

ORIGINAL RESEARCH

Open access

# Orchestrating Interdependence: Strategic Participation and Value Alignment in Digital Platform-Centered Business Networks

Ahmed El-Kholy<sup>1\*</sup>, Nour Abdelrahman<sup>1</sup>, Karim Hassan<sup>2</sup>

## Abstract

Digital platform ecosystems have redefined firm boundaries, transforming competition into coordinated networks of interdependent actors who jointly generate value through platform participation. This conceptual article addresses a critical gap in the literature by developing an integrative framework that explains how firms can strategically engage in these ecosystems while managing complex interdependencies with platform leaders and complementors. By synthesizing foundational insights on ecosystem theory, platform meta-organizations, complementor engagement, governance mechanisms, and value co-creation, we identify the need for a holistic model that goes beyond isolated strategies. We introduce the strategic interdependence orchestration framework (SIOF), a novel architecture comprising five interconnected components—ecosystem role positioning, interdependence mapping, governance mechanism deployment, complementor coordination protocols, and value co-creation pathways—supported by adaptive feedback loops. The SIOF positions ecosystem participation as a core competitive strategy, enabling firms to convert interdependence risks into sustained value advantages within platform-centered networks. By theorizing the relational flows of coordination, governance, and learning, this framework advances platform strategy research and offers actionable guidance for firms navigating digital ecosystems. A detailed conceptual diagram illustrates the architecture, highlighting dynamic relationships and feedback mechanisms essential for long-term ecosystem success.

**Keywords** Digital platform ecosystems, Strategic participation, Interdependence management, Complementor coordination, Ecosystem governance, Value co-creation

\*Correspondence:

Ahmed El-Kholy  
[ahmed.elkholy@outlook.com](mailto:ahmed.elkholy@outlook.com)

<sup>1</sup> Department of Digital Commerce and Analytics, Alexandria University, Alexandria, Egypt

<sup>2</sup> Department of Business Intelligence and Innovation Systems, Ain Shams University, Cairo, Egypt

## Introduction

### The proliferation of digital ecosystem participation

Digital ecosystems increasingly operate as interconnected networks in which firms co-create value through platform participation [1–5]. Platform leaders orchestrate resources while complementors and participating firms contribute specialized offerings [5], inverting traditional firm boundaries [6–12]. This shift enables rapid innovation and scalability [4] but requires deliberate strategic choices regarding entry and positioning [13]. Firms no longer

compete in isolation [1]; instead, they align with platform infrastructures to access shared user bases and complementary assets [8].

### Interdependence dynamics in platform-centered business networks

Participation inherently creates mutual reliance among actors, generating both opportunities and vulnerabilities [14–18]. Complementors must navigate asymmetric network effects and potential competition from the platform owner itself [3, 18]. Interdependence manifests through shared

technological standards, data flows, and user communities [16], demanding continuous alignment to prevent value erosion. Without structured management, such linkages can amplify risks of hold-up or free-riding [15, 19–23].

## Governance imperatives for sustainable ecosystem engagement

Platform governance mechanisms emerge as essential tools for coordinating diverse actors and resolving conflicts [6, 9, 10, 14]. Selective promotion of complements, boundary-setting rules, and incentive structures guides behavior while preserving generativity [6, 23]. Orchestrators deploy dynamic capabilities to maintain ecosystem health [7, 22], while participating firms retain agency to shape governance through multi-actor collaboration [9, 10].

## Strategic positioning as a source of competitive advantage

Firms that master ecosystem participation convert interdependence into superior performance by leveraging platform resources strategically [15, 21, 24–27]. Openness strategies for complementary innovation and architectural leverage allow sustained differentiation [27–29]. This paper synthesizes these foundations to propose an integrated framework that operationalizes participation as a competitive strategy [1].

## Literature Synthesis and Conceptual Foundations

### Ecosystem theories and platform meta-organizations

Early ecosystem scholarship establishes platforms as meta-organizations that coordinate without full hierarchical control [1, 2]. Participants interact through modular architectures [1], enabling value creation beyond the firm's boundaries [5, 12]. Platform ecosystems differ from traditional supply chains by emphasizing generativity and user-driven innovation [13, 26].

## Complementor engagement and asymmetric network effects

Complementors actively shape ecosystem outcomes through engagement strategies, as evidenced in e-book

and software contexts [3, 16, 17]. Lead users and toolkit support drive service innovation [16], while cross-side effects determine platform vitality [17]. However, complementors face tensions when platforms compete directly [18], requiring careful positioning [23].

## Orchestration, governance, and multi-actor collaboration

Governance literature highlights orchestration processes, knowledge boundaries, and regulatory structures that balance control with openness [9, 10, 14, 22]. Dynamic capabilities enable platform leaders to profit from innovation while supporting complementor contributions [7, 8]. Multi-actor collaboration introduces both opportunities for co-creation and challenges in alignment [10, 11].

## Value co-creation practices and servitization pathways

Business-to-business platforms foster value co-creation through intricate shared practices and sophisticated resource orchestration that transcend traditional transactional exchanges [11, 19, 21]. In these environments, participating firms and complementors actively engage in joint value-generating activities, pooling knowledge, data, and specialized capabilities to produce outcomes that no single actor could achieve on its own [11, 26]. Resource orchestration extends beyond simple allocation [19]; it involves deliberate alignment of complementary assets—such as modular software components, user data streams, and service infrastructures—to create synergistic effects that amplify ecosystem-wide utility [21]. For instance, manufacturers transitioning into servitized offerings leverage platform interfaces to bundle physical products with digital services [21], thereby generating recurring revenue streams and deeper customer lock-in while simultaneously enriching the platform's overall value proposition.

This co-creation process is inherently iterative and multi-layered. Firms contribute domain-specific expertise through open innovation toolkits and collaborative development arenas [11]. At the same time, the platform provides infrastructural backbone elements such as scalable cloud resources, standardized APIs, and aggregated user communities [17, 26]. The resulting value emerges not merely as additive but as multiplicative [16], where each participant's input enhances the marginal utility of others'

contributions through network effects and data feedback loops [23]. Servitization further accelerates this dynamic by transforming one-time product sales into continuous service relationships [20]; digital platforms enable real-time performance monitoring, predictive maintenance, and customized solution bundles that co-evolve with user needs [21].

Co-evolution of architecture, services, and governance plays a pivotal role in expanding platform value [20, 21]. As platform architectures mature, they incorporate increasingly sophisticated service layers that integrate complementor innovations seamlessly [20], while governance structures adapt to regulate access, incentivize contributions, and resolve disputes over value appropriation [9, 10]. Openness decisions become critical strategic levers [27]: greater architectural openness invites broader complementary product innovation [23], yet demands refined governance to prevent value slippage or quality dilution. Firms that master these openness-calibration choices can strategically influence the pace and direction of ecosystem innovation [27], positioning themselves as indispensable co-creators rather than peripheral suppliers [4].

Moreover, value co-creation in B2B platform ecosystems frequently incorporates elements of platformization that reshape internal firm processes [28]. Knowledge flows become platform-mediated, enabling rapid diffusion of best practices across complementors [28] while simultaneously introducing challenges of knowledge specificity and appropriation risks. Successful participants therefore embed co-creation routines into their organizational DNA—establishing dedicated cross-functional teams, investing in shared digital infrastructures, and cultivating relational norms that prioritize mutual benefit over short-term extraction [11, 19, 22]. These practices not only generate immediate economic returns [11] but also build long-term ecosystem resilience [15], allowing firms to thrive amid technological turbulence and competitive pressures [21].

In sum, value co-creation and servitization pathways constitute the generative heart of platform ecosystems [11]. They transform static participation into dynamic, self-reinforcing cycles of value expansion that benefit all aligned actors [19], provided firms deliberately orchestrate resources, calibrate openness, and align governance with evolving service architectures [20, 21, 27].

## Interdependence management and performance sustainability

Sustaining superior performance within digital ecosystems demands explicit, proactive management of interdependence structures that bind platform leaders, complementors, and participating firms into tightly coupled networks [15, 20, 28]. Interdependence here is multidimensional—spanning technological interfaces, data-sharing protocols, revenue-allocation mechanisms, user-community access, and reputational spillovers [15]—creating both amplifying opportunities and cascading risks [16, 18]. Without systematic management, seemingly minor misalignments can trigger ecosystem-wide value erosion through free-riding, hold-up problems, or unintended competitive encroachment by the platform owner itself [18, 23].

Platformization intensifies these dynamics by increasing knowledge specificity [28]: as firms embed their offerings deeper into platform architectures, their core competencies become increasingly co-specialized and less transferable outside the ecosystem [28]. This specificity enhances short-term value capture [15] but heightens long-term vulnerability, necessitating deliberate strategies to retain strategic autonomy while maximizing platform synergies [28]. Architectural leverage offers a counterbalancing mechanism [29], enabling firms to contextualize their strategies within broader platform-centered networks and extract disproportionate benefits from shared infrastructure without bearing full orchestration costs [29]. Firms that master this leverage treat the platform not as a constraint but as an extensible foundation upon which they build differentiated, hard-to-replicate value layers [27, 29].

Existing studies provide rich, yet fragmented insights into these phenomena. Research on complementor engagement illuminates how firms navigate asymmetric network effects and selective promotion to sustain performance [3, 6, 16]. Governance scholarship details the rules, incentives, and boundary mechanisms that stabilize interdependence [9, 10, 14]. Dynamic capability perspectives explain how orchestrators and participants reconfigure resources amid ecosystem evolution [7, 20]. Servitization and openness literatures further reveal pathways for value expansion and innovation diffusion [21, 27]. However, these streams remain largely siloed [8]: participation strategies are examined independently of interdependence handling [13], coordination protocols are

detached from governance deployment [25], and adaptive learning loops are rarely linked across all elements.

The literature, therefore, reveals a critical theoretical and practical lacuna—an absence of an integrated model capable of linking ecosystem participation strategies, interdependence management, complementor coordination, governance mechanisms, and continuous feedback processes into a cohesive architecture [1, 2, 25]. Addressing this gap requires a holistic framework that treats interdependence not as a passive condition but as a strategically manageable and monetizable asset [15]. Such a framework must simultaneously account for firm-level agency and ecosystem-level dynamics [20], offering firms actionable pathways to convert relational dependencies into sustained competitive advantage [29].

## The Strategic Interdependence Orchestration Framework (SIOF): Architecture for Competitive Ecosystem Participation

We propose the strategic interdependence orchestration framework (SIOF) as a novel, integrative conceptual model that synthesizes ecosystem participation strategies with systematic interdependence management within platform-centered business networks [1]. The SIOF explicates how firms can deliberately transform platform engagement from a potential source of vulnerability into a repeatable source of competitive advantage [2] by systematically aligning five core components, each reinforced by adaptive feedback and learning loops that ensure continuous recalibration amid ecosystem evolution [7, 20, 29].

Unlike prior frameworks that focus predominantly on platform-owner orchestration or isolated complementor tactics [1, 5, 6], the SIOF distributes strategic agency across all actors while centering interdependence as the pivotal construct [15]. It operationalizes participation as a multifaceted competitive capability wherein firms actively shape their ecosystem position, diagnose relational risks and opportunities, deploy hybrid governance safeguards, establish robust coordination routines, and engineer bidirectional value flows [20]—all while maintaining dynamic learning mechanisms that prevent lock-in and enable anticipatory adaptation [28, 29].

The first component—ecosystem role positioning—serves as the strategic entry and recalibration mechanism [1]. Firms diagnose platform architectural openness, market maturity, competitive intensity, and user-base characteristics to select and periodically adjust optimal roles: pure complementor (focused specialization), hybrid integrator (sub-ecosystem orchestration), or selective participant (targeted integration) [4, 27]. Role positioning is informed by architectural leverage principles [29], allowing firms to maximize influence without assuming disproportionate coordination costs. This component explicitly incorporates openness decisions as levers for complementary innovation [27], ensuring roles evolve in tandem with platform generativity and market shifts [23].

The second component—interdependence mapping—functions as the diagnostic and foresight engine [15]. Firms conduct systematic, multi-dimensional assessments of relational dependencies across technological, data, revenue, user, and reputational dimensions [16], quantifying risk exposure, mutual value potential, and co-specialization opportunities [20]. Mapping tools reveal asymmetric network effects, platform-complementor tensions, and latent synergies [3], enabling proactive mitigation of hold-up or free-riding while surfacing avenues for deeper co-specialization [16, 18]. This mapping directly feeds governance and coordination decisions [15], transforming abstract interdependence into actionable intelligence [20, 28].

The third component—governance mechanism deployment—translates mapping insights into a tailored portfolio of safeguards and enablers [6]. Firms adopt and co-influence platform rules, incentive alignments, selective promotion policies, knowledge-boundary controls, and contractual mechanisms to protect core interests while contributing to collective stability [9, 10, 14]. The SIOF advocates hybrid governance approaches that blend platform-imposed structures with firm-initiated advocacy and multi-actor coalitions [6], thereby balancing generativity with protection of appropriation [22, 23]. Governance deployment is dynamic [9]: mechanisms scale from light-touch in nascent ecosystems to tightly integrated in mature ones [10], always calibrated to mapped interdependencies [14].

The fourth component—complementor coordination protocols—establishes operational routines for synchronized action [3]. Through modular interfaces, joint innovation sprints, shared toolkit utilization, regular alignment forums, and formalized conflict-resolution arenas

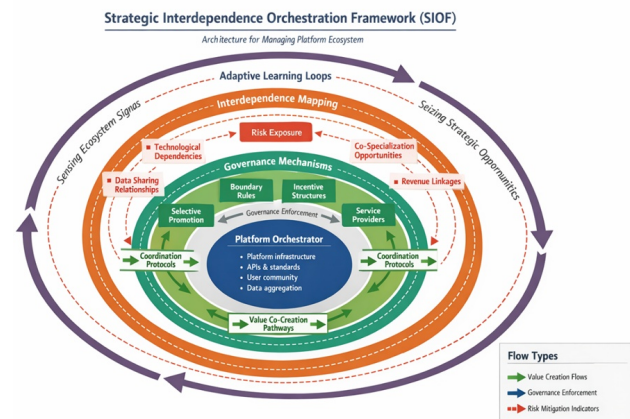
[11], firms synchronize activities with peer complementors and the platform leader [17, 22]. Coordination protocols evolve across the ecosystem's life cycle—from information exchange in early phases to co-owned module development in maturity [20]—while preserving modularity to safeguard autonomy [27]. Effective protocols build relational capital [16], amplify cross-side effects [17], and accelerate service innovation [11], turning coordination into a source of collective acceleration.

The fifth component—value co-creation pathways—structures the actual realization of ecosystem value through three interlocking channels: knowledge and data exchange, resource orchestration, and user-experience integration [11, 21, 23, 26]. Firms design modular contributions that plug seamlessly into platform infrastructures [11] while extracting value via servitization extensions, data monetization, and personalized solution bundles [19, 21]. Pathways are deliberately bidirectional [20], ensuring mutual reinforcement between contribution and capture, and are continuously enriched by servitization and openness strategies [27].

Adaptive feedback and learning loops—drawing explicitly on dynamic and integrative capabilities—interconnect all five components into a living, self-correcting system [7, 20, 29]. These loops institutionalize sensing (monitoring ecosystem signals), seizing (rapid deployment adjustments), and reconfiguring (role, governance, or pathway recalibration) routines that respond to technological disruptions, regulatory shifts, competitive entries, or changes in user behavior [7]. By embedding learning at every interface, the SIOF prevents static lock-in [15] and enables anticipatory repositioning [29], converting potential interdependence liabilities into enduring strategic assets.

Collectively, the five components and their adaptive loops position strategic participation as a deliberate, repeatable competitive strategy [1]. Firms using the SIOF no longer merely join platforms [2]; they orchestrate their interdependence to redefine competitive boundaries [5], sustain superior performance [12], and shape ecosystem evolution within platform-centered business networks [25]. The framework thus provides both theoretical coherence and practical architecture for navigating the complexities of digital ecosystems [1]. **Figure 1** illustrates the Strategic Interdependence Orchestration Framework (SIOF), depicting how governance mechanisms, complementor coordination protocols, interdependence mapping, and

value co-creation pathways interact within adaptive learning loops to enable firms to strategically orchestrate participation in platform ecosystems.



**Figure 1.** Strategic interdependence orchestration framework (SIOF).

The framework conceptualizes platform ecosystems as layered coordination systems in which firms manage interdependence through governance mechanisms, complementor coordination protocols, and value co-creation pathways. Interdependence mapping bridges actor relationships while adaptive learning loops continuously recalibrate ecosystem participation strategies.

## Interpreting strategic interdependence: operationalizing the SIOF in dynamic platform networks

The Strategic Interdependence Orchestration Framework (SIOF) provides a structured yet flexible lens for decoding how firms actively participate in digital ecosystems while converting inherent interdependence into a source of sustained competitive advantage [1, 2, 15, 20]. At its core, the framework does not treat participation as a passive alignment with platform rules; rather, it positions firms as proactive orchestrators of their own strategic destiny within platform-centered business networks. Each of the five components interacts recursively, creating a dynamic system where decisions in one area ripple across the others through adaptive feedback loops [7, 20, 29].

Ecosystem role positioning serves as the foundational entry point. Firms must first diagnose the platform's architectural openness and market maturity to select an optimal role—pure complementor, hybrid integrator, or selective

participant [1, 4, 27]. For instance, in highly generative ecosystems, firms may opt for hybrid roles that blend specialized complements with partial orchestration of niche sub-ecosystems, thereby amplifying their influence without assuming full platform leadership [5, 26, 27]. This positioning is not static; it evolves as platform scope expands or user behaviors shift, requiring periodic reassessment grounded in architectural leverage principles [29].

Once roles are positioned, interdependence mapping becomes the diagnostic engine of the SIOF. Firms systematically chart relational dependencies across technological interfaces, data flows, user communities, and revenue streams [15, 16, 18, 20]. Mapping reveals not only the risks of hold-up or free-riding but also latent synergies in which mutual reliance can be leveraged for co-specialization [16, 23]. Unlike traditional supply-chain mapping, SIOF interdependence mapping incorporates asymmetric network effects and platform-owner complementor tension, enabling firms to quantify vulnerability indices and opportunity surfaces [3, 18]. This component directly informs governance choices, ensuring that mapped risks are mitigated before they materialize.

Governance mechanism deployment translates mapping insights into actionable safeguards and enablers. Firms deploy a portfolio of mechanisms—ranging from contractual boundary rules and incentive alignments to selective promotion tactics and knowledge-boundary controls—while simultaneously influencing platform-level governance through multi-actor advocacy [6, 9, 10, 14]. The SIOF emphasizes hybrid governance: firms neither fully submit to platform dictates nor operate in isolation; instead, they co-shape rules that balance generativity with protection [6, 22, 23]. For example, complementors can negotiate data-access protocols or co-develop standards that reduce knowledge specificity risks, thereby strengthening their bargaining position [14, 28].

Complementor coordination protocols operationalize these governance choices into day-to-day collaborative routines. Through modular interfaces, joint innovation workshops, shared toolkit utilization, and conflict-resolution arenas, firms synchronize activities with peer complementors and the platform leader [3, 11, 17, 22]. The SIOF highlights that effective coordination is not merely transactional; it builds relational capital that amplifies cross-side network effects and accelerates service innovation [11, 16, 17]. Protocols must remain adaptive—scaling from loose information

exchange in early stages to tightly integrated co-development in mature phases—ensuring coordination evolves in tandem with ecosystem growth [20].

Value co-creation pathways represent the culminating flow that converts all prior components into measurable ecosystem value. These pathways operate through three interconnected channels: knowledge exchange, resource orchestration, and user-experience integration [11, 21, 23, 26]. Firms actively design modular contributions that plug into platform infrastructures, while simultaneously extracting value through servitization extensions and data-driven personalization [19, 21]. The SIOF underscores that value co-creation is bidirectional; participating firms both contribute to and draw from the ecosystem commons, creating a virtuous cycle that sustains superior performance [7, 15]. **Table 1** synthesizes the structural logic of the Strategic Interdependence Orchestration Framework by mapping each component to its strategic purpose, organizational mechanisms, ecosystem risks, and resulting value outcomes.

**Table 1.** Structural logic of the strategic interdependence orchestration framework (SIOF)

| SIOF component                  | Strategic purpose                                                    | Key organizational mechanisms                                                        | Ecosystem risks addressed                                  |
|---------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------|
| Ecosystem role positioning      | Determines the firm's strategic stance within the platform ecosystem | Role diagnostics, architectural leverage analysis, and openness strategy calibration | Strategic misalignment, over-dependence on platform owner  |
| Interdependence mapping         | Diagnoses relational dependencies across ecosystem actors            | Dependency matrices, technological interface mapping, and data flow analysis         | Hold-up, asymmetric network effects, knowledge specificity |
| Governance mechanism deployment | Stabilizes ecosystem interactions while                              | Boundary rules, incentive structures, contractual safeguards,                        | Free-riding, opportunistic behavior, value                 |

|                                           |                                                                                 |                                                                                                    |                                                            |
|-------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------|
|                                           | protecting<br>firm interests                                                    | and policy<br>negotiation                                                                          | appropri-<br>imbala                                        |
| Complementor<br>coordination<br>protocols | Enables<br>synchronized<br>collaboration<br>across<br>ecosystem<br>participants | Joint<br>innovation<br>workshops,<br>toolkit<br>platforms, and<br>conflict<br>resolution<br>forums | Fragmente<br>c<br>comple<br>innov<br>ar<br>coordi<br>break |
| Value co-<br>creation<br>pathways         | Converts<br>coordinated<br>ecosystem<br>activity into<br>realized value         | Data exchange<br>mechanisms,<br>servitization<br>extensions,<br>and modular<br>integration         | Une<br>contrib<br>cap<br>dynam<br>ecosy<br>stagr           |
| Adaptive<br>learning loops                | Continuously<br>recalibrates<br>ecosystem<br>strategies<br>amid change          | Dynamic<br>capability<br>routines:<br>sensing,<br>seizing, and<br>reconfiguring                    | Strateg<br>in, eco<br>disru<br>and reg<br>sho              |

Adaptive feedback and learning loops bind the five components into a living system. Drawing on dynamic capabilities, firms institutionalize sensing, seizing, and reconfiguring routines that continuously recalibrate roles, maps, governance, coordination, and co-creation pathways in response to technological shifts, competitive entries, or regulatory changes [7, 20, 29]. These loops prevent lock-in and enable anticipatory repositioning, transforming interdependence from a potential liability into a strategic asset. In practice, the SIOF thus operates as a managerial dashboard: firms monitor component interactions, detect misalignments, and intervene before ecosystem value erodes.

By interpreting participation through this integrated architecture, the SIOF reveals that successful firms do not merely join platforms—they orchestrate their interdependence to redefine the rules of competition within platform-centered networks [2, 5, 12, 25]. The framework’s strength lies in its simultaneous attention to micro-level firm agency and macro-level ecosystem dynamics, offering a unified explanation for how strategic participation becomes a repeatable source of advantage.

# Theoretical Enrichment: Advancing Platform Ecosystem Scholarship through Integrated Interdependence Logic

The SIOF makes three distinctive theoretical contributions that bridge previously fragmented streams in ecosystem, platform, and strategy literature. First, it synthesizes ecosystem theory [1] with meta-organization perspectives [2] by introducing interdependence as the central organizing principle rather than generativity or orchestration alone. Where prior work treated interdependence as a background condition [15, 16], the SIOF elevates it to a core construct that firms actively map, manage, and monetize. This shift resolves the theoretical tension between platform control and complementor autonomy by demonstrating how deliberate interdependence management reconciles both [6, 23].

Second, the framework integrates governance and value co-creation literatures into a single recursive architecture [9–11, 21]. Existing studies have examined these domains in isolation—governance as rule-setting [6, 14] and co-creation as outcome [11, 26]—yet rarely as mutually reinforcing loops. SIOF’s five-component model, with embedded feedback mechanisms, provides a processual explanation of how governance deployment enables coordination protocols, which, in turn, fuel value pathways that feed back into refined governance. This integration extends dynamic capability theory [7] into multi-actor settings, showing how participating firms, not only platform leaders, develop ecosystem-specific capabilities.

Third, the SIOF advances architectural leverage and platformization research [28, 29] by theorizing strategic participation itself as a competitive capability. Prior contributions emphasized platform owners’ leverage [29] or knowledge specificity challenges [28]; the framework demonstrates that complementors and participants can develop parallel leverage through role positioning and interdependence mapping. This bidirectional view enriches the literature by moving beyond platform-centric models [5, 12, 13] toward a fully distributed agency perspective, where every actor’s strategic choices collectively shape ecosystem evolution [20, 22, 25].

Collectively, these contributions address a critical gap identified across multiple streams: the absence of an

integrative model that simultaneously explains participation strategies, interdependence management, coordination, governance, and adaptive learning [8, 13, 25]. By naming and formalizing the Strategic Interdependence Orchestration Framework, the SIOF offers a new theoretical vocabulary and visual architecture that future scholars can refine, extend, or empirically test. The framework's emphasis on feedback loops also opens avenues for process-oriented research on ecosystem coevolution, complementor resilience, and platform-driven servitization [19, 21, 27]. In doing so, it positions digital ecosystem participation as a distinct strategic domain worthy of standalone theoretical development.

## Strategic Guidance for Practitioners: Actionable Pathways for Mastering Ecosystem Participation

Translating the SIOF into managerial practice requires firms to adopt a disciplined yet flexible sequence of actions that align internal capabilities with external ecosystem realities. Practitioners should begin with a formal ecosystem role audit—mapping their current offerings against platform architecture, user base size, and competitive intensity—to determine whether a complementor, hybrid, or selective-participant stance maximizes leverage [4, 27, 29]. This audit, conducted quarterly in fast-evolving sectors, prevents strategic drift and identifies timely repositioning opportunities.

Next, managers must institutionalize interdependence mapping as a cross-functional routine involving strategy, IT, and partnership teams. Using simple visual tools (extensions of **Figure 1**), firms can score dependencies on dimensions of technological lock-in, revenue sharing, and data access, then prioritize mitigation tactics [15, 16, 20]. High-risk interdependencies trigger immediate governance deployment: negotiating API access clauses, co-investing in shared standards, or joining complementor coalitions to influence platform policies [9, 10, 14].

Coordination protocols deserve dedicated investment. Leading firms establish “ecosystem collaboration offices” that facilitate regular joint innovation sprints, toolkit training programs, and dispute-resolution forums [11, 17, 22]. These protocols should scale with ecosystem maturity—starting with lightweight information sharing and

progressing to co-owned modules—while maintaining modularity to preserve firm autonomy [27].

Value co-creation pathways are activated by embedding platform interfaces into internal product roadmaps. Managers should designate “ecosystem value champions” responsible for identifying servitization extensions, data monetization models, and user-experience synergies [19, 21, 26]. Performance dashboards tracking contribution-to-capture ratios ensure that co-creation remains mutually beneficial rather than extractive.

Finally, adaptive feedback loops demand senior leadership oversight. Firms should schedule annual SIOF recalibration workshops that revisit all five components in light of emerging ecosystem signals—such as technological disruptions, regulatory shifts, or new entrant threats [7, 20, 29]. Organizations that embed these loops report faster pivots and greater resilience, converting potential platform dependence into strategic optionality.

In practice, the SIOF functions as both a diagnostic and prescriptive tool. Small and medium-sized enterprises can use simplified versions focused on role positioning and mapping, while large corporations deploy the full architecture with dedicated ecosystem strategy teams. Across contexts, the framework consistently guides firms to treat platform participation not as a tactical choice but as a core competency that redefines competitive boundaries.

## Conclusion

The strategic interdependence orchestration framework (SIOF) reframes digital ecosystems from arenas of passive participation to arenas of deliberate strategic orchestration. By integrating ecosystem role positioning, interdependence mapping, governance deployment, complementor coordination, and value co-creation pathways within adaptive feedback loops, the SIOF demonstrates that firms can systematically transform complex interdependencies into durable competitive advantages.

As digital platforms continue to permeate industries—from software and e-commerce to manufacturing servitization and societal challenge platforms—the ability to orchestrate interdependence will separate thriving participants from those relegated to commoditized roles. The framework's theoretical contributions—elevating interdependence as a manageable construct, unifying governance and co-creation logics, and distributing strategic agency across

actors—provide scholars with a robust foundation for future inquiry into coevolutionary dynamics, resilience mechanisms, and cross-ecosystem comparisons.

For practitioners, the SIOF supplies an immediately actionable architecture that aligns internal decision-making with external ecosystem rhythms. Firms that internalize their components and loops will not merely survive platformization; they will shape it.

Ultimately, the SIOF affirms a central proposition: in platform-centered business networks, strategic participation is no longer optional—it is the new locus of competitive advantage. By mastering interdependence orchestration, firms unlock generative potential that isolated strategies cannot achieve, ensuring sustained value creation amid accelerating digital transformation.

## Acknowledgements

None

## Conflict of interest

None

## Financial support

None

## Ethics statement

None

Received: 25 Apr 2022   Revised: 05 Jun 2022   Accepted: 25 Jul 2022  
Published online: 18 September 2022

## Rights and permissions

**Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

## References

- Jacobides MG, Cennamo C, Gawer A. Towards a theory of ecosystems. *Strateg Manag J.* 2018;39(8):2255-76.  
<https://doi.org/10.1002/smj.2904>.
- Kretschmer T, Leiponen A, Schilling MA. Platform ecosystems as meta-organizations: Implications for platform strategies. *Strateg Manag J.* 2022;43(3):405-24.  
<https://doi.org/10.1002/smj.3250>.
- Wang RD. Complementors' engagement in an ecosystem: A study of publishers' e-book offerings on Amazon Kindle. *Strateg Manag J.* 2020;41(1):3-26.  
<https://doi.org/10.1002/smj.3196>.
- Li H, Zhang C, Kettinger WJ. Digital platform ecosystem dynamics: The roles of product scope, innovation, and collaborative network centrality. *MIS Q.* 2022;46(2):739-70.  
<https://doi.org/10.25300/MISQ/2022/15444>.
- Parker GC, Van Alstyne MW, Jiang X. Platform ecosystems: How developers invert the firm. *MIS Q.* 2017;41(1):255-66.  
<https://doi.org/10.25300/MISQ/2017/41.1.13>.
- Rietveld J, Schilling MA. Platform strategy: Managing ecosystem value through selective promotion of complements. *Organ Sci.* 2019;30(6):1232-51.  
<https://doi.org/10.1287/orsc.2019.1290>.
- Helfat CE, Raubitschek RS. Dynamic and integrative capabilities for profiting from innovation in digital platform-based ecosystems. *Res Policy.* 2018;47(8):1391-9.  
<https://doi.org/10.1016/j.respol.2018.01.019>.
- Hein A, Schreieck M, Riasanow T, Setzke DS, Wiesche M, Böhm M, et al. Digital platform ecosystems. *Electron Mark.* 2020;30(1):87-98.  
<https://doi.org/10.1007/s12525-019-00377-4>.
- Mukhopadhyay S, Bouwman H. Orchestration and governance in digital platform ecosystems: a literature review and trends.

Digit Policy Regul Gov. 2019;21(4):329-44.  
<https://doi.org/10.1108/DPRG-11-2018-0067>.

Mukhopadhyay S, Bouwman H. Multi-actor collaboration in platform-based ecosystem: opportunities and challenges. *J Inf Technol.* 2018;34(3):262-76.  
<https://doi.org/10.1177/0268396218769800>.

Hein A, Weking J, Schreieck M, Wiesche M, Böhm M, Krcmar H. Value co-creation practices in business-to-business platform ecosystems. *Electron Mark.* 2019;29(3):503-18.  
<https://doi.org/10.1007/s12525-019-00337-y>.

Constantinides P, Henfridsson O, Parker GG. Introduction—Platforms and infrastructures in the digital age. *Inf Syst Res.* 2018;29(2):381-6.  
<https://doi.org/10.1287/isre.2018.0794>.

de Reuver M, Sørensen C, Basole RC. The digital platform: A research agenda. *J Inf Technol.* 2018;33(2):124-35.  
<https://doi.org/10.1057/s41265-018-0060-1>.

Foerderer J, Kude T, Schuetz SW, Heinzl A. Knowledge boundaries in enterprise software platform development: Antecedents and consequences for platform governance. *Inf Syst J.* 2019;29(1):119-44.  
<https://doi.org/10.1111/isj.12167>.

Kapoor R, Agarwal S. Sustaining superior performance in business ecosystems: Evidence from application software developers in the iOS and Android smartphone ecosystems. *Organ Sci.* 2017;28(3):531-51.  
<https://doi.org/10.1287/orsc.2016.1116>.

Song P, Xue L, Rai A, Zhang C. The ecosystem of software platform: A study of asymmetric cross-side network effects and platform governance. *MIS Q.* 2018;42(1):121-42.  
<https://doi.org/10.25300/MISQ/2018/13737>.

Ye H, Kankanhalli A. User service innovation on mobile phone platforms: Investigating impacts of lead user-ness, toolkit support, and design autonomy. *MIS Q.* 2018;42(1):165-87.  
<https://doi.org/10.25300/MISQ/2018/13105>.

Zhu F, Liu Q. Competing with complementors: An empirical look at Amazon. *Strateg Manag J.* 2018;39(10):2618-42.  
<https://doi.org/10.1002/smj.2788>.

Zeng J, Tavalaei MM, Khan Z. Sharing economy platform firms and their resource orchestration approaches. *J Bus Res.* 2021;136:451-65.  
<https://doi.org/10.1016/j.jbusres.2021.08.014>.

Jovanovic M, Sjödin D, Parida V. Co-evolution of platform architecture, platform services, and platform governance: Expanding the platform value of industrial digital platforms. *Technovation.* 2022;118:102218.  
<https://doi.org/10.1016/j.technovation.2020.102218>.

Kapoor K, Bigdeli AZ, Schroeder A, Baines T. A platform ecosystem view of servitization in manufacturing. *Technovation.* 2022;118:102221.  
<https://doi.org/10.1016/j.technovation.2021.102221>.

Addo A. Orchestrating a digital platform ecosystem to address societal challenges: A robust action perspective. *J Inf Technol.* 2022;37(2):180-201.  
<https://doi.org/10.1177/02683962221088333>.

Cennamo C, Santaló J. Generativity tension and value creation in platform ecosystems. *Organ Sci.* 2019;30(3):617-41.  
<https://doi.org/10.1287/orsc.2018.1270>.

Hein A, Weking J, Schreieck M, Wiesche M, Böhm M, Krcmar H. Value co-creation practices in business-to-business platform ecosystems. *Electron Mark.* 2019;29(3):503-18.

Senyo PK, Effah J, Osabutey ELC. Digital business ecosystem: Literature review and a framework for future research. *Int J Inf Manage.* 2019;47:52-64.  
<https://doi.org/10.1016/j.ijinfomgt.2019.01.002>.

Alaimo C, Kallinikos J, Valderrama E. Platforms as service ecosystems: Lessons from social media. *Inf Syst Res.* 2020;31(4):1270-90.  
<https://doi.org/10.1287/isre.2020.0942>.

Cenamor J, Frishammar J. Openness in platform ecosystems: Innovation strategies for complementary products. *Res Policy.* 2021;50(1):104148.  
<https://doi.org/10.1016/j.respol.2020.104148>.

Saadatmand F, Lindgren R, Schultze U. Platformization and the platform-specificity of knowledge: The case of a digital platform for service innovation. *Inf Manag.* 2021;58(8):103544.  
<https://doi.org/10.1016/j.im.2021.103544>.

Thomas LDW, Autio E, Gann DM. Architectural leverage: Putting platforms in context. *Acad Manag Perspect.* 2014;28(2):198-219.  
<https://doi.org/10.5465/amp.2011.0105>.