American Journal of Economic and Management Business
e-ISSN: 2835-5199
Vol. 5 No. 9 September 2026

Sustainable Business Model Development Strategy for Arae Fashion Using the Triple Layered Business Model Canvas (TLBMC)

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Keywords: social enterprise, sustainable business model, sustainable fashion, triple layered business model canvas

Abstract

Conventional fast fashion contributes significantly to environmental degradation and social challenges, encouraging a transition toward sustainable business models. Arae Fashion, an eco-print-based social enterprise in Bogor, Indonesia, has implemented various sustainability practices but lacks a structured business model framework that can effectively respond to market development. This study aimed to analyze Arae Fashion's existing business model, identify internal and external factors influencing its sustainability, and formulate a sustainable business model development strategy using the Triple Layered Business Model Canvas (TLBMC) approach. A descriptive qualitative method was employed, with data collected through in-depth interviews, observations, and questionnaires involving management, artisans, and consumers. The TLBMC approach was used to map 27 business model elements across economic, environmental, and social layers. VRIO analysis was applied to evaluate internal resources, industry foresight was used to identify future trends, and SWOT analysis was conducted to formulate strategic recommendations. The VRIO analysis showed that 58.82% of Arae Fashion's resources represented sustainable competitive advantages, particularly in intellectual property ownership, human resources, reputation, and organizational capabilities. The SWOT analysis generated several priority strategies, including developing derivative products, strengthening styling capabilities for export markets, and formalizing sustainability certification. This study produced an improved TLBMC framework that integrates these strategies across the 27 business model blocks, providing practical recommendations for Arae Fashion to simultaneously strengthen its economic, environmental, and social sustainability.

INTRODUCTION

Indonesia's fashion industry continues to experience growth in quality, color variety, and product diversity, ranking 16th among the world's fashion exporters with a 1.69% market share and a 34.92% increase between January and August 2022 compared with the previous year (Owo, 2022). Although the 2020–2021 period was affected by pandemic-related changes in consumption patterns, fashion remained the fastest-growing online shopping category in 2021, increasing by 52%, while exports grew by 17.74%, from US$5.85 billion to US$6.9 billion (Kusnandar, 2022).

However, behind this significant growth are serious environmental consequences. The fast-fashion production and consumption cycle contributes to overproduction and overconsumption (Tanzil, 2017), consumes substantial amounts of water, generates carbon dioxide emissions, and produces textile waste that contaminates water and soil ecosystems (Shafie et al., 2021). Globally, the textile industry generates an estimated 1.2 billion tons of greenhouse gas emissions annually (Ramadani, 2022), while in Indonesia, one out of every 33 million tons of produced textiles becomes textile waste (Ramadani, 2022). At the local level, a February 2022 study conducted by the IPB University Oceanography Research Center found that 70% of the middle section of the Citarum River, the longest river in West Java, was contaminated with polyester microplastics. This condition was further exacerbated by the fact that approximately 90% of textile factories located along the river lacked wastewater treatment facilities (Ramadani, 2022).

At the same time, the COVID-19 pandemic accelerated changes in consumer behavior, particularly among Millennials and Generation Z consumers, who increasingly considered functionality, sustainability, and social-environmental responsibility when selecting brands. A JakPat survey involving 2,023 respondents in September 2022 revealed that 56.2% preferred environmentally friendly products, 45.2% preferred natural materials, 36.2% favored brands concerned with social and environmental issues, and 32.5% actively recycled used clothing (Annur, 2022). Global research supports this trend, showing that 89.7% of Generation Z and Millennial respondents in the Playfest 2022 survey preferred environmentally friendly brands. Furthermore, McKinsey (2018) reported that 39% of Millennials, 37% of Generation Z consumers, and 40% of urban consumers considered environmental impact an important purchasing factor and were willing to pay a premium for lower-carbon products (Franci & Hoefel, 2018). Collectively, these findings indicate that sustainable fashion has developed from a temporary market trend into an increasingly expected business practice.

Within this changing industry landscape, PT Bumi Sahabat Arae, known as Arae Fashion, demonstrates how a fashion enterprise can simultaneously function as an agent of social and environmental change. Established in 2018 in Bubulak, Bogor, Arae Fashion is a community-based social enterprise founded on the concept of sustainable living, with eco-print techniques as its distinctive feature. Its production process utilizes plant-based materials, natural dyes, efficient water management, and a recycling system that transforms production waste into a new collection called “The Beauty of Second Life.” Beyond its environmental initiatives, Arae Fashion allocates 10% of every sale to the Rumah Sahabat Arae Foundation, which supports community empowerment, rural education, and forest rehabilitation. Through this program, more than 60 women artisans living around national park buffer zones have been empowered, while collaborations with Way Kambas and Gunung Halimun Salak National Parks have directly benefited more than 1,450 individuals (Bank Indonesia, 2020).

Despite these measurable environmental, social, and economic contributions, a critical structural gap remains between Arae Fashion’s existing sustainability practices and the business model framework used to represent them. Arae Fashion still applies the conventional nine-block

Business Model Canvas (BMC) developed by Osterwalder and Pigneur (2010), which primarily represents the economic dimension of a business, while the environmental and social dimensions that form the foundation of Arae Fashion's competitive identity remain insufficiently represented (Joyce & Paquin, 2016). This issue extends beyond documentation, as it creates a strategic limitation in communicating Arae Fashion's competitive advantages to potential investors, strategic partners, and sustainability-oriented stakeholders. The Triple Layered Business Model Canvas (TLBMC), developed by Joyce and Paquin (2016), addresses this limitation by expanding the conventional BMC through an environmental layer based on Life Cycle Assessment (LCA) and a social layer based on stakeholder theory, creating a three-layer framework that represents value creation more comprehensively. Previous studies support the relevance of this approach. Hurriyati et al. (2023) found that TLBMC implementation in Indonesia's fashion industry improved environmental sustainability while strengthening business competitiveness, while Fadila (2024) confirmed that TLBMC can be effectively applied in community-based micro, small, and medium enterprises (MSMEs), a context relevant to Arae Fashion as an MSME supported by Bank Indonesia West Java that has expanded into international markets.

However, developing an optimal TLBMC requires more than examining the current business condition; it requires an understanding of the internal factors shaping Arae Fashion's strengths and weaknesses and the external factors creating opportunities and threats. This study identifies three research gaps that justify further investigation: (1) a documentation gap, where existing sustainability practices are not systematically represented within the current business model framework; (2) a strategic gap, where the absence of environmental and social value representation limits the company's ability to attract mission-aligned partners and funding opportunities; and (3) an academic gap, resulting from limited research applying TLBMC to community-based social enterprise MSMEs in Indonesia's fashion sector. These gaps lead to three research questions: (1) What is the current condition of Arae Fashion's business model? (2) What internal and external factors influence its strategic position? (3) What sustainable business model strategy is most appropriate based on internal-external analysis and TLBMC mapping? Accordingly, this study integrates internal analysis (VRIO), external analysis (industry foresight), and three-dimensional sustainability mapping (TLBMC) to formulate an optimal development strategy. Theoretically, this research contributes an integrated analytical framework linking VRIO, industry foresight, SWOT, and TLBMC, extends empirical evidence regarding TLBMC application in community-based social enterprise MSMEs, and connects sustainable fashion practices with Sustainable Development Goals (SDGs) 5, 8, 12, and 15 within a unified framework. Practically, the resulting improved TLBMC can function as a documentation framework, communication instrument for impact investors and strategic partners, and triple-bottom-line strategic planning tool, while providing a transferable framework for other sustainable fashion MSMEs and policymakers.

Sustainable Fashion and Sustainable Business Models

Eco-fashion refers to an approach to clothing production and consumption that considers the entire product life cycle, from raw-material selection to production, distribution, use, and end-of-life, guided by ecological and environmental-responsibility principles (Assoune, 2023). It is broader than organic fashion, which focuses narrowly on minimizing synthetic chemicals, since eco-fashion also encompasses recycled materials and biodegradable, plant-based innovations (Firdaus, Purnama, & Candrastuti, 2021). Jalil and Shaharuddin (2020) modeled the eco-fashion design process as a cyclical rather than linear process, in which every design decision, from material choice to end-of-life method, is shaped by environmental considerations originating from consumers, designers, materials, and production processes; their findings show that more than 92% of the eco-fashion design phases involve explicit environmental awareness, a pattern consistent with Arae Fashion's integration of material choice, production technique, and community involvement into a single design cycle. Sustainability in fashion also connects directly to the United Nations Sustainable Development Goals (SDGs); for Arae Fashion as a community-based social enterprise, four SDGs are operationally relevant: SDG 5 (Gender Equality), through women's empowerment across the supply chain; SDG 8 (Decent Work and Economic Growth), through local creative-sector employment; SDG 12 (Responsible Consumption and Production), through sustainable product design and the use of production leftovers; and SDG 15 (Life on Land), through direct collaboration with national park stakeholders (United Nations, 2015).

A sustainable business model integrates economic, social, and environmental aspects to create shared value for all stakeholders, oriented not only toward profit but also toward people and planet (Bocken, Short, Rana, & Evans, 2014). For Arae Fashion, this translates into the use of eco-friendly materials, women's empowerment, functional product design, and low-waste production practices.

Triple Layered Business Model Canvas (TLBMC)

The Triple Layered Business Model Canvas (TLBMC), developed by Joyce and Paquin (2016), enriches the conventional Business Model Canvas by adding an environmental layer, grounded in a Life Cycle Assessment perspective, and a social layer, grounded in a stakeholder perspective, resulting in three simultaneous layers: (1) the economic layer, comprising elements such as value proposition, customers, key resources, and cost structure; (2) the social layer, reflecting the social impact of business activities, community relationships, and social value created; and (3) the environmental layer, assessing ecological impact, resource cycles, emissions, and energy use across nine blocks each, for a total of 27 blocks. This tri-layer structure allows a business to be understood not merely as an economic entity but as a vehicle for holistic value creation across the triple bottom line.

VRIO, Industry Foresight, and SWOT Analysis

The VRIO framework (Value, Rarity, Imitability, Organization) evaluates whether a firm's resources and capabilities generate sustained competitive advantage by assessing whether they are valuable, rare, costly to imitate, and supported by the organization (Barney, 1991; Barney & Clark, 2007). Resources satisfying all four criteria constitute a sustained competitive advantage, while those satisfying fewer criteria fall into unused competitive advantage, temporary competitive advantage, competitive parity, or competitive disadvantage categories. Industry foresight is a systematic scanning of macro trends and dynamics, such as lifestyle, demographics, socio-economics, regulation, and technology, that shape the future of an industry and support anticipatory decision-making (Rohrbeck & Gemünden, 2011; Jacobsen & Hirvensalo, 2022). SWOT analysis then synthesizes the internal findings from VRIO (strengths and weaknesses) with the external findings from industry foresight (opportunities and threats) to produce four alternative strategy quadrants: SO (leveraging strengths to capture opportunities), ST (using strengths to counter threats), WO (overcoming weaknesses through opportunities), and WT (defensive actions that minimize weaknesses while avoiding threats) (Rangkuti, 2017; Hunger & Wheelen, 2010).

Conceptual Framework

This study follows a five-stage analytical chain. First, the existing condition of Arae Fashion's business model is mapped across the 27 TLBMC blocks to obtain a comprehensive baseline. Second, the internal environment is analyzed using VRIO to identify resources and capabilities that constitute strengths and weaknesses. Third, the external environment is analyzed using Industry Foresight, through in-depth interviews with external experts across five macro dimensions, to identify opportunities and threats. Fourth, the internal and external findings are synthesized through SWOT analysis and the SWOT Matrix to generate four alternative strategies. Fifth, the resulting strategies are translated into a new, improved TLBMC that explicitly documents, manages, and communicates three-dimensional sustainability value. Without VRIO, a new TLBMC would merely duplicate the existing condition without a competitive-advantage basis; without Industry Foresight, the resulting strategy risks losing relevance to future industry direction; and without the SWOT Matrix as a bridge, the leap from diagnosis to prescription becomes speculative. Figure 1 illustrates this conceptual framework.

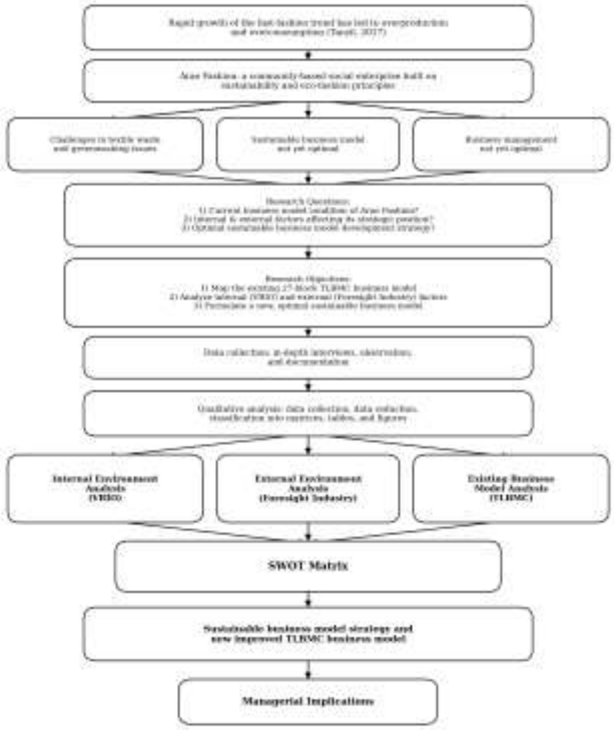

Figure 1. Conceptual Research Framework

Source: Developed by the authors based on field data analysis (2026).

METHOD

This study employed a qualitative descriptive approach with a constructivist paradigm, which views social reality as constructed through individual experiences, social interactions, and contextual factors (Creswell & Poth, 2014). A case study design was applied (Yin, 2014), with Arae Fashion serving as the single unit of analysis because it represents a community-based social enterprise integrating economic, environmental, and social sustainability values. In addition, Arae Fashion is an MSME supported by Bank Indonesia West Java that has expanded into international markets. The research population consisted of stakeholders involved in Arae Fashion's operational activities and business ecosystem, categorized into three groups: internal informants (Founder, CEO, CMO, Director of Operations, digital marketing staff, and artisans), external expert informants (representatives of Dekranasda West Java, fashion design academics, and sustainability experts), and loyal customer informants. Informants were selected using purposive sampling (Moleong, 2017), with the number determined based on data saturation rather than a predetermined sample size (Sugiyono, 2017). A total of 15–20 informants was considered adequate based on previous TLBMC and VRIO studies involving community-based MSMEs with similar characteristics (Fadila, 2024; Hurriyati et al., 2023).

The key informants were selected through purposive sampling (Moleong, 2017) and consisted of three groups. Internal informants, including the Founder, CEO, CMO, Director of Operations, digital marketing staff, and artisans, served as the primary sources for mapping the 27 TLBMC elements and conducting VRIO analysis. External expert informants, including representatives of Dekranasda West Java, fashion design academics, and sustainability experts, contributed to the industry foresight analysis. Loyal customer informants were involved in validating the Customer Segments and End-User components. The number of informants was determined based on data saturation principles rather than a fixed sample size (Sugiyono, 2017), resulting in an estimated range of 15–20 informants, which was considered sufficient based on previous TLBMC and VRIO studies on similarly sized community-based MSMEs (Fadila, 2024; Hurriyati et al., 2023). The composition of key informants is presented in Table 1.This study uses a qualitative descriptive approach with a constructivist paradigm, which views social reality as a subjective construction through experience, social interaction, and cultural context (Creswell & Poth, 2014). The type of research chosen is a case study (Yin, 2014) with Arae Fashion as a single unit of analysis, because this company is a community-based social enterprise that represents the integration of economic, environmental, and social sustainability values, as well as an MSME fostered by Bank Indonesia West Java that has penetrated the international market. The data population includes all stakeholders in Arae Fashion's operations and business ecosystem, which are divided into three groups: internal informants (Founder, CEO, CMO, Director of Operations, digital marketing staff, and craftsmen), external expert informants (representatives of Dekranasda West Java, fashion design academics, and sustainability experts), and loyal customer informants. The data sample was determined through purposive sampling (Moleong, 2017) with the number of informants following the principle of data saturation rather than a fixed a priori sample size (Sugiyono, 2017), with an estimate of 15–20 informants considered adequate based on previous TLBMC/VRIO studies on community-based MSMEs of a similar scale (Fadila, 2024; Hurriyati et al., 2023).

Table 1. Key Informants

Category	Position	Number
Internal respondents		
a. Founder of Arae Fashion		1 person
b. CEO of Arae Fashion		1 person
c. CMO of Arae Fashion		1 person
d. Director of Operations		1 person
e. Digital Marketing Staff		1 person
f. Artisans		5 people
External respondents		
Dekranasda West Java		1 person
Fashion Designer (Academic)		1 person
Sustainable Expert		1 person

Category	Position	Number
Loyal Customers		5 people

Source: primary data, processed by the authors

Data were collected through in-depth interviews, direct field observations, and documentation of business records, digital content, and internal archives. Data credibility was ensured through four types of triangulation: source triangulation involving internal, external, and customer informants supported by documents and observations; investigator triangulation through peer debriefing to minimize potential researcher bias; theory triangulation by integrating TLBMC with sustainability and SDG frameworks; and method triangulation through the combination of semi-structured interviews, observations, and document analysis. Data analysis was conducted using four sequential instruments: (1) TLBMC mapping to identify the existing business model across 27 blocks; (2) VRIO analysis to evaluate internal resources based on physical, financial, organizational, human/intellectual, technological, and reputational indicators following Dollinger (1999); (3) industry foresight analysis based on expert interviews to identify future trends across lifestyle, demographic, socioeconomic, regulatory, and technological dimensions; and (4) SWOT analysis and SWOT Matrix synthesis to formulate SO, ST, WO, and WT strategies, which were subsequently integrated into relevant TLBMC blocks to develop an improved sustainable business model.

RESULT AND DISCUSSION

Company Profile and Existing Business Model

PT Bumi Sahabat Arae, known as Arae Fashion, is a community-based social enterprise founded in 2018 in Bubulak, Bogor, West Java, built on the concept of sustainable living using eco-print and natural dyeing as its distinguishing feature. The company currently employs 27 permanent staff and empowers more than 60 artisans, predominantly housewives around national park buffer zones, organized under three departments: Operations, Marketing, and Finance, led by a CEO under commissioner oversight. Its product range spans women's and men's wear, the export-quality Hansari shawl, leather accessories, the recycled "The Beauty of Second Life" collection, paintings, and both offline and online eco-print training courses. Arae Fashion currently documents its business using a conventional, economic-only Business Model Canvas that has not been updated to reflect its evolving sustainability practices. Table 2, Table 3, and Table 4 present the existing business model mapped onto the three TLBMC layers, obtained through interviews and field observation.

Table 2. Existing Business Model - Economic Layer

Key Partners / Key Activities / Key Resources	Value Propositions / Channels / Customer Relationships	Customer Segments / Cost Structure / Revenue Streams
• Raw-material suppliers, artisans, NGOs, AEPI, schools/universities (Key Partners) • Pre-production, production, finishing, distribution, marketing, community empowerment, education & scholarship program (Key Activities) • Human capital, artisans, natural resources, workspace, community, village empowerment (Key Resources)	• Sustainable, authentic, limited-edition, functional, eco-friendly, handmade products; social impact (Value Propositions) • Website, e-mail, social media, WhatsApp, exhibitions, pop-up stores (Channels) • B2B: wholesale price, custom design, responsive service, long-term cooperation; B2C: discounts, gift with purchase, fast service, custom design (Customer Relationships)	• Individuals aged 25-60, sustainable-lifestyle enthusiasts, social-movement/education enthusiasts, office workers, corporations, international markets (Customer Segments) • Raw materials, salaries, platform development, daily operations, 10% for Rumah Sahabat Arae Foundation, events, tax (Cost Structure) • Sales volume (main revenue), eco-print service fees, online/onsite courses, grant funding, B2B margin 20-40% (Revenue Streams)

Source: field interviews and observation, processed by the authors

Table 3. Existing Business Model - Environmental Layer

Supplies & Out-sourcing / Production	Materials / Distribution	Functional Value / Environmental Impacts & Benefits / End-of-Life / Use Phase
• Plant-based and organic leather waste (linen, lyocell, cotton, viscose), natural indigo dye (Supplies) • Design, mordanting, coloring, steaming, washing, drying, ironing, quality control (Production)	• Plant-based and organic leather waste, weeds and flowers (Materials) • Air, road, and sea transport (Distribution)	• Ecopreneurship, durable, biodegradable products (Functional Value) • Production waste fertilizes soil; supports sustainable community living (Environmental Benefits); no reported negative impact (Environmental Impacts) • Products decompose naturally (End-of-Life); avoids washing machines and excessive detergent (Use Phase)

Source: field interviews and observation, processed by the authors

Table 4. Existing Business Model - Social Layer

Local Communities / Governance	Social Culture / Employees / End-User	Scale of Outreach / Social Impacts / Social Benefits
• Rumah Sahabat Arae Foundation, artisans, AEPI (Local Communities) • Transparency, profit orientation, hierarchical structure (Governance)	• Sustainable-living movement, back-to-nature culture (Social Culture) • Majority-women, local workforce (Employees) • Customer satisfaction (End-User)	• National and international (Europe, Asia, America) customers, suppliers, sustainability community, fostered village (Scale of Outreach) • Consumptive-behavior risk among artisans (Social Impacts) • Empowerment, new lifestyles, job creation, rural revitalization, gender equality, improved education quality (Social Benefits)

Source: field interviews and observation, processed by the authors

Overall, the existing business model shows that Arae Fashion has substantively implemented economic, environmental, and social sustainability practices, yet these practices remain undocumented within a systematic framework, since the company still relies on the conventional nine-block BMC. This confirms the documentation gap identified in the introduction and forms the empirical baseline for the subsequent VRIO, Industry Foresight, and SWOT analyses.

Internal Environment Analysis (VRIO)

The VRIO analysis assessed 17 resources and capabilities across six indicators: physical, financial, organizational, human/intellectual, technological, and reputational resources, along with organizational capabilities such as employee motivation, stakeholder relations, and international market reach, summarized in Table 5.

Table 5. Resource Inventory at Arae Fashion

Tangible	Intangible	Organizational Capabilities
• Physical • Financial • Organizational	• Human resources • Technology (trademarks and patents) • Reputation	• Motivating employees • Employee training • Community empowerment • Product innovation

Tangible	Intangible	Organizational Capabilities
		• Educating stakeholders • Selling to international markets • Relationships with partners and stakeholders

Source: field interviews, processed by the authors

Of the 17 resources and capabilities analyzed, 58.82% (10 of 17) qualify as sustainable competitive advantage, 23.52% (4 of 17) as temporary competitive advantage, 11.76% (2 of 17) as competitive parity, and 5.89% (1 of 17) as competitive disadvantage, as summarized in Table

Table 6. VRIO Analysis Results

Resource Category	Resource / Capability	Competitive Implication
Physical	Strategic office location	Competitive parity
Physical	Modern office facilities; diverse eco-print equipment; eco-friendly raw materials	Temporary competitive advantage
Financial	Cash flow	Competitive parity
Financial	Capacity to raise capital	Sustained competitive advantage
Financial	Capacity to lend capital to other parties	Competitive disadvantage
Organizational	Strategic planning, control, and evaluation system	Sustained competitive advantage
Technological	Patents, copyrights, trademarks	Sustained competitive advantage
Human Resources	Experience, skills, education, skilled production workforce; managerial ability and SOPs	Sustained competitive advantage
Reputation	Reputation as a social enterprise and for product quality	Sustained competitive advantage
Capability	Educating stakeholders (consumers, artisans, suppliers, community)	Sustained competitive advantage
Capability	International market sales capability	Sustained competitive advantage
Capability	Stakeholder relationships	Temporary competitive advantage
Capability	Innovation and creativity capacity in product range and quality	Sustained competitive advantage

Resource Category	Resource / Capability	Competitive Implication
Capability	Ability to motivate employees to increase productivity	Sustained competitive advantage

Source: field interviews, processed by the authors

The ten sustained-competitive-advantage resources form the core foundation of Arae Fashion's long-term competitive advantage. Notably, employee-motivation capability was included in this category because the company shows very high retention supported by flexible-work policies, contrasting with the high turnover typical of comparable fast-fashion operations. Resources classified as temporary competitive advantage remain valuable and relatively rare but are not yet supported by a fully structured organizational system, making them susceptible to imitation in the medium term if not reinforced. Office location and cash flow, at competitive parity, remain necessary but are not distinguishing factors, since competitors generally possess comparable resources. The sole competitive-disadvantage resource, lending capacity to other parties, reflects a deliberate strategic choice to limit external capital involvement, including declining investor funding and interest-based financing, rather than an operational weakness.

External Environment Analysis (Industry Foresight)

Industry Foresight analysis was conducted through in-depth interviews with entrepreneurship experts and a Ministry of Industry representative across five macro variables: lifestyle, demographics, socio-economics, regulation, and technology, summarized in Table 7.

Table 7. Industry Foresight Analysis at Arae Fashion

Variable	Emerging Trends
Lifestyle	• Rising public awareness of sustainability issues • Growing demand for environmentally friendly fashion products • More consumers prioritizing product function and longevity over aesthetics alone • Growing preference for minimalist, timeless (slow-fashion) products
Demographics	• Indonesia approaching peak demographic dividend • Rising numbers of university-educated population • Growing urban population relative to rural areas • Gen Z and Millennials as the main segment driving sustainability
Socio-economics	• Growing share of women in strategic corporate positions • MSMEs as the core of the Indonesian economy • Sustainable fashion increasingly dominated by younger consumers • Growing middle class with purchasing power for premium sustainable products • Economic inequality constrains adoption of eco-friendly fashion for some segments
Regulation	• Expanding regulatory support for MSMEs and start-ups in Indonesia • More detailed and uniform waste-management regulation • Growing regulation supporting the "economy for the common good"

Variable	Emerging Trends
	• Carbon taxes and bans on non-eco-friendly materials in various countries • VAT increase to 12%, affecting raw-material prices
Technology	• Material innovation such as recycled or plant-based fibers • Supply-chain digitalization enabling transparency and efficiency • Social media accelerating economic growth • Growth of eco-friendly e-commerce • Use of big data and AI in information dissemination

Source: expert interviews, processed by the authors

These five macro trends collectively indicate that consumer demand for sustainable, ethically produced fashion is rising, driven by Gen Z and Millennial demographics, growing regulatory pressure toward transparency and lower emissions, and technological innovation in materials and digital supply chains, providing both clear opportunities (export-oriented styling, premium demand, digital transparency tools) and threats (VAT increases, raw-material price volatility, and rising certification and reporting requirements) that Arae Fashion must anticipate.

SWOT Analysis and SWOT Matrix

The internal findings from VRIO (strengths and weaknesses) and the external findings from Industry Foresight (opportunities and threats) were synthesized into a SWOT analysis across the three TLBMC layers, summarized in Table 8.

Table 8. SWOT Summary by Business Model Layer

Layer	Strengths	Weaknesses	Opportunities	Threats
Economic	• Reputation as a social enterprise • Patented eco-print formula and technique • Structured strategic-planning system • Growing, trainable production capacity • Community-based supplier partnerships	• Heavy dependence on a single supplier for some materials • Production still labor-dependent, not machine-based • Customer segmentation not yet formally structured	• R&D collaboration with NGOs and academia • Standardization of key activities for efficiency • Export-oriented styling/ready-to-wear demand • Growing art-collector segment	• Competitors imitating similar eco-print branding • Barriers from established fast-fashion players • Raw-material price volatility
Environmental	• Patented fossilized dried-leaf printing technique • Efficient mordanting method • Biodegradable materials	• No formal quantitative environmental-impact measurement (carbon footprint) • Sustainability claims not yet backed	• Rising global demand for certified sustainable materials • Emerging carbon-tax and environmental regulation	• Rising cost/scarcity of natural dye sources (e.g., logwood) • Tightening international sustainability-reporting standards

Layer	Strengths	Weaknesses	Opportunities	Threats
	• No harmful synthetic-waste discharge	by complete third-party certification	• Innovation in recycled/plant-based textiles	
Social	• High employee retention with flexible work culture • Strong women-empowerment programs • Transparent, participatory governance • Established rural community partnerships	• Decision-making still dependent on a single founder/leader • Consumptive-behavior risk among newly empowered artisans	• Growing consumer preference for verified social impact • Potential to replicate the empowerment model in new partner villages	• Difficulty scaling governance without losing the family-based culture • Risk of program discontinuity if key leadership changes

Source: VRIO and Industry Foresight synthesis, processed by the authors

These SWOT components were then cross-tabulated into a SWOT Matrix (Table 9) to generate four alternative strategy quadrants.

Table 9. SWOT Matrix

Strategy Quadrant	Formulated Strategy
SO (Strengths-Opportunities)	• Strengthen positioning as an authentic eco-print pioneer through production-process storytelling, transparent IP ownership, and completed sustainability certification to capture rising consumer awareness and the Gen Z/Millennial demographic dividend • Develop derivative products and ready-to-wear styling capacity for the premium export market, targeting the price-insensitive overseas collector segment • Realize offline channel expansion (permanent gallery, new city outlets) and replicate the empowerment model to new partner villages using the existing community network • Convert international workshop interest into paid course revenue, building on successful online-class experience during the pandemic
WO (Weaknesses-Opportunities)	• Build an impact-measurement system (carbon footprint, social indicators/SROI) and a sustainability report as a certification prerequisite, capitalizing on transparency trends and regulatory support

Strategy Quadrant	Formulated Strategy
	• Plan phased financing for certification costs (~IDR 25 million) and production-facility upgrades through non-investor, non-interest-based schemes consistent with organizational principles • Formalize a membership system, including an art-collector segment, to address current customer-segmentation weaknesses • Invest in domestic market education (branding and storytelling) to bridge the price-perception gap between local and overseas consumers
ST (Strengths-Threats)	• Strengthen differentiation through completed formal certification, documented material sourcing, and transparent production processes to avoid greenwashing accusations and cross-cultural sustainability misunderstandings • Diversify natural-dye raw-material sources (particularly the costlier logwood) and expand partnerships with forest-farmer groups and alternative suppliers • Strengthen production batch-management systems (dye baths, mordant storage) and an external vendor network to mitigate overcapacity risk during sudden order surges
WT (Weaknesses-Threats)	• Build cash reserves and a contingency plan for single-supplier dependency risk, while remaining consistent with the principle of declining investors/interest-based financing • Make phased investments in production facilities, styling/design capacity, and certification to meet regulatory and premium-market pressure without straining cash flow • Conduct consumer education (on eco-print variation and material trade-offs) and financial literacy training for artisans to mitigate customer disappointment and consumptive-behavior risk

Source: SWOT synthesis, processed by the authors

The SO strategy focuses on strengthening Arae Fashion's differentiation and positioning as an authentic eco-print pioneer to capture the rising trend of sustainability awareness. The WO strategy targets financial and operational weaknesses by leveraging funding opportunities and market trends. The ST strategy mitigates competitive and raw-material risks by leveraging existing reputation and network strengths. The WT strategy is defensive, minimizing weaknesses while avoiding threats through more structured management of financial, supply, and human-resource risks.

Improved Triple Layered Business Model Canvas

The priority strategies from the SWOT Matrix were translated into the relevant TLBMC blocks, retaining every element that already constitutes a proven strength while adding new elements, marked "(New)", to address the identified weaknesses and threats. Tables 10, 11, and 12 present the improved TLBMC across the economic, environmental, and social layers respectively.

Table 10. Improved TLBMC - Economic Layer

Key Partners / Key Activities / Key Resources	Value Propositions / Channels / Customer Relationships	Customer Segments / Cost Structure / Revenue Streams
• Raw-material suppliers, community artisans, NGOs, dye/woven-fabric partners (existing) • (New) Forest-farmer groups and additional high-value dye suppliers for supply diversification • Pre-production, standardized 6-stage production, finishing, distribution, marketing (existing) • (New) Partial supply-chain digitalization for efficiency and transparency • Human resources (~87 people including village artisans), natural resources, patented formula and technique, community (existing) • (New) Environmental and social impact-measurement system	• Sustainable, authentic, eco-friendly, handmade products based on the patented Spring Botanical formula (existing) • (New) Derivative products and a ready-to-wear/styling line for the premium export market • Website, Instagram/WhatsApp, exhibitions, Bogor gallery (existing) • (New) Permanent PIK gallery; expansion to Bali and Surabaya; paid workshop packages • Vouchers, gift-with-purchase, custom design, fast service (existing) • (New) Formal membership system to strengthen branding	• Office workers aged 25-60, corporations, international markets (existing) • (New) Art-collector segment and a more structured membership segment • Raw materials, salaries, daily operations, exhibition/booth marketing (existing) • (New) Phased budget allocation for certification (~IDR 25 million) and impact measurement • Product sales (mainly online ready-to-wear), eco-print services, courses, grants, B2B margin with a net-price policy (existing) • (New) Revenue from derivative products and the membership system

Source: SWOT-to-TLBMC synthesis, processed by the authors

Table 10 shows that the economic-layer improvements mainly target previously underutilized potential. The added derivative products and ready-to-wear/styling line respond to needs identified by management and explicit recommendations from industry practitioners, leveraging the patented Spring Botanical formula. The added art-collector segment and formal membership system address the previously unstructured customer-segmentation weakness, while the planned permanent PIK gallery and expansion to Bali and Surabaya realize strategy SO3 from Table 9. The additions to Cost Structure and Key Resources, certification budget allocation and an impact-measurement system, address the weaknesses in the Functional Value and Environmental Benefits blocks while fulfilling the prerequisites for the international sustainability certification currently in process.

Table 11. Improved TLBMC - Environmental Layer

Supplies & Out-sourcing / Production	Functional Value / Materials	Environmental Impacts / Benefits
• Plant-based materials and natural dyes; efficient 5-minute mordanting method; patented fossilized dried-leaf, leaf-vein, and mirroring techniques; transparently acknowledged katazome technique (existing) • (New) Diversification of high-value dye suppliers and formal documentation of resource-efficient production SOPs	• Ecopreneurship; durable, biodegradable products (decomposing in ~6 months); passed the Balai Batik colorfastness test; diverse, quality-controlled natural color sources (existing) • (New) Completion of international material certification and a sustainability report as third-party evidence of functional claims	• Liquid waste and used leaves processed without synthetic content; waste-awareness internalized down to the implementer level; repeated academic recognition (existing) • (New) Standardized annual carbon-footprint measurement and environmental-impact reporting

Source: SWOT-to-TLBMC synthesis, processed by the authors

Table 11 shows that Arae Fashion's existing environmental strengths, particularly the resource-efficient production innovations and synthetic-free waste management, are fully retained because they are a source of differentiation difficult for competitors to replicate. The additions to Functional Value and Materials follow up on the weakness in Table 8, namely that sustainability claims still rest on consumer trust without complete third-party evidence, while the additions to Environmental Impacts and Benefits align with strategies SO1 and WO1 in Table 9 and respond to tightening supply-chain transparency demands identified in the Industry Foresight findings.

Table 12. Improved TLBMC - Social Layer

Governance / Employees	Local Communities / Social Value	Social Impacts / Benefits
• Transparency, tiered evaluation, family-based culture, high retention, principled rejection of investors/interest-based financing (existing) • (New) Leadership-regeneration and authority-delegation program	• Original Baiti Jannati community, partner NGOs, partner villages in Bogor, locally sourced training for external institutions (existing) • (New) Structured independence-transition mechanism for new partner villages and artisan financial-literacy programs	• Empowerment, gender equality, education for partner-village children, transformation toward legal and sustainable livelihoods (existing) • (New) Measurable social-impact indicators, e.g., a simple Social Return on Investment (SROI) and documented case studies of successful independence transitions

Source: SWOT-to-TLBMC synthesis, processed by the authors

Table 12 shows that the social-layer improvements focus on two priorities. First, in the Governance block, the addition of a leadership-regeneration and authority-delegation program addresses the single-leader decision-making dependency identified in Table 8, without sacrificing the family-based work culture and the principled rejection of investors and interest-based financing that have become part of the organization's identity. Second, in the Local Communities and Social Value blocks, the addition of a more structured independence-transition mechanism replicates the community-empowerment success already demonstrated in existing partner villages, in line with the SO3 strategy in Table 9. The addition to Social Impacts and Social Benefits, measurable social-impact indicators, is intended to convert Arae Fashion's social-impact claims from narrative/qualitative statements into verifiable data, strengthening its credibility as a social enterprise among partners, donors, and consumers.

Taken together, the improved TLBMC retains every element of Arae Fashion's existing business model that has proven effective, including IP ownership, a family-based work culture, and community networks, while adding strategic elements to the economic layer (derivative products and channel expansion), the environmental layer (impact measurement and certification), and the social layer (leadership regeneration and empowerment-model replication) to address the weaknesses and threats identified through the SWOT analysis.

Managerial Implications

Based on the combined TLBMC, VRIO, Industry Foresight, and SWOT findings, several managerial implications follow: (1) Arae Fashion should plan phased financing for international sustainability certification (approximately IDR 25 million excluding advisory costs) and its accompanying sustainability report, using funding schemes consistent with its rejection of equity investors and interest-based financing; (2) development of derivative products and export-oriented styling capacity should be prioritized to sustain business-model relevance over the next 10-20 years, in line with explicit recommendations from external industry practitioners; (3) the risk of labor-dependent production capacity, evidenced by the pandemic-era surge of roughly 300 units that required company-wide overtime, calls for more mature capacity planning, such as strengthening external vendor networks or backup production schemes; (4) formal documentation of raw-material sourcing should be strengthened, given that sustainability standards are perceived differently across markets; (5) environmental and social impact measurement should be formalized, since current sustainability claims remain largely qualitative; and (6) planned offline-channel expansion (the PIK gallery and Bali/Surabaya outlets) should be accompanied by careful cash-flow readiness evaluation, since current cash flow, while operationally healthy, has not yet become a strategically sustainable competitive advantage.

CONCLUSION

This study concluded that Arae Fashion had implemented economic, environmental, and social sustainability practices; however, these practices had not been systematically documented because the company still applied the conventional Business Model Canvas. The VRIO analysis revealed that 58.82% of the 17 internal resources represented sustainable competitive advantages, particularly intellectual property ownership, skilled human resources, reputation, and organizational capabilities. The industry foresight analysis identified increasing sustainability awareness, the growing influence of Generation Z and Millennial consumers, stricter regulations, and material technology innovation as key external factors shaping the business environment. Through SWOT analysis, this study formulated a sustainable business model development strategy that strengthened the economic layer through derivative product development, export-oriented styling capabilities, offline channel expansion, gradual certification processes, and supplier diversification; enhanced the environmental layer through impact measurement and certification initiatives; and reinforced the social layer through leadership regeneration and replication of the community empowerment model. These strategies were integrated into an enhanced Triple Layered Business Model Canvas (TLBMC). This study recommended phased financing strategies for certification and business expansion based on ethical and sustainable funding principles, formalization of environmental and social impact measurement systems, and diversification of raw material suppliers. The limitations of this research included the incomplete quantitative assessment of SWOT factors in the environmental and social layers and the use of a single case study approach. Future research is recommended to develop a more comprehensive SWOT assessment across all TLBMC layers, involve broader groups of informants, and conduct comparative studies involving other sustainable fashion brands.

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