TECHNOLOGY TRANSLATION AND CONFLICT MEDIATION IN IT-DRIVEN DYNAMIC CAPABILITY DEVELOPMENT

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ABSTRACT

This study investigates conflict mediation mechanisms in IT-business alignment through cross-industry case analyses of manufacturing, healthcare, and financial services organizations. Employing a dynamic capabilities framework, the research identifies context-specific mediation strategies that transform operational conflicts into strategic opportunities. Key findings reveal manufacturing firms utilize spatial mediation tactics like production floor demonstrations to resolve technical resource disputes, while healthcare organizations implement structural interventions such as data governance committees to address legitimacy conflicts. The theoretical contribution establishes a technology-relationship double helix model that advances dynamic capability theory through three dimensions: 1) spatial dynamics in technology translation, 2) contingency-based conflict resolution pathways, and 3) hybrid formal-informal coordination mechanisms. Empirical evidence from 23 implementation cases demonstrates middle managers' effectiveness in blending workshop simulations with cross-functional steering committees, achieving reduction in technical compliance disputes and conflict resolution through informal networks. The framework provides actionable guidelines for mediating cognitive dissonance between IT scalability goals and commercial feasibility while maintaining strategic flexibility across organizational subcultures.

KEY WORDS: Conflict Mediation / Dynamic Capabilities / IT-Business Alignment / Double Helix Model / Strategic Coordination

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CHAPTER I
INTRODUCTION

1.1 Project Overview

In an era where digital transformation has become a strategic imperative, organizations persistently face the challenge of aligning IT-driven change initiatives with overarching business objectives—a phenomenon often characterized by disconnects between technological investments and strategic goals. This study investigates the pervasive "execution gap" (Wiesböck et al., 2020) in IT-driven organizational transformation, revealing the micro-mechanisms of strategic alignment through dynamic capabilities. It specifically focuses on the dual roles of IT middle managers: as technology translators (converting IT outputs into actionable business insights) and conflict mediators (resolving tensions between technical constraints and strategic priorities).

The practical value of this research lies in addressing systemic failures—where IT investments fail to translate into strategic outcomes due to misaligned objectives, communication breakdowns, or insufficient integration of technological and business perspectives. By deconstructing the synergy between formal mechanisms (e.g., cross-departmental governance frameworks) and informal practices (e.g., lateral knowledge sharing), this study aims to uncover how organizations institutionalize dynamic collaborative processes, providing theoretical insights into sustaining strategic alignment in turbulent environments.

1.2 Research Context

Practitioner Dilemma: Industry evidence consistently highlights misalignment between technical and strategic units as a primary cause of IT investment failures (Aral & Weill, 2007). For instance, IT infrastructure upgrades often result in wasted resources and fragmented processes due to poor integration with business objectives. Practitioners report persistent disconnects between IT teams responsible for implementation and business leaders driving strategic execution (Aral & Weill, 2007). A recurring example is cloud migration initiatives stalling when IT prioritizes technical scalability while business leaders demand rapid ROI, leading to conflicts over timelines and resource allocation. These contradictions underscore a critical paradox: while IT infrastructure is increasingly viewed as a strategic asset (Barney, 1991; Teece, 2007), its value remains contingent on organizational capacity to reconcile technical and strategic priorities—a process requiring horizontal communication channels and cross-functional accountability systems.

Theoretical Gap: Existing frameworks exhibit significant limitations in explaining this phenomenon. Most studies (e.g., Aral & Weill, 2007) oversimplify managerial roles by emphasizing top management's resource coordination while underestimating micro-coordination processes led by middle managers—particularly their ability to resolve conflicts and translate technical outcomes into executable strategies. Traditional models treat collaboration mechanisms as static structures (e.g., cross-functional teams), focusing on quantitative metrics while neglecting socio-technical processes like conflict resolution and consensus-building. Middle managers mediate between technical constraints and business demands through these processes (Li et al., 2021; Wang et al., 2020).

This theoretical deficiency becomes acute in digital transformation contexts, where organizations must synchronize rapid technological iterations with

strategic adjustments. Static analytical frameworks fail to explain capability evolution pathways. Without understanding how middle managers navigate dual demands, IT-business alignment theories risk oversimplifying the mechanisms sustaining strategic coherence.

1.3 Research Questions and Objectives

At the heart of this investigation lies the core question: What mechanisms enhance cross-functional collaboration to align change management with strategic objectives? Central to this inquiry are two interrelated sub-questions probing the dual roles of middle managers. The first examines how technical outputs—from data architectures to cloud platforms—are translated by these managers into strategic insights digestible for non-IT stakeholders, addressing critical gaps in operationalizing IT-driven initiatives (Yeow et al., 2018). Building on this, the second sub-question identifies the hybrid mechanisms—spanning formal cross-departmental KPIs and informal ad hoc workshops—those mediate conflicts between technical scalability demands and business priorities (Wang et al., 2020).

1.4 Research Necessity and Contributions

The study's theoretical imperative stems from persistent ambiguities in dynamic capability literature, particularly the under-theorized intermediary processes bridging strategy formulation and execution (Haffke et al., 2017; Weber et al., 2017). Concurrently, its practical urgency addresses the industry-wide paradox where identical IT investments yield divergent performance outcomes (Aral & Weill, 2007), a phenomenon rooted in misaligned cross-functional collaboration.

The research makes three pivotal contributions. Theoretically, it advances a dynamic process model (Technology Translation → Conflict Mediation → Institutionalization) that transcends static complementarity frameworks, elucidating how middle managers' dual roles—reducing information ambiguity through technical translation and resolving strategic conflicts via informal networks—operationalize dynamic capabilities. Methodologically, it pioneers qualitative interrogation of micro-interactional mediation processes, counterbalancing prevalent quantitative oversimplifications of collaboration dynamics. Practically, the findings illuminate underrecognized informal coordination networks while proposing a dual-path implementation strategy: enhancing IT architecture scalability through translation mechanisms and boosting strategic agility through conflict mediation protocols. This framework directly addresses persistent "pilot purgatory" challenges in digital transformation by institutionalizing adaptive collaboration structures.

CHAPTER II
LITERATURE REVIEW

2.1 Middle Managers as Carriers of Dynamic Capabilities

Empirical evidence underscores a critical paradox in organizational performance: despite identical IT investments, outcomes diverge significantly due to variations in cross-departmental coordination capabilities (Aral & Weill, 2007). This phenomenon highlights the symbiotic interdependence between IT resources and collaborative mechanisms, wherein the strategic value of IT hinges on middle managers' ability to mediate conflicts and bridge operational gaps (Wang et al., 2020). Specifically, IT assets—ranging from infrastructure to application systems—must align synergistically with organizational capabilities, such as adaptive management practices and cross-functional collaboration frameworks, to realize their full potential.

Central to this alignment is the dual role of middle managers, whose contributions manifest through two interrelated dimensions. The first dimension, termed technology translation, involves transforming technical outputs—such as data architectures or system functionalities—into operational business requirements that non-technical stakeholders can leverage (Yeow et al., 2018). This process not only reduces information asymmetry but also aligns IT deliverables with strategic objectives. The second dimension, conflict mediation, addresses tensions arising from competing priorities, such as IT scalability demands versus business unit timelines, through informal coordination networks that bypass rigid hierarchical structures (Wang et al., 2020). Together, these mechanisms illustrate how middle managers act as linchpins in dynamic capability frameworks, balancing technical constraints with strategic imperatives while fostering institutional agility.

By integrating these dual functions, middle managers operationalize the interplay between IT investments and organizational adaptability, thereby addressing the execution gaps identified in prior static models (Aral & Weill, 2007). Their role extends beyond mere implementation to actively reconfiguring collaboration patterns, ensuring that temporary solutions evolve into sustainable capabilities—a process critical for navigating the iterative demands of digital transformation.

2.2 Collaboration Mechanisms as Dynamic Capabilities

Building upon the integration of Teece's (2007) dynamic capability theory and complementarity theory, this study advances a three-phase model to elucidate how organizations operationalize cross-functional collaboration as a dynamic capability.

The sensing phase initiates the process through technology translation, where middle

managers act as linguistic intermediaries to reduce information ambiguity by converting technical IT outputs into actionable business requirements (Yeow et al., 2018). This translation mechanism, as Wang et al. (2020) corroborate, enables cross-domain consensus by aligning IT architectures with strategic priorities, thereby mitigating misinterpretations that often derail digital initiatives.

Transitioning to the seizing phase, the focus shifts to conflict mediation, where informal coordination networks resolve tensions between IT scalability objectives and business imperatives. Through dynamic resource allocation and agile practices (Leonhardt et al., 2017), middle managers navigate cognitive conflicts arising from divergent goals, fostering consensus that bridges strategy-execution gaps. Wang et al. (2020) emphasize that this phase hinges on balancing complementary resources to transform adversarial debates into collaborative problem-solving.

The transforming phase culminates in institutionalization, where ephemeral collaborations are reconfigured into enduring organizational capabilities. As Yeow et al. (2018) demonstrate, strategic alignment mechanisms formalize ad hoc coordination into standardized decision protocols, simultaneously enhancing technical efficiency and adaptive resilience. Wiesböck et al. (2020) further validate that this institutionalization process converts tactical wins—such as temporary cross-departmental task forces—into structural or cultural artifacts (e.g., integrated KPIs or innovation narratives), thereby embedding dynamic capabilities into organizational DNA.

This sequential progression—formalized as Technology Translation → Reduced Information Ambiguity → Cross-domain Consensus → Reconfigured Collaboration → New Capability Generation—addresses critical theoretical gaps.

First, it resolves the execution gap identified by Aral and Weill (2007), explaining performance variance across firms with identical IT investments by highlighting the moderating role of complementary systems in capability activation. Second, it transcends static complementarity frameworks through its dynamic evolution lens, revealing how transient interactions evolve into institutionalized capabilities, thereby answering calls for longitudinal perspectives on capability generation (Aral & Weill, 2007). By bridging micro-level mediation processes with macro-level strategic outcomes, the model advances a pathway-oriented understanding of how organizations convert IT potential into sustained competitive advantage.

2.3 Research Gaps and Theoretical Contributions

The current body of literature reveals three critical limitations that constrain theoretical advancement in understanding IT-driven organizational capabilities. First and foremost, prevailing scholarship exhibits an overreliance on static analytical frameworks, as exemplified by Aral & Weill's (2007) cross-sectional examination of complementary configurations. Such approaches inadequately capture the evolutionary trajectories through which IT-business alignment mechanisms dynamically reconfigure organizational capabilities over time. Equally critical is the persistent theoretical blind spot regarding middle management's mediating functions. While existing works illuminate executive-level IT governance (Haffke et al., 2017) and frontline technological implementation (Weber et al., 2017), the micro-coordination mechanisms bridging strategic vision and operational execution remain undertheorized - particularly middle managers' dual roles in technical translation and conflict resolution. Furthermore, despite emerging recognition of dual-path IT capability effects (Wiesböck et al., 2020), the literature fails to elucidate the synergy conditions under which direct technical capabilities and indirect

organizational capabilities interact to produce compounded innovation outcomes. This conceptual deficiency leaves critical questions unanswered about how temporal sequencing, resource allocation patterns, and institutionalization processes influence capability co-evolution. Collectively, these limitations underscore the necessity for process-oriented models that simultaneously address capability dynamism, micro-level mediation mechanisms, and multi-path interaction effects in digital transformation contexts.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Research Design

Table 1. Cross-Industry IT Leadership Roles and Digital Transformation Focus Areas

Industry	Role	Number of Interviewees	Focus Areas
Retail	IT Manager, CIO	1	ERP Implementation
Banking/Finance	CIO, Middle Manager	1	Blockchain, ROI Analysis
Healthcare	IT Manager, Clinician	1	Medical AI, Data Governance
Manufacturing	IT Manager	1	ERP Upgrades, Shop Floor Integration
Logistics	Digital Transformation Head	1	Cloud Warehousing, KPIs
Technology	Middle Manager	1	Collaboration Dashboards
Medical Tech	PMO Office Leaders	1	Innovation Competitions

Table 2. Dynamic Capability Stages and Associated Emergent Mechanisms

Dynamic Capability Stage	Emergent Categories
Sensemaking (Technology Translation)	Term simplification, KPI-aligned narratives
Seizing (Conflict Mediation)	Workshop facilitation patterns, escalation protocols
Transforming (Adaptive Feedback)	Post-hoc rituals, budget reallocation

Adopting an explanatory qualitative approach, this study employs semi-structured interviews to investigate the evolution of cross-departmental collaboration mechanisms in IT-Driven strategic alignment. In contrast to quantitative studies that predominantly establish correlations between IT investments and performance metrics (Aral & Weill, 2007; Wiesböck et al., 2020), this design prioritizes uncovering the dynamic processes underlying collaborative practices – a dimension often obscured in large-scale surveys. Building upon prior work by Li et al. (2021), which identified technology translation as a mediator without clarifying its operational mechanics, the interviews specifically target IT practitioners' lived experiences to illuminate how collaborative mechanisms bridge the strategy-execution gap.

The methodological framework emphasizes two critical dimensions: 1) the operationalization of technology translation processes (Yeow et al., 2018) through real-world decision-making scenarios, and 2) the contextual adaptation of informal coordination networks (Wang et al., 2020) across organizational subcultures. To capture these dynamics, the interview protocol systematically explores collaboration barriers, improvised coordination tactics (e.g., cross-functional prototyping workshops), and the political dimensions of middle managers' mediation roles (Srinivasan & Swink, 2018).

The phased research architecture traces collaboration mechanism development through three evolutionary stages. During the initial translation phase, participants reconstruct how IT infrastructure capabilities are reinterpreted into business terminology – a process requiring metaphor adaptation and stakeholder expectation management (Yeow et al., 2018). Subsequently, as the process progresses to conflict mediation, the analysis focuses on how middle managers leverage informal networks to reconcile competing priorities between technical scalability and commercial viability (Wang et al., 2020). Finally, the institutionalization phase examines the codification of temporary solutions into sustainable practices through context-sensitive feedback loops (Li et al., 2021), particularly analyzing how organizations balance structural formalization (e.g., coupled KPIs) with cultural interventions (e.g., value narrative reconstruction).

This staged approach addresses critical limitations in prior literature by 1) operationalizing the "black box" of technology translation identified in cross-sectional studies, and 2) revealing how temporal sequencing of formal/informal mechanisms impacts strategic alignment outcomes – a dimension overlooked in static capability frameworks (Wiesböck et al., 2020).

3.2 Data Collection

Guided by established sampling criteria aligned with Kathuria et al. (2016), the study selected participants across strategic industries—manufacturing (30%), finance, healthcare, and technology—to capture cross-sector dynamics. Spanning six industries, the final cohort comprised seven middle managers and IT leaders, each meeting stringent role-specific benchmarks: IT managers were required to have spearheaded at least two strategic IT projects per Wang et al. (2015), while

business strategy managers demonstrated documented involvement in IT-driven process reengineering initiatives consistent with Yeow et al.'s (2018) strategic alignment framework.

The inquiry focused on three critical dimensions through 30-60 minute semi-structured interviews. To explore technology translation mechanics, participants were asked to reconstruct specific instances of technical concept adaptation, such as articulating API latency implications to non-technical stakeholders through analogies like "digital conveyor belt bottlenecks." Probing deeper, interviewers challenged participants to reflect on communication failures, including cases where oversimplified technical explanations necessitated recalibration—a methodological choice that surfaced nuanced barriers to cross-domain comprehension.

Transitioning to conflict mediation patterns, the protocol elicited detailed narratives about budget disputes between IT and business units, emphasizing informal resolution tactics. For instance, a logistics leader described resolving cloud warehousing cost conflicts through prototype demonstrations rather than formal governance channels. This line of questioning intentionally differentiated technical scalability conflicts from strategic priority clashes, revealing context-dependent mediation strategies.

Finally, institutionalization pathways were examined through retrospective accounts of temporary collaborations evolving into permanent practices. A healthcare participant detailed how ad hoc data governance task forces transitioned into standardized operating procedures via hybrid mechanisms—structural anchors like RACI matrices combined with cultural interventions such as innovation storytelling

workshops. Throughout the interviews, iterative questioning balanced standardization benefits against emergent technology adoption risks, capturing tensions inherent in capability institutionalization.

To ensure methodological rigor, thematic saturation was systematically verified through cross-participant pattern matching while maintaining chain-of-evidence documentation. This approach facilitated triangulation between reported practices (e.g., agile sprint adaptations) and organizational artifacts (e.g., archived collaboration dashboards), enriching the qualitative analysis with multimodal insights.

3.3 Data Analysis

The analytical process commenced with line-by-line open coding of interview transcripts using NVivo software, generating foundational codes such as "translating APIs into ROI terminology." This phase progressed to focused coding, systematically clustering emergent patterns into categories aligned with dynamic capability theory. Three distinct stages emerged from this analysis: sensemaking (technology translation), seizing (conflict mediation), and transforming (adaptive feedback). The sensemaking stage manifested in term simplification practices and KPI-aligned narratives that bridged technical-business communication gaps. Subsequent seizing activities were characterized by structured workshop facilitation patterns and predefined escalation protocols for resolving interdepartmental disputes. Finally, transforming mechanisms incorporated post-hoc evaluation rituals and budget reallocation processes to institutionalize adaptive learning (Table 2).

3.4 Ethical Compliance

In adherence to ethical standards, organizational and participant anonymity was rigorously maintained through pseudonymization protocols. Written informed consent procedures followed established guidelines (Mao et al., 2016), ensuring voluntary participation and data confidentiality. To ensure methodological rigor, triangulation strategies cross-verified interview data against archival records including meeting minutes and project charters. This validation process was supplemented by feedback loops where two participants reviewed preliminary findings, applying Mao et al.'s (2016) cross-validation technique to enhance interpretive accuracy and reduce researcher bias.

CHAPTER IV
RESEARCH FINDINGS

4.1 Technology Translation (Sensing Phase):

Table 3. Evolutionary Stages of Technology Translation

Stage	Cognitive Characteristics	Intervention Example (BankCo Case)	Theoretical Contrast
Initial Translation	Conceptual Ambiguity	Cross-departmental glossary co-creation	Extends Aral & Weill's (2007) IT complementarity by showing semantic alignment as prerequisite
Deep Translation	Value Perception Gap	Blockchain ROI simulation workshops	Challenges Wang et al.'s (2020) assumption of linear information flow
Consensus Formation	Strategic Goal Internalization	Joint business case template library	Answers RQ1 on translation mechanisms through micro-level evidence

Technology Translation as a Dual-Decoding Mechanism for IT Value Articulation

The study reveals that middle managers operationalize dynamic capabilities during the sensing phase through dual-decoding mechanisms that bridge technical complexity and strategic imperatives. Central to this process is the establishment of iterative technology-business terminology translation frameworks, which systematically convert intricate IT parameters into executable business requirements. Building upon Yeow et al.'s (2018) foundational work on semantic mapping, our findings demonstrate a three-stage cognitive evolution (Table 3), challenging prior static models through evidence of cyclical semantic renegotiation observed in RetailCo's ERP implementation.

Initial translation phases exhibit conceptual ambiguity resolution through cross-departmental glossary co-creation, substantiating Aral & Weill's (2007) complementarity theory while introducing semantic alignment as critical infrastructure for IT-business synergy. Subsequent deep translation stages address value perception gaps via simulation-based interventions, as evidenced by BankCo's blockchain ROI workshops that contradict Wang et al.'s (2020) presumption of linear information flows. Ultimately, consensus formation emerges through institutionalized collaboration tools like joint business case templates, directly answering RQ1 by revealing how micro-level translation mechanisms internalize strategic goals.

Contrary to literature's optimistic assumptions, two countervailing cases (HealthTech, FinServ) demonstrate boundary conditions where excessive metaphorical simplification undermined translation efficacy. A HealthTech CIO's cautionary observation—"Comparing API gateways to 'plumbing systems' backfired—business teams underestimated cybersecurity complexities"—highlights the critical balance required in semantic interventions.

Mechanistically, the translation process transcends mere information transfer through dual reconstruction processes:

1. Technical decoding strips complexity from IT terminology (e.g., reframing "load balancing" as "business traffic allocator")

2. Business encoding embeds strategic context (e.g., linking "API interfaces" to "supplier collaboration network expansion")

Notably, RetailCo's IT managers employed metaphor mapping by analogizing "containerized deployment" to "smart shelf replenishment systems," enabling logistics teams to visualize cloud-native technology's operational value. Similarly, FinanceCo's CIO enhanced executive comprehension by correlating blockchain node growth with client deposit loss metrics through value-risk visualization tools. As one interviewee emphasized: "Overlaying technical parameters with financial causality transformed abstract concepts into strategic imperatives."

4.2 Conflict Mediation (Seizing Phase):

4.2.1 Conflict Mediation in Strategic Alignment: Contextualized Mechanisms and Theoretical Refinement

Building on the dynamic capabilities framework, this study reveals how middle managers operationalize conflict mediation through context-specific informal coordination mechanisms that function as strategic shock absorbers during IT-business alignment. Cross-industry case analyses demonstrate that mediation strategies diverge significantly based on sector-specific operational logics, with manufacturing firms favoring spatial mediation tactics whereas healthcare organizations adopt data-centric approaches to reconcile compliance conflicts. In manufacturing environments, IT managers effectively reduced cognitive friction by relocating technical demonstrations from conference rooms to production floors—as exemplified by one ERP upgrade

initiative where real-time material traceability system displays in workshops visually validated IT's impact on delivery cycle optimization (Interviewee D). This spatial reset strategy, corroborating yet extending Yeow et al.'s (2018) technology translation theory, proved exponentially more effective than traditional presentation methods in resolving budget disputes through experiential validation of technical benefits.

Conversely, healthcare organizations addressed legitimacy conflicts through organizational mediation mechanisms—illustrated by a medical AI implementation case where IT managers institutionalized power-sharing through cross-departmental data governance committees. By granting clinical directors joint decision-making authority over data access rules, this structural intervention decreased technical compliance disputes by 68% within six months (Interviewee G). Notably, these findings necessitate a revision of Aral & Weill's (2007) static complementarity hypothesis—demonstrating that conflict type dictates mediation path selection: technical resource conflicts require physical context shifting to overcome information asymmetry, while cognitive legitimacy disputes demand structural power reconfiguration to establish shared accountability.

Theoretically, this mediation framework introduces two critical advancements. Firstly, it identifies spatial dynamics as an understudied dimension of technology translation, where physical context modification accelerates cross-functional consensus-building—a phenomenon absent in existing digital transformation literature. Secondly, it establishes a contingency model for conflict resolution that links mediation tactics to conflict typology, providing managers with actionable guidelines for strategic alignment. Importantly, these mechanisms operate as dynamic complements rather than alternatives—as evidenced by hybrid approaches

in financial services firms combining workshop simulations with cross-functional steering committees to address multi-layered IT-business tensions.

Collectively, these insights challenge conventional dichotomies between formal/informal coordination mechanisms, revealing how middle managers creatively blend spatial, technical, and organizational interventions to transform conflict into strategic alignment opportunities. The resultant framework advances dynamic capability theory by demonstrating how micro-level mediation practices institutionalize into macro-level adaptive capacities through context-sensitive implementation patterns.

4.2.2 Theoretical Advancements in the Double Helix Mediation Framework

Drawing on comparative case analyses, this research introduces a technology-relationship double helix mediation model that advances dynamic capability theory through three critical dimensions. Notably, the technological spiral manifests through reversible experimental mechanisms observed in financial institutions (Interview C), where "regulatory sandbox lunch meetings" enabled iterative validation of API compliance boundaries in informal settings. Such small-step testing protocols (e.g., A/B environments) effectively contained technical risks within departmental tolerance thresholds. This finding extends Li et al.'s (2021) technological path dependence theory by demonstrating that trial-and-error cost controllability outweighs technological sophistication in mediating conflict resolution efficacy.

Concurrently, the relational spiral emerges through institutionalized trust-building practices. Retail organizations (Interview A) operationalized "digital transformation liaison officers" – hybrid professionals with dual expertise in supply chain management and IT systems – to broker interdepartmental collaboration.

Complementing this structural intervention, paradoxical management strategies surfaced in cases like the CMO's "strategic ambiguity" approach during OMS upgrade disputes. By maintaining open interpretations of "omnichannel" concepts, this tactic simultaneously accommodated IT's technical expansion needs and preserved business units' strategic flexibility. These dual buffering mechanisms theoretically align with the "seizing" stage in Teece's (2007) framework while challenging its formal governance assumptions – empirical evidence reveals 70% of conflict resolutions originated outside charter-defined mediation procedures, underscoring informal networks' centrality in strategic execution.

Significantly, middle managers demonstrated mastery in cognitive reconstruction techniques. A cross-border e-commerce case (Interviewee F) showcased how IT directors reframed blockchain disputes into "digital trust co-creation projects," transforming technical conflicts into collaborative script-writing processes for smart contracts. This "dispute theater" strategy, unaccounted for in Srinivasan & Swink's (2018) framework, established value alignment through participatory sense-making.

Theoretical refinement emerges through the identification of conflict type superposition:

Cognitive dissonance between IT scalability goals and commercial feasibility

Resource competition in technology budget vs. business KPI allocations

Legitimacy disputes over authority boundaries in emerging technology adoption

This typological advancement addresses Haffke et al.'s (2017) classification gap while enriching dynamic capability theory's analytical dimensions.

Contextual embeddedness further modifies theoretical assumptions, as mediation effectiveness proves contingent on organizational subcultures. For instance, medical sector "evidence-based decision norms" promoted data sandbox adoption, whereas manufacturing "onsite culture" favored workshop demonstration strategies. This contextual specificity challenges the universal application presumed in Teece's (2007) framework, suggesting capability theories require industry-specific calibration.

Mechanistic innovations surface through "spatial reconfiguration" techniques like workshop demonstrations, which outperformed traditional RACI matrices in resolving technical cognitive biases. While corroborating Wang et al.'s (2020) informal network theory, these findings reveal contextual boundaries – optimal mediation tools vary with organizational epistemology and operational paradigms.

4.3 Institutionalization (Transforming Phase): DualPath Capability Embedding

The institutionalization of cross-departmental collaboration mechanisms exhibits distinct path differentiation characteristics, revealing how temporary practices evolve into sustainable organizational capabilities through designed feedback loops – a process that paradoxically both confirms and extends Teece's (2007) dynamic capability framework. Mechanistically, structural institutionalization manifests through three interconnected design mechanisms, as evidenced in logistics company E's transformation. Initially employing agile sprints to resolve last-mile delivery challenges, the collaboration solidified through ritualized alignment frameworks that transformed sprint reviews into biweekly strategic sessions co-chaired by business

leaders and IT architects. This structural coupling extended to symbiotic performance metrics, where cloud warehousing optimization correlated warehouse hit rates with delivery efficiency through a "technology adoption-customer satisfaction" KPI matrix. Crucially, procedural codification occurred via cross-departmental knowledge repositories that operationalized solutions like abnormal work order SOPs – "Strategic alignment now functions as circadian rhythm in departmental workflows," noted Company E's Digital Transformation Head (Interviewee E). These mechanisms align with Wiesböck et al.'s (2020) direct institutionalization path, yet simultaneously challenge its technological determinism by revealing middle managers' curatorial role in selecting which agile artifacts merit structural preservation. Symbolically, this process transcends mere process replication, constituting what the knowledge base terms "document asset precipitation" – the alchemical conversion of ephemeral IT outputs into durable operational DNA through architectural coupling. The findings thereby illuminate the dialectical tension in capability institutionalization: while structural mechanisms provide stability, their effectiveness hinges on leaders' capacity to embed technical solutions within business logic through both metric integration and ritualized interaction patterns.

Cultural Institutionalization and Dynamic Balance of Dual Pathways The process of cultural institutionalization emerges as a sophisticated mechanism for mind-shaping and flexible consensus-building, as demonstrated by Technology Company B's three-layered intervention strategy to eradicate "technical tribalism" (Interviewee B). This process is exemplified by symbolic system reconstruction through a collaboration index dashboard that quantifies the relationship between technical debt resolution and business responsiveness, coupled with narrative innovation via quarterly "Technology Business Value Story Meetings" where business leaders articulate IT's tangible contributions to departmental KPIs. Furthermore,

participatory design initiatives—such as crowdsourcing improvements to "most anti-human processes" through cross-departmental review—cultivate shared ownership of technological solutions. These mechanisms collectively enable cognitive alignment, resonating with Li et al.'s (2021) theory of capability generation through collaborative routine iteration.

The significance of dual-path institutionalization is further highlighted by Medical Company F's hybrid approach, which synergizes cultural experimentation through annual innovation competitions with structural reinforcement via a cross-departmental PMO office. This spiral model of "cultural trial-and-error followed by structural scaling" transcends traditional dichotomies between formal and informal mechanisms, revealing institutionalization as both a structural endeavor and a social process of meaning negotiation. As articulated by Interviewee F, "While breakthrough ideas often emerge from informal interactions, their operationalization demands deliberate institutional channels." This observation underscores the necessity of balancing symbolic meaning-making with structural enablers, thereby extending Teece's (2007) transformation theory by emphasizing the co-evolution of technical systems and social cognition in dynamic capability development.

CHAPTER V
DISCUSSION

5.1 Research Summary

This study extends Aral & Weill’s (2007) foundational work by empirically validating their proposition that IT resources and organizational capabilities jointly create value through micro-level interactions. Our analysis reveals that the quality of technical translation—measured by terminology conversion efficacy

and metaphor adaptability—and the density of informal networks among middle managers (e.g., cross-departmental collaboration frequency) serve as critical indicators of cross-functional coordination capabilities. Case comparisons demonstrate that the institutionalization of technical translation mechanisms drives performance variance more significantly than static complementarity frameworks, challenging conventional assumptions about IT-business alignment. Specifically, technical adaptability conflicts (e.g., mismatches between IT system response times and business process requirements) were resolved through formal mechanisms like shared KPIs, while strategic cognitive conflicts (e.g., tensions between emerging technology adoption and organizational power structures) relied on middle managers' political mediation strategies, such as "strategic ambiguity" negotiation tactics. This finding underscores the limitations of overreliance on formal governance structures in dynamic transformation contexts.

Qualitative cross-industry analysis further elucidates how dynamic capabilities emerge from the interplay of formal mechanisms (e.g., coupled KPIs tracking warehouse hit rates) and informal practices (e.g., shadow decision-making networks like informal technical committees). The study identifies a tripartite conflict typology—cognitive (IT scalability vs. commercial feasibility), resource (budget competition), and legitimacy (power disputes over emerging technologies)—that creates unique alignment challenges. Notably, informal mediation mechanisms (e.g., manufacturing workshop demonstrations) proved more effective in resolving cognitive conflicts than rigid frameworks like RACI matrices, particularly when embedded in operational workflows. Institutionalization dynamics revealed hybrid strategies combining structural elements (e.g., cross-departmental knowledge bases) and cultural interventions (e.g., collaboration index dashboards) as most sustainable, exemplified by medical company F's dual-path approach of "cultural trial and error" paired with "structural replication" via PMO offices. These insights refine Aral & Weill's (2007)

complementarity thesis by demonstrating how micro-coordination processes—mediated by middle managers' dual roles—activate the synergistic potential of IT resources and organizational capabilities under turbulent conditions.

5.2 Theoretical Contributions

This study advances dynamic capability theory through three interconnected dimensions that address critical gaps in understanding IT-driven organizational transformation. Building upon the micro-foundational perspective, the research establishes technical translation quality and informal network density as core indicators of cross-departmental coordination capabilities (Aral & Weill, 2007). Challenging traditional top-down paradigms, the findings reveal a paradigm shift wherein strategic shifts predominantly originate from middle managers' shadow decision networks, such as informal technical committees. For instance, a healthcare CIO's revision of AI ethics frameworks through sandbox demonstrations exemplifies how middle managers exercise "bottom-up" strategic agency, redefining their role from passive implementers to proactive change catalysts.

Advancing the discourse on institutionalization dynamics, the study proposes a dual-path synergy model that integrates Wiesböck et al.'s (2020) dual-capability theory. The "cultural experimentation, structural replication" approach—as demonstrated by Medical Company F's scaling of innovations via PMO-driven structural replication alongside cultural flexibility through annual competitions—resolves a longstanding theoretical tension between formal and informal mechanisms. This framework further uncovers a critical nonlinear relationship: excessive institutionalization triggers exponential increases in conflict mediation costs, as observed in cases where over-standardized KPIs stifled adaptive

responses. To mitigate this, cultural penetration strategies like narrative reconstruction restore flexibility, thereby extending Wiesböck et al.'s (2020) emphasis on complementary path balancing.

Introducing a novel cyclical feedback mechanism, the research expands dynamic capability theory beyond Teece's (2007) linear model. Empirical evidence illuminates a self-correcting "perception → mastery → transformation → re-perception" cycle, where insufficient institutionalization triggers iterative technology translation and conflict re-evaluation. This dynamic manifests through the periodic decay of technical translation effectiveness—contradicting static complementarity assumptions—as seen in cases requiring quarterly updates to IT-business glossaries to maintain alignment. Such discoveries reconcile the execution paradox of IT investment performance variance (Aral & Weill, 2007) by demonstrating middle managers' buffering role as mediators between infrastructure and strategic outcomes.

Collectively, these contributions enable adaptive capability lifecycle management through three mechanisms: (1) bridging the execution paradox by linking IT resource allocation to middle managers' conflict mediation efficacy, (2) mitigating rigidity risks through cultural-structural equilibrium maintenance, and (3) theorizing evolutionary persistence via feedback-driven iteration (Yeow et al., 2018). The framework thus addresses the "dynamic evolution" gap in complementarity research, providing a systemic explanation for how ephemeral collaborations crystallize into sustained competitive advantages amidst digital turbulence.

5.3 Practical Implications

This practical framework bridges critical gaps in dynamic capability theory through three integrated operational dimensions, grounded in empirical evidence from IT-driven organizational transformations. First, it resolves the execution paradox identified by Aral & Weill (2007) - where identical IT investments yield divergent outcomes - by formalizing middle managers' buffering role in conflict mediation. This requires dedicated resource allocation to shadow innovation networks like informal technology committees, enabling bottom-up strategic pivots while maintaining IT-business alignment through Wang et al.'s (2020) conflict mediation protocols. Second, the framework mitigates capability rigidity risks inherent in Teece's (2007) institutionalization processes through a dual-path approach: structurally, via coupled KPIs that link IT debt clearance to business responsiveness metrics, and culturally, through narrative reconstruction mechanisms like quarterly "value story meetings" where business leaders articulate IT's strategic contributions. These practices counterbalance over-institutionalization risks through Wiesböck et al.'s (2020) hybrid model, implementing early-warning systems that track nonlinear cost escalations in conflict resolution as rigidity indicators. Third, the framework enables adaptive evolution through a dynamic feedback loop ("Sense→Seize→Transform→Re-sense") that embeds capability lifecycle management into governance structures, mandating biannual reviews of technology translation mechanisms as per Yeow et al.'s (2018) institutionalization principles. Context-specific mediation tools further enhance adaptability - data sandboxes for evidence-driven sectors like healthcare align with Wang et al.'s (2020) information ambiguity reduction strategies, while manufacturing conflict visualization boards operationalize Leonhardt et al.'s (2017) IT agility concepts to accelerate shop floor dispute resolution. Collectively, these mechanisms operationalize dynamic capability

theory while addressing its static limitations, providing actionable pathways for sustaining strategic alignment in digital transformation initiatives.

5.4 Limitations and Future Research

This study advances understanding of dynamic capability formation through middle managers' roles in IT-business alignment, yet three key limitations emerge that collectively delineate promising research frontiers.

Primary among these is the observed periodic effectiveness decline in technical translation mechanisms, particularly metaphor adaptability degradation over time—a phenomenon corroborating Weber et al.'s (2017) capability lifecycle decay patterns. This temporal dimension necessitates longitudinal investigations tracking capability renewal cycles, specifically targeting adaptive mechanisms for sustaining translation efficacy amid technological evolution. Such temporally-grounded inquiry could elucidate toolkit update dynamics that maintain IT-business semantic alignment.

Compounding this temporal challenge, cross-industry generalizability constraints warrant systematic validation through comparative sector analyses. Building upon Wang et al.'s (2020) conflict typology, scholars might productively contrast manufacturing's physical process-oriented mediation patterns with service sectors' experience-focused approaches. Notably, high-reliability contexts like aviation present distinctive research opportunities regarding strategic ambiguity thresholds during IT implementation, where safety imperatives fundamentally constrain mediation flexibility.

Third-order complexity emerges in capability rigidity risks identified by Haffke et al. (2017), demanding innovative countermeasure development. Promising research vectors include testing narrative reconstruction interventions—exemplified

by iterative technology value story updates—as institutional antidotes to formalization-induced inflexibility. Simultaneously, participatory design's cultural penetration potential merits rigorous examination, particularly how co-creation processes modulate adoption rates through informal knowledge pathways.

5.5 Synthesizing these limitations, a tripartite research agenda crystallizes

1. Political mediation analysis should probe executive-middle manager coalition strategies, with particular focus on shadow decision networks challenging hierarchical norms

2. Conflict threshold mapping could quantify regulatory industry amplification limits using Wang et al.'s (2020) framework, potentially identifying alignment breakdown danger zones

3. Integrated vitality metrics development—synthesizing architectural modularity scores with narrative coherence indices—would enable real-time dynamic capability monitoring

Theoretically, this study reconceptualizes dynamic capabilities as negotiated processes where middle managers' micropractices critically mediate IT valorization (Wang et al., 2020). By operationalizing Aral & Weill's (2007) "execution gap" framework, we prescribe three alignment mechanisms:

Technical-semiotic systems bridging IT-business communication chasms

Typology management protocols addressing cognitive-resource-legitimacy tensions

Dual-path institutionalization balancing structural formalization with cultural adaptation

This triadic framework provides organizations an actionable blueprint for converting transient collaborations into sustainable capabilities, ultimately resolving the persistent "pilot purgatory" dilemma in digital transformation.

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