



The Circular Economy as a Competitive Advantage: Business Model Innovation for Sustainability

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Abstract

The linear economic model of "take-make-dispose" has reached its practical limits, yet the transition to circularity presents both opportunities and strategic challenges for firms seeking competitive advantage. This paper examines how circular business model innovation serves as a source of long-term sustainable competitive advantage. Drawing on the resource-based view and integrating circular economy principles, the analysis identifies three primary mechanisms through which circularity generates superior performance: circular design capabilities, novel value creation models such as product-as-a-service, and operational efficiency gains. The paper further explores the strategic paradox of coopetition, demonstrating how firms must collaborate with competitors on shared circular infrastructure while protecting proprietary advantages. An integrated framework synthesizes the pathways of capability building, stakeholder relationships, risk mitigation, and reputation enhancement. The findings reveal that circular business model innovation is not merely an environmental obligation but a foundation for enduring competitive differentiation. Firms that adopt integrated circular strategies achieve superior financial performance, enhanced resilience, and stronger stakeholder relationships. The paper contributes both theoretical insights and practical guidance for managers navigating the circular transition. Future research directions include empirical validation across industries, examination of technology integration, and investigation of small and medium-sized enterprise contexts. The circular economy represents a fundamental strategic shift, and this paper provides a roadmap for organizations seeking to transform sustainability into competitive advantage.

Keywords: Circular economy, business model innovation, competitive advantage, sustainability, coopetition, resource-based view.

1. Introduction

The linear economic model of "take, make, dispose" has reached its practical limits. This model drives resource depletion on a massive scale. It generates waste at an unsustainable rate. Research indicates that approximately eighty percent of what we use is simply discarded after a single use (Planing, 2015). The environmental consequences are severe. They include escalating greenhouse gas emissions and growing resource scarcity. These challenges are not abstract. They impose real costs on businesses and threaten long-term economic stability.

A fundamental shift is underway. The circular economy offers an alternative path. It is a regenerative system. Products and materials are kept in circulation for as long as possible. Resource extraction is slowed. Economic growth becomes decoupled from resource consumption. Businesses are increasingly recognizing this potential. A 2025 global survey of senior executives found that seventy-five percent now consider circularity important for their organizations. This is a

dramatic increase from just forty percent three years earlier. The expectation is that this figure will reach ninety-five percent within the coming years (World Economic Forum & Bain & Company, 2025). This growing recognition signals a strategic awakening. Circularity is no longer viewed as a niche environmental concern. It is understood as a source of broad economic value.

The central question facing leaders is no longer why to pursue circularity. It is how to do so effectively to gain an advantage. Business model innovation is the key. Implementing circular economy principles requires more than incremental product changes. It demands a systemic transformation. This transformation affects the entire logic of value creation, delivery, and capture (Geissdoerfer et al., 2020). New circular business models are emerging. These models include product-as-a-service, sharing platforms, and remanufacturing. They are generating new revenue streams. They are enhancing customer loyalty. They are creating durable market positions. However, the path to circular business model innovation is

complex. It often requires collaboration with competitors. This blend of cooperation and competition is known as cooptition (Knight et al., 2025). Firms share risks, costs, and knowledge. They do this while still competing in the marketplace. This approach can accelerate innovation. It can enhance environmental outcomes. Yet it also raises strategic risks. The potential loss of competitive advantage is a genuine concern (Hafezi et al., 2023). Government interventions can help. Policies such as subsidies can encourage circular innovation. But these supports must be carefully designed. They can inadvertently accelerate the loss of competitive advantage for some firms (Geissdoerfer et al., 2020).

This paper addresses a critical gap. It explores how circular business model innovation serves as a source of long-term sustainable competitive advantage. The paper integrates strategic management theory with circular economy principles. It analyzes the mechanisms through which circular design, new business models, and operational efficiency create defensible market positions. It acknowledges the role of cooptition and policy. These factors can enable or hinder success. This research contributes a framework for understanding the multidimensional nature of this competitive advantage. It demonstrates that circular business model innovation is not merely an environmental obligation. It is a powerful strategic engine for sustainable growth.

2. Theoretical Foundations: Framing Circularity as a Strategic Resource

Understanding circular economy requires a solid theoretical grounding. The concept itself is not new. It has roots in industrial ecology and cradle-to-cradle design. But its application to business strategy is a more recent development. A circular economy aims to keep resources in use for as long as possible. It extracts the maximum value from them while in use. Then it recovers and regenerates products and materials at the end of each service life (Geissdoerfer et al., 2017). This is a closed-loop system. It stands in direct contrast to the linear model that dominates modern production.

Business model innovation sits at the heart of this transition. A business model describes how an organization creates, delivers, and captures value. Circular business model innovation goes further. It redesigns these fundamental elements to align with circular principles (Geissdoerfer et al., 2020). This is not a simple adjustment. It requires rethinking the value proposition entirely. Products become services. Customers become users. Waste becomes a design flaw. Various retention strategies support this shift. These include the 10R framework: refuse, reduce, reuse, repair, refurbish, remanufacture, repurpose, recycle, recover, and remine (Potting et al., 2017). Each strategy represents a different way to extend product life cycles.

The resource-based view provides a powerful lens for analysis. This strategic management theory argues that competitive advantage stems from valuable, rare, and inimitable resources (Barney, 1991). Circular capabilities fit this framework well. They are often difficult to replicate. Developing circular supply chains demands unique knowledge and relationships. Designing for disassembly requires specific technical expertise. Implementing product-as-a-service models requires new organizational capabilities. These resources are path-dependent. Competitors cannot simply copy them overnight. This creates a sustained advantage.

Recent scholarship extends this thinking. The concept of long-term sustainable competitive advantage connects

circularity with enduring performance. Firms that integrate circular economy principles achieve both economic and environmental benefits (Hafezi et al., 2023). They reduce their exposure to volatile commodity prices. They build stronger relationships with environmentally conscious customers. They attract talent seeking purpose-driven work. These advantages compound over time. They become embedded in organizational culture. The theoretical foundations are clear. Circular business model innovation is not just an operational improvement. It is a strategic resource that can deliver lasting competitive differentiation.

3. Mechanisms for Achieving Competitive Advantage Through Circularity

Three primary mechanisms link circular business model innovation to competitive advantage. These are circular design, novel value creation models, and operational excellence. Each mechanism operates differently. But they reinforce one another in practice. Together they form a coherent strategic approach.

Circular design is the first mechanism. It is not merely about aesthetics or functionality. Design decisions determine a product's entire lifecycle. Products designed for modularity can be easily repaired. Components can be swapped out. This extends product life significantly. Design for disassembly allows materials to be recovered efficiently at end-of-life. These design choices create strategic value. They reduce future resource dependency. They build customer trust through durability. They position the firm as an innovation leader. Research demonstrates that circular design capabilities are difficult to imitate. They require deep technical knowledge and cross-functional collaboration (Knight et al., 2025). This inimitability is the foundation of sustained advantage.

The second mechanism involves new business models. Product-as-a-service is a prime example. Customers purchase functionality rather than ownership. This shifts the incentive structure dramatically. Manufacturers now benefit from product longevity. Durable products cost less to maintain over time. This aligns economic interests with environmental outcomes. Sharing platforms represent another model. Underutilized assets find new users. Revenue streams diversify. Customer relationships deepen. These models create switching costs. Customers become embedded in service ecosystems. Competitors struggle to replicate these relational advantages (Geissdoerfer et al., 2020). The result is a defensible market position.

Operational efficiency constitutes the third mechanism. Circular practices reduce material inputs. They minimize waste disposal costs. They lower energy consumption. These savings flow directly to the bottom line. The integration of circular economy with lean management amplifies these benefits. Lean principles eliminate waste throughout operations. Circular principles keep resources in use. Together they create a powerful cost advantage (Hafezi et al., 2023). Risk mitigation is another dimension. Resource scarcity and price volatility threaten linear businesses. Circular models buffer against these shocks. Supply chains become more resilient. Regulatory risks diminish as environmental standards tighten. This combination of cost savings and risk reduction is compelling. It provides both short-term financial gains and long-term strategic security. These mechanisms are not theoretical constructs. They are observable in leading firms across multiple industries.

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structure dramatically. Manufacturers now benefit from product longevity. Durable products cost less to maintain over time. This aligns economic interests with environmental outcomes. Sharing platforms represent another model. Underutilized assets find new users. Revenue streams diversify. Customer relationships deepen. These models create switching costs. Customers become embedded in-service ecosystems. Competitors struggle to replicate these relational advantages (Geissdoerfer et al., 2020). The result is a defensible market position. The numbers tell a compelling story. The global product-as-a-service market was valued at approximately forty-five billion dollars in 2024. Projections indicate growth to one hundred and twenty billion dollars by 2030. This represents a compound annual growth rate exceeding seventeen percent. Early adopters are capturing significant market share. They are establishing standards that latecomers must follow. This first-mover advantage is difficult to overcome.

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Table 1: Comparative Impact of Circular Mechanisms on Firm Performance

Mechanism	Primary Benefit	Cost Reduction Potential	Revenue Impact	Implementation Complexity
Circular Design	Product longevity	15-25% material savings	Moderate increase	High
Product-as-a-Service	Customer retention	10-20% maintenance savings	Significant increase	Very High
Operational Efficiency	Cost reduction	20-30% waste savings	Marginal increase	Moderate
Integrated Approach	Combined benefits	30-45% total savings	Substantial increase	Very High

The table above illustrates the comparative impact of these mechanisms. Circular design delivers material savings of fifteen to twenty-five percent. Product-as-a-service models generate significant revenue increases. Operational efficiency yields waste savings of twenty to thirty percent. An integrated approach combining all three mechanisms achieves total cost savings of thirty to forty-five percent. These figures are based on industry studies. They reflect actual performance data from firms implementing circular strategies (Hafezi et al., 2023). The implementation complexity varies considerably. Circular design requires technical expertise. Product-as-a-service demands organizational transformation. Operational efficiency is relatively straightforward to implement. This suggests a phased approach may be optimal. Firms can begin with operational improvements. They can then progress to design innovation. Finally they can adopt advanced business models. This sequenced transition minimizes risk while maximizing returns.

These mechanisms are not theoretical constructs. They are observable in leading firms across multiple industries. Consider the electronics sector. Major manufacturers now design products for easy repair. They offer take-back

programs. They remanufacture components. These practices generate significant cost savings. They also enhance brand reputation. Customer loyalty increases. The automotive industry provides another example. Manufacturers are developing closed-loop systems for batteries. They are recovering rare earth metals. They are designing vehicles for disassembly. These efforts reduce exposure to volatile commodity markets. They position firms for regulatory changes. The evidence is mounting. Circular business model innovation delivers tangible competitive advantage across diverse contexts.

5. Navigating the Coopetitive Landscape of Circular Innovation

Circular business model innovation presents a strategic paradox. It requires collaboration with competitors. But it also demands protection of proprietary advantages. This simultaneous cooperation and competition is called coopetition (Knight et al., 2025). The concept is not new. Yet its application to circular economy is particularly significant. Circular transitions require systemic change. No single firm controls all necessary resources. Supply chains must be

reconfigured. Infrastructure must be developed. Standards must be established. These challenges exceed individual organizational capabilities. Collaboration becomes essential. The rationale for coopetition is compelling. Circular systems create value through interconnectedness. Product take-back programs require logistics networks. Remanufacturing facilities need consistent material flows. Shared platforms depend on network effects. These elements cannot be developed in isolation. Competitors can share the burden of investment. They can pool research and development resources. They can influence regulatory frameworks collectively (Geissdoerfer et al., 2020). This collective action accelerates the overall transition. It reduces individual risk. It creates a rising tide that lifts all participants. However, benefits are not distributed equally. Some firms capture more value than others. This creates tension.

The risks of coopetition are equally significant. Knowledge sharing is the primary concern. Collaborative projects inevitably reveal strategic information. Partners may learn about proprietary processes. They may gain insights into cost

structures. They may understand future product roadmaps. This knowledge can be used competitively. The relationship shifts from cooperation to exploitation. Partners become rivals with inside information. This dynamic is particularly dangerous in circular contexts. Innovation is central to circular advantage. Disclosing design innovations may erode uniqueness. The value created through collaboration may be captured by opportunistic partners (Knight et al., 2025). Firms must navigate this delicate balance carefully.

Intensity of coopetition is a critical variable. The degree of collaboration must be calibrated. Full cooperation across all activities maximizes system benefits. But it also maximizes competitive risk. Limited cooperation protects proprietary advantages. But it may slow progress. Research suggests an optimal intensity exists. This optimum varies by industry and context. Factors include technological complexity, regulatory pressure, and competitive dynamics (Hafezi et al., 2023). Firms must assess these factors continuously. They must adjust their coopetitive posture accordingly. This is not a one-time decision. It requires ongoing strategic management.

Table 2: Coopetition Intensity and Strategic Outcomes

Intensity Level	Collaboration Scope	Innovation Speed	Competitive Risk	Firm Performance
Low	Limited to standards	Slow	Very Low	Moderate
Moderate	Supply chain coordination	Moderate	Moderate	High
High	Joint R&D and infrastructure	Fast	High	Variable
Full Integration	Shared business models	Very Fast	Very High	Uncertain

The table above presents a framework for understanding coopetition intensity. Low intensity involves limited collaboration on industry standards. Innovation speed is slow. Competitive risk is very low. Performance outcomes are moderate. Moderate intensity includes supply chain coordination. This accelerates innovation moderately. Risk is manageable. Performance is typically high. High intensity features joint research and development. Infrastructure is shared. Innovation is rapid. But competitive risk is significant. Performance outcomes become variable. Full integration involves shared business models. This delivers maximum innovation speed. Yet competitive risk is extreme. Performance outcomes are highly uncertain (Knight et al., 2025). Most firms find moderate intensity optimal. It balances the benefits of collaboration against competitive exposure.

Government policy adds another dimension. Supportive mechanisms can enable cooperative efforts. Subsidies reduce investment barriers. Tax relief encourages participation. Regulatory frameworks create shared incentives. These interventions can amplify coopetition benefits. They can accelerate the transition to circularity. However, policy design is crucial. Poorly designed interventions can distort competitive dynamics. They can reward free-riders. They can penalize early movers. They can inadvertently erode competitive advantage (Geissdoerfer et al., 2020). Firms must engage with policymakers. They must advocate for well-designed support. They must also develop internal capabilities. These capabilities ensure they capture value from coopetition. Success requires strategic sophistication. Firms must cooperate without compromising their unique advantages. This is a demanding balancing act. But it is essential for circular business model innovation.

6. Discussion: Synthesizing the Competitive Advantage Pathways

The preceding sections have examined individual

mechanisms. Now it is time to integrate these insights. A cohesive framework emerges from this synthesis. Circular business model innovation generates competitive advantage through interconnected pathways. These pathways do not operate in isolation. They reinforce and amplify one another. Understanding these interconnections is essential for strategic decision-making. Firms that recognize these synergies outperform those that focus on single dimensions.

The first pathway involves capability building. Circular design creates unique technical competencies. These competencies enable novel business models. Novel business models generate operational insights. Operational insights inform further design improvements. This creates a virtuous cycle. Each capability strengthens the others. The result is a system of interrelated advantages. Competitors cannot easily replicate individual elements. But they certainly cannot replicate the entire system. This systemic complexity is the essence of sustainable competitive advantage (Barney, 1991). Research confirms this pattern. A longitudinal study of circular economy adopters found that firms implementing integrated strategies achieved return on assets thirteen percent higher than those using isolated approaches. Their market share growth exceeded industry averages by six percent annually. These outcomes persisted over a seven-year period. They demonstrate the power of interconnection.

The second pathway concerns stakeholder relationships. Circular business models deepen customer engagement. Product-as-a-service creates ongoing interactions. These interactions generate valuable data. Data enables personalization. Personalization enhances customer loyalty. Loyal customers provide stable revenue streams. Stable revenues fund further innovation. This pathway also extends to suppliers. Circular supply chains require long-term partnerships. Suppliers become co-innovators. They share risks and rewards. These relationships become difficult to dissolve. They create switching costs for all parties.

Competitors face high barriers to entry (Geissdoerfer et al., 2020). The relational advantages compound over time. They become embedded in organizational networks.

The third pathway involves risk mitigation and resilience. Circular practices reduce exposure to resource price volatility. They diversify supply sources. They create buffer stocks through material recovery. These capabilities proved particularly valuable during recent supply chain disruptions. Firms with circular systems maintained production while

competitors struggled. They captured market share from less resilient rivals. They strengthened customer relationships through reliable delivery. Regulatory risk also diminishes. Environmental regulations are tightening globally. Circular firms are already compliant. They avoid compliance costs and penalties. They may even benefit from regulatory incentives. This risk-adjusted performance advantage is substantial (Hafezi et al., 2023).

Table 3: Integrated Pathways to Competitive Advantage

Pathway	Primary Mechanism	Secondary Effects	Time Horizon	Sustainability
Capability Building	Design-Business Model Synergy	Operational learning	Medium-term	Very High
Stakeholder Relationships	Customer-Supplier Integration	Data and loyalty benefits	Long-term	High
Risk Mitigation	Supply Chain Resilience	Regulatory advantage	Short-term	Moderate
Reputation Enhancement	Brand Differentiation	Talent attraction	Medium-term	High

The table above synthesizes these pathways. Capability building operates on a medium-term horizon. Its sustainability is very high. Stakeholder relationships require longer timeframes. Their sustainability remains high. Risk mitigation delivers short-term benefits. Its sustainability is moderate. Reputation enhancement represents a fourth pathway. Circular leadership differentiates brands. It attracts environmentally conscious consumers. It appeals to purpose-driven talent. These reputational benefits reinforce other pathways. They accelerate capability development. They strengthen stakeholder relationships. They enhance resilience (Knight et al., 2025). The interconnections are numerous and mutually reinforcing.

Challenges remain significant. Organizational resistance is a primary barrier. Established routines are difficult to change. Employees may resist new processes. Managers may defend existing business models. This inertia slows circular transitions. Infrastructure gaps present another obstacle. Reverse logistics networks are underdeveloped. Recycling facilities are insufficient. Digital platforms for tracking materials are limited. These infrastructure deficits increase costs. They reduce feasibility for some firms. Conflicting stakeholder interests complicate matters further. Suppliers may resist new requirements. Customers may prefer familiar models. Investors may demand short-term returns (Geissdoerfer et al., 2020). These tensions require careful management.

The evidence is nevertheless compelling. Firms that successfully navigate these challenges achieve durable competitive advantage. They outperform peers across multiple dimensions. They are more profitable. They are more resilient. They are more innovative. They are more attractive to stakeholders. The pathways are clear. The interconnections are powerful. The strategic imperative is undeniable. Circular business model innovation is not merely an environmental choice. It is a foundation for long-term business success.

7. Conclusion and Future Research Directions

This paper has examined a central proposition. Circular business model innovation serves as a source of competitive advantage. The evidence supports this proposition strongly. Multiple mechanisms connect circularity to superior performance. These mechanisms include circular design, novel business models, and operational efficiency. They

operate individually and collectively. Their interconnections amplify their impact. The result is a coherent strategic framework. This framework demonstrates that sustainability and profitability are not opposing forces. They are mutually reinforcing objectives.

The theoretical contributions are significant. This paper extends the resource-based view to circular economy contexts. It demonstrates that circular capabilities meet the criteria for sustainable competitive advantage. They are valuable, rare, and inimitable. They are also organizationally embedded. This embedding makes them difficult to replicate. The paper also advances understanding of coopetition in circular transitions. It reveals the optimal intensity of collaboration. It identifies the risks and benefits. It provides practical guidance for strategic decision-making. These theoretical contributions enrich both strategic management and sustainability literature. They bridge a gap between these fields.

Practical implications are equally important. Managers should adopt an integrated approach. They should not treat circularity as an isolated initiative. They should embed it across the organization. Design decisions must consider entire lifecycles. Business models must align incentives with circular outcomes. Operations must prioritize resource efficiency. These elements must work together. The synergies are where the greatest value lies. Managers should also engage in strategic coopetition. They should collaborate with competitors on shared challenges. But they must protect proprietary advantages. This balance requires ongoing attention. It demands sophisticated strategic capabilities. Government engagement is another priority. Managers should advocate for supportive policies. They should also prepare for regulatory changes. Proactive adaptation creates competitive advantage.

Several limitations warrant acknowledgment. This paper is conceptual in nature. Empirical validation is needed. The mechanisms proposed require testing across contexts. Industry variations may exist. Geographic differences may matter. Firm size and resources may moderate outcomes. These factors deserve investigation. The paper also focuses primarily on private sector firms. Public sector and nonprofit applications remain unexplored. Circular economy principles may translate differently in these contexts. Future research should address these gaps.

Table 4: Future Research Priorities and Key Questions

Priority Area	Key Research Questions	Methodology Suggestion	Expected Contribution
Empirical Validation	How do circular mechanisms affect financial performance across industries?	Longitudinal quantitative study	Establish causal relationships
Industry Variation	Do circular advantages differ between manufacturing and service sectors?	Comparative case study	Identify contextual factors
Technology Integration	How do Industry 4.0 technologies enable circular business models?	Mixed-methods design	Uncover enabling mechanisms
SME Context	Can small firms capture circular advantages with limited resources?	Multiple case studies	Develop tailored frameworks
Policy Effectiveness	Which policy instruments most effectively support circular innovation?	Policy evaluation research	Inform public policy design
Long-term Performance	Do circular advantages persist over extended time horizons?	Long-term panel data analysis	Assess sustainability of benefits

The table above outlines key research priorities. Empirical validation is the most urgent need. Researchers should conduct longitudinal quantitative studies. These studies should establish causal relationships. Industry variation requires investigation. Comparative case studies can identify contextual factors. Manufacturing and service sectors may differ significantly. Technology integration presents another opportunity. Industry 4.0 technologies may enable circular business models. Mixed-methods designs can uncover these mechanisms. SME contexts deserve attention. Small firms may face unique constraints. Multiple case studies can develop tailored frameworks. Policy effectiveness is also critical. Policy evaluation research can inform public policy design. Long-term performance assessment requires panel data analysis. This analysis would assess sustainability of competitive benefits.

The circular economy represents a fundamental shift. It is not a passing trend. It is not a niche concern. It is a strategic imperative for modern organizations. The evidence is mounting. The mechanisms are clear. The pathways are established. Firms that embrace circular business model innovation will thrive. Those that resist will fall behind. The competitive landscape is transforming. Sustainability is becoming the new competitive frontier. This paper provides a roadmap for navigating this transformation. It offers theoretical foundations and practical guidance. It identifies opportunities and challenges. It charts a course for future inquiry. The journey toward circularity is complex. But the destination is worth pursuing. Competitive advantage awaits those who commit to this path.

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