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Theorizing Synchronization of Organizational Resources in Dynamic Environments

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ABSTRACT

Resource orchestration (RO) in dynamic environments poses challenges during strategic initiatives. Although prior research highlights RO's benefits, little is known about how managerial decisions influence RO over time, potentially leading to inefficiencies. This study examines two multiyear strategic initiatives: an innovative city project and a telecommunications network upgrade to explore how RO actions adapt to shifting priorities using historical methods and longitudinal data. The study contributes to our understanding by examining RO processes in dynamic environments, offering a framework for synchronizing RO, and proposing a roadmap to guide senior management in aligning initiatives with organizational assets. It highlights the importance of adaptation and ambidexterity. Our findings identify four key synchronization processes—refocusing, descoping, substituting, and deferring—essential for managing strategic initiatives. A framework that aligns organizational capabilities with the benefits of innovation through four synchronization states: "Drowning," "Swimming," "Treading Water," and "Doggy Paddle" is presented. Implications, future research, and limitations are discussed.

1 | Introduction

Prior research has recognized that the development of the organizational capabilities of a firm is a key enabler for generating and sustaining a competitive advantage (Barney and Clark 2007; Helfat et al. 2009; Peteraf 1993). The resource-based view (RBV) is a seminal theory that identifies how key resources and capabilities contribute to a firm's sustained advantage relative to competitors. RBV emphasizes that advantage stems from strategic assets that are valuable, rare, inimitable, and organized (VRIO) (Chatzoglou et al. 2018; Murcia et al. 2022).

Over the past decade, the resource orchestration framework, which is a theoretical expansion of the RBV, has emerged to focus on managerial actions involved in organizing resources and integrating them with capabilities to achieve a competitive advantage (Chadwick et al. 2015; Helfat and Martin 2015; Schriber and Löwstedt 2018). Key to effective resource orchestration is the synchronization of these actions across organizational units and over time (Baert et al. 2016; Parida et al. 2019; Sirmon et al. 2010). However, much of the existing literature does not fully address how orchestration occurs in dynamic environments, where continuous adjustment is crucial (Baert et al. 2016).

Despite prior studies offering valuable insights, most provide static or backward-looking snapshots of resource orchestration (Chadwick et al. 2015), limiting our understanding of how

orchestration evolves dynamically. The literature often neglects the unfolding, real-time synchronization of resource-oriented actions, particularly during strategic initiatives—defined as coordinated efforts to achieve long-term goals such as establishing sustainable advantage or enhancing corporate reputation (Birkinshaw 1997; Lechner and Floyd 2011; Rothaermel 2020). Strategic initiatives often take the form of transformative projects, such as process improvements (Katila and Ahuja 2002; Lechner and Kreutzer 2010).

Thus, a key research gap lies in understanding how synchronization mechanisms and managerial actions dynamically align resources and capabilities during strategic initiatives, especially under fluctuating environmental conditions (Chirico et al. 2011; Wilden et al. 2013). Prior research (Sirmon et al. 2007; Helfat et al. 2009) has mainly focused on the static aspects of structuring, bundling, and leveraging resources. This approach gives insufficient attention to how resources are dynamically synchronized across different organizational levels and time periods. Additionally, the role of managerial decision-making, particularly how managers dynamically adapt orchestration processes, remains underexplored in both entrepreneurial ventures and large corporations (Dutta et al. 2015; Barreto 2010).

Furthermore, although dynamic capabilities theory emphasizes adaptability, current resource orchestration frameworks (Sirmon et al. 2011) fail to sufficiently explain how managers make real-time decisions to deploy resources dynamically when strategic needs shift.

Building on these gaps, this study investigates how organizations synchronize resources during multiyear strategic initiatives in highly dynamic environments. It explores the specific mechanisms and managerial actions involved, as well as differences across organizational types such as startups, SMEs, and multinational corporations.

In the innovation literature, resource orchestration has recently attracted attention (Andersén and Ljungkvist 2021; Carnes et al. 2017; Poulios and Kamperou 2022; Queiroz et al. 2018; Tikas 2023). However, there remains limited exploration of how organizations adapt orchestration practices in fast-changing contexts (Tikas 2023; Queiroz et al. 2018). Addressing this shortfall, our study formulates three research questions (RQs), each targeting a specific dimension of the orchestration challenge.

RQ1. *How do organizations synchronize their resources during strategic initiatives in dynamic environments, and what mechanisms enable effective adaptation over time?*

RQ2. *How do different types of organizations vary in their approach to resource orchestration during strategic initiatives, and what factors influence these differences?*

RQ3. *How does the effectiveness of different resource synchronization mechanisms relate to technical, business model, and social innovation outcomes?*

To answer these questions, the study analyzes two case studies. The following sections present the analysis and findings,

offering deeper insights into how orchestration strategies support innovation goals, enhance competitiveness, and foster societal value. This dynamic perspective enables firms to remain agile and innovative amidst constant external change (see Table 1).

2 | Literature Review

RBV stipulates that competitive advantage can be achieved by employing strategic assets and VRIO capabilities resources (Barney and Clark 2007; Kristandl and Bontis 2007; Rothaermel 2020). Tangible strategic resources include a firm's premises, physical equipment, technological infrastructure, and financial resources. In contrast, intangible strategic resources include employees' knowledge and skill set, corporate and brand reputation, leadership style, and intellectual rights and property. Intangible resources are more likely to conform to the criteria of VRIO resources, and thus, a firm aiming to achieve long-term sustainable competitive advantage should prioritize developing and strengthening its intangible resources (Carmeli and Tishler 2004; Teece 2000).

However, said sustainable competitive advantage can only be achieved if the firms have in place the organizational systems, processes, policies, structure, and culture to leverage the strategic resources and capabilities (Barney and Clark 2007; Rothaermel 2020). Three barriers to resource imitation can insulate firms from competitive erosion (Barney and Clark 2007): (1) historical condition, (2) ambiguity, and (3) social complexity. These mechanisms emphasize the importance of having resources and structuring and deploying them strategically, particularly under dynamic and uncertain conditions.

2.1 | Resource Orchestration and Strategic Initiatives

Resource orchestration, an integration of resource management (Sirmon et al. 2008, 2010; Hodgkinson et al. 2014) and asset orchestration frameworks (Sirmon et al. 2010) involves structuring the firm's available resources, bundling them into capabilities, and using specific strategies to harness said resources to achieve positive organizational outcomes such as a sustainable competitive advantage (Barney and Clark 2007; Rothaermel 2020) or promoting innovation (Andersén and Ljungkvist 2021; Candi and Beltagui 2019; Nemeh and Yami 2019; Tikas 2023). In a dynamic environment, creating an effective "fit" between a firm's resources and strategies demands ongoing "synchronization" of multiple elements within the resource orchestration process (Choi et al. 2020; Helfat et al. 2009; Holcomb et al. 2009).

Firms must continuously monitor and adapt to environmental changes (Barney 2001; Kraaijenbrink et al. 2010; Kristandl and Bontis 2007). These changes include new competitors entering the market, political shifts, regulatory updates, and evolving economic conditions (Hatani 2016; Lok and De Rond 2013).

Strategic change involves firms effectively planning and implementing changes to enhance competitive advantage or achieve

TABLE 1 | Literature review.

Study	Research methodology	Empirical context	Key findings on resource orchestration	Synchronization mechanisms identified	Limitations	Future research directions
Tikas (2023)	Empirical study, multiple studies design	Public R&D organizations (India)	Three sub-dimensions of resource orchestration: adaptive structuring, synergistic leveraging, decentralized decision-making	Implicit synchronization through decentralized resource adjustments	Limited to public-funded R&D organizations in India	Extend to private sector and international R&D contexts
Andersén and Ljungkvist (2021)	Case study, interviews, secondary data	Swedish business press outlets	Team-based innovation for managing resources and capabilities	Coordination across team-based innovation processes	Focused on customized products	Study innovation orchestration in national contexts
Hodgkinson et al. (2014)	Case study	Service industry organizations	Orchestration supports organizational ambidexterity	Synchronization between exploration and exploitation	Focused on service industries	Apply to manufacturing and tech industries
Ketchen Jr et al. (2014)	Case study	Supply chain settings	Identified orchestration gaps affecting efficiency	Synchronization challenges across supply chain	Limited to supply chain	Extend to healthcare and education
Liu et al. (2016)	Survey	IT and supply chain managers	IT orchestration enhances integration and performance	IT-based synchronization for cross-unit collaboration	Focus on IT/supply chain	Include human and financial resources
Pavlov et al. (2017)	Longitudinal study	Multiple sectors	Orchestrated HR and performance management boosts results	Sync between internal systems and strategic goals	Limited external factors considered	Examine market influence
Hitt et al. (2011)	Theoretical	Entrepreneurial ventures	Resource orchestration creates multilevel value	Conceptual synchronization	Lacks empirical validation	Empirical testing in diverse settings

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other significant objectives (Birkinshaw 1997; Lechner and Kreutzer 2010). A strategic initiative requires the mobilization of a firm's resources to enhance existing organizational and individual capabilities to help a firm achieve its intended targets. Strategic change is steered and managed by upper management (Bruch et al. 2005; Kotter 2012) and it is quite common to use tangible technical and business benefits to justify resource allocations to a strategic initiative (Hitt et al. 2011). Empirical evidence shows that synchronization can enhance organizational performance (Liu et al. 2016; Pavlov et al. 2017; Sirmon and Hitt 2009). However, we have a limited understanding of which factors promote or impede these positive outcomes. For example, although resource bundling and deployment augment organizational performance, some forms of resource bundling can adversely affect a firm's performance (Ketchen Jr et al. 2014; Kor and Leblebici 2005). However, Ketchen Jr et al. (2014) and Kor and Leblebici (2005) warn that not all bundling approaches yield positive results. In fact, poorly implemented resource combinations may damage rather than improve performance.

2.2 | Organizational Context and Mechanism of Orchestration

Despite the growing focus on resource orchestration, limited attention has been paid to how different types of organizations, such as small and medium enterprises (SMEs), multinational companies (MNCs), or public–private partnerships, tailor their orchestration strategies during strategic initiatives (Lin et al. 2024; Poulios and Kamperou 2022). Organizational structure, governance models, and sectoral context all shape how resources are deployed and how change is managed. For instance, while MNCs may rely on formal coordination mechanisms, startups might emphasize agility, informal knowledge sharing, and collaboration (Appiah et al. 2025; Birkinshaw and Gibson 2004; Hodgkinson et al. 2014; O'Reilly III and Tushman 2013).

Recent research also highlights the role of orchestration mechanisms, such as cross-functional integration, resource modularity, and feedback loops in enabling synchronization across organizational layers (Choi et al. 2020; Andersén and Ljungkvist 2021). Feedback mechanisms, in particular, remain underexplored in the literature, yet they are vital for enabling continuous

adaptation during long-running initiatives (Soleymanzadeh and Hajipour 2025; Balogun 2006; Schaffer and Thomson 1992).

This gap suggests the need to explore organizational diversity in resource orchestration strategies. Figure 1 presents our dynamic RO framework for strategic initiatives. The indicated primary relationships illustrated in the RO framework (see Figure 1) are adapted from Sirmon et al. (2007); however, our framework incorporates a feedback relationship, which represents an under-researched topic in the resource orchestration literature (Balogun 2006; Schaffer and Thomson 1992): the process of orchestrating resources in a transitional (dynamic) environment. The consequences illustrated in Figure 1 represent different levels of benefits for innovation—technical, business, and social—that can manifest depending on the strategic focus areas of an organization.

2.3 | Innovation Outcomes and the Synchronization Mechanism

The orchestration of resources can drive multiple types of innovation: technical, business model, and social. Each form of innovation benefits from distinct configurations of resource orchestration.

Technical innovation benefits generally refer to more tangible, specifiable aspects of organizational functioning such as IT systems and key technologies (Piccoli and Ives 2005). By efficiently managing and coordinating resources, organizations within the ecosystem can develop competitive advantages, which are necessary for leading in innovation (Rehman et al. 2021). In open innovation, IT is both an operand and an operant resource (Li and Jia 2018). As an operand resource, IT supports processes and infrastructure. As an operant resource, IT actively enables innovation processes by facilitating the integration of knowledge across organizational boundaries. IT activity leads to the creation of new capabilities and innovations, such as the development of new products or processes. Furthermore, IT activity promotes interaction among diverse actors (such as universities, businesses, and government) within the ecosystem, facilitating knowledge sharing and creating innovations (Cui et al. 2022).
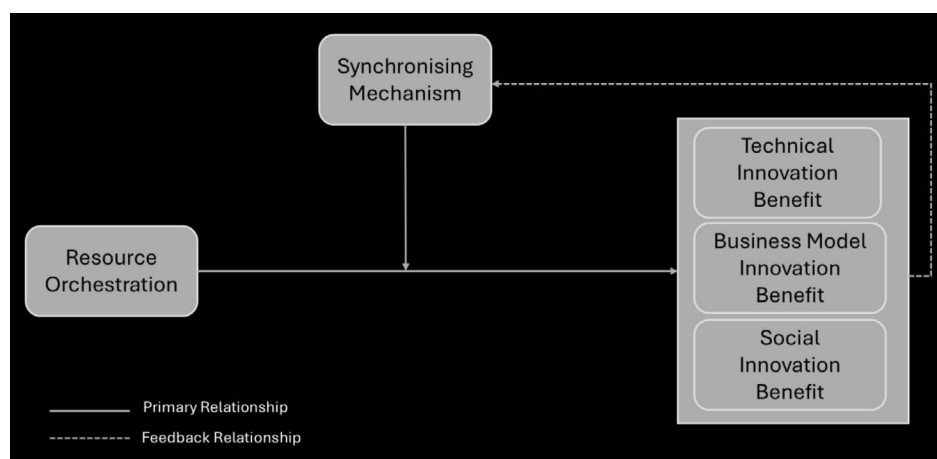

FIGURE 1 | A dynamic resource orchestration framework for strategic initiatives (adapted from Sirmon and colleague's RO framework).

Business model innovation benefits include the realization of process/operating changes to an organization leading to value creation (Lin et al. 2024; Lu and Zhang 2022). The benefits of business model innovation in resource orchestration include promoting common prosperity, integrating social responsibility with business success, enhancing competitiveness, and contributing to sustainable development. By orchestrating digital resources strategically, companies can respond to market demands, innovate their operations, and adapt to the evolving digital economy, ultimately leading to improved competitiveness in the global market (Sun et al. 2024).

Social innovation benefits refer to advantages gained from producing or consuming a good/service such as bike-for-work schemes (Rosenbaum and Wong 2015). Resource orchestration allows social innovations to be scaled up by utilizing the strengths of collaborative networks (Faccin et al. 2020). Orchestrators play a crucial role in ensuring that successful initiatives can be replicated or adapted to different contexts, increasing their impact and reaching larger populations (Wegner et al. 2023). The study identifies new orchestrator roles—designing, bridging, and legitimizing—which are vital for the success of social innovation. These roles differ from those observed in technological innovation and require a nuanced understanding of social dynamics. By fulfilling these roles, orchestrators help ensure that collaborative networks are functional and capable of delivering tangible social outcomes.

2.4 | Toward a Dynamic Resource Orchestration Framework

Resource orchestration refers to managerial actions that structure initiatives through the acquisition or divestment of products or services with bundling that combines or recombines them by deploying resources and capabilities for leveraging through modular sequencing (Sirmon et al. 2025). These efforts can result in novel and useful technical outcomes achieved through faster cycles. During these cycles, products with higher quality and new features appear as technical innovations (Nambisan and Sawhney 2011). These technical innovations with architectural advances perform better with the support of a synchronization mechanism (Nambisan and Sawhney 2011). The synchronization mechanism, in this context, refers to a combination of temporal fit that orchestrates resources required for opportunities to reduce wait times in the process (Oostvogels et al. 2024). The fit of the interface helps lower friction during the integration of processes or improve information fit that addresses asymmetry in the information and relational fit that delivers innovation through complementarities (Iyer et al. 2023). The design orchestration supports resource orchestration by synchronizing timings, information, and interfaces (Mechitov et al. 2007). Integration of these for information about exploration versus exploitation helps maintain higher standards required for amplifying orchestration and improves opportunities for technical innovation (Li and Jia 2018).

When adopting the lens of business model innovation, resource orchestration provides a view of structuring, bundling, and leveraging from the perspective of opportunities for enabling managers to capture, create, and deliver value through pricing strategies required for channel or business relationships for structuring the overall costs (Teece 2010). The synchronization mechanism aligns times and tasks between actors for governance (Roehrich et al. 2023). Such innovation of business model works on recombining capabilities for creating value to be considered contemporary by the stakeholders through the application of data science combined with service operations (Pereira et al. 2024). Sequential investments of capital and talent for discovery, validated for scaling of value, can be distributed through reconfigured partnerships with suppliers, channel members, and other platforms (Zeng et al. 2023).

Importance of social value innovation by companies is recognized by stakeholders as inclusion, environmental concern, impact on health or education (Mair et al. 2023). Resource orchestration helps companies to achieve social innovation goals by applying synchronization mechanisms for the adoption of legitimate initiatives and scaling them in a complex setting that involves the movement of actors at a fast pace (Mair et al. 2023). Focus on social innovation requires investments into infrastructure required for management in a way that builds a trustworthy platform where community members can make themselves heard without restrictions and review rigidity that hampers efficiency and governance (Addo 2022).

Figure 1 presents an updated Dynamic Resource Orchestration (RO) Framework tailored for strategic initiatives in dynamic environments. Building on Sirmon et al. (2007), the framework introduces a feedback mechanism, reflecting how strategic initiatives must continuously realign resources in response to changing conditions (Balogun 2006; Schaffer and Thomson 1992).

This dynamic orchestration fosters synchronized innovation across technical, business model, and social domains, yet the specific synchronization mechanisms that influence diverse innovation outcomes remain inadequately studied (Andersén and Ljungkvist 2021; Sun et al. 2024). The primary and feedback relationships being argued in this study about resource orchestration with synchronization mechanisms adopt a multidimensional view. Building on the RBV with dynamic capabilities (DCV), this study emphasizes structuring, leveraging, and renewing resources for building competitive advantage with open and social innovation. Studies like Sirmon et al. (2011) discussed how resource orchestration, when viewed from the lens of the RBV, enables managers to structure their actions around acquisition and bundling that support mobilization and coordination as leveraging of resources required to either renew existing ones or create new advantages as endowments in the form of capabilities and outcomes. Another research conducted by Malone and Crowston (1994) discussed primary relationships in the model about formal and informal mechanisms for alignment of activities in time and across units as synchronization mechanisms discussed temporal pacing, cross-functional integration routines with interface standards in modularity for boundary objects and incentives by operationalizing Galbraith's information-processing view of coordination theory. These studies, along with Zott and Amit (2010) and Porter and Kramer (2011) have looked at innovation benefits as the total innovation budget for efficiency and quality with technical features through

recombining modularity for learning curves as total innovation budget (ITIB), value-based logic as a part of the business maturity innovation index (BMIB) along with the strategic innovation budget that focuses on social innovation and shared values for improving social outcomes with legitimacy and licensing-based operations for the social welfare of stakeholders. These primary relationships claim that the effectiveness of resource orchestration on benefits, with the role of synchronization mechanisms in a setting that discusses binding and structuring of resources, is insufficient without synchronization and depends upon dynamism and interdependence. These studies explain why resource orchestration is not only a source of innovation, although it enables reshaping technical, business, and social innovation as realized benefits.

Thus, this research addresses three interconnected gaps:

- How resource orchestration mechanisms operate under dynamic environmental conditions (RQ1)?

- How different types of organizations tailor resource orchestration during strategic initiatives (RQ2)?

- How synchronization mechanisms influence diverse innovation outcomes (RQ3)?

By focusing on these interrelated questions, this study advances theoretical and practical understanding of dynamic resource orchestration in strategic initiatives.

3 | Methodology

To investigate strategic initiatives adopted by companies to orchestrate their resources in a dynamic environment, this study adopted an approach like prior studies that focused on RO by using historical methods to analyze exemplary cases. Analysis of two longitudinal case studies was conducted to depict the processes of resource orchestration and synchronization within their natural settings (Street and Ward 2012). Given the small number of cases, this study aimed to translate experience and observation into theoretical insights using episode analysis (Lechner and Floyd 2011).

For applying a selection criterion for choosing the organizations and their strategic initiatives for this study, first, the change initiative needs to be large-scale to accommodate a shift in strategic priorities, which would challenge managers to dynamically adapt their resource orchestration to switch from one benefit realization to another. Second, to examine the RO processes of the strategic initiative, the change initiative needed to be in-house and managed by the parent organization. Third, the change initiative had to draw upon the organization's resource base so that reciprocal relationships and synergies in the RO processes emerge between the change initiative and the parent organization. Two change initiatives met said case selection criteria: the first case study organization is labeled Destinytech (anonymized), and its change initiative, called SustCity, involves the development of a "smart city"; the second organization is labeled Initech (anonymized) and its change initiative EvoInitech involved revamping the organization's mobile telecommunications network.

Our selection of cases may be considered atypical; however, the study of atypical cases can shed light on more typical cases by considering phenomena in extremis (Hällgren et al. 2018). The demographic characteristics and roles of the interview participants for the two case studies conducted in the analysis were outlined, that is, Case Study 1—Destinytech and Case Study 2—Initech. The profiles provide essential context for understanding the perspectives shared by participants during the interviews, which focused on key organizational themes such as resource synchronization, organizational viability, leadership transition, employee retention, and performance metrics. The participants in Case Study 1—Destinytech were all male and of English nationality. The sample consisted of three key individuals, each occupying distinct and influential roles within the organization. These roles are pivotal in understanding the organizational dynamics and decision-making processes discussed in the interviews. The inclusion of participants from both executive and external consulting roles enables a comprehensive understanding of Destinytech's organizational challenges and strategic responses. For Case Study 2—Initech, demographic details of the interview participants were unavailable due to the origin of study—the unit of analysis is not the individuals but resource synchronization processes. As a result, the insights derived from the Initech case study are based on the thematic analysis of responses rather than specific demographic profiles. Nevertheless, the interview questions explored similar themes as those in the Destinytech case, allowing for comparisons of organizational performance and strategic responses across different contexts.

For method involved was an iterative process of data collection, verification, and validation. Each case was researched for approximately 18 months. The gathered information about the change initiative and the parent organizations from multiple sources was across three levels: the organization, the project and program, and the actors involved in the change initiatives. The source of the data collected includes status reports and other publicly available information (see Table 2). To "track" changes to innovation benefits realization in each change initiative (Wang et al. 2007), three workshops (every 6 months) were conducted with respondents to develop concept maps (see Table 2) from words (e.g., quotes), ideas (e.g., how change manifests), and tasks (e.g., how changes were accommodated). Said concept maps (see Figure 2) were used to probe into innovation benefits realization to explore the changes to participants' perception of benefits realization, understand the challenges to these changes in benefits realization, and examine how the changes were implemented for benefits realization.

The respondents in each workshop were selected purposefully to ensure that they possess in-depth knowledge about the strategic initiative and its management. However, managers at different hierarchical levels were interviewed to ensure that operational (e.g., project managers), tactical (e.g., strategic initiative managers), and strategic (e.g., account executives) views were captured. Semi-structured interviews were used to gain a more contextual understanding of the concepts of innovation benefits realization and resource orchestration, as semi-structured interviews can emulate a naturalistic conversation for capturing a detailed snapshot of respondents' beliefs, perceptions, and accounts of a particular phenomenon (Galletta 2013). The questions focused on the key actions taken in the strategic initiatives. This

TABLE 2 | Data sources for the case study analysis.

Type	SustCity	EvoInitech	Description
Interviews	28	34	Interviews at upper, middle, and lower management levels every 3 months
Upper management	1	3	Includes CEO, CFO, VP, COO, and CTO
Middle management	24	25	Program, project, and operations managers
Lower management	2	4	Administrators and systems engineers
Workshops and focus groups	2	4	Clarify and validate contextual shift in priorities
Technical summaries and reports	6	11	Internal reports on resource orchestration
Official blogposts	8	4	Support evidence trail on orchestration efforts
Business press articles	14	2	Externally produced material on orchestration
Academic papers	8	2	Academic references
Case studies	3	2	Used to support case analysis
Book chapters	1	0	Additional context
Analyst reports	1	3	Industry-wide sources to inform interviews
Business press articles	13	28	Supplementary press sources
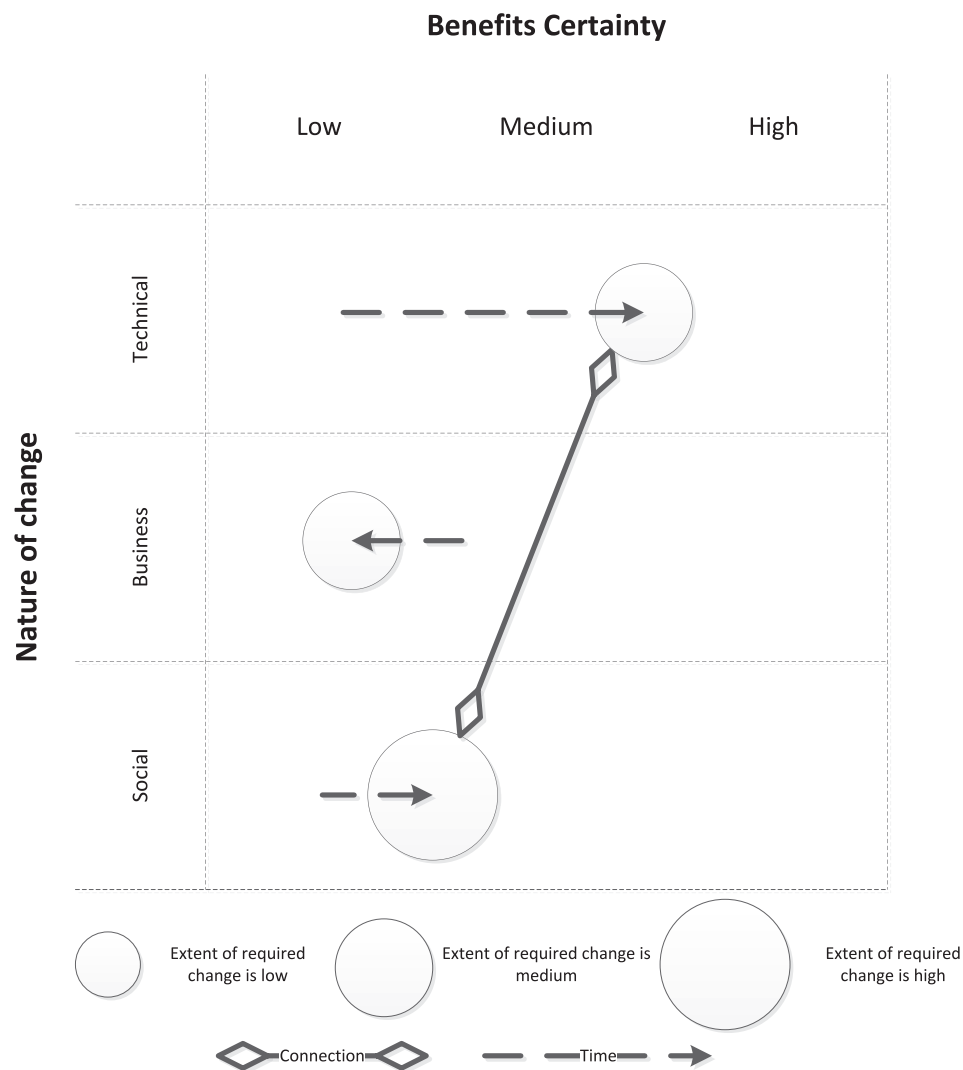
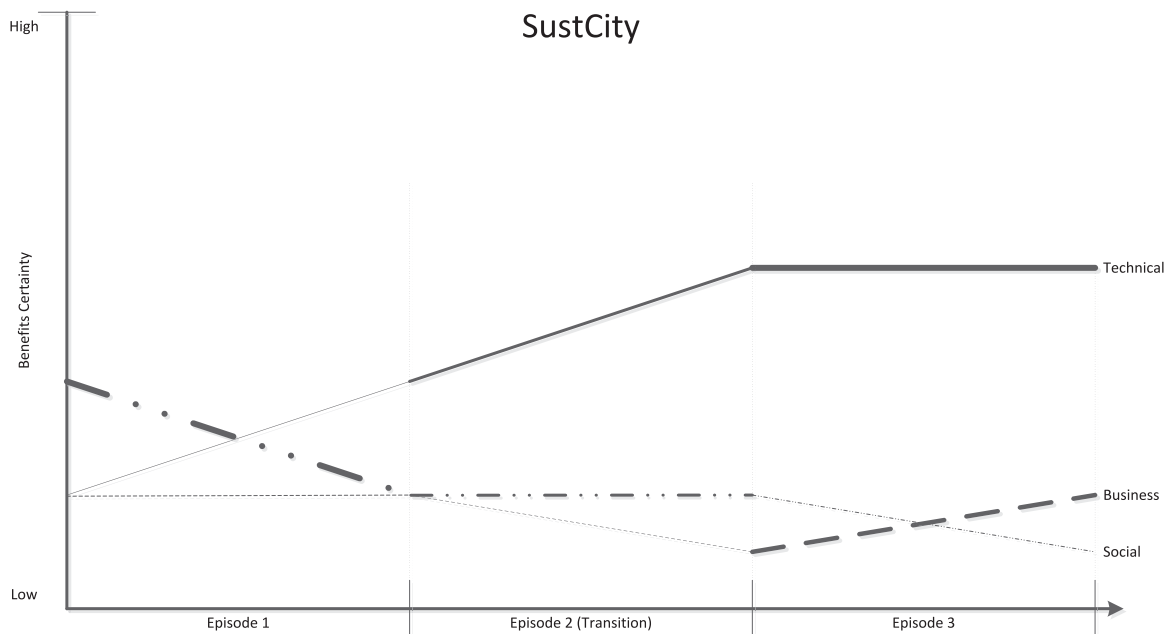**FIGURE 2** | A simplified example of a concept map.

FIGURE 3 | Benefits realization in the case of SustCity.

approach to data collection has enabled us to establish a near-complete timeline of the two change initiatives in their natural settings.

4 | Case Analysis

A processual analysis was then conducted to provide insights into the underlying patterns. For each strategic initiative, a narrative was developed, and case summaries were produced and reviewed by the organizations to ensure accuracy. Each narrative was divided into distinct phases or episodes (Langley 1999) that highlight the continuity of activities within each phase. The analysis considered change in three types of innovation benefits: technical, business, and societal. The perceived innovation benefits were rated by the respondents into three levels: low-, medium-, and high-innovation benefit certainty. For example, low-innovation benefit certainties include innovation benefits that are not established, ambiguous, or likely to change. The collective data generated from this analysis produced a rich narrative describing the strategic initiatives, including the context in which they operated, the innovation benefits they realized, and how they changed the resource base. To enhance data reliability and validity, several measures were implemented. First, a detailed chain of evidence linking data to findings was maintained (Eisenhardt 1989). Second, for employed member checking, sharing preliminary analyses with participants for verification and refinement was used (Creswell and Clark 2017). Third, a systematic comparison of findings across different data sources to identify and resolve inconsistencies was helpful (Eisenhardt 1989).

5 | Case: Destinytech (SustCity)

Destinytech a privately-owned international business focuses on developing innovative and sustainable city-scale technologies

(Siala et al. 2023). Destinytech brings together technology corporations, educational institutions, and other partner organizations to facilitate and accelerate technological innovation to address the challenges of escalating urbanization. Destinytech's strategic change initiative, SustCity, is a 1700-ha greenfield site that serves as a research and development platform for Destinytech and its partners. The dynamism in innovation benefits realization from SustCity is represented by the process maps in Figure 3.

Table 3 shows the shift in priorities from realizing the societal vision of sustainable urbanization to a financially viable business model for Destinytech.

The analysis was performed by structuring the context in episodes. Episode 1 focused on benefit realization was analyzed to explore how social innovation by Destinytech initially envisioned a business model that fosters social change through the development of sustainable smart cities (Siala et al. 2023). SustCity is a societally driven strategic initiative that was launched to achieve this vision of a smart city, which drew interest and investments from large organizations. This model refers to partnership of large organizations with smart city vision emphasizing the pain- and gainsharing. Next, Episode 2—transition toward technical business model explained how Destinytech's resource base expanded significantly; however, the social innovation benefits realization declined due to austerity measures implemented by EU governments, which partially funded the project (Siala et al. 2023). This shortsighted approach adversely affected Destinytech's key decision-makers. As one program manager of SustCity put it, the situation was akin to a "Ferrari slowed down by land deals." Consequently, the reduction in funding led to a noticeable decrease in benefits, prompting a drastic shift in focus from business feasibility to technical feasibility. Third, Episode 3 focused on technical/business innovation benefits realization reflected on the lack of funding and protracted negotiations about tax exemptions in a

partnering country led to an offsetting remedial strategy that included conducting smaller, concurrent projects for upgrading existing construction sites to provide greater yield in a shorter time (Siala et al. 2023). Those concurrent projects were meant to keep Destinytech afloat and invigorate engagement with its partners.

5.1 | Resource Orchestration

SustCity, in Episode 1, focused its attention on the RO actions of acquiring and leveraging a resource base. Episode 2 led to a major transition, in which the team descoped and refocused their efforts, shifting priorities from a societal change initiative to a technically viable business undertaking. Tables 4 and 5 outline the RO and synchronization actions of SustCity. During Episode 1, the focus was on acquiring strategy and how SustCity significantly mobilized resources and capabilities due to the uncertainty of surroundings, particularly the high-risk real-estate projects funded by governmental and private sponsors. In the start-up phase, Destinytech recruited individuals from high-tech companies on a pro bono basis. Destinytech's ecosystem comprises 300 organizations, including consultancies, high-technology firms, real-estate firms, and architects. Investors were attracted by the alluring high-risk, high-reward potential associated with smart cities and the opportunity to augment their reputation through such a sustainably

labeled investment. However, they eventually became reluctant to invest the lion's share to realize this vision of a smart city. For Episode 2, transition needed refocusing, descoping, and substituting and suffered from the lack of funding, which led to the redeployment of resources and capabilities in smaller projects, such as the redevelopment of existing parts of a city or buildings. This action of descoping the initial vision of societal change to more feasible short-term projects had ramifications on the "visionary" managers of Destinytech. This suggests that the "visionaries" and "innovator," seen as advocates for societal impact, were challenged by business realities. The diminishing financial support from EU governments led to the decision to lease the existing urban technologies to other providers. This change in focus to a technology-led business provided the traction needed to sustain the start-up toward the growth stage. Episode 3, meant for leveraging, required ongoing tensions that started to emerge between visionaries and operations managers, leading to further scope changes that ultimately eventuated in the realization of SustCity (Siala et al. 2023). The organization moved away from its ambitious social goals to a more pragmatic approach, emphasizing technically viable business projects. This transition involved downsizing the original vision and focusing on smaller, more manageable projects that could generate revenue and sustain the company in the short term. Leadership changes were also made, with the more visionary leaders stepping back and technically focused managers taking the reins to drive the business forward.

TABLE 3 | Episodic evidence of benefits realization in SustCity (Destinytech).

Shift in priority	Environmental pressures	Illustrative quotes
Social (external) → technical/business	Funding for SustCity, utilization/retention of in-house employees, developing a commercially viable technical platform	"I think on the test side … they'll be operating at 80%–90% efficiency …" [CEO of Destinytech] "So, most of the questions … have dealt with funding issues and resourcing …" [VP of Destinytech] "It's all dependent on funding … kind of a Catch 22." [VP of Destinytech]

TABLE 4 | Episodic evidence of resource synchronization for SustCity (Destinytech).

Action	Definition	Episode 1	Episode 2	Episode 3
Refocusing	Adjusting activity concentration	A, B	A, b	A, b
Descoping	Reducing depth of activities	A, B	a, B	A, B
Substituting	Changing power of influence	A, B	A, b	A, b

TABLE 5 | Analysis of shifts and pressures with illustrative quotations.

Shift	Episode 1	Episode 2	Episode 3	Illustrative quotes
Social (external)—technical/business	A, B, C	A, B, c	A, B, c	"Like Initechs preferred position … this contract is we sell mandays …" [Director of Prodos] "… things that should have been done better are tools and systems …" [Program manager EvoInitech]

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5.2 | Resource Synchronization

The lack of funding, rising costs, declining business model innovation benefits, and rising uncertainty collectively threatened Destinytech's viability. The Destinytech ecosystem was a pain/gain-share contractual agreement where risks and opportunities are shared between clients, contractors, and the supply chain. This challenge of long-term sustainability led the visionaries to cede their role to operationally minded individuals who can generate income from smaller projects to keep SustCity afloat. The failure to realize the societal vision of a sustainable urban city led some employees at Destinytech to question their role, resulting in a lack of internalization of capabilities. This restricted Destinytech from defining a permanent core team for the entrepreneurial organization to enter a growth phase.

The contextual issue behind these episodes was explained by the program manager of SustCity in the following words:

> It's the time when the entrepreneur might need to stand aside and become more the Chairman, a strategist, developing the visions and have other people taking over. (Program Manager SustCity)

6 | Case: EvoInitech

EvoInitech is a strategic initiative involving a managed-services partnership between Initech and a mobile phone operator called Prodos. This was a major change as Initech had to shift from being a hardware and system supplier to becoming a service provider. The contract stipulates that Prodos retains ownership of all IT assets and networks while Initech's responsibility is to manage the operations of the network. This strategic initiative involved a radio network rollout, the maintenance of existing 6000+ radio base station sites, and the management of the core network and operations center. This change initiative started with a relatively higher perceived certainty of societal, technical, and business model innovation benefits (see Figure 4 and Table 5), but through the course of 18 months, this initiative had to adapt to accommodate a shift in priority from a technical focus to one that emphasizes technical innovation benefits to Prodos and business model innovation benefits to Initech.

First episode analyzed was focused on benefits realization considering social innovation including technical ones that were managed and how the service agreement involved subsuming 1000 Prodo employees into Initech. Initech experienced a challenge of transition from being primarily a technology provider to becoming a full-service provider for Prodos. Second, Episode 2 about transition toward a technical business model revealed that although Initech assimilated former employees of Prodos, the transition to full-service provision for Prodos involved further capacity challenges: the global shortage of IP staff caused Initech to struggle with mobilizing its resources and consequently, it had to outsource the IP change management process, which led the strategic initiative to experience higher staff turnover and steeper costs. The third episode focused on business/societal benefits realization. EvoInitech's transition to a full-service provider meant that it had to maintain uptime service-level agreements. EvoInitech had to also upgrade a network that required specialized and scarce resources, but the human resources that were transferred from Prodos fell short of the standards of the service-level agreement with Prodo.

6.1 | Resource Orchestration

EvoInitech faced a shortage of the specific capabilities needed for growing in a service-oriented market. Table 6 outlines the RO and synchronization actions of EvoInitech. In the Tables 2–7, the strength of evidence has been categorized as follows: "A,"
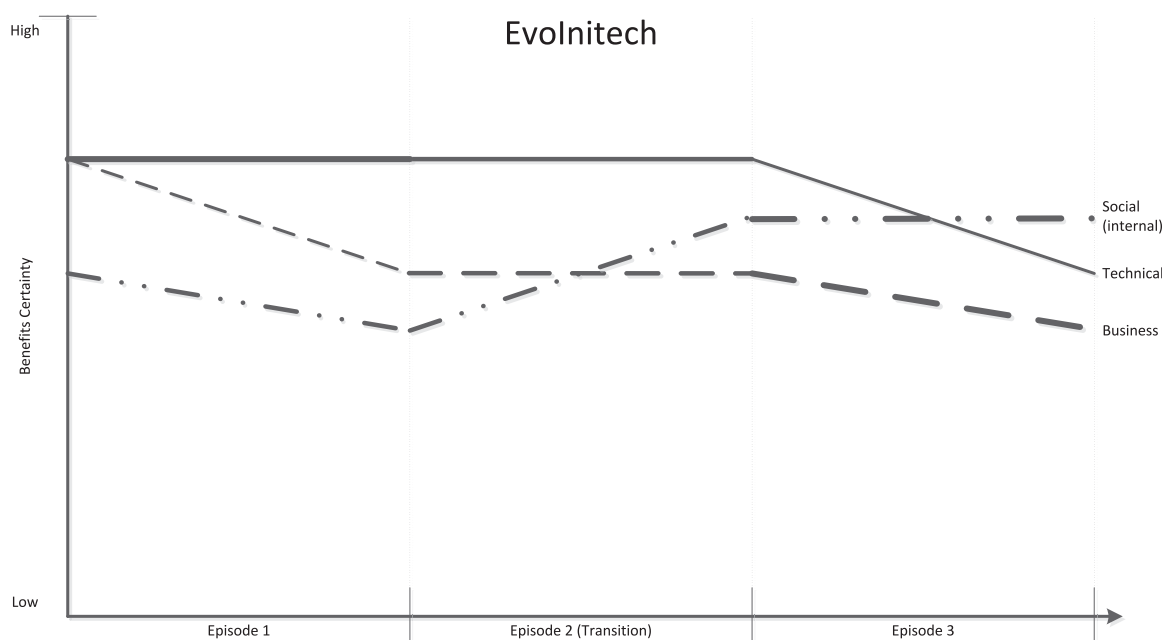

FIGURE 4 | Benefits realization in the case of EvoInitech.

TABLE 6 | Episodic resource orchestration and synchronization in EvoInitech.

Action	Definition	Episode 1	Episode 2	Episode 3
RO-transferring	Moving resources between units	A, B	A, b	A, b
RO-mobilizing	Identifying capabilities to exploit market	A, b	a, b	A, B
RO-accumulating	Developing internal resources	A, B	A, b	A, b
RO-enriching	Extending current capabilities	A, B	a, B	A, B
RO-strategic	Purchasing resources from markets	A, b	a, B	A, b
RS-refocusing	Adjusting concentration of activities	A, b	A, b	A, b

TABLE 7 | Case comparison: SustCity and EvoInitech.

Aspect	SustCity (Destinytech)	EvoInitech (Initech)
Focus	Sustainable city-scale technologies	Transition to managed-services
Strategic initiative	1700-ha smart city platform	Managed-service with Prodos
Initial objective	Societal benefits via smart cities	Internal benefits, Prodos staff integration
Episode 1	Acquire resources, societal focus	Transfer resources, customer focus
Episode 2	Refocus/descoping due to funding cuts	Refocus/outsourcing due to turnover
Episode 3	Leverage resources, maintain partnerships	Enrich and mobilize resources
Key challenges	Funding, cost, leadership changes	Resource scarcity, integration, competition
Resource orchestration	Acquiring, refocusing, leveraging	Transferring, acquiring, enriching
Synchronization mechanisms	Pain/gain contracts, smaller projects	Talent training, contract conversion

evidence from more than three interviews; "a," evidence from less than three interviews. "B," evidence from more than two archival sources (such as status reports, etc.); "b," no evidence from internal documents (such as status reports, etc.). The analysis based on Episode 1 reviewed transferring, acquiring, and accumulating. Prodos transferred resources to Initech to maintain and upgrade a mobile network. However, 70% of the transferred workforce remained on flexible contracts, which led to integration challenges. The second episode analyzed was focused on transition, which revealed that issues related to resource shortfall, that is, the shortfall in resources, led EvoInitech to refocus the realization of its benefits to better leverage its resource base by emphasizing the attractiveness of EvoInitech as an employer, which includes highlighting its unique career development opportunities. The third episode reflected on issues related to enriching and mobilizing resources and explained how Initech eventually invested in training its permanent staff to address the shortage in IP capabilities, but the scarcity of IP capabilities persisted despite these enrichment efforts. Initech paid a salary premium to convert former temporary personnel to sign permanent contracts. Initech's global reach helped recruit and retain employees for EvoInitech, and the increased external competition for capabilities reinforced the need to focus on societal (internal) benefits to enable EvoInitech to maintain high business benefits realization.

These challenges were explained by the program manager of the company in following words:

> ... what made this place here so different was, everyone didn't think of product, we thought of operator, we thought about customer and that was all we thought about. We also recognized that outsourcing work is not good business, and we would like to build competencies that will give us the ability to use external pools of talent ... (Business Unit Leader Initech)

6.2 | Resource Synchronization

In contrast to SustCity, which faced a viability challenge, EvoInitech faced the challenge of sourcing specific expertise to maintain service levels to Prodos (Siala et al. 2023). A workforce of temporary workers—up to 70% at EvoInitech—was unsustainable. To develop internal talent and expertise, professional development activities were incorporated into the employment package of the employees that were subsumed into EvoInitech, and engineers on temporary contracts were offered permanent contracts. However, at some stage, the demand for technical expertise outstripped the organizational capability to attract additional engineers, and the processes of acquisition and accumulation led to an inflation of the resource-based costs associated with Initech's strategic initiative.

The context was explained by one of the managers in following words:

11

... half of the problem is that because they know [people with IP skills], they expect high salaries ... it becomes more challenging to get the right people into those places and keep them there. (CTO EvoInitech)

7 | Discussion

This study explored how resource synchronization unfolds during strategic change initiatives by examining the differing resource orchestration processes across initiative life cycles, and how continuous synchronization enhances strategic fit with changing environmental and organizational demands.

While prior research has highlighted the importance of resource orchestration for dynamic capabilities (Hitt et al. 2011; Sirmon et al. 2008; Helfat et al. 2009), this study advances theory by conceptualizing resource synchronization as a dynamic, evolving capability that enables the continuous realignment of innovation benefits with organizational capabilities. We extend the literature by identifying four distinct synchronization mechanisms—Refocusing, Descoping, Substituting, and Deferring—that allow organizations to dynamically adjust their initiatives in response to evolving conditions. Furthermore, we introduce a novel conceptual framework (see Figure 5), categorizing organizations into synchronization states of Swimming, Treading Water, Doggy Paddle, and Drowning, thus offering new explanatory insight into how synchronization quality impacts innovation outcomes.

The findings directly address RQ1 by identifying the specific processes (Refocusing, Descoping, Substituting, Deferring)

that organizations employ to manage and synchronize their resources. These processes enable adaptation by allowing organizations to dynamically adjust their approach based on changing resources and environmental conditions, answering the question of how synchronization occurs and which mechanisms enable adaptive strategies over time. Refocusing is a process of concentrating and adjusting the breadth of activities. This transformative process addresses shifts in priorities of the strategic initiative (e.g., from social innovation benefits realization to technical innovation benefits realization). *Descoping* is the process of reducing the scope of activities by discarding some activities to save resources or to focus on more important aspects of the project. For example, in response to a shortfall in the funding of SustCity, descoping was implemented by running smaller construction projects in tandem with SustCity to provide financial support to the parent organization. *Substituting* is the process of changing actors and roles, such as reconstituting project leadership. For example, the process of refocusing required a change in leadership (focus) for SustCity. *Deferring* is the process of procrastinating any concentration of activities due to an inadequate resource base. At SustCity, for example, the shift in priorities from a societally (externally) driven strategic initiative toward a technically business-driven strategic initiative was facilitated by Destinytech's time-demanding reconfiguration of their resource base. In a similar vein, EvoInitech harnessed the existing capabilities offered by its parent organization Initech to cope with a shifting priority from technical/business to business. The continuous, time-demanding aspiration and commitment to maintain, expand, and enhance the resource base facilitated this shift, although said resource orchestration
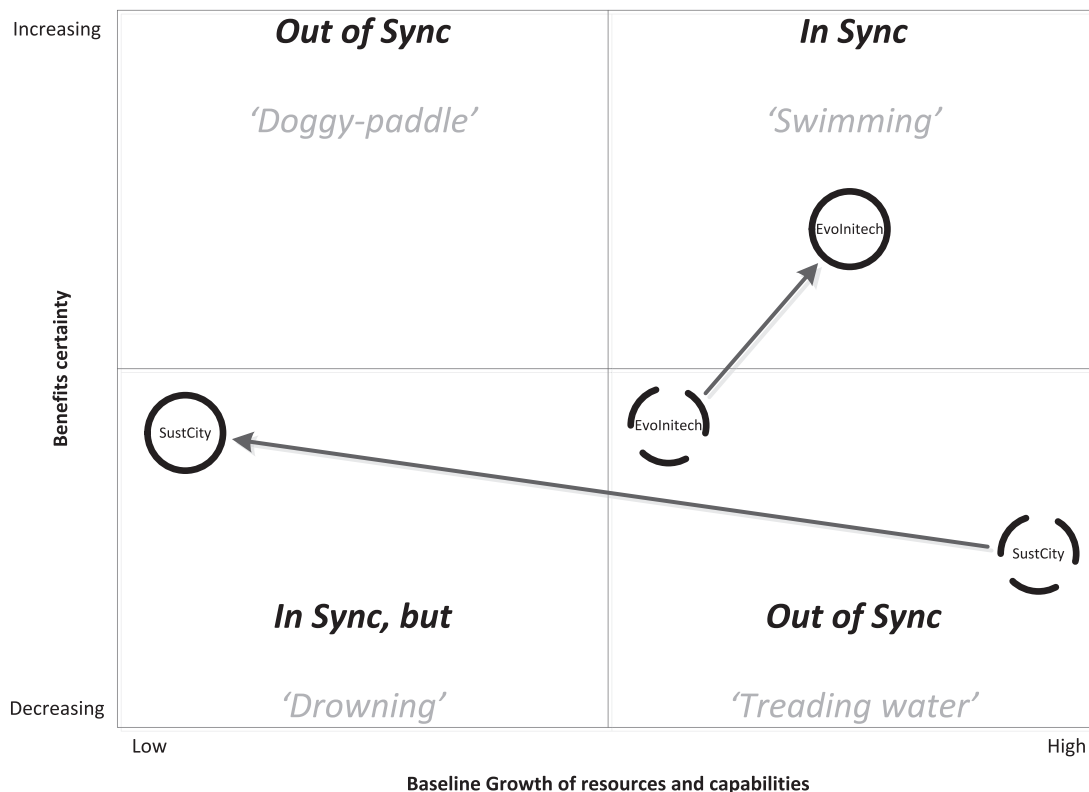

FIGURE 5 | Change orchestration and aspects of synchronization (with aggregated realization and growth scores).

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efforts for employee retention at EvoInitech ultimately inflated the cost of the resource base and reduced the flexibility to divest resources.

The findings expand on RQ2 that synchronization mechanisms are not static but evolve alongside shifts in benefit prioritization. Strategic initiatives such as SustCity and EvoInitech demonstrated adaptive transformations in their benefit orientation from social to technical, and from technical to business model innovation, illustrating that synchronization involves not just internal resource adjustments but dynamic realignments of strategic aims.

Organizations recalibrate their focus and resources in tandem, ensuring that synchronization supports emergent opportunities rather than adhering rigidly to initial goals. This highlights synchronization as a longitudinal, learning-driven capability that evolves to maintain fit between organizational ambitions and environmental realities.

The findings for RQ3 address the relationship between synchronization mechanisms and organizational outcomes by categorizing organizations into different states of synchronization effectiveness. The four states of synchronization effectiveness are Swimming, Treading Water, Doggy Paddle, and Drowning. Each state reflects distinct levels of alignment between capabilities and benefit realization:

- Swimming denotes high alignment and high realization of innovation benefits, representing effective synchronization.

- Treading Water reflects organizations with strong capabilities but unclear or shifting benefits realization under uncertainty.

- Doggy Paddle characterizes organizations with clear benefit targets but insufficient or unsuitable capabilities.

- Drowning signifies both a lack of clear strategic benefits and deficient organizational capabilities, leading to innovation failure.

These states demonstrate that synchronization quality critically influences innovation outcomes across technical, business model, and social innovation domains. High synchronization fosters resilience and performance; low synchronization increases vulnerability to strategic drift and resource inefficiency.

The insights generated from the two case studies led us to propose a new conceptual framework for resource synchronization (see Figure 5), which advances theory in two important ways.

First, it conceptualizes resource synchronization not merely as resource reallocation, but as a dynamic capability that facilitates the continuous realignment between strategic benefit realization and organizational capability development over time.

Second, it introduces a typology of synchronization states (Swimming, Treading Water, Doggy Paddle, and Drowning)

offering a nuanced explanation of how varying degrees of synchronization influence innovation outcomes.

In our framework, when both strategic benefits and organizational capabilities are low, the organization enters a Drowning state, characterized by high uncertainty, limited capabilities, and few achievable benefits. Although exploration may uncover future opportunities, the organization lacks the immediate means to generate value.

Through deliberate resource orchestration, momentum can be gradually built by enhancing capabilities and clarifying objectives, progressing toward the Swimming state. Swimming represents high synchronization where strong capabilities are tightly aligned with strategic benefit realization, enabling organizations to perform effectively and safely within dynamic environments.

Meanwhile, organizations that possess developed capabilities but experience unclear benefits realization operate in a Treading Water state, maintaining existing structures without achieving significant progress. Capabilities are underutilized in such settings. Conversely, organizations that have clear benefit aspirations but insufficient or misaligned capabilities are found in the Doggy Paddle state, where the ambition to realize innovation benefits is not matched by the operational ability to deliver them.

By distinguishing these states, our framework contributes a deeper understanding of how synchronization evolves dynamically, offering theoretical insight into the interplay between capabilities and benefit realization over time—an area previously underexplored in the resource orchestration literature (Hitt et al. 2011; Sirmon et al. 2008).

Beyond theoretical advancement, the findings provide critical managerial implications. To sustain synchronization, managers must practice improvisational capability reconfiguration (Andersén and Ljungkvist 2021; Baert et al. 2016), such as reassessing workforce skills, outsourcing tasks, or bridging resource gaps through complementary initiatives (Choi et al. 2020). Building organizational ambidexterity—balancing exploitation of current assets with exploration of new opportunities—is key to sustaining adaptability (Birkinshaw and Gibson 2004; O'Reilly III and Tushman 2013). Aligning strategic initiatives with available capabilities while fostering managerial flexibility enhances the overall synchronization effectiveness (Helfat and Martin 2015; Ketchen Jr et al. 2014).

Managers should systematically assess organizational strengths and weaknesses (Carmeli and Tishler 2004; Cardeal and Antonio 2012), leverage cross-functional collaboration platforms, and apply real-time monitoring tools (Galletta 2013; Street and Ward 2012) to stay responsive. Resource governance frameworks such as RACI matrices (Helfat et al. 2009; Kor and Leblebici 2005) further support clear accountability and resource alignment.

Thus, continuous resource synchronization emerges as a strategic imperative for organizations navigating complex, uncertain environments (Teece 2000; Sirmon et al. 2007).

8 | Implications, Limitations, and Future Research

This study offers a significant theoretical contribution to the resource orchestration (RO) literature by uncovering the recursive relationship between organizational conditions and resource orchestration processes through specific synchronization mechanisms in strategic initiatives. The findings show that, prior to taking strategic action, managers often create new events, structures, constraints, and opportunities (Weick 1995), which subsequently reshape the organizational context. This dynamic reinforces the idea that the innovation benefits generated can in turn alter the very resource base and capabilities that supported them. The recognition of this recursive relationship provides a foundation for further theorization of dynamic strategic management processes.

Although the strategic initiatives studied were contextually distinct, theory development in this research was grounded in the epistemological assumption that comparative case analysis can identify recurring patterns, issues, and mechanisms across cases (Eisenhardt 1989; Buchanan 2012; Langley 1999). Through analytic refinement (Tsoukas 2009), we developed a refined conceptual framework that integrates emerging RO research and, to a lesser extent, the RBV. Nevertheless, while this framework extends current theory, it requires further empirical validation across different organizational and industry contexts to strengthen its generalizability.

In addition to theoretical contributions, this study offers practical implications for managers engaged in dynamic strategic initiatives. It emphasizes that managers must proactively develop dynamic synchronization capabilities that allow continuous realignment of resources in response to shifting priorities and environmental changes. Organizations should institutionalize formal mechanisms for resource flexibility, such as cross-functional team structures and modular project management approaches, to enable faster reallocation of skills and assets. Furthermore, embedding iterative feedback loops and real-time monitoring into strategic initiatives can help detect emerging misalignments early, allowing managers to make timely adjustments. Developing resource buffers—such as maintaining surplus technical expertise or financial reserves—also enhances an organization's agility. In addition, organizations need to foster ambidexterity not only at the executive level but throughout operational and project teams, encouraging both the exploitation of existing strengths and the exploration of new opportunities. Managers should tailor synchronization strategies according to the stage of the initiative, promoting greater flexibility during early exploratory phases and enforcing more structured resource consolidation during later stages of implementation. These practices provide a clear operational roadmap for enhancing innovation outcomes through effective resource synchronization.

Despite its contributions, this study is subject to several limitations. The research was based on two strategic initiatives conducted within specific industry, organizational, and geographic contexts, which may have influenced the findings. SustCity operated in the urban development sector within a European environment characterized by strong public-private collaborations and regulatory frameworks, while EvoInitech operated in the technology innovation sector in a North American market-driven setting. Furthermore, the firms differed significantly in size, with SustCity representing a larger, more bureaucratic organizational form compared to EvoInitech's smaller and more agile structure. These differences suggest that the processes of resource synchronization and their effectiveness may vary depending on industry characteristics, firm size, and regional institutional environments. Consequently, caution must be exercised when generalizing the findings to different contexts.

Future research should investigate how synchronization mechanisms differ across industries characterized by different levels of environmental turbulence, resource dependency, and strategic horizons. Comparative studies between small, medium, and large enterprises could illuminate how organizational size affects the capacity for dynamic resource synchronization. Moreover, further exploration of how national and regional institutions influence resource orchestration practices would enhance understanding of contextual contingencies. Research should also move beyond individual initiatives to examine how organizations manage portfolios of concurrent strategic initiatives, which often compete for shared resource pools. Longitudinal studies employing process-tracing or sequence analysis methodologies would be particularly valuable in capturing the evolving and recursive nature of resource synchronization efforts over extended periods.

In conclusion, while this study advances understanding of resource synchronization in strategic initiatives and provides a foundation for future theoretical development, broader empirical testing is needed to refine and generalize the proposed framework across diverse organizational and environmental settings.

9 | Conclusion

Our study provides practical insight into the challenges surrounding RO processes and how they change and interact with each other in a dynamic environment. The core contribution of this study is revealing the recursive relationship between organizational conditions and RO processes in strategic initiatives through specific synchronization mechanisms. When managers act, they bring events, structures, constraints, and opportunities that were not evident before. They consider action and then set it in motion. This is indicated by those feedback relationships, which show how the innovation benefits obtained can alter the organizational assets under which they were generated. Another key contribution of this study is our proposed conceptual framework for RO and synchronization of strategic initiatives in dynamic environments, which draws on concepts of organizational ambidexterity and the RBV. We have also proposed a roadmap to guide senior management on how to facilitate alignment between strategic initiatives and an organization's core assets. Our proposed roadmap demonstrates how our findings can translate into practical, actionable, and transferable insights that can guide senior management in their decision-making in regard to RO, enabling them to streamline their efforts in aligning strategic initiatives with core assets to achieve sustainable business growth and success in the long run.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

References

Addo, A. 2022. "Orchestrating a Digital Platform Ecosystem to Address Societal Challenges: A Robust Action Perspective." *Journal of Information Technology* 37, no. 4: 359–386.

Andersén, J., and T. Ljungkvist. 2021. "Resource Orchestration for Team-Based Innovation: A Case Study of the Interplay Between Teams, Customers, and Top Management." *R&D Management* 51, no. 1: 147–160.

Appiah, L. O., D. Essuman, C. A. Forson, N. Boso, and J. Annan. 2025. "Green Process Innovation and Financial Performance in Small and Medium-Sized Enterprises in a Developing Country; Role of Resource Orchestration." *Journal of Business Research* 189: 1–14.

Baert, C., M. Meuleman, M. Debruyne, and M. Wright. 2016. "Portfolio Entrepreneurship and Resource Orchestration." *Strategic Entrepreneurship Journal* 10, no. 4: 346–370.

Balogun, J. 2006. "Managing Change: Steering a Course Between Intended Strategies and Unanticipated Outcomes." *Long Range Planning* 39, no. 1: 29–49.

Barney, J. 2001. "Resource-Based Theories of Competitive Advantage: A Ten-Year Retrospective on the Resource-Based View." *Journal of Management* 27, no. 6: 643–650.

Barney, J., and D. N. Clark. 2007. *Resource-Based Theory: Creating and Sustaining Competitive Advantage.* Oup Oxford.

Barreto, I. 2010. "Dynamic Capabilities: A Review of Past Research and an Agenda for the Future." *Journal of Management* 36, no. 1: 256–280.

Birkinshaw, J. 1997. "Entrepreneurship in Multinational Corporations: The Characteristics of Subsidiary Initiatives." *Strategic Management Journal* 18, no. 3: 207–229.

Birkinshaw, J., and C. Gibson. 2004. "Building Ambidexterity Into an Organization." *MIT Sloan Management Review* 45, no. 4: 47–55.

Bruch, H., P. Gerber, and V. Maier. 2005. "Strategic Change Decisions: Doing the Right Change Right." *Journal of Change Management* 5, no. 1: 97–107.

Buchanan, D. A. 2012. "Case Studies in Organizational Research." In *The Practice of Qualitative Organizational Research: Core Methods and Current Challenges*, edited by G. Symon and C. Cassell, 373–392. Sage Publications.

Candi, M., and A. Beltagui. 2019. "Effective Use of 3D Printing in the Innovation Process." *Technovation* 80: 63–73.

Cardeal, N., and N. S. Antonio. 2012. "Valuable, Rare, Inimitable Resources and Organization (VRIO) Resources or Valuable, Rare, Inimitable Resources (VRI) Capabilities: What Leads to Competitive Advantage?" *African Journal of Buisness Management* 6, no. 37: 10159–10170.

Carmeli, A., and A. Tishler. 2004. "The Relationships Between Intangible Organizational Elements and Organizational Performance." *Strategic Management Journal* 25, no. 13: 1257–1278.

Carnes, C. M., F. Chirico, M. A. Hitt, D. W. Huh, and V. Pisano. 2017. "Resource Orchestration for Innovation: Structuring and Bundling Resources in Growth- and Maturity-Stage Firms." *Long Range Planning* 50, no. 4: 472–486.

Chadwick, C., J. F. Super, and K. Kwon. 2015. "Resource Orchestration in Practice: CEO Emphasis on SHRM, Commitment-Based HR Systems, and Firm Performance." *Strategic Management Journal* 36, no. 3: 360–376.

Chatzoglou, P., D. Chatzoudes, L. Sarigiannidis, and G. Theriou. 2018. "The Role of Firm-Specific Factors in the Strategy-Performance Relationship: Revisiting the Resource-Based View of the Firm and the VRIO Framework." *Management Research Review* 41, no. 1: 46–73.

Chirico, F., D. G. Sirmon, S. Sciascia, and P. Mazzola. 2011. "Resource Orchestration in Family Firms: Investigating How Entrepreneurial Orientation, Generational Involvement, and Participative Strategy Affect Performance." *Strategic Entrepreneurship Journal* 5, no. 4: 307–326.

Choi, S. B., W. R. Lee, and S. Kang. 2020. "Environmental Dynamics and Firm Performance: A Test of Three-Way Interaction." *Sustainability* 12, no. 13: 1–13.

Creswell, J. W., and V. L. P. Clark. 2017. *Designing and Conducting Mixed Methods Research.* 3rd ed. Sage Publications.

Cui, T., J. H. Ye, and C. H. Tan. 2022. "Information Technology in Open Innovation: A Resource Orchestration Perspective." *Information and Management* 59: 1–18.

Dutta, D. K., K. L. Gwebu, and J. Wang. 2015. "Personal Innovativeness in Technology, Related Knowledge and Experience, and Entrepreneurial Intentions in Emerging Technology Industries: A Process of Causation or Effectuation?" *International Entrepreneurship and Management Journal* 11: 529–555.

Eisenhardt, K. M. 1989. "Building Theories From Case Study Research." *Academy of Management Review* 14, no. 4: 532–550.

Faccin, K., D. Wegner, and A. Balestrin. 2020. "How to Orchestrate R&D Networks? The Role of Orchestration Subprocesses and Collaborative Practices Over Time." *Creativity and Innovation Management* 29, no. 1: 161–177.

Galletta, A. 2013. *Mastering the Semi-Structured Interview and Beyond: From Research Design to Analysis and Publication.* Vol. 18. NYU press.

Hällgren, M., L. Rouleau, and M. De Rond. 2018. "A Matter of Life or Death: How Extreme Context Research Matters for Management and Organization Studies." *Academy of Management Annals* 12, no. 1: 111–153.

Hatani, F. 2016. "Institutional Plasticity in Public-Private Interactions: Why Japan's Port Reform Failed." *Journal of World Business* 51, no. 6: 923–936.

Helfat, C. E., S. Finkelstein, W. Mitchell, et al. 2009. *Dynamic Capabilities: Understanding Strategic Change in Organizations.* John Wiley & Sons.

Helfat, C. E., and J. A. Martin. 2015. "Dynamic Managerial Capabilities: Review and Assessment of Managerial Impact on Strategic Change." *Journal of Management* 40, no. 5: 1281–1312.

Hitt, M. A., R. D. Ireland, D. G. Sirmon, and C. A. Trahms. 2011. "Strategic Entrepreneurship: Creating Value for Individuals, Organizations, and Society." *Academy of Management Perspectives* 25, no. 2: 57–75.

Hodgkinson, I. R., M. Ravishankar, and M. Aitken-Fisher. 2014. "A Resource-Advantage Perspective on the Orchestration of Ambidexterity." *Service Industries Journal* 34, no. 15: 1234–1252.

Holcomb, T. R., R. M. Holmes Jr., and B. L. Connelly. 2009. "Making the Most of What You Have: Managerial Ability as A Source of Resource Value Creation." *Strategic Management Journal* 30, no. 5: 457–485.

Iyer, K. N., P. Srivastava, and M. Srinivasan. 2023. "Symbiotic Association of Resources and Market-Facing Capabilities in Supply Chains as Determinants of Performance: A Resource Orchestration Perspective." *European Journal of Marketing* 57, no. 11: 2893–2917.

Katila, R., and G. Ahuja. 2002. "Something Old, Something New: A Longitudinal Study of Search Behavior and New Product Introduction." *Academy of Management Journal* 45, no. 6: 1183–1194.

Ketchen, D. J., Jr., K. D. Wowak, and C. W. Craighead. 2014. "Resource Gaps and Resource Orchestration Shortfalls in Supply Chain Management: The Case of Product Recalls." *Journal of Supply Chain Management* 50, no. 3: 6–15.

Kor, Y. Y., and H. Leblebici. 2005. "How Do Interdependencies Among Human-Capital Deployment, Development, and Diversification Strategies Affect Firms' Financial Performance?" *Strategic Management Journal* 26, no. 10: 967–985.

Kotter, J. P. 2012. *Leading Change.* Harvard Business Review Press. https://books.google.co.uk/books?id=xpGX1EWL_EMC.

Kraaijenbrink, J., J.-C. Spender, and A. J. Groen. 2010. "The Resource-Based View: A Review and Assessment of Its Critiques." *Journal of Management* 36, no. 1: 349–372.

Kristandl, G., and N. Bontis. 2007. "Constructing a Definition for Intangibles Using the Resource Based View of the Firm." *Management Decision* 45, no. 9: 1510–1524. https://doi.org/10.1108/0025174071 0828744.

Langley, A. 1999. "Strategies for Theorizing From Process Data." *Academy of Management Review* 24, no. 4: 691–710.

Lechner, C., and S. W. Floyd. 2011. "Group Influence Activities and the Performance of Strategic Initiatives." *Strategic Management Journal* 33, no. 5: 478–495.

Lechner, C., and M. Kreutzer. 2010. "Coordinating Growth Initiatives in Multi-Unit Firms." *Long Range Planning* 43, no. 1: 6–32.

Li, M., and S. Jia. 2018. "Resource Orchestration for Innovation: The Dual Role of Information Technology." *Technology Analysis & Strategic Management* 30: 1136–1147. https://doi.org/10.1080/09537325.2018.1443438.

Lin, Y., X. Zhao, and L. Chen. 2024. "A Multi-Case Study of Business Innovation Models for Manufacturing Capacity Sharing Platforms, Based on a Resource Orchestration Perspective." *Engineering Management Journal* 36, no. 1: 92–102. https://doi.org/10.1080/10429 247.2023.2193127.

Liu, H., S. Wei, W. Ke, K. K. Wei, and Z. Hua. 2016. "The Configuration Between Supply Chain Integration and Information Technology Competency: A Resource Orchestration Perspective." *Journal of Operations Management* 44: 13–29.

Lok, J., and M. De Rond. 2013. "On the Plasticity of Institutions: Containing and Restoring Practice Breakdowns at the Cambridge University Boat Club." *Academy of Management Journal* 56, no. 1: 185–207.

Lu, B., and S. Zhang. 2022. "Resource Orchestration in Hub-Based Entrepreneurial Ecosystems: A Case Study on the Seaweed Industry." *Entrepreneurship Research Journal* 14: 1401–1459. https://doi.org/10.1515/erj-2022-0071.

Mair, J., T. Gegenhuber, L. Thäter, and R. Lührsen. 2023. "Pathways and Mechanisms for Catalyzing Social Impact Through Orchestration: Insights From an Open Social Innovation Project." *Journal of Business Venturing Insights* 19: e00366.

Malone, T. W., and K. Crowston. 1994. "The Interdisciplinary Study of Coordination." *ACM Computing Surveys* 26, no. 1: 87–119.

Mechitov, K., R. Razavi, and G. Agha. 2007. "Architecture Design Principles to Support Adaptive Service Orchestration in WSN Applications." *ACM SIGBED Review* 4, no. 3: 37–42.

Murcia, N. N. S., F. A. F. Ferreira, and J. J. M. Ferreira. 2022. "Enhancing Strategic Management Using "Quantified VRIO": Adding Value With the MCDA Approach." *Technological Forecasting and Social Change* 174: 1–9.

Nambisan, S., and M. Sawhney. 2011. "Orchestration Processes in Network-Centric Innovation: Evidence From the Field." *Academy of Management Perspectives* 25, no. 3: 40–57.

Nemeh, A., and S. Yami. 2019. "Orchestrating Resources for FMA in Coopetitive NPD." *R&D Management* 49, no. 1: 64–85.

Oostvogels, J., S. Michiels, and D. Hughes. 2024. "Twofer: Ambiguous Transmissions for Low-Latency Sensor Networks Facing Noise, Privacy and Loss." In *2024 23rd ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, 213–224. IEEE.

O'Reilly, C. A., III, and M. L. Tushman. 2013. "Organizational Ambidexterity: Past, Present, and Future." *Academy of Management Perspectives* 27, no. 4: 324–338.

Parida, V., T. Burström, I. Visnjic, and J. Wincent. 2019. "Orchestrating Industrial Ecosystem in Circular Economy: A Two-Stage Transformation Model for Large Manufacturing Companies." *Journal of Business Research* 101: 715–725.

Pavlov, A., M. Mura, M. Franco-Santos, and M. Bourne. 2017. "Modelling the Impact of Performance Management Practices on Firm Performance: Interaction With Human Resource Management Practices." *Production Planning & Control* 28, no. 5: 431–443.

Pereira, V., D. Vaz, N. Bamal, U. Bamel, and A. Behl. 2024. "Evaluating the Resource Orchestration of Evolving Disruptive Technologies Within Ecosystem-Based Business Models: Evidence From the Indian Railways." *Journal of Technology Transfer*: 1–20. https://doi.org/10.1007/s10961-024-10124-3.

Peteraf, M. A. 1993. "The Cornerstones of Competitive Advantage: A Resource-Based View." *Strategic Management Journal* 14, no. 3: 179–191.

Piccoli, G., and B. Ives. 2005. "IT-Dependent Strategic Initiatives and Sustained Competitive Advantage: A Review and Synthesis of the Literature." *MIS Quarterly* 29, no. 4: 747–776.

Porter, M. E., and M. R. Kramer. 2011. "Criação de Valor Compartilhado." *Harvard Business Review* 89, no. 1/2: 62–77.

Poulios, I., and E. Kamperou. 2022. "Business Innovation in Orchestra Organizations Supported by Digital Technologies: The Orchestra Mobile Case Study." *Sustainability* 14, no. 7: 3715.

Queiroz, M., P. P. Tallon, R. Sharam, and T. Coltman. 2018. "The Role of IT Application Orchestration Capability in Improving Agaility and Performance." *Journal of Strategic Innovation Systems* 27, no. 1: 4–21.

Rehman, S. U., S. Bresciani, K. Ashfaq, and G. M. Alam. 2021. "Intellectual Capital, Knowledge Management and Competitive Advantage: A Resource Orchestration Perspective." *Journal of Knoweldge Management* 26, no. 7: 1705–1731.

Roehrich, J. K., J. Kalra, B. Squire, and A. Davies. 2023. "Network Orchestration in a Large Inter-Organizational Project." *Journal of Operations Management* 69, no. 7: 1078–1099.

Rosenbaum, M. S., and I. A. Wong. 2015. "If You Install It, Will They Use It? Understanding Why Hospitality Customers Take "Technological Pauses" From Self-Service Technology." *Journal of Business Research* 68, no. 9: 1862–1868. https://doi.org/10.1016/j.jbusr es.2015.01.014.

Rothaermel, F. T. 2020. *Strategic Management.* McGraw-Hill Education. https://books.google.co.uk/books?id=Zl-6ygEACAAJ.

Schaffer, R. H., and H. A. Thomson. 1992. "Successful Change Programs Begin With Results." *Harvard Business Review* 70, no. 1: 80–89.

Schriber, S., and J. Löwstedt. 2018. "Managing Asset Orchestration: A Processual Approach to Adapting to Dynamic Environments." *Journal of Business Research* 90: 307–317.

Siala, H., E. Kutsch, M. Brannan, and S. Gupta. 2023. "Agile Strategies for Synchronizing Organizational Resources in Dynamic Environments:

Towards a Theory of Resource Synchronization." Available at SSRN. https://ssrn.com/abstract=4561368.

Sirmon, D. G., S. Gove, and M. A. Hitt. 2008. "Resource Management in Dydadic Competitive Rivavlry: The Effects of Resource Bunding and Deployment." *Academy of Management Journal* 51, no. 5: 919–935.

Sirmon, D. G., and M. A. Hitt. 2009. "Contingencies Within Dynamic Managerial Capabilities: Interdependent Effects of Resource Investment and Deployment on Firm Performance." *Strategic Management Journal* 30, no. 13: 1375–1394.

Sirmon, D. G., M. A. Hitt, J. L. Arregle, and J. T. Campbell. 2010. "The Dynamic Interplay of Capability Strengths and Weaknesses: Investigating the Bases of Temporary Competitive Advantage." *Strategic Management Journal* 31, no. 13: 1386–1409.

Sirmon, D. G., M. A. Hitt, and R. D. Ireland. 2007. "Managing Firm Resources in Dynamic Environments to Create Value: Looking Inside the Black Box." *Academy of Management Review* 32, no. 1: 273–292.

Sirmon, D. G., M. A. Hitt, R. D. Ireland, and B. A. Gilbert. 2011. "Resource Orchestration to Create Competitive Advantage: Breadth, Depth, and Life Cycle Effects." *Journal of Management* 37, no. 5: 1390–1412.

Sirmon, D. G., M. A. Hitt, and B. McClellan. 2025. "Resource Orchestration's Role in the Implementation of Mergers and Acquisitions." *Organizational Dynamics*: 101157. https://doi.org/10.1016/j.orgdyn.2025.101157.

Soleymanzadeh, O., and B. Hajipour. 2025. "A Bibliometric Analysis of Resource Orchestration Research: Current Status, Emerging Trends and Future Research Agenda." *Management Research Review* 48, no. 4: 643–664.

Street, C. T., and K. W. Ward. 2012. "Improving Validity and Reliability in Longitudinal Case Study Timelines." *European Journal of Information Systems* 21, no. 2: 160–175.

Sun, F., J. Li, and F. Bai. 2024. "Mechanism of Digital Business Model Innovation for Common Prosperity: Based on Resource Orchestration Perspective." *Chinese Management Studies* 19: 734–757. https://doi.org/10.1108/CMS-12-2023-0710.

Teece, D. J. 2000. "Strategies for Managing Knowledge Assets: The Role of Firm Structure and Industrial Context." *Long Range Planning* 33, no. 1: 35–54.

Teece, D. J. 2010. "Business Models, Business Strategy and Innovation." *Long Range Planning* 43, no. 2–3: 172–194.

Tikas, G. D. 2023. "Team Innovation Capability: Scale Development and Validation." *Technovation* 126: 102773.

Tsoukas, H. 2009. "Craving for Generality and Small-N Studies: A Wittgensteinian Approach Towards the Epistemology of the Particular in Organization and Management Studies." In *The Sage Handbook of Organizational Research Methods*, edited by D. A. Buchanan and A. Bryman, 285–301. Sage Publications.

Wang, E., G. Klein, and J. J. Jiang. 2007. "IT Support in Manufacturing Firms for a Knowledge Management Dynamic Capability Link to Performance." *International Journal of Production Research* 45, no. 11: 2419–2434.

Wegner, D., R. Hölsgens, and C. C. Bitencourt. 2023. "Orchestrating Collaborative Networks for Social Innovation: Orchestrators' Roles in Socially Innovative Initiatives." *Technological Forecasting and Social Change* 195: 122786.

Weick, K. E. 1995. *Making Sense in Organizations*. Sage.

Wilden, R., S. P. Gudergan, B. B. Nielsen, and I. Lings. 2013. "Dynamic Capabilities and Performance: Strategy, Structure and Environment." *Long Range Planning* 46, no. 1–2: 72–96.

Zeng, J., Y. Yang, and S. H. Lee. 2023. "Resource Orchestration and Scaling-Up of Platform-Based Entrepreneurial Firms: The Logic of Dialectic Tuning." *Journal of Management Studies* 60, no. 3: 605–638.

Zott, C., and R. Amit. 2010. "Business Model Design: An Activity System Perspective." *Long Range Planning* 43, no. 2–3: 216–226.