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Circular Startup Strategies in Emerging Consumer Markets

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Abstract

Circular startups seek to create economic value while reducing dependence on linear patterns of resource extraction, short product life, and disposal. Their strategic challenge becomes particularly complex in emerging consumer markets, where environmental benefits must coexist with affordability, product quality, accessibility, trust, repair practices, informal reuse systems, and fragmented recovery infrastructure. This study develops a strategic framework for circular startups operating in emerging consumer markets, emphasizing the interaction among circular resource-loop capability, consumer value acceptance, ecosystem collaboration, and market viability.

The framework integrates circular business-model research with entrepreneurship, sustainable value creation, consumer acceptance, and ecosystem perspectives. Because no primary startup dataset was supplied, a transparent simulation-based explanatory design was adopted. A synthetic dataset containing 350 hypothetical circular-startup profiles was generated using five seven-point constructs: circular startup strategy maturity, resource-loop capability, consumer value acceptance, ecosystem collaboration, and market viability.

The simulated analysis produced a positive relationship between circular strategy maturity and market viability (r = 0.701). Resource-loop capability was also strongly related to viability (r = 0.660), while consumer value acceptance and ecosystem collaboration each produced correlations of approximately r = 0.585. A multiple-regression model containing all four predictors explained approximately 64.9% of the simulated variation in market viability. Mean viability increased from 3.59 among very-low-strategy-maturity profiles to 5.83 among very-high-maturity profiles.

A complementary synthetic archetype analysis classified startups into repair-and-reuse, access/service, resource-recovery, circular-platform, and regenerative-design strategies. The paper argues that circular startups in emerging consumer markets should not compete through environmental positioning alone. Market viability depends on converting circularity into recognizable consumer value while establishing reliable material flows, affordable delivery models, and collaborative ecosystems capable of supporting recovery, repair, reuse, and redistribution.

Keywords: circular startups, circular economy, emerging consumer markets, circular business models, consumer acceptance, resource loops, ecosystem collaboration, sustainable entrepreneurship

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1. Introduction

The circular economy has developed as an alternative to conventional linear patterns of resource extraction, production, consumption, and disposal. Geissdoerfer and colleagues describe circularity around regenerative systems that reduce resource inputs and waste through strategies that slow, close, and narrow material and energy loops, while Kirchherr, Reike, and Hekkert's analysis of circular-economy definitions shows that reduce, reuse, and recycle remain prominent but that circularity ultimately requires broader systemic change. For entrepreneurial firms, this transition creates opportunities to construct new value propositions around product longevity, repairability, reuse, remanufacturing, resource recovery, access instead of ownership, and digitally enabled exchange. Bocken and colleagues provide a widely used strategic distinction among slowing, closing, and narrowing resource loops, demonstrating that circular design must be connected with corresponding business-model innovation.

Startups are particularly relevant to this transition because they can enter markets without being fully committed to legacy linear production systems. Henry, Bauwens, Hekkert, and Kirchherr's analysis of 128 circular startups identified five broad archetypes—design-based, waste-based, platform-based, service-based, and nature-based ventures—and demonstrated the substantial diversity of business-model configurations within circular entrepreneurship. Their empirical sample, however, was drawn from European circular-economy ecosystems, including the Netherlands, Berlin, and London. This geographical concentration creates a particularly important research opportunity concerning circular startups operating in emerging consumer markets, where consumption patterns, purchasing power, institutional structures, informal economic activity, infrastructure, and service accessibility may differ substantially from the contexts in which much circular-business-model research developed.

Consumer acceptance is especially significant because environmental circularity does not automatically create consumer value. Kuah and Wang's 2020 study of East and Southeast Asian consumers examined willingness to engage with shared platforms, recycled products, and remanufactured products, demonstrating the importance of considering consumer participation explicitly within circular-economy transitions. Kirchherr and colleagues similarly identified cultural barriers, including limited consumer interest and awareness, among major obstacles to circular-economy implementation. Circular startups therefore face a dual requirement: they must retain resources effectively while producing offerings whose quality, convenience, price, reliability, and social meaning remain attractive to consumers.

A second challenge concerns interdependence. Circular value propositions often require the startup to coordinate actors that were weakly connected under linear models. Repair services require spare parts and technical skills; refurbishment requires return channels and quality assessment; recycling requires collection and material sorting; product-as-a-service models require maintenance and asset tracking; and resale or sharing platforms require sufficient supply and demand participation. Circular-business-model scholarship accordingly emphasizes the importance of value networks and multi-actor configurations, while systematic work on circular supply chains highlights the influence of numerous organizational and institutional drivers and barriers. A circular startup may therefore possess an attractive product concept and still fail if the ecosystem required to recover, circulate, repair, or redistribute resources remains economically or operationally weak.

The present study develops an integrated strategy framework for circular startups in emerging consumer markets. It proposes that market viability results from the interaction of circular strategy maturity, resource-loop capability, consumer value acceptance, and ecosystem collaboration.

2. Objectives of the Study

2.1 To Conceptualize Circular Startup Strategy for Emerging Consumer Markets

The first objective is to conceptualize circular startup strategy as an integrated configuration of resource use, value proposition, revenue architecture, consumer engagement, and ecosystem design. Circularity cannot be measured adequately by whether a startup uses recycled materials or operates within an environmentally oriented industry. A startup becomes strategically circular when its method of creating, delivering, and capturing value systematically retains product, component, material, or functional value over longer periods.

This conceptualization draws on circular-business-model research emphasizing value creation and capture rather than technological recycling alone. Lüdeke-Freund, Gold, and Bocken reviewed circular-economy business-model patterns and demonstrated the diversity of configurations through which organizations can operationalize circularity. For emerging consumer markets, these strategies must additionally account for price sensitivity, product accessibility, local repair and recovery capability, and the credibility of circular offerings to consumers who may evaluate them primarily through functional and economic rather than environmental criteria.

2.2 To Examine Consumer Acceptance and Resource-Loop Capability

The second objective is to investigate conceptually whether market viability is stronger when circular-resource capability is accompanied by consumer acceptance. Resource-loop capability refers to a startup's capacity to recover products or materials, preserve their quality, extend useful life, and return economic value to circulation. Bocken and colleagues' framework distinguishes product-life-extension strategies from material recycling and resource-efficiency strategies, illustrating why different circular models require different operational capabilities.

Consumer value acceptance represents the extent to which customers perceive the circular offering as sufficiently affordable, functional, convenient, trustworthy, and desirable. Kuah and Wang's work demonstrates that consumer acceptance varies across circular practices rather than being a uniform response to circularity. Consequently, a technically circular model can remain commercially weak if consumers perceive reused, shared, repaired, or remanufactured offerings as inconvenient or inferior.

2.3 To Assess Ecosystem Collaboration as a Scaling Condition

The third objective is to assess ecosystem collaboration as a complementary condition for circular startup viability. Circular ventures frequently rely on suppliers, repairers, logistics providers, waste collectors, recyclers, digital platforms, local retailers, community organizations, municipalities, and consumers to maintain resource circulation. The startup therefore competes not solely through internal capabilities but also through its ability to coordinate resource flows across organizational boundaries.

This perspective is consistent with supply-chain research identifying a wide range of drivers and barriers affecting circular-economy implementation. Govindan and Hasanagic's systematic review

emphasizes that circular transition is shaped by interactions among stakeholders and by organizational, technological, governmental, economic, and supply-chain conditions. Ecosystem collaboration is therefore positioned in this study as an operational capability rather than as a peripheral stakeholder-relations activity.

3. Review of Literature

3.1 Circular Business Models and Startup Strategic Archetypes

Circular business-model scholarship developed partly from sustainable-business-model research concerned with aligning environmental and economic value creation. Bocken, Short, Rana, and Evans identified sustainable-business-model archetypes that include creating value from waste, delivering functionality rather than ownership, encouraging sufficiency, and substituting renewable or natural processes. These archetypes provided an important foundation for later circular-business-model work by demonstrating that sustainability innovation requires changes to value propositions and business logic rather than isolated efficiency improvements.

Bocken, de Pauw, Bakker, and van der Grinten subsequently developed a circular strategy framework distinguishing slowing resource loops, closing resource loops, and resource-efficiency or narrowing approaches. Slowing emphasizes longer product use and product-life extension, while closing focuses on recirculating materials after use. This distinction has significant startup implications. A repair venture, rental platform, material-recovery company, and regenerative-material startup may all be circular but rely on fundamentally different cost structures, assets, consumer behaviors, and partner relationships.

Henry and colleagues' analysis of 128 circular startups further develops this distinction by identifying design-based, waste-based, platform-based, service-based, and nature-based startup archetypes. The typology is particularly valuable because it demonstrates that circular entrepreneurship should not be reduced to recycling ventures. However, because the sample focused on European entrepreneurial ecosystems, questions remain concerning how these strategic archetypes should be configured in markets where affordability constraints, informal repair, secondary markets, and heterogeneous infrastructure influence value creation.

Lüdeke-Freund, Gold, and Bocken's review similarly identifies multiple circular business-model patterns and reinforces the proposition that circularity is ultimately implemented through business-model configurations linking value proposition, value creation, delivery, and capture. Circular startup strategy should therefore be evaluated according to whether the organization possesses a coherent model for capturing sufficient economic value while maintaining the intended circular flow.

3.2 Consumer Value Acceptance in Emerging Markets

Circular-economy implementation requires consumer participation because many strategies depend on changed purchasing, usage, return, sharing, repair, or disposal behavior. Kuah and Wang's exploratory study in East and Southeast Asia examined acceptance of shared platforms, recycled products, and remanufactured products, directly demonstrating that consumer acceptance is a significant component of circular-economy viability. Their research is especially relevant to emerging consumer markets because

it highlights the need to examine circular consumption through specific practices rather than assuming that favorable attitudes toward sustainability will automatically transfer into purchasing behavior.

Kirchherr, Piscicelli, Bour, Kostense-Smit, Muller, Huibrechtse-Truijens, and Hekkert's empirical research on barriers to circular-economy transition likewise identified cultural barriers, including limited consumer awareness and interest, as particularly significant. Consumer participation consequently becomes part of the business model itself. A return-and-refurbishment startup cannot recover products if customers do not return them; a sharing service cannot function without sufficient usage density; and a remanufactured-product business cannot scale if customers equate prior use with unacceptable quality.

Emerging-market strategy therefore requires circular startups to translate environmental benefits into immediate customer value. An inexpensive repaired appliance that remains dependable may generate circular value without consumers primarily purchasing it for environmental reasons. Similarly, refill systems can reduce packaging while simultaneously lowering purchase quantities and improving affordability. Circular startups should consequently investigate how resource efficiency, product longevity, reuse, and service-based access can be converted into consumer benefits such as lower total cost, convenience, reliability, access, and reduced replacement frequency.

At the same time, affordability should not be assumed to guarantee acceptance. Trust can become critical where consumers cannot easily evaluate the remaining life, safety, hygiene, or quality of reused and refurbished goods. Circular startups may therefore need product grading, warranties, transparent inspection standards, traceability, repair histories, or return guarantees. The consumer-facing business model must address perceived risk as carefully as the operational system addresses resource recovery.

3.3 Resource Networks, Collaboration, and Circular Market Formation

Circular startups depend on networks because resource loops frequently cross organizational boundaries. Lieder and Rashid's comprehensive review of circular-economy implementation emphasizes that circular transformation involves interconnected economic, environmental, and resource-related considerations rather than isolated firm-level optimization. Govindan and Hasanagic similarly demonstrate that circular-economy implementation in supply chains is influenced by multiple drivers, barriers, and stakeholder relationships.

Ranta, Aarikka-Stenroos, and Mäkinen examined value creation in circular-economy business models and highlighted the importance of understanding how organizations generate and capture economic value from circular activity. This is particularly important for startups because environmental value can be generated at one point in a system while commercial value is captured elsewhere. For example, a startup may create savings for manufacturers by collecting waste but incur logistics costs that consumers are unwilling to finance. The circular model must therefore establish who receives value, who pays, and how incentives are distributed across participants.

Ecosystem collaboration is consequently necessary for activities such as collection, sorting, repair, refurbishment, resale, recycling, product tracking, financing, and consumer education. Startups can develop some capabilities internally, but attempting to own every element of a circular value chain may be financially unrealistic. Partnership strategies allow startups to access existing local infrastructure and knowledge while concentrating scarce resources on distinctive capabilities.

This network perspective is especially relevant in emerging consumer markets because circular entrepreneurs may encounter existing informal repair, resale, and resource-recovery systems rather than empty markets awaiting formal circular solutions. Strategic startup design should therefore consider how formal technology, quality standards, financing, and market access can complement rather than automatically displace local capabilities.

4. Research Methodology

4.1 Research Design and Analytical Rationale

The study employed a quantitative simulation-based explanatory design. No completed startup survey, transaction dataset, consumer panel, circularity audit, or venture-performance record was supplied. Numerical results are therefore generated only to illustrate how the proposed framework could be evaluated in a future empirical study.

A total of 350 synthetic circular-startup profiles was generated. Each observation represents a hypothetical venture operating within an emerging consumer-market environment and does not correspond to an identifiable company, founder, consumer population, or geographical market.

Table 1: Operationalization of the Simulation Framework

Construct	Scale	Conceptual Operationalization	Analytical Role
Circular Startup Strategy Maturity	1–7	Degree to which circularity is integrated into value proposition, revenue logic, product/service design, resource recovery, and strategic positioning	Primary predictor
Resource-Loop Capability	1–7	Ability to retain, recover, repair, reuse, redistribute, remanufacture, or recirculate product and material value	Explanatory mechanism
Consumer Value Acceptance	1–7	Perceived affordability, quality, convenience, reliability, trust, and attractiveness of the circular offering	Explanatory mechanism
Ecosystem Collaboration	1–7	Ability to coordinate suppliers, recovery actors, logistics providers, repair networks, communities, and other relevant partners	Explanatory mechanism
Market Viability	1–7	Capacity of the circular startup model to attract customers, sustain resource flows, support revenue generation, and remain operationally scalable	Dependent variable

4.2 Synthetic Data Construction

Circular startup strategy maturity was generated as the central explanatory construct. Resource-loop capability was modeled as positively associated with strategy maturity because ventures with circularity

embedded more deeply in their business model should possess stronger processes for maintaining value within resource loops.

Consumer value acceptance was modeled partly as a function of circular strategy and resource-loop capability but retained substantial random variation. This structure recognizes that strong circular operations do not guarantee consumer acceptance. Consumers can reject an environmentally advantageous product because of price, inconvenience, weak quality assurance, unfamiliarity, or lack of trust.

Ecosystem collaboration was generated as a related but analytically distinct capability. Market viability was then modeled from circular strategy maturity, resource-loop capability, consumer acceptance, ecosystem collaboration, and a stochastic residual component. The residual represents unmodeled influences including competition, financing, regulation, founder capability, technology, macroeconomic conditions, infrastructure, and market timing.

4.3 Statistical Procedures and Strategy Classification

Descriptive statistics and Pearson correlations were calculated first. Ordinary least squares multiple regression was then used to examine the combined relationships of circular strategy maturity, resource-loop capability, consumer value acceptance, and ecosystem collaboration with market viability.

The 350 profiles were divided into five equal circular-strategy maturity groups—very low, low, moderate, high, and very high—with 70 synthetic ventures in each group. A separate illustrative classification distributed the same 350 synthetic ventures across five broad startup-strategy archetypes inspired by established circular-startup and circular-business-model literature: repair and reuse, access/service, resource recovery, circular platform, and regenerative design. The archetype classification is illustrative rather than an empirical reproduction of Henry and colleagues' dataset.

5. Analysis

5.1 Relationships Between Circular Capabilities and Market Viability

The synthetic dataset produced a mean circular startup strategy score of 4.19, mean resource-loop capability of 3.89, mean consumer value acceptance of 4.06, mean ecosystem collaboration of 4.01, and mean market viability of 4.80.

Circular startup strategy maturity demonstrated a positive simulated association with market viability of $r = 0.701$. Resource-loop capability produced an association of $r = 0.660$, while consumer value acceptance and ecosystem collaboration each produced correlations of approximately $r = 0.585$ with viability.

These relationships illustrate an important strategic principle: market viability cannot be attributed to circularity alone. The circular strategy must be operationally executable, valued by consumers, and supported by an ecosystem capable of maintaining circular flows.

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Table 2: Simulated Market Outcomes by Circular Strategy Maturity

Strategy Maturity	Synthetic Startups (n)	Mean Circular Strategy	Mean Resource-Loop Capability	Mean Consumer Acceptance	Mean Ecosystem Collaboration	Mean Market Viability
Very Low	70	2.60	2.84	3.11	3.03	3.59
Low	70	3.59	3.46	3.68	3.58	4.26
Moderate	70	4.24	3.92	4.07	4.00	4.95
High	70	4.86	4.35	4.47	4.40	5.37
Very High	70	5.68	4.86	4.97	5.05	5.83

5.2 Market Viability Across Strategy Maturity

Mean market viability increased progressively from 3.59 among very-low-strategy-maturity ventures to 4.26 for low maturity, 4.95 for moderate maturity, 5.37 for high maturity, and 5.83 for very-high maturity. The simulated difference between the lowest and highest categories was approximately 2.24 points on the seven-point scale.

The pattern indicates that circular-market viability strengthens when circularity becomes structurally integrated rather than peripheral. A startup that merely adds recycled material to an otherwise linear value proposition may obtain fewer strategic benefits than a venture that redesigns product durability, returns, revenue logic, consumer engagement, and partner relationships around continued resource value.

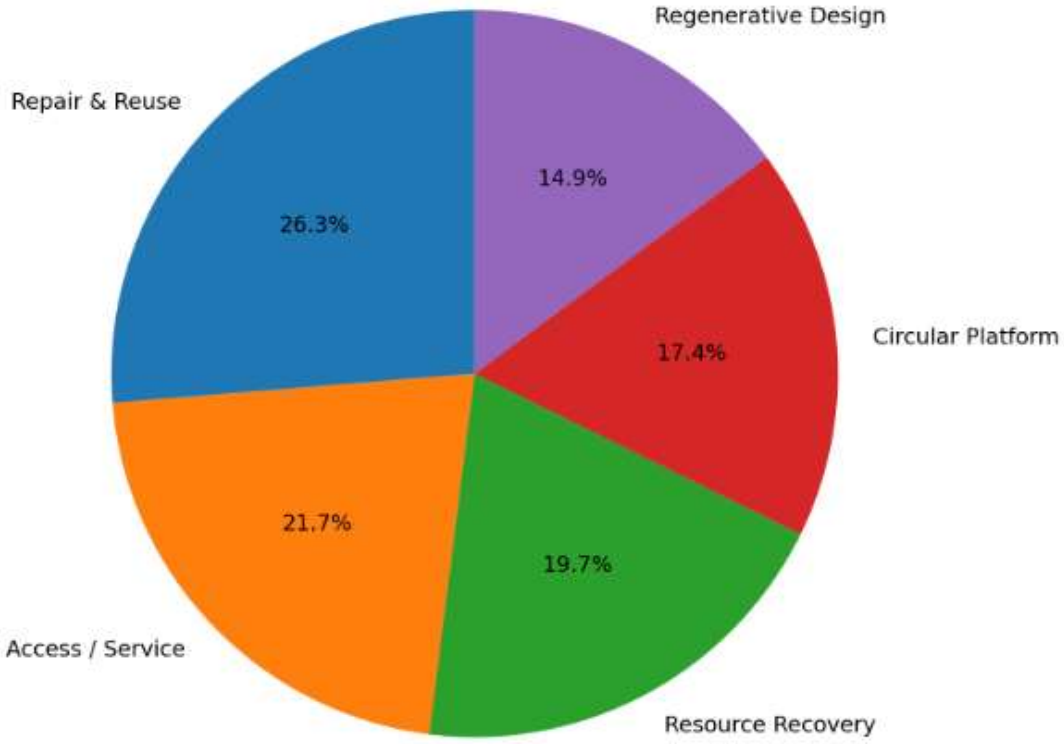
Multiple regression generated an R^2 of 0.649 and an adjusted R^2 of 0.645. Resource-loop capability produced an unstandardized coefficient of approximately 0.306, circular strategy maturity 0.265, consumer value acceptance 0.251, and ecosystem collaboration 0.237.

The model reinforces the complementarity of the four constructs. Strong consumer demand cannot sustain a circular startup if returned products cannot be recovered economically. Equally, sophisticated recycling or refurbishment systems cannot ensure viability when consumers reject the value proposition. Circular startup success therefore involves synchronization of environmental and commercial mechanisms.

5.3 Distribution of Circular Startup Strategic Archetypes

The synthetic archetype classification provides an additional view of how different circular startup strategies can be represented within an emerging consumer-market portfolio.

Graph 1: Simulated Distribution of Circular Startup Strategy Archetypes



The largest simulated category is Repair and Reuse, representing 26.3% of profiles. Access/Service strategies account for 21.7%, Resource Recovery for 19.7%, Circular Platforms for 17.4%, and Regenerative Design for 14.9%.

Interpretation: The distribution illustrates a strategically diverse circular-startup landscape. Repair-and-reuse models receive the largest share in the synthetic portfolio because product-life extension can be especially relevant where customers seek lower replacement costs and where repair capabilities are locally available. Access/service and circular-platform models represent alternatives in which utilization or exchange replaces conventional ownership, while resource-recovery and regenerative-design models address material circulation and input substitution.

Key Finding: Circular entrepreneurship should not be treated as a single business-model category. Different strategic archetypes rely on different consumer behaviors, partner networks, resource flows, and revenue mechanisms, requiring differentiated market-validation strategies.

6. Discussion

6.1 Circularity Must Create Immediate Consumer Value

The first major implication is that circular startups in emerging consumer markets should avoid assuming that sustainability benefits will independently generate sufficient demand. Kuah and Wang's consumer research demonstrates the importance of acceptance across specific circular practices, while Kirchherr and colleagues identify cultural and consumer-related barriers as important impediments to circular-economy implementation. Circular startups therefore need a consumer proposition that remains compelling even when environmental concern is not the primary purchasing motive.

Affordability can become an especially powerful circular-value mechanism. Product-life extension may reduce replacement expenditure, refurbished products can provide access to higher-value goods at lower prices, shared-use services can reduce ownership costs, and refill systems can reduce packaging-related expenditure. These strategies should nevertheless be evaluated carefully because a circular offering that is initially cheaper may create hidden costs through inconvenient returns, unreliable availability, or frequent repair.

Quality assurance is equally significant. Circular products may carry uncertainty concerning remaining product life, safety, hygiene, maintenance history, or component quality. Startups can reduce this uncertainty through warranties, standardized inspection, grading, transparent refurbishment records, replacement guarantees, and clear product-condition information. Consumer trust therefore becomes part of the circular operating model rather than an independent branding problem.

The broader strategic implication is that startups should communicate circularity through consumer outcomes. Environmental savings remain important, but consumers should also understand how the circular design affects affordability, quality, convenience, durability, service access, and reliability.

6.2 Emerging Markets Can Build Circularity Around Existing Resource Practices

A second implication is that circular entrepreneurship should not assume that circular practices must be introduced into otherwise entirely linear consumer systems. Repair, reuse, resale, informal material recovery, and product sharing already exist in many market contexts for practical economic reasons. A startup's strategic opportunity may therefore involve improving the reliability, safety, reach, traceability, or scalability of existing resource-retention practices.

This approach differs from importing capital-intensive circular infrastructure without considering local economic conditions. For example, a digital platform might connect existing repair providers with customers rather than building a fully owned repair network. A refurbishment venture might provide diagnostics and quality standards to existing secondary-market sellers. A waste-based startup could improve material sorting or demand aggregation while collaborating with existing recovery actors.

Such models can create a bridge between formal and informal circular systems. However, collaboration should avoid extracting value from existing actors without providing reasonable economic participation. Sustainable circular entrepreneurship should improve working conditions, market access, safety, productivity, or income possibilities where existing local actors become part of the startup's resource network.

Circular strategy is consequently contextual. The most advanced technological model is not automatically the most appropriate model. An effective emerging-market startup should identify the lowest-cost combination of local capabilities, technology, partnerships, and consumer participation capable of maintaining resource value while generating a commercially sustainable margin.

6.3 Ecosystem Collaboration Determines Whether Circular Models Can Scale

The third implication concerns scalability. Circular startups frequently require resource flows moving in both directions: products or materials must reach consumers and subsequently return for repair, reuse, refurbishment, remanufacturing, redistribution, or recycling. This differs structurally from linear startup

models optimized mainly for outward distribution. Supply-chain research demonstrates that circular implementation depends on multiple interconnected organizational and institutional conditions.

Scaling therefore depends on ecosystem design. Startups need to determine which capabilities should remain internal and which should be accessed through partners. Reverse logistics might be combined with existing delivery networks. Local retailers can function as return points. Independent technicians may provide decentralized repair. Material processors can absorb recovered components that the startup cannot reuse internally. Financial-service providers may support leasing or subscription models.

The ecosystem also affects consumer convenience. A theoretically circular return system can fail when customers must travel too far, complete complex procedures, or wait excessively for repairs. Circularity must therefore be designed at the level of the entire consumer journey, not only at the level of material accounting.

Finally, startups should avoid premature scaling before resource-loop economics are understood. Higher sales can actually intensify future recovery obligations. A circular startup must therefore know the cost of acquiring customers, serving them, retrieving products or materials, restoring value, and creating the next revenue event from the recovered resource. Scaling a circular venture whose reverse flow remains structurally unprofitable can simply enlarge an unresolved operating problem.

7. Conclusion

Circular startups have significant potential to challenge linear patterns of production and consumption by creating business models based on product-life extension, access, repair, reuse, refurbishment, resource recovery, platform exchange, and regenerative design. Emerging consumer markets provide a particularly important setting for such ventures because circularity intersects directly with affordability, resource constraints, local service systems, and established patterns of product reuse. However, the strategic viability of these businesses cannot be inferred from environmental benefit alone.

The simulation-based analysis illustrates this multidimensional logic. Circular startup strategy maturity was positively associated with market viability, while resource-loop capability, consumer value acceptance, and ecosystem collaboration also contributed substantially within the constructed model. Mean simulated viability increased progressively across circular-strategy maturity levels. These relationships are deliberately identified as synthetic and do not constitute field evidence from actual startups or consumers.

The paper contributes by integrating circular-business-model strategy, consumer acceptance, resource-loop capability, and ecosystem collaboration within an emerging-market entrepreneurial framework. The central theoretical position is that successful circular startups must simultaneously answer four questions: What resource value is retained? Why will consumers participate? Which actors make the loop operationally possible? How does the startup capture sufficient economic value from the resulting system? A circular model that answers only the environmental question remains strategically incomplete.

Future empirical research should test this framework using actual circular ventures across emerging economies and consumer categories. Particularly valuable designs could compare repair, resale, rental, sharing, refill, refurbishment, recycling, and regenerative models; examine consumer

willingness to pay for different circular propositions; and calculate the economics of reverse logistics and product recovery. Longitudinal research should also investigate how informal and formal resource systems interact as circular startups scale. The most promising emerging-market circular strategy is therefore unlikely to be the one that reproduces a model developed elsewhere most faithfully. It will be the strategy that retains resources effectively while fitting local consumer economics, existing capabilities, and the ecosystem through which circular value must repeatedly move.

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