>Coffee coaster; Pouch from creamer packaging; Lanyard; Compost; Goodiebags; Furniture from plastic cup waste</i>	Waste products are creatively redesigned into marketable goods that highlight sustainability values.	(Bhatt et al., 2019); (Isaac-Bamgboye et al., 2025)	Strengthens brand storytelling and demonstrates creative sustainability application.
	Product diversification	<i>Laptop bag; Pouch; Coaster; Tray; Chair; Panel merchandise</i>	Product diversification enhances consumer engagement through eco-designed merchandise.	(Singh et al., 2019); (Coppola et al., 2021)	Combines functional and aesthetic value to position sustainability as part of brand identity.
	Production collaboration	<i>Partner MSMEs; Local artisan network; Community sewing groups</i>	Collaboration with MSMEs and local artisans increases income by 10–15% and promotes	(Samuel et al., 2019); (Udodiugwu, 2024)	Confirms inclusive circularity, community participation reinforces social and economic sustainability.

Main Theme	Sub-theme	Representative Codes	Key Findings (Field Data)	Supporting Literature	Interpretation / Discussion
			community empowerment.		

Source: Authors

Based on the results of thematic coding, the application of circular economy in local coffee shops can be understood through three main mechanisms: (1) principles level, (2) process level, and (3) creative level.

At the principle level, coffee shops seem to have begun to develop a basic attitude that waste is not the end of the cycle, but rather a starting point for new possibilities. The use of biodegradable packaging and more disciplined waste sorting shows that sustainability has become part of the organization's mindset. These practices indicate that they no longer see sustainability as a slogan, but as a value that guides operational decisions. There is a conscious effort to shape a brand identity that is consistent with environmental principles, while normalizing sustainable behavior for consumers.

At the process level, it is evident how upcycling has evolved from a simple recycling activity into a more strategic production approach. RR explains that they process post-consumer waste “*so that it can be reused for outlet needs*” a brief statement, but one that clearly shows how they position waste as an asset. The five-stage process he mentions, from cleaning to assembly, essentially shows that they have built a continuously running mini-industrial system capable of handling 1.8-3.5 tons of waste per month. What is analytically interesting is how this process shifts the role of waste management from a corrective function to part of the value chain. This means that upcycling not only reduces negative impacts but also creates economic opportunities that do not arise in a linear system.

At the creative level, circular economy logic has evolved into more expressive practices. Cafes produce eco-bags, compost, furniture panels, and other products that not only add value to goods but also serve as educational tools. SD explains that they strive to ensure that used cups “*don't immediately become trash*”, a simple quote that reflects the close relationship between practices in the field and broader sustainability values. Upcycled products, visual campaigns, and tumbler discount programs signify a two-way relationship between coffee shops and consumers: not only selling coffee, but also inviting consumers to be part of a more responsible production pattern.

When these three levels are viewed holistically, the circular economy in local coffee shops is not just about waste. It is more like a way of thinking, a continuous effort to see value in something that is usually considered finished. This is what makes these practices relevant to MSMEs: not because of their large scale, but because they test new possibilities in a more humane, creative, and responsible production chain.

Challenges and Strategies for Circular Economy Implementation in Local Coffee Shops

The implementation of circular economy initiatives in local coffee shops is not without challenges. Although these businesses have succeeded in introducing waste segregation, upcycling, and eco-friendly product innovations, several internal and external barriers still

hinder the full operationalization of circular models. The following section explores the challenges faced by four participating local coffee shops and the strategies they employ to sustain circular practices. Interviews with managers, project supervisors, and ESG officers reveal that collaboration, innovation, and adaptive management are central to overcoming resource limitations and maintaining long-term sustainability.

Table 3. Summary of Findings from Thematic Coding of Challenges and Strategies for Circular Economy Implementation

Main Theme	Sub-theme	Representative Codes	Key Findings (Field Data)	Supporting Literature	Interpretation / Discussion
Challenges in Circular Economy Implementation	Operational barriers	<i>Limited space; Inconsistent waste sorting (60%); High cost of eco-materials</i>	Shops face infrastructural and material constraints, particularly during waste collection and processing, which reduce operational efficiency.	(Nikolaou et al., 2021); (Kasavan et al., 2022)	Highlights structural barriers common among MSMEs, necessitating optimized logistics and spatial solutions.
	Human resource barriers	<i>Low awareness; Knowledge gap in sustainability; Need for training</i>	Staff show low sustainability awareness and limited training related to circular practices.	(Filimonau et al., 2019); (Martin-Rios et al., 2018)	Indicates that employee education is a critical determinant for sustaining circular initiatives.
	Consumer awareness barriers	<i>Limited consumer appreciation; Low sustainability awareness; Local vs. non-local awareness gap</i>	Consumers show uneven understanding of upcycling products, influencing purchase behavior and engagement.	(Filimonau et al., 2019); (Leverenz et al., 2021)	Suggests the need for stronger communication and environmental education targeting consumer segments.
	Financial barriers	<i>High material cost; Limited capital and space; Budget constraints</i>	Small enterprises experience budget limitations in adopting eco-materials and scaling waste transformation activities.	(Vargas-Sánchez, 2018)	Reflects dependency on financial planning, external partnerships, and funding to sustain circular operations.

Main Theme	Sub-theme	Representative Codes	Key Findings (Field Data)	Supporting Literature	Interpretation / Discussion
Implementation Strategies	Process optimization	<i>Collecting system; Process efficiency; Waste management priority</i>	Shops focus on optimizing collecting processes and establishing efficient waste management flows to reduce operational costs.	(Leverenz et al., 2021); (Amicarelli et al., 2022)	Demonstrates process-oriented innovation, turning sustainability into an efficiency driver.
	Commercialization	<i>Internal merchandise; External product marketing</i>	Upcycled products are marketed both as in-store merchandise and as commercial goods in collaborations with partner vendors.	(Singh et al., 2019)	Transforms sustainability practices into tangible economic opportunities through marketable green products.

Source: Author (2025)

Based on the results of thematic coding, the challenges and strategies for implementing a circular economy in local coffee shops can be understood through four main dimensions: operations, human resources, consumer awareness, and financial barriers. These four dimensions are intertwined and form a context that influences the quality of implementation. After that, two prominent strategic responses emerge, namely process optimization and commercialization.

At the operational level, coffee shops face real constraints such as limited waste storage space, inconsistent sorting routines, and relatively high costs for environmentally friendly materials. RR states that the biggest challenge lies in collecting used cups, as “*only about 60% can be collected*”. This brief quote shows that the problem is not only technical but also related to an unstable logistics system. Analytically, this condition emphasizes the need for standard procedures and a more organized workflow so that upcycling can be sustainable and not overly dependent on momentum.

At the human resource level, low sustainability literacy and lack of training cause waste sorting to be viewed as an additional task rather than part of the work routine. These findings indicate that sustainability cannot rely on policy alone; it must be internalized through training, incentives, and a supportive organizational culture. In other words, resistance does not stem from rejection, but from a lack of comprehensive understanding of their role in the circular economy system.

At the consumer awareness level, although consumers tend to like the concept of sustainability, their understanding of the upcycling process is still limited. This lack of literacy has an impact on purchasing behavior and participation in waste collection

programs. Interpretively, this shows that sustainability requires clear and repeated communication, not just a one-off campaign, so that consumers feel they are part of the process, not just recipients of information.

At the financial level, challenges arise from high production costs, limited capital, and tight operating budgets. These conditions hinder the scale of upcycled production and make shops more reliant on external partnerships. Analytically, these financial barriers show that the circular economy for MSMEs is not only a matter of intention but also of structural capacity that needs to be strengthened.

In facing these obstacles, coffee shops responded with two main strategies. The first strategy was process optimization, which involved improving the collection and sorting process to make it more efficient through clear SOPs and regular monitoring. AR explained that they now manage waste more systematically: “*sorted, recorded, and processed*” as part of their daily workflow. This quote reflects efforts to integrate sustainability with operational discipline. The second strategy is commercialization, which involves converting sustainability practices into economic value through the production and sale of upcycled merchandise such as coasters, bags, and trays. This approach not only reduces waste but also strengthens the brand's sustainability-oriented identity and expands collaboration with the community.

Overall, these findings show that even though local coffee shops face operational and financial constraints, adaptive strategies that combine process efficiency and market innovation can help them embed sustainability into their business models. In this way, local coffee shops not only manage waste but also position themselves as actors of sustainability transformation in the MSME sector.

Sustainability Impacts: Social, Economic, and Environmental

The results of the study show that the implementation of a circular economy in local coffee shops has a significant impact on social, economic, and environmental dimensions. Socially, this initiative encourages active community participation in waste-based creative activities. Programs like the one initiated by a local coffee shop are a concrete example of empowering local communities through collaboration with MSME artisans who process plastic waste into valuable products such as eco-friendly merchandise and accessories. This practice reflects the concept of community-based circularity proposed by Nikolaou et al. (2021), where community involvement is central to creating sustainable value from resources that were previously considered worthless. In addition, this approach also raises public awareness of the importance of waste management and shared ecological responsibility.

Tabel 4. Summary of Findings from Thematic Coding of Sustainability Impacts

Main Theme	Sub-theme	Representative Codes	Key Findings (Field Data)	Supporting Literature	Interpretation / Discussion
Sustainability Impact in Circular Economy Implementation	Socio-Economic Impact	<i>Community economic benefits; Additional income; Local community empowerment</i>	Coffee shops collaborate with local MSMEs and artisans to turn waste into sellable products, providing added income and strengthening community participation.	(Samuel et al., 2019; Udodiugwu, 2024)	Reflects inclusive circularity, where collaboration drives social empowerment and local economic resilience.
	Environmental Impact	<i>Waste reduction; Management efficiency; Post-consumer waste responsibility</i>	Structured sorting, recycling, and upcycling systems reduce plastic and organic waste; coffee grounds and cups are reused for compost and furniture.	(Isaac-Bamgboye et al., 2025; Strippoli et al., 2024)	Confirms that circular practices effectively lower environmental footprints and promote continuous eco-awareness.

Source: Author (2025)

From a socio-economic perspective, circular economy initiatives encourage community empowerment and participation through creative waste-based activities. PYA explains that they collect creamer sachets, clean them, and then send them to MSME partners in Gunung Sindur. According to him, the program, which “initially only involved one or two families”, has now grown to 11 households producing eco-bags. This quote shows how sustainability practices can open up new economic opportunities for local communities. Analytically, this kind of collaboration reinforces the concept of community-based circularity, where economic value grows through cooperative relationships and creative processes built together with the community.

From an environmental perspective, the implementation of a circular economy produces more measurable impacts, particularly in waste reduction and increased material efficiency. All coffee shops in this study have implemented waste sorting at the source and collaborate with recycling partners or creative parties to process used materials. RR stated that every month they process “around 1.8-3.5 tons of used materials”, mainly plastic cups and lids, into furniture panels and shop fittings. AR added that most of their production waste packaging is recycled into furniture or compost, which “significantly reduces the volume of

waste”. This quote demonstrates consistency in practice and affirms a commitment to the principles of material efficiency and post-consumption responsibility.

This finding is in line with the views of [Strippoli et al. \(2024\)](#) and [Isaac-Bamgboye et al. \(2025\)](#) that the circular economy emphasizes the reuse of materials without creating new residues. The use of coffee grounds as compost, furniture materials, and decorative elements illustrates how waste can be positioned as an alternative resource. Furthermore, these environmental practices not only reduce waste but also shape new awareness. Some consumers mentioned that seeing upcycled products and educational displays in stores encouraged them to bring their own tumblers or reduce their use of plastic. This means that the environmental impact does not stop at waste reduction figures but extends to broader behavioral changes.

Consumer Perceptions and Responses to Upcycling Practices

Interviews with 17 regular consumers aged between 20–28 years old revealed that most respondents demonstrated a positive perception and emotional engagement toward the upcycling initiatives implemented by local coffee shops. As regular visitors mostly students and young professionals they expressed appreciation for the creative use of waste materials in product design. Respondents reported being particularly intrigued by upcycled items such as coasters made from coffee grounds, bags and pouches made from used plastic or creamer packaging, and merchandise crafted from recycled tarpaulins. Their awareness of these sustainability initiatives primarily arose from visual communication within outlets and informative content shared on social media, which effectively emphasized the environmental value of the products.

Tabel 5. Summary of Findings from Thematic Coding of Consumer Perception

Main Theme	Sub-theme	Representative Codes	Key Findings (Field Data)	Supporting Literature	Interpretation / Discussion
Consumer Perception and Behavior	Brand awareness	<i>Word-of-mouth recommendation; Social media exposure; Digital and geographic accessibility</i>	Consumers recognize the brand primarily through social recommendations and digital visibility; awareness grows through media exposure and accessibility.	(Chen, 2010); (Nguyen-Viet, 2023)	Indicates that social networks and online visibility serve as key drivers of sustainability brand awareness among young consumers.
	Consumer loyalty	<i>Regular customers; Emotional attachment; Long-term loyalty; Brand trust</i>	Loyal consumers express emotional engagement with the coffee shop’s sustainability values, reinforcing repeat	(Kang & Hur, 2012); (Rosli et al., 2019)	Suggests that consistent sustainability practices enhance emotional and

Main Theme	Sub-theme	Representative Codes	Key Findings (Field Data)	Supporting Literature	Interpretation / Discussion
			visits and brand trust.		behavioral loyalty
	Consumption pattern	<i>Non-routine and flexible consumption; Situational behavior; Takeaway preference</i>	Consumption behavior is adaptive and situation-dependent, with a high tendency toward takeaway culture supported by eco-friendly packaging.	(Filimonau et al., 2019)	Reflects that sustainability-oriented convenience drives flexible consumption preferences
	Price and value perception	<i>Product price affects purchase intention; Value-quality evaluation; Rationalization of upcycling cost</i>	Consumers rationalize the higher cost of upcycled products when perceived value and quality are clearly communicated.	(Khandelwal et al., 2019); (Ng et al., 2014)	Demonstrates that perceived balance between price and value strengthens consumer acceptance of sustainable good
	Accessibility	<i>Strategic location; Ease of access; Visit frequency</i>	Accessibility and convenience influence frequency of visits and sustainability participation, particularly through location proximity.	(Han, 2021)	Emphasizes that physical and social accessibility determine behavioral engagement with eco-friendly brands.

Source: Author (2025)

This finding is in line with [Nguyen-Viet's \(2023\)](#) framework for brand sustainability communication, which emphasizes that sustainability messages are more effective when they are aesthetically pleasing, informative, and integrated with brand identity. In the context of local coffee shops, this type of communication does not simply inform consumers about recycling programs, but builds narratives that spark curiosity and emotional connection. This can be seen from AP's experience, who first learned about recycling practices after seeing social media posts: he found out about merchandise made from packaging waste through friends' stories and digital content. This short quote shows that the persuasive power of sustainability does not come from the program itself, but from how the program is told and displayed in public spaces.

Consistency also emerges as an important dimension in building trust. CN assesses the coffee shop's commitment not from its claims, but from the alignment between the slogan “*Sisa Jadi Bisa*” (Waste Can Be Useful) and actual practices in the field. Analytically, this

shows that credible sustainability is built through repeated actions, not just communication aesthetics. Trust is born when consumers are able to connect the brand narrative with the evidence they see and experience.

However, some respondents still consider upcycled products to be relatively more expensive. This perception is related to limited sustainability literacy; they understand the ecological value, but are not yet fully aware of the costs of design, collection, and material transformation involved. VA, for example, acknowledges that the price of tumblers is “*slightly higher*”, but considers it reasonable because they can be used multiple times. Analytically, this pattern is consistent with the arguments of [Khandelwal et al. \(2019\)](#) and [Ng et al. \(2014\)](#) that perceptions of green pricing are often influenced by a lack of understanding of long-term benefits, not just direct cost considerations.

Regardless of price perceptions, interviews show that many consumers still demonstrate strong loyalty. They return not only to buy coffee, but because they feel part of a community that shares their values. GD, a regular customer, described his routine visits as a form of emotional engagement: he feels “*like he is supporting an environmentally friendly movement*”. This shows that sustainability can function as an identity anchor, connecting consumers and brands through shared values.

Furthermore, these findings also emphasize the importance of social amplification. Recommendations from friends, social media, and digital collaboration are the main channels for spreading sustainability narratives. RP learned about the upcycling program after seeing community collaboration content on social media. These findings reinforce [Chen's \(2010\)](#) argument that digital storytelling and social recommendations are key mechanisms in building credibility and expanding the reach of sustainability-based brands.

5. CONCLUSIONS AND RECOMMENDATION

This study confirms that the implementation of a circular economy through upcycling practices in local coffee shops has a significant impact on social, economic, and environmental aspects, while strengthening the emotional connection between consumers and brands. From a social perspective, this initiative promotes the empowerment of local communities and the involvement of MSMEs in processing waste into value-added products, such as environmentally friendly merchandise and creative accessories. Economically, upcycling activities have been proven to create additional income opportunities and expand the market through collaboration with local businesses. Meanwhile, environmentally, the implementation of waste management systems and the transformation of waste materials into new products demonstrate a strong commitment to material efficiency and reducing ecological impact. On the other hand, interviews with consumers show that these sustainability practices increase brand awareness and loyalty, although some consumers still perceive upcycled products as more expensive due to limited sustainability literacy.

Based on the results of this study, it is recommended that local coffee shop businesses continue to strengthen their collaboration with MSMEs and creative communities in developing waste-based product innovations that have high aesthetic and functional value.

Local governments and supporting institutions are also expected to provide incentives or assistance programs to expand the application of the circular economy in the MSME sector, particularly in terms of technical training, access to green financing, and the promotion of sustainable products. In addition, public education on the value of sustainability and the economic benefits of upcycling needs to be expanded through social media and creative campaigns to increase consumer awareness and demand for environmentally friendly products.

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