Sustainability-as-a-Service: Conceptualizing Value Co-Creation in Evolving Service Ecosystems

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ABSTRACT. This conceptual paper advances the integration of sustainability and Service-Dominant Logic (S-D Logic) by proposing the notion of "Sustainability-as-a-Service." Drawing on institutional theory, complexity science, and value co-creation literature, the paper develops a multi-dimensional framework that situates sustainability as an emergent, co-created property of evolving service ecosystems. The framework comprises three interdependent dimensions: institutional orchestration, ecosystem adaptability, and sustainability value realization. These are enacted through four core capabilities—alignment, reconfiguration, capacity, and sensemaking—operating across macro, meso, and micro levels. Sustainability is thus reframed not as an outcome but as a performative process embedded in recursive service interactions and governed by dynamic institutional arrangements. Two illustrative tables explicate the constructs and levels of capability application. The discussion highlights theoretical, managerial, and policy implications, including opportunities for future empirical research. This paper contributes to midrange theory development in S-D Logic and offers a pathway for embedding sustainability within systemic design and practice. It reorients sustainability from compliance to co-creation, and from measurement to meaning.

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INTRODUCTION

The pursuit of sustainability has transitioned from a peripheral goal to a strategic imperative across industries (Al-Shaikh & Hanaysha, 2023). As climate change, resource depletion, and social inequities intensify, organizations are compelled to rethink value creation beyond economic metrics (Altuntas Vural, 2017). However, traditional business paradigms—rooted in linear, output-focused models—fall short in addressing the complexity of sustainable development. Emerging challenges demand systemic thinking, long-term stakeholder engagement, and a reconceptualization of value (Chen et al., 2018). In this context, the Service-Dominant (S-D) Logic provides a promising theoretical lens to reimagine sustainability as a co-created, evolving, and context-dependent process (Vargo & Lusch, 2017).

Service-Dominant Logic, first introduced by (Vargo & Lusch, 2017), positions service—not goods—as the fundamental basis of exchange, and value as something co-created by multiple actors. Rather than focusing on discrete transactions or firm-centric value delivery, S-D Logic emphasizes collaborative processes of resource integration, experiential value realization, and the coordination of actors through institutions (Chowdhury et al., 2023). This logic offers fertile ground for redefining sustainability as a dynamic process rather than a static outcome, embedded in networks of interdependent stakeholders (Edvardsson et al., 2013). Consequently, S-D Logic allows us to transcend conventional boundaries between producers and consumers, private and public actors, and economic and ecological concerns (Edvardsson et al., 2011).

Recent developments in S-D Logic highlight the role of service ecosystems—self-adjusting systems of resource-integrating actors bound by shared institutional arrangements—as the unit of analysis for value co-creation (Vargo & Lusch, 2017). Within these ecosystems, sustainability can be understood not merely as compliance or corporate social responsibility, but as an emergent outcome of institutional coordination, knowledge flows, and reciprocal service exchange. This approach resonates with global sustainability frameworks such as the UN Sustainable Development Goals (SDGs), which emphasize systemic interdependencies and collective action (Higuera et al., 2023). Yet, empirical and conceptual work that explicitly links S-D Logic to sustainability remains limited and fragmented (Hendratmi et al., 2024).

Moreover, sustainability research in marketing and management has often focused on organizational practices, green innovation, or ethical consumption in isolation (Basit et al., 2024). These fragmented perspectives do not adequately capture the embeddedness of sustainability within larger institutional and systemic structures (Gonçalves & Silva, 2021). In contrast, viewing sustainability as a service opens a new line of inquiry: how can actors collaboratively design and perform service systems that enable sustainable outcomes? This reframing shifts attention from firm performance to systemic viability, from product innovation to institutional orchestration, and from individual behavior to ecosystem-level adaptation (Grönroos & Gummerus, 2014).

The increasing complexity of digital platforms, AI-driven services, and decentralized governance models further necessitates a rethinking of sustainability as a performative, co-evolving process (Holmqvist & Diaz Ruiz, 2017). In such environments, traditional mechanisms of control, regulation, and prediction are insufficient. Instead, adaptive governance, reflexive institutions, and shared meaning-making become central to sustaining service ecosystems (Holttinen, 2010). Here, S-D Logic offers a conceptual vocabulary—operant resources, value-in-context, actor-to-actor (A2A) exchange—that aligns with the epistemological demands of sustainable systems thinking.

In addition, the COVID-19 pandemic and ongoing geopolitical disruptions have highlighted the fragility of global value chains and the need for resilient, sustainable ecosystems (Hsieh & Chen, 2017). This has reinforced the urgency of building distributed capacities for value co-creation that can adapt to uncertainty and maintain wellbeing over time. From this vantage point, sustainability must be integrated into the architecture of service ecosystems—not as an externality, but as an intrinsic property of institutional design and actor engagement (Abbasi et al., 2023). Understanding the institutional logic that enables or inhibits sustainable value co-creation is thus a central challenge (Hsieh & Yuan, 2015).

Despite these insights, the notion of "Sustainability-as-a-Service" has not yet been systematically conceptualized in academic literature. While terms like "XaaS" (Everything-as-a-Service) are common in technology management, they rarely intersect with discussions on environmental or social sustainability (Hughes et al., 2018). Our proposed conceptual paper seeks to bridge this gap by articulating how sustainability can be enacted, scaled, and maintained through evolving service ecosystems. We aim to develop a framework that situates sustainability as a co-created, institutionally mediated service process (Jaakkola et al., 2015).

By doing so, this paper responds to calls for midrange theory development within S-D Logic (Vargo & Lusch, 2017), while contributing to an integrative understanding of sustainable innovation, ecosystem dynamics, and institutional change. Our conceptualization will be of relevance to scholars in marketing, sustainability studies, and systems theory, as well as to practitioners seeking to design resilient, future-ready service systems. We invite readers to envision sustainability not as a destination, but as a continually negotiated value that emerges from collective service practices.

LITERATURE REVIEW

The foundation of S-D Logic lies in five core axioms that reorient marketing and management theory from a goods-centric to a service-centric worldview (Vargo & Lusch, 2017). These axioms include the notions that service is the basis of exchange, value is always co-created, all actors are resource integrators, value is phenomenologically determined, and value co-creation is coordinated through institutional arrangements. Together, they offer a powerful metatheoretical framework for analyzing complex phenomena such as sustainability (Löbler, 2013).

One of the key concepts within S-D Logic is "value-in-use," which contrasts with the traditional "value-in-exchange" model. In a sustainability context, this implies that value cannot be predetermined by producers or measured solely by outputs, but must be understood through lived experiences, context-specific utility, and longer-term impact on ecosystems (Ng & Wood, 2018). This shifts the evaluative criteria from profit margins and units sold to systemic wellbeing and adaptive resilience.

Another central pillar is the concept of operant resources—knowledge, skills, relationships—which actors use to co-create value. Sustainability, from this perspective, becomes a function of how effectively these operant resources are orchestrated across actors to maintain ecological integrity, social equity, and economic viability. This insight aligns with the capabilities approach in development theory and with institutional views of innovation as socially embedded (Pham et al., 2022).

Service ecosystems, as defined by (Vargo & Lusch, 2017), are complex adaptive systems wherein multiple actors interact through service-for-service exchange. Sustainability within such systems is inherently multi-actor, multi-level, and temporally dynamic. It involves institutionalized routines,

regulatory frameworks, and shared norms that guide behavior toward collective wellbeing. This requires moving beyond dyadic stakeholder models to embrace nested, overlapping networks of co-creation (Plé, 2016).

Institutional theory provides a valuable complementary lens by emphasizing how rules, norms, and beliefs enable and constrain value co-creation. (Hendratmi et al., 2024) concept of institutions as "rules of the game" aligns closely with S-D Logic's emphasis on actor coordination. Institutional arrangements influence the directionality of sustainability efforts by shaping what is considered legitimate, desirable, or possible within an ecosystem.

Practice theory further enriches our understanding by conceptualizing sustainability as a bundle of recurring, situated practices. Practices such as circular design, collaborative consumption, or regenerative agriculture can be viewed as service performances that co-create sustainable value. These practices are routinized yet adaptable, grounded in shared meanings, and mediated by socio-material configurations—a view compatible with S-D Logic's actor-to-actor and resource-integration principles (Vargo & Lusch, 2017).

Complexity theory also informs this conversation by positioning sustainability as an emergent property of systems, not as a fixed goal. Concepts such as self-organization, feedback loops, and path dependence are crucial for understanding how service ecosystems evolve over time. S-D Logic embraces this non-linearity, acknowledging that value creation cannot be engineered from above but must be cultivated through ongoing interactions (Scarlett et al., 2021).

Recent research in macromarketing has called for more integrative approaches to sustainability, highlighting the limitations of firm-level initiatives and the need for systemic transformation (Yu et al., 2019). Here, S-D Logic can provide a connective tissue by embedding sustainability within broader narratives of institutional work, social learning, and cultural change. This aligns with movements toward degrowth, post-growth, and sustainable prosperity frameworks (Shleha et al., 2023).

Digital transformation adds another layer to the analysis. Platforms, AI, and digital infrastructures reconfigure service ecosystems, altering how value is created, measured, and shared. While digitalization offers new tools for sustainable innovation, it also introduces risks related to energy consumption, surveillance, and exclusion. A S-D Logic perspective encourages critical reflection on how digital operant resources are deployed and governed within sustainability agendas (Skjølsvik, 2018).

Moreover, sustainability is not neutral—it is contested, political, and value-laden. Different actors interpret and perform sustainability according to divergent interests, worldviews, and temporalities. This multiplicity underscores the need for a reflexive, pluralistic approach to value co-creation. S-D Logic's emphasis on phenomenological value aligns with this recognition, enabling nuanced, context-sensitive sustainability strategies (Smith et al., 2014). Empirical studies have begun to apply S-D Logic to sustainability contexts, such as service design for environmental stewardship, stakeholder engagement in renewable energy, and community-based tourism (Aboagye & Adjei Kwakwa, 2023). However, these applications often remain descriptive and lack a unifying conceptual foundation. There is a clear need to theorize sustainability as an embedded, emergent service logic rather than a bolt-on concern (T.M. Ingenbleek, 2014).

Finally, the notion of "Sustainability-as-a-Service" invites a rethinking of business models, governance structures, and innovation practices (Tregua et al., 2021). It challenges firms and institutions to design offerings not as static products but as dynamic service configurations that

enable users and stakeholders to live more sustainably. This implies not only new forms of value delivery but also new forms of institutional accountability and co-responsibility.

METHODS

This conceptual paper adopts a theory-building approach grounded in abductive reasoning and meta-synthesis. As recommended by (Creswell & Creswell, 2018), conceptual research aims to clarify constructs, establish linkages among concepts, and develop new theoretical insights by drawing from diverse literatures. We use the S-D Logic framework as a guiding metatheory and integrate complementary perspectives from institutional theory, complexity science, and practice theory to construct our model of Sustainability-as-a-Service. The methodological foundation rests on systematic conceptual integration. We identify key constructs—such as service ecosystems, institutional arrangements, and value-in-use—from the literature and examine their interrelations in the context of sustainability. Through an iterative process of comparison and synthesis, we generate a framework that captures the dynamic, emergent, and co-constructed nature of sustainable value creation. This process ensures theoretical coherence and ontological alignment with the S-D Logic perspective.

We draw extensively on secondary literature, including peer-reviewed articles, meta-analyses, and theoretical models in marketing, sustainability, and organizational studies. Our literature selection strategy prioritizes conceptual rigor, transdisciplinary relevance, and theoretical novelty. By weaving together insights from adjacent fields—such as ecological economics and service design—we seek to enrich the explanatory power of the S-D Logic framework in sustainability domains.

To ensure clarity and academic contribution, we follow the structure proposed by MacInnis (2011) for conceptual contributions: (1) problematization of existing theory, (2) articulation of new conceptual relationships, and (3) formulation of a future research agenda. This structure allows us to critically assess the limitations of current sustainability frameworks and propose a theoretically grounded path forward through the lens of S-D Logic. This conceptual work is deliberately positioned to support future empirical operationalization. By providing a theoretically sound and parsimonious model of Sustainability-as-a-Service, we pave the way for future researchers to develop measurement scales, conduct case studies, or apply system dynamics modeling to test and refine our propositions. Thus, the contribution is both foundational and generative, aiming to stimulate scholarly dialogue and practical experimentation.

FRAMEWORK DEVELOPMENT

Building on the principles of Service-Dominant Logic (S-D Logic), the proposed framework conceptualizes "Sustainability-as-a-Service" (SaaS) as a dynamic configuration of value co-creation processes embedded in evolving service ecosystems. This framework integrates three core dimensions: (1) institutional orchestration, (2) service ecosystem adaptability, and (3) sustainability value realization. These dimensions are interconnected through recursive feedback loops facilitated by digital and social operant resources.

Institutional orchestration refers to the coordination mechanisms that align actor behavior, shape shared meanings, and embed sustainability goals into everyday practices. Drawing on institutional theory, this involves both formal structures (rules, policies) and informal norms (beliefs, routines) that enable sustainable service exchange. Actors co-create institutional arrangements that support long-term systemic viability. Service ecosystem adaptability captures the ability of ecosystems to

self-organize, evolve, and maintain coherence amid environmental volatility. This draws on complexity theory, recognizing that sustainability outcomes emerge through iterative, distributed adjustments among actors. Resilient ecosystems are characterized by diversity, modularity, and feedback sensitivity. Sustainability value realization reflects how beneficiaries phenomenologically determine the impact of service interactions on their wellbeing. Rooted in S-D Logic's value-in-context premise, this construct highlights the experiential, contextual, and dynamic nature of sustainability. It shifts focus from static metrics to relational and emergent assessments of value. These three dimensions are operationalized through four interdependent capabilities: (1) institutional alignment, (2) resource reconfiguration, (3) adaptive capacity building, and (4) stakeholder sensemaking. Together, they provide the functional architecture for enacting sustainability-as-a-service.

RESULT AND DISCUSSION

The conceptual framework developed in this study illustrates how sustainability can be viewed as an emergent property of service ecosystems. It posits that sustainability arises from the dynamic interaction between institutional orchestration, ecosystem adaptability, and contextual value realization. These dimensions are mutually reinforcing, with sustainability understood not as a static goal but as a performative, ongoing process. The framework reframes sustainability as being embedded in relational processes and actor engagements, coordinated through shared institutional arrangements.

The analysis reveals that institutional orchestration plays a central role in enabling or constraining the realization of sustainable outcomes. Institutions—formal and informal—establish the normative boundaries for actor behavior and define what constitutes legitimate sustainability practices. These institutional logics are co-created and evolve through interaction, thereby reinforcing or reconfiguring the trajectory of ecosystem development. Sustainability, in this view, is not imposed but negotiated and embedded into the values and operations of service ecosystems.

Service ecosystem adaptability is essential for maintaining systemic viability in the face of environmental, technological, and social change. Adaptability involves the ecosystem's capacity to self-organize, reconfigure resources, and absorb shocks without collapsing. In this sense, sustainability is directly tied to the resilience and learning capabilities of the ecosystem. The framework thus highlights that rigid systems are less likely to support long-term sustainability because they lack the capacity for dynamic alignment.

The third construct, sustainability value realization, captures the experiential and phenomenological aspects of sustainable outcomes. Value, in S-D Logic, is not embedded in products or services, but is determined in-use by the beneficiary. This means that sustainability must be meaningful to stakeholders within their specific contexts. The framework suggests that measuring sustainability requires going beyond traditional metrics and incorporating subjective evaluations, social meaning-making, and longitudinal perspectives.

Furthermore, the recursive interplay among the three dimensions shows that sustainability is best understood as a continuous process rather than a final state. Institutional arrangements shape ecosystem behavior, while feedback from actor experiences influences institutional evolution. This circularity fosters a living system that adapts and evolves with emerging stakeholder needs, external

pressures, and technological advancements. Therefore, sustainability is both an outcome and an input to the co-creation process.

Digital infrastructures also emerge as critical enablers of sustainability-as-a-service. Platforms and smart technologies facilitate real-time data collection, resource tracking, and personalized value propositions. These tools can enhance transparency, improve coordination, and support adaptive governance. However, their effectiveness depends on how they are embedded within institutional logics and made accessible to all ecosystem actors. Without equitable access and interpretability, digital tools risk exacerbating existing inequalities.

The results underscore the importance of cultivating capabilities that support sustainability. These include institutional alignment (ensuring coherence in norms and goals), resource reconfiguration (repurposing assets toward sustainability), adaptive capacity (learning from experimentation and feedback), and stakeholder sensemaking (shared interpretation of sustainability). These capabilities act as levers for institutional change and ecosystem transformation.

Notably, the framework introduces a temporal lens to sustainability. It incorporates the influence of path dependencies (how past decisions constrain future options), present actor configurations, and future imaginaries. Sustainability strategies must therefore be reflexive and iterative, continually responding to changing conditions and stakeholder expectations. This orientation moves away from static planning toward emergent, process-based management.

Managerial implications of this model include the need to design service systems with sustainability embedded as a guiding logic. This involves shifting from transactional mindsets to stewardship roles, where managers act as facilitators of collaboration and institutional evolution. Organizations must engage stakeholders not just as consumers but as co-creators of sustainable futures. Leadership, therefore, becomes less about control and more about orchestration and empowerment.

In sum, the results support a reconceptualization of sustainability within the S-D Logic paradigm. Rather than treating sustainability as an ancillary goal, the framework embeds it within the architecture of value co-creation. By articulating how institutions, adaptability, and value realization interact over time, this study offers a theoretical basis for understanding and enacting sustainability-as-a-service in evolving service ecosystems.

DISCUSSION

The proposed framework marks a significant theoretical advancement by embedding sustainability into the core of service-dominant logic. Unlike prior models that treat sustainability as a firm-level initiative or external goal, this approach conceptualizes it as an emergent outcome of service interactions. This view aligns with the ontological foundations of S-D Logic, where value is co-created, rather than delivered. By integrating institutional theory and complexity thinking, the model captures both structure and emergence. It also responds to the call for more midrange theory development in sustainability (Vespestad & Clancy, 2019).

The institutional orchestration dimension of the framework underscores the importance of shared rules, norms, and meaning-making in coordinating sustainable action. Institutions are not merely background conditions but active enablers or barriers to sustainability. The recursive nature of institutional evolution—shaped by actor interactions—means that sustainability practices can scale or erode depending on institutional feedback. Thus, sustainability transitions require institutional entrepreneurship that mobilizes actors across levels. This resonates with recent debates in institutional work and change literature (Westrup, 2018).

Ecosystem adaptability, as a core dimension, reflects the complexity orientation of the framework. Sustainable service systems must evolve in response to feedback, uncertainty, and disturbance. This requires designing for modularity, redundancy, and learning. The framework implies that actors must embrace experimentation, tolerate failure, and build adaptive capacity over time. These insights find strong parallels in resilience literature and the theory of dynamic capabilities.

Value realization—framed here as sustainability value—is crucial for understanding how beneficiaries perceive sustainable outcomes. Unlike conventional models that emphasize technical efficiency or environmental compliance, this perspective centers the user's lived experience. Sustainability, therefore, becomes context-specific, dynamic, and participatory. Measurement tools must incorporate both objective and subjective dimensions of value. This dimension aligns with the phenomenological emphasis of S-D Logic (Wilden & Gudergan, 2017).

The framework also offers insights into how digitalization shapes sustainable value co-creation. Technologies such as IoT, AI, and data platforms act as mediators of service exchange, enabling more precise coordination and customization. However, their impacts are not neutral—they reflect and reproduce institutional logics. As such, digital transformation must be governed by inclusive and reflexive norms. The challenge is to ensure that digital operant resources are distributed equitably within the ecosystem.

The interplay between institutions and technologies emerges as a particularly rich area for exploration. Table 1 outlines how specific institutional mechanisms interact with digital affordances to enable or constrain sustainability-as-a-service. For instance, algorithmic governance may reinforce or contest prevailing sustainability norms. Policies must therefore co-evolve with technological infrastructures. Research must explore how digital-institutional hybrids shape sustainable practices across contexts.

Table 1: Institutional Mechanisms and Digital Enablers of Sustainability-as-a-Service

Institutional Mechanism	Digital Enabler	Sustainability Impact
Regulatory Standards	Automated Compliance	Enhances transparency and accountability
Cultural Norms	Social Media Platforms	Diffuses sustainability narratives
Stakeholder Dialogues	Online Engagement Tools	Facilitates participatory sensemaking
Market Incentives	Smart Contracts	Aligns sustainability with value exchange

Source: At Work, 2025

The framework also emphasizes the role of capabilities as mediators between structural conditions and ecosystem performance. As shown in Table 2, these capabilities operate at different aggregation levels, shaping how actors engage in sustainability practices. Institutional alignment is essential at the macro level to ensure legitimacy and coherence. At the meso level, resource reconfiguration enables organizations to repurpose assets. Micro-level capabilities such as adaptive learning and sensemaking are vital for reflexive sustainability performance.

Table 2: Sustainability Capabilities across Aggregation Levels

Capability	Aggregation Level	Role in Sustainability-as-a-Service
Institutional Alignment	Macro	Embeds sustainability into system rules
Resource Reconfiguration	Meso	Enables adaptive asset use
Adaptive Capacity	Micro	Supports learning and innovation

Capability	Aggregation Level	Role in Sustainability-as-a-Service
Stakeholder Sensemaking	Micro	Facilitates shared sustainability meanings

Source: At Work, 2025

The temporal sensitivity of the model adds an important dimension to the sustainability discourse. Ecosystems are not static—they evolve through path-dependent trajectories influenced by past decisions. Present actions are shaped by institutional constraints and actor configurations, while future visions guide innovation. This temporal framing allows for a more nuanced understanding of sustainability dynamics. It encourages decision-makers to design for both continuity and transformation. Managerially, the framework suggests a shift from control to orchestration. Leaders must foster institutional coherence while enabling emergent, adaptive practices. This includes investing in capability building, cultivating partnerships, and embracing systemic innovation. Organizations must design services with embedded feedback mechanisms that support reflexivity. Leadership becomes a distributed function across ecosystem actors (Chin et al., 2022). From a policy perspective, the framework underscores the need for integrative governance. Public institutions can act as meta-coordinators, shaping the institutional environment for sustainable service ecosystems. This involves aligning regulatory, fiscal, and knowledge systems to support sustainability-as-a-service. Cross-sectoral collaboration becomes essential for addressing complex sustainability challenges. Policymakers must also address digital divides and ensure inclusive access to service infrastructures. For scholars, the model opens pathways for empirical validation and extension. Future research could use system dynamics modeling to simulate interactions among dimensions. Case studies can explore how specific ecosystems instantiate the proposed constructs. Comparative research could examine how cultural and institutional contexts mediate the enactment of sustainability-as-a-service. The model is modular and scalable for diverse settings (Wu et al., 2025).

The conceptual nature of the framework also invites critical reflection. While the model is comprehensive, its operationalization may vary across sectors and geographies. Researchers must be attuned to contextual nuances and potential blind spots. Sustainability, after all, is deeply normative and contested. The framework provides a starting point—but not a final blueprint—for co-created futures. In summary, this discussion has demonstrated the theoretical richness and practical relevance of viewing sustainability through the lens of service-dominant logic. The integration of institutional theory, complexity science, and digital affordances provides a holistic foundation. Sustainability-as-a-service reframes the conversation from metrics to meaning, from delivery to co-creation, and from control to orchestration. It is a step toward sustainable futures that are emergent, participatory, and systemic (Yazdanparast et al., 2010). As sustainability becomes an existential concern for business and society, the need for new theoretical tools intensifies. This paper contributes to that need by proposing a model that is conceptually robust, practice-oriented, and future-facing. We hope it stimulates further dialogue, experimentation, and learning across disciplines and ecosystems.

CONCLUSION

This conceptual paper has proposed a novel framework that repositions sustainability within the Service-Dominant Logic paradigm as an emergent, co-created outcome of service ecosystems. By

integrating institutional theory, complexity science, and phenomenological value perspectives, the framework conceptualizes "Sustainability-as-a-Service" as a performative, recursive process. It identifies three interdependent dimensions—institutional orchestration, ecosystem adaptability, and sustainability value realization—that jointly shape sustainable outcomes. The framework advances the theoretical discourse by bridging micro, meso, and macro perspectives in service systems. This integrative view enables scholars and practitioners to rethink how sustainability is conceptualized, enacted, and sustained over time.

The implications of this work span both academic and managerial domains. For scholars, it contributes to midrange theory development within S-D Logic and offers a modular, scalable model for future empirical inquiry. For practitioners, the model highlights the strategic value of embedding sustainability into the architecture of service ecosystems rather than treating it as a separate initiative. It emphasizes the role of capabilities such as institutional alignment and adaptive capacity in fostering long-term viability. Policymakers are also encouraged to design enabling environments that support participatory governance and equitable access to digital infrastructures.

Despite its contributions, this study is not without limitations. As a conceptual framework, its propositions remain theoretical and require empirical validation across diverse sectors and geographies. The abstraction level of the model may limit its immediate operationalization for practitioners seeking concrete implementation steps. Moreover, the model assumes a baseline level of institutional functionality and digital infrastructure, which may not be present in all contexts. Researchers must remain attentive to contextual variability and socio-political contingencies that shape the applicability of the framework.

Future research should aim to empirically test and refine the proposed model through longitudinal studies, case analyses, and system dynamics simulations. Specific attention could be given to how institutional mechanisms co-evolve with digital technologies in shaping sustainable practices. Scholars may also explore how different stakeholder groups interpret and perform sustainability across cultural settings. By applying and adapting the model in real-world scenarios, future studies can enrich its explanatory power and extend its practical relevance.

In conclusion, this paper has conceptualized sustainability as an embedded, dynamic, and participatory process rooted in the co-creation logic of service ecosystems. It invites a shift from outcome-based thinking to process-based orchestration of sustainable value. By framing sustainability as a service, it reframes the challenge not only as what is delivered but how it is continuously negotiated among diverse actors. This reconceptualization holds promise for building resilient, just, and adaptive systems in an increasingly complex world. It is hoped that this work stimulates new conversations and innovations at the intersection of sustainability, service science, and systemic transformation.

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