

Article

Conceptualising Digital Transformation Through Recursive Capability Constriction: Evidence from Australian NDIS Providers

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Highlights

Please indicate how your work links to systems science via your contributions to systems practice, theory, and/or methodology.

- Extends sociotechnical and digital transformation scholarship by conceptualising digital transformation in disability services as an interconnected organisational systems process characterised by potential reinforcing relationships.
- Introduces Recursive Capability Constriction (RCC) as a systems-based conceptual framework proposing how technological misalignment, compensatory workarounds, administrative expansion, and constraints on digital improvement may become interconnected in regulated care environments.

What are the main findings and/or the implications of the main findings?

- Participants described recurring associations among fragmented technologies, manual workarounds, duplicate record-keeping, increased administrative effort, and reduced opportunities for digital improvement.
- Suggests that addressing digital friction in regulated care environments requires attention to underlying technological and sociotechnical misalignment, alongside system integration, process redesign, workforce capability, and targeted digital investment.

Abstract

Digital transformation is a strategic priority across care-intensive service sectors, yet many organisations struggle to realise its intended benefits. Existing research often examines technological, organisational, and environmental barriers separately, offering limited insight into their interconnections within organisational systems. Drawing on Systems Theory and Sociotechnical Systems (STS) Theory, this study investigates digital transformation among small and medium providers within Australia's National Disability Insurance Scheme (NDIS). Using an interpretive qualitative design, semi-structured interviews were conducted with 15 participants from 15 distinct NDIS provider organisations in Sydney, Australia, followed by reflexive thematic analysis and systems-oriented interpretation. Participants described recurring associations among technological misalignment, fragmented software, adaptive workarounds, increased administrative demands, and constraints on organisational capacity for digital improvement, with regulatory and resource pressures interacting with these technological and organisational conditions. Building on these cross-sectional patterns, this study develops Recursive Capability Constriction (RCC), a systems-based conceptual framework that proposes how technological misalignment,



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compensatory adaptation, administrative expansion, and constrained organisational capability for digital improvement may become interconnected through reinforcing relationships. Rather than representing an inevitable or empirically established causal sequence, RCC provides a conditional explanation of how local adaptations may become associated with constraints on subsequent digital improvement. By shifting attention from isolated implementation barriers to interconnected sociotechnical relationships, RCC extends digital transformation research and provides practical guidance for managing digital change in regulated care environments.

Keywords: digital transformation; Recursive Capability Constriction (RCC); systems theory; sociotechnical systems theory; organisational adaptation; disability service providers

1. Introduction

Digital transformation has become a central concern within Information Systems research as organisations increasingly integrate digital technologies into core processes, service delivery, decision-making, and governance [1–4]. While recent comprehensive reviews highlight that digital transformation strategy must extend beyond isolated information technology (IT) implementations to address broader organisational agility [4–6], many organisations—particularly those operating in care-intensive sectors—continue to struggle to translate digital strategies into sustainable organisational performance [7,8]. This implementation gap persists because digital transformation requires more than technological deployment; it involves alignment among technological infrastructures, organisational processes, workforce capabilities, and institutional conditions [9,10]. This challenge is particularly evident in care-intensive service sectors such as healthcare, aged care, and disability services, which operate within complex institutional environments characterised by stringent regulatory oversight, professional accountability, and resource limitations [11,12]. In Australia, these institutional conditions are reflected in regulatory frameworks governing disability services, including the National Disability Insurance Scheme Act 2013 [13], which shapes the compliance and accountability environment in which providers select, adopt, and adapt digital systems [12]. Although digital systems—including electronic health records, scheduling platforms, and automated compliance technologies—have become increasingly embedded in everyday service delivery, their transformative potential often remains unrealised [12,14]. Fragmented infrastructures, limited interoperability, workforce capability gaps, and continually evolving regulatory requirements continue to constrain digital transformation [7,15].

The complexity of digital transformation within regulated care environments suggests that these challenges cannot be understood as isolated implementation barriers. Rather, technological, organisational, and institutional conditions may interact in ways that generate consequences across organisational subsystems. Systems Theory provides an analytical lens for examining these interdependencies by conceptualising organisations as interconnected systems characterised by feedback relationships [11,16–18]. From this perspective, digital transformation can be understood as a non-linear organisational process in which adaptations within one subsystem may influence conditions elsewhere in the wider organisational system [4,15,19,20]. Similar digital transformation challenges have been reported internationally across healthcare and care-service settings, where organisations must balance technological integration with regulatory requirements, workforce capability, resource constraints, and established work practices [7,21]. These international experiences suggest that the challenges examined in this study extend beyond a single national policy setting,

while their specific configuration is shaped by local institutional and regulatory conditions. Australia's National Disability Insurance Scheme (NDIS) [13] provides an appropriate empirical setting for examining these system interactions because it combines a competitive market-based service model with regulatory governance, pricing constraints, workforce pressures, and increasing dependence on digital infrastructure [12,22]. NDIS services are delivered through provider organisations that vary considerably in size, resources, and digital capability. This study focuses on small and medium providers, defined here as organisations with 50 or fewer and 51–200 staff, respectively. Compared with larger organisations, these providers may operate with more limited financial and specialist IT resources and rely on combinations of commercial platforms, administrative software, spreadsheets, and manual processes to support service delivery and compliance. Organisational size is therefore relevant because resource availability, technical capability, and capacity to integrate or customise systems may shape how providers respond to technological and regulatory demands. Regulatory and compliance demands are not inherently constraining; rather, difficulties arise when these demands interact with inadequate or poorly aligned digital capabilities, requiring providers to rely on manual processes, duplicate data entry, and other compensatory work practices. These interactions provide an important basis for examining how technological, organisational, and environmental conditions may become interconnected and potentially mutually reinforcing. Policy reform and administrative change may require provider organisations to adapt internal workflows and digital infrastructures while operating under resource constraints [7,23,24].

Although existing digital transformation research has extensively documented technological, organisational, and environmental factors associated with implementation outcomes [5,17,25], prevailing frameworks remain predominantly static and factor-oriented. Less attention has been given to how these conditions may interact and become mutually reinforcing within organisational settings [23,26]. Consequently, existing research provides limited explanation of how technological limitations are associated with adaptive work practices, how these practices relate to organisational resource demands [9,14,27], and how environmental pressures may influence these relationships. Addressing this gap requires a systems-oriented perspective that moves beyond identifying implementation factors to examining the interdependencies among technological, organisational, and environmental conditions. To address this gap, this study investigates digital transformation among small and medium NDIS providers through the primary lens of Systems Theory. Sociotechnical Systems (STS) Theory is employed to interpret adaptive organisational responses to technological misalignment [23,28], while the Technology–Organisation–Environment (TOE) framework provides an organising taxonomy for classifying the technological, organisational, and environmental conditions identified in the empirical data. Together, these perspectives enable examination of how interactions across these domains are associated with organisational adaptation during digital transformation. Accordingly, this study addresses the following research question:

RQ: How do interactions among technological, organisational, and environmental subsystems shape organisational adaptation during digital transformation within a regulated care ecosystem?

The study contributes by proposing RCC as a systems-based conceptual framework that connects established explanations of technological misalignment, compensatory work practices, administrative demands, and organisational capability constraints. Rather than treating these as separate challenges, RCC specifies how they may become interconnected through proposed reinforcing relationships that constrain opportunities for subsequent digital improvement.

2. Literature Review

2.1. Digital Transformation as Organisational Change

Digital transformation extends beyond the adoption of digital technologies to represent an ongoing process of organisational change that reshapes organisational structures, operational processes, capabilities, and value creation mechanisms [5,6]. Contemporary research increasingly conceptualises digital transformation as a sociotechnical and organisational phenomenon involving the integration of digital technologies into everyday organisational practices, organisational adaptation, and strategic renewal [23,29]. Rather than occurring as a discrete implementation event, digital transformation unfolds through interaction between technological capabilities and organisational adaptation within increasingly interconnected digital ecosystems [23]. Consequently, successful transformation depends less on the availability of advanced technologies than on an organisation's capacity to realign technological infrastructures, organisational resources, and evolving institutional conditions [29].

This dynamic view challenges traditional assumptions that organisations progress through predictable stages of digital maturity. Conventional maturity models generally portray digital transformation as a cumulative process in which incremental improvements in technology integration progressively strengthen organisational capability. However, growing evidence suggests that adaptation does not necessarily generate cumulative capability, particularly in resource-constrained environments. Instead, fragmented digital infrastructures, legacy technologies, institutional pressures, and organisational resource limitations frequently interact in ways that constrain rather than strengthen future adaptation [3,30]. As organisations seek to maintain operational continuity while responding to evolving technological and environmental demands, resources may be diverted towards sustaining existing systems and managing workarounds rather than enabling transformational change, potentially reinforcing cycles of reactive maintenance [3,30,31]. This phenomenon is widely documented across international healthcare and care-service settings, where compliance systems and administrative reporting burdens may encourage reliance on operational workarounds, absorbing frontline resources and constraining long-term digital capability [32–34]. Recent research further identifies interconnected constraints—including technical debt, inadequate workflow redesign, governance fragmentation, competing organisational priorities, and path-dependent routines—that may collectively diminish adaptive capacity and impede sustained digital transformation [3,30,31]. These interacting conditions may be particularly pronounced within highly regulated environments, where compliance obligations under statutory frameworks—such as the National Disability Insurance Scheme [13]—interact with operational demands and organisational constraints [11,14].

This study makes three primary contributions to Information Systems research. First, it reconceptualises digital transformation in regulated care environments as an interconnected organisational systems process characterised by potential feedback relationships, moving beyond traditional stage-based understandings of implementation. Second, it introduces Recursive Capability Constriction (RCC), a systems-based conceptual framework proposing how adaptive responses to technological misalignment may become interconnected with constraints on the organisational capabilities needed for subsequent digital adaptation. Third, it provides empirical evidence showing how technological, organisational, and environmental pressures are experienced as interconnected and uses these cross-sectional patterns to theorise potential reinforcing relationships that may influence the sustainability of digital transformation.

2.2. Digital Transformation in Regulated Care Ecosystems

Regulated care ecosystems present a distinctive context for digital transformation because organisations must simultaneously pursue service innovation, regulatory compliance, workforce coordination, and financial sustainability [7,8]. Unlike many commercial sectors, digital transformation in care settings is shaped not only by technological capability but also by professional practice standards, complex service relationships, and extensive external oversight. Consequently, digital technologies become deeply embedded within operational, clinical, and administrative processes, meaning that technological change frequently alters organisational routines, professional interactions, and decision-making practices rather than simply improving operational efficiency [7].

Across healthcare, aged care, and disability services, the literature consistently demonstrates that digital transformation is influenced by the interaction of technological, organisational, and institutional conditions rather than by technological adoption alone [6,15,35,36]. Fragmented information systems, limited interoperability, workforce capability constraints, and expanding compliance obligations frequently combine to generate implementation friction that extends far beyond technical system performance [7,32]. As organisations adapt to these pressures, they frequently introduce administrative expansion, parallel documentation practices, and informal workarounds to ensure operational continuity and statutory compliance [9,34,37]. These adaptive responses can be beneficial by maintaining service continuity and enabling local problem-solving. However, where compensatory practices persist without addressing underlying technological misalignment, they may also become associated with additional administrative complexity and reduced opportunities for longer-term digital improvement [3,30,38]. Similar sociotechnical tensions have been reported internationally across regulated healthcare and welfare settings. Studies from the United States, United Kingdom, and Europe identify documentation and regulatory burdens [32,33], technological and infrastructural misalignment [7,21], resource constraints [7,21], and workaround or coping practices [9,34,37] as recurring challenges associated with digitalised service delivery. Collectively, this evidence suggests that digital friction arising from interactions among technological, organisational, and institutional conditions is not unique to the Australian context.

These challenges are particularly acute for small and medium care providers operating under constrained financial and workforce conditions [39,40]. Limited organisational resources frequently restrict investment in integrated digital infrastructure, specialist technical expertise, workforce training, and ongoing system maintenance [41,42]. Consequently, organisations may prioritise maintaining essential service delivery over strategic digital development, contributing to incremental rather than transformational technological change [43]. Existing research suggests that repeated reliance on such reactive adaptations may reinforce dependence on fragmented systems, parallel documentation, and manual coordination processes, potentially making subsequent organisational adaptation more resource-intensive and difficult to sustain [3,30].

Although existing research provides substantial insight into the barriers affecting digital transformation within regulated care environments, these obstacles are predominantly analysed as discrete organisational or technological factors [44–46]. Comparatively less attention has been given to how interactions among technical limitations, organisational coping responses, and institutional oversight may become interconnected with organisational capability constraints [3,23,30]. Explaining these recursive organisational dynamics requires an analytical perspective capable of examining feedback relationships across interconnected subsystems rather than treating implementation challenges as independent variables [35,47]. This explanatory gap provides the core rationale for adopting Systems

Theory—with its emphasis on feedback loops, non-linear behaviour, and emergent system properties—as the analytical lens for the present study.

2.3. *Systems and Sociotechnical Perspectives on Digital Transformation*

The preceding discussion demonstrates that digital transformation within regulated care ecosystems cannot be adequately understood by examining technological, organisational, or environmental factors in isolation. Rather, transformation emerges from the continuous interaction of multiple organisational subsystems, where changes in one domain may influence conditions across others [23,48]. Systems Theory provides a rigorous theoretical foundation for examining these dynamics by conceptualising organisations as dynamic, interconnected systems defined by feedback mechanisms, ongoing adaptation, and functional interdependence [35,47]. From this perspective, organisational outcomes arise not from isolated events or linear technological deployments, but from the cumulative interactions among technological infrastructures, organisational routines, human capabilities, and external regulatory conditions [35,47].

A central proposition of Systems Theory is that organisations continuously exchange information, resources, and feedback with their surrounding environment, requiring iterative adaptation to maintain system viability [35]. Because these internal subsystems are mutually dependent, interventions intended to optimise one area of performance frequently generate secondary, unexpected effects elsewhere in the system. These interactions are rarely linear; instead, they may involve reinforcing and balancing feedback relationships that influence organisational behaviour and adaptive capacity [16,35,47].

While Systems Theory explains organisation-wide feedback structures, interdependencies, and adaptive dynamics, STS Theory provides complementary insight into how these dynamics emerge through interactions between people, technologies, and work practices during organisational change [23]. STS Theory emphasises that organisational performance relies on the joint optimisation of technological infrastructures and social work systems, rather than the independent optimisation of either subsystem [23]. When digital technologies fail to align with established practices, staff may adapt workflows, develop manual workarounds, or improvise coordination strategies to maintain service continuity [9,30,49]. Importantly, workarounds are not inherently dysfunctional. Prior research shows that they can represent pragmatic adaptation, local problem-solving, and innovation, enabling employees to respond flexibly when formal systems do not adequately support operational requirements [30,34,49]. However, their organisational consequences depend on how they are used and sustained. While some workarounds may support learning and improvement, others may generate additional administrative effort, fragmented processes, or dependence on compensatory routines when underlying technological misalignments remain unresolved [3,30,34]. This distinction is central to the present study, which examines the specific conditions under which adaptive practices may become associated with broader organisational constraints rather than assuming that workarounds are inherently harmful.

Viewed in tandem, Systems Theory and STS Theory provide complementary analytical perspectives for understanding digital transformation within regulated care ecosystems. STS Theory was used to interpret how participants adapted everyday work practices in response to misalignment between technological systems and operational demands, while Systems Theory was subsequently used to examine how these local adaptations were associated with broader organisational and environmental conditions through interdependencies and potential feedback relationships.

2.4. Technology–Organisation–Environment (TOE) as an Organising Framework

The TOE framework has been widely applied to examine the contextual conditions influencing technology adoption and digital transformation across diverse sectors [6,25,36,50]. The framework posits that technology implementation is shaped by three interrelated contextual domains: technological characteristics, organisational attributes, and the external environment. Collectively, these domains provide a structured taxonomy for categorising the contextual drivers and constraints that influence organisational decision-making and technology adoption.

Although the TOE framework has contributed substantially to identifying the determinants of technology adoption, its primary strength lies in organising technological, organisational, and environmental conditions associated with implementation. Most TOE-based studies identify specific factors associated with implementation outcomes but devote comparatively less attention to the relationships and potential feedback processes among these domains [6,25,50,51]. Consequently, TOE effectively identifies the conditions associated with digital transformation but provides more limited insight into how organisational responses to these conditions may become interconnected and influence organisational capabilities.

This distinction is particularly crucial within regulated care ecosystems, where technical constraints, organisational coping responses, and institutional oversight continuously condition one another rather than operating as independent implementation variables. These interactions may give rise to feedback relationships in which adaptations within one domain are associated with changing conditions in others. Together, these perspectives provide a basis for explaining how digital transformation in regulated care settings may involve adaptation and interdependence across technical, organisational, and institutional subsystems, rather than isolated implementation decisions.

Taken together, existing research explains important aspects of digital transformation difficulty, including technological misalignment, workaround behaviour, organisational inertia, and capability erosion [9,34,35,48]. However, these mechanisms are largely examined separately, providing limited explanation of how short-term sociotechnical adaptations may become embedded in organisational routines, redirect resources towards maintaining fragmented arrangements, and subsequently constrain the capacity to address the original technological problems. This leaves an explanatory gap concerning how adaptation itself may contribute to the recursive reproduction of digital transformation constraints.

Accordingly, this study employs TOE as an organising taxonomy for classifying the technological, organisational, and environmental conditions identified during data analysis, rather than as the primary explanatory lens. Systems Theory and STS Theory provide the explanatory lenses for interpreting interdependencies, sociotechnical adaptations, and potential feedback relationships across these domains. This complementary approach retains TOE's value for systematically organising contextual factors while enabling a systems-oriented interpretation of how technological, organisational, and environmental conditions may become interconnected within regulated care ecosystems.

2.5. The Australian NDIS as a Regulated Digital Service Ecosystem

The Australian National Disability Insurance Scheme provides a particularly appropriate setting for examining digital transformation within regulated care ecosystems because it pairs market-based service delivery with extensive regulatory oversight and an increasing reliance on digital technologies [11,12]. Since its inception, the NDIS has fundamentally restructured disability service provision by replacing legacy block funding with individualised funding packages. This shift requires providers to operate within a competitive, consumer-directed marketplace while maintaining strict compliance with

legislative frameworks and governance standards [11,22,52]. Marketized and quasi-market care environments internationally (such as consumer-directed care schemes in North America and Europe) reflect similar structural tensions, where providers must simultaneously contend with market competition, individualised client funding, and stringent regulatory requirements [53,54]. In England, devolving funding control to service users through individual budgets produced “potentially adverse administrative and workforce consequences” for providers [55], while research on personal budgets identified structural market features and transaction costs that constrain effective service delivery [56,57]. These parallel experiences suggest that the tensions observed among NDIS providers reflect wider dynamics of regulated care markets rather than uniquely Australian conditions.

This combination of market competition and regulatory accountability creates an organisational environment in which enterprise IT systems are central to service coordination, claim processing, audit logging, workforce management, and administrative governance. Registered providers must demonstrate ongoing compliance with the NDIS Practice Standards and Quality Indicators, particularly the modules relating to governance, operational management, and workforce safeguards [58]. However, when central software platforms fail to support these complex administrative workflows, providers may rely on manual workarounds and duplicated documentation processes to preserve service continuity and regulatory compliance [30,34,37].

Digital transformation within the NDIS extends far beyond the linear adoption of administrative software [54]. Providers must continually adjust organisational processes in response to evolving pricing arrangements, shifting reporting frameworks, acute workforce shortages, and policy reforms [12]. These ongoing institutional demands require care organisations to adapt operational workflows while maintaining uninterrupted service delivery and stringent regulatory compliance [12,13]. Consequently, digital tools become deeply embedded within broader sociotechnical systems where software functionality, administrative routines, workforce practices, and statutory expectations continuously condition one another [15,23].

These operational conditions are especially challenging for small and medium providers, which comprise a substantial proportion of the Australian disability sector [54]. Compared to larger counterparts, smaller providers routinely operate with constrained financial margins, limited internal IT capabilities, and minimal capacity to invest in integrated enterprise systems or dedicated digital transformation initiatives [41,42]. As a result, these organisations frequently rely on incremental software adoption, manual coordination processes, and locally improvised workarounds to sustain day-to-day operations [43]. Although such adaptations may support immediate service continuity, persistent reliance on compensatory practices may also be associated with greater organisational complexity and constraints on longer-term digital improvement [3,30,31,47].

The NDIS therefore represents more than a background context; it provides a theoretically relevant setting for examining how technological limitations, organisational coping responses, resource constraints, and institutional pressures may interact. These characteristics make the NDIS a suitable empirical setting for the systems-oriented analysis undertaken in this study.

2.6. Conceptual Framework

The preceding review suggests that digital transformation within regulated care ecosystems is better understood as an organisational process involving interactions among technological, organisational, and environmental conditions rather than as a set of isolated implementation factors. Although existing research has advanced understanding of

these conditions, comparatively less attention has been given to how they may become interconnected and potentially mutually reinforcing within organisational settings.

To address this gap, the conceptual framework presented in Figure 1 integrates Systems Theory and STS Theory. Systems Theory provides the overarching lens for examining system-level interdependencies and potential feedback relationships among organisational subsystems [4,11,15,17]. STS Theory complements this perspective by explaining how these relationships are expressed through interactions among people, technologies, and everyday work practices [59–63]. Together, these perspectives connect organisation-level interdependencies with the sociotechnical practices through which adaptation occurs.

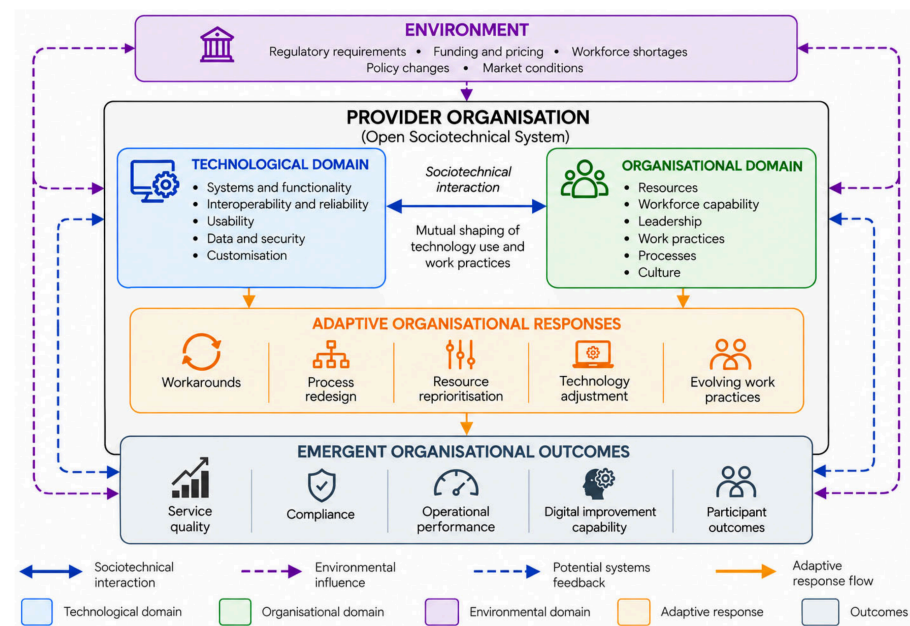


Figure 1. Integrated conceptual framework for examining cross-domain interactions and organisational adaptation within the NDIS provider ecosystem. The conceptual framework was developed by the authors, with graphical enhancement and visual refinement assisted by OpenAI’s ChatGPT (model version as disclosed in Section 3.7).

The TOE framework serves as an organising taxonomy rather than the primary explanatory theory. Its technological, organisational, and environmental dimensions provide a structured basis for classifying empirical conditions following inductive theme development, while Systems Theory and STS Theory provide the explanatory lenses for interpreting interdependencies, sociotechnical adaptations, and potential feedback relationships across these domains.

Within this framework, environmental pressures such as regulatory and compliance requirements are not conceptualised as direct causes of capability constriction. Rather, they may interact with technological misalignment and organisational resource constraints, potentially increasing reliance on adaptive or compensatory work practices.

In this study, organisational capability for digital improvement refers to an organisation’s capacity to mobilise the time, resources, technological expertise and organisational effort required to improve its digital systems and associated work practices. Capability constriction refers to limitations on this capacity. In participants’ accounts, constriction was reflected in limited time and resources for digital improvement, the deferral of system improvements in favour of immediate operational demands, continued reliance on compensatory workarounds, and reduced opportunities for staff learning, innovation, training and system optimisation. Adaptive capacity refers more specifically to the organisation’s capacity to respond to changing technological, operational and environmental demands

and is treated here as an aspect of the broader capability for digital improvement rather than as a separate construct.

Importantly, Figure 1 served as a sensitising and organising framework rather than a predetermined model of RCC relationships. The empirical themes were developed inductively from participants' accounts and subsequently interpreted using Systems Theory and STS Theory. This analytical process informed the subsequent development of Recursive Capability Constriction (RCC), presented in the Discussion as a systems-based conceptual framework.

3. Methodology

3.1. Epistemological Stance and Research Design

This study adopts an interpretive qualitative design grounded in constructivism to examine digital transformation in Australian disability service organisations [64–66]. Interpretivism is well suited to investigating complex organisational phenomena where the aim is to understand how actors construct and negotiate meaning within sociotechnical contexts, rather than measuring predetermined variables [64,65]. This design directly aligns with the research question by exploring how participants experience, interpret, and adapt to cross-domain interactions among technological, organisational, and environmental conditions. The study seeks an interpretive explanation of these interdependencies within their natural setting rather than a quantitative estimation, statistical measurement, or computational simulation of system variables. Constructivism assumes organisational realities are socially enacted through shared routines and localised practices, making it ideal for capturing the processual nature of digital transformation. An interpretive approach enables examination of the contextual complexity, sense-making, and adaptive processes associated with digital transformation [64,65,67].

To operationalise this approach, primary empirical data were collected via semi-structured interviews, enriched by the researcher's practitioner insider positionality and contextual familiarisation with sector policies, administrative software, and operational routines [68,69]. Rather than treating policy documents and observations as formal coded datasets, this insider pre-understanding informed protocol design, guided targeted interview probing, and contextualised participant accounts of technological friction and compliance pressures [67,68,70].

3.2. Participant Selection and Sampling Strategy

Purposive sampling was used to recruit participants with direct, experiential knowledge of digital transformation across Australian disability service organisations operating under the NDIS. Qualitative research relies on purposive sampling to select information-rich cases capable of providing deep insight into complex organisational dynamics rather than statistical representativeness [64,65].

Potential participants were recruited through a combination of publicly available provider contact information and professional networks developed by the field researcher through their work within the NDIS sector. Initial contacts were approached directly, with additional potential participants identified through professional referrals, incorporating a snowball recruitment element within the purposive sampling strategy.

A total of 25 NDIS provider organisations were approached and invited to participate. Sixteen organisations initially agreed; however, one prospective participant was subsequently excluded prior to data collection because their experience was primarily technology-focused, with insufficient operational knowledge of NDIS processes relevant to the study. The final sample therefore comprised 15 participants from 15 distinct NDIS provider organisations, with one key informant interviewed from each organisation. This sampling

approach provided breadth across organisational contexts while capturing perspectives across strategic, operational, and frontline roles. Individual accounts were treated as participant perspectives rather than as representative accounts of their respective organisations.

The final sample size ($N = 15$) was evaluated using the principle of information power [71]. Information power proposes that sample adequacy depends on the informational value of the data rather than a predetermined numerical threshold. Sample adequacy was supported across five dimensions:

1. Aim specificity: A focused examination of workaround practices, administrative burdens, and digital capability constraints within NDIS providers.
2. Sample specificity: Participants from 15 distinct provider organisations with direct experience of NDIS digital systems, compliance workflows, and organisational processes across different levels of responsibility.
3. Established theory: Systems Theory and STS Theory provided theoretical lenses for interpretation, while TOE provided a post-coding organising taxonomy for the empirical conditions identified.
4. Dialogue quality: Rich and detailed participant accounts of technological friction, workarounds, administrative demands, and organisational responses.
5. Analysis strategy: In-depth cross-case analysis of interdependencies and recurring relationships among the identified conditions rather than broad population-level comparison.

Analysis of the later interviews indicated diminishing conceptual returns, with limited additional dimensions relevant to the research question. Rather than supporting statistical or population-level generalisation, the organisational breadth and contextual detail of the sample support assessment of the transferability of the findings to comparable regulated and resource-constrained service environments. Participant characteristics are detailed in Table 1.

Table 1. Participant Characteristics.

Characteristic	Category	Count (<i>n</i>)	Percentage (%)
Role Category	Senior decision-makers	7	47%
	Operational managers/coordinators	4	27%
	Frontline support staff	4	27%
Organisation Size	Small providers (50 or fewer staff)	8	53%
	Medium providers (51–200 staff)	7	47%
Sector Experience	Less than one year	2	13%
	One to three years	2	13%
	Three to five years	5	33%
	Five to ten years	5	33%
	Greater than ten years	1	7%
Digital Responsibility	Strategic systems management	4	27%
	Operational coordination and compliance	6	40%
	Frontline service documentation	5	33%

3.3. Data Collection

Primary data were collected from NDIS providers in Sydney over approximately six months, from September 2024 to March 2025, through in-depth semi-structured in-

interviews. Interviews were designed to take approximately 30–45 min, although some interviews with senior and executive-level participants extended to approximately 50 min due to the depth of discussion. Although ethics approval was obtained in November 2023, commencement of data collection was deferred due to a period of approved leave taken by the field researcher. The researcher's practitioner experience as an accountant within the NDIS sector provided contextual familiarity with NDIS administrative processes, compliance requirements, and digital systems [66,68,69].

The interview protocol was informed by the research objectives and broad technological, organisational, environmental, and sociotechnical considerations. It explored participants' experiences of digital transformation, technological challenges, work practices, organisational responses, and external pressures. The digital technologies discussed by participants spanned several functional areas, including participant/client management, rostering and scheduling, financial and accounting administration, compliance and reporting, and service documentation, together with spreadsheets and other supplementary tools used alongside formal organisational systems. Importantly, participants were not presented with RCC, predetermined feedback relationships, or an assumed sequence of relationships. Follow-up questions were used to clarify and explore issues raised by participants [67,68]. Interview guides were used to reflect participants' differing organisational responsibilities while maintaining consistent areas of inquiry relevant to the research objectives. The semi-structured interview guides are provided in Appendix A. The interviews formed part of a broader research project on digital transformation in the disability services sector; accordingly, the interview guides covered topics beyond the specific focus of this article. The present analysis draws on interview data relevant to the research questions examined in this study.

Although some interview questions explicitly addressed barriers and challenges, the semi-structured format allowed participants to elaborate on their experiences and express alternative perspectives. Follow-up questions were used to clarify participants' responses rather than impose predetermined interpretations. The inclusion of contrasting accounts, including experiences of successful digital adaptation and fewer technological difficulties, further indicates that participants were able to express perspectives beyond the problem-focused framing of some questions. Nevertheless, the possibility that question framing influenced the experiences participants emphasised cannot be entirely excluded.

Interviews were conducted via secure video conferencing using Microsoft Teams. All interviews were audio-recorded with consent, transcribed verbatim, de-identified, and assigned alphanumeric participant codes.

Organisational documents, software interfaces, and operational observations were used only for contextual orientation and were not treated as separate coded datasets or independent empirical evidence [64].

3.4. Data Analysis

Data were analysed in NVivo using reflexive thematic analysis following Braun and Clarke's six-phase framework [72,73]. Reflexive thematic analysis was selected for its rigour, its organic treatment of pattern identification, and its explicit acknowledgement of the researcher's reflexive role in knowledge generation. It aligned directly with the study's constructivist orientation, allowing candidate themes to emerge inductively rather than be imposed through predetermined coding structures.

Analysis proceeded in two stages.

Stage One: Inductive Reflexive Thematic Analysis. Transcripts were repeatedly read for familiarisation before open inductive coding was undertaken to capture participants' experiences and perspectives. Coding was not conducted against predetermined RCC

categories, TOE dimensions, or feedback relationships; the theoretical perspectives outlined in Section 2.6 served as sensitising concepts rather than a predefined coding framework. Initial coding remained close to participants' accounts, with first-order codes reflecting participants' language and meanings. Related first-order codes were iteratively compared and grouped into candidate second-order themes representing recurring patterns across the dataset. These themes were continuously refined and checked against raw extracts.

Stage Two: Systems Synthesis and Abstraction. Following inductive theme development, TOE was used as an organising taxonomy to classify the technological, organisational, and environmental conditions represented within the themes. Systems Theory and STS Theory were then operationalised to interpret cross-level relationships: STS Theory was used to analyse how participants adapted work practices in response to technological friction, while Systems Theory was used to examine the interdependencies, potential feedback relationships, and resource flows among the empirically derived themes. This two-stage process ensured that higher-level theoretical synthesis remained grounded in empirical participant accounts. The field researcher conducted the initial coding and analysis of all interview transcripts. The coding decisions, development of themes, and subsequent analytical interpretation were reviewed by the supervisor of the project. Coding decisions and theme development were documented throughout the analytical process to support transparency and the audit trail described in Section 3.5.

Negative and deviant case analysis was also undertaken by examining participant accounts that did not fully align with the dominant thematic pattern or suggested alternative organisational responses. Particular attention was given to accounts reporting successful system integration, limited technological difficulty, reduced administrative workload, or organisational responses that resolved rather than reproduced technological constraints. These contrasting cases were compared with the dominant themes to refine interpretation of the relationships among technological, organisational, and environmental conditions and to identify circumstances in which the proposed RCC pattern appeared weaker or incomplete.

Together, these stages synthesised the empirical themes into a higher-level, systems-oriented interpretation of digital transformation and informed the subsequent development of the RCC framework. Table 2 illustrates the analytical progression from raw participant evidence to first-order codes and inductively derived second-order themes, followed by post-coding TOE classification and systems-oriented interpretation. TOE was applied as an organising taxonomy rather than as a coding framework, and themes could be associated with more than one TOE domain where appropriate.

Table 2. Illustrative progression from participant evidence to systems-oriented interpretation.

Raw Participant Evidence	First-Order Code	Second-Order Theme	TOE Domain(s)—Post-Coding Classification	Systems-Oriented Interpretation
"We ended up using like so many different system instead of one system that was able to do everything." (P12)	Multiple disconnected systems	System fragmentation	Technological–Organisational	Technological fragmentation is associated with increased administrative effort and compensatory organisational responses.
"You will end up using two parallel systems doing the same thing." (P3)	Parallel system use	Administrative expansion	Technological–Organisational	Administrative demands consume organisational resources and may reduce capacity for system improvement.
"I don't think training is enough." (P4)	Insufficient training	Workforce capability	Organisational	Limited capability development may constrain organisational adaptation and subsequent digital improvement.

Table 2. *Cont.*

Raw Participant Evidence	First-Order Code	Second-Order Theme	TOE Domain(s)—Post-Coding Classification	Systems-Oriented Interpretation
"We were just operating on the basics of using Excel spreadsheets [and] Microsoft Word." (P7)	Spreadsheet-based workaround	Informal adaptation	Technological–Organisational	Workarounds support service delivery in response to system limitations while potentially increasing process fragmentation and complexity.
"If you need the good system, they come with the cost. So the cost is sometimes too high." (P12)	Limited investment capacity	Resource constraints	Organisational–Environmental	Resource and environmental pressures may restrict corrective responses and opportunities for organisational adaptation.

3.5. Trustworthiness and Research Rigour

The trustworthiness of this study was established using the four criteria proposed by Lincoln and Guba [70,74]: credibility, transferability, dependability, and confirmability.

Credibility was supported through prolonged engagement with the Australian NDIS sector and the researcher's practitioner-insider familiarity with organisational processes and digital systems. The semi-structured interview design allowed iterative clarification of emerging issues during data collection [66,72].

The researcher's practitioner-insider position provided contextual understanding of NDIS processes, digital systems, and terminology, but also introduced potential risks of overfamiliarity and confirmation bias. These risks were managed through reflexive memo writing, maintaining an audit trail of analytical decisions, repeatedly checking interpretations against participant transcripts, and actively examining contradictory and deviant cases.

Transferability was supported through thick description of the Australian NDIS context, participating organisations, and participant roles, enabling readers to assess the applicability of the findings to similar regulated care environments [66,70].

Dependability was enhanced by maintaining a transparent audit trail documenting methodological decisions, interview procedures, coding, and analytical development throughout the research process [70].

Confirmability was supported through reflexive memo writing during data collection and analysis, together with continual critical reflection on the researcher's insider position to ensure that interpretations were grounded in the empirical data rather than prior assumptions [70].

3.6. Ethical Considerations

Ethical approval for this study was obtained from the Torrens University Australia Human Research Ethics Committee (HREC) (Approval No. 0286) before the commencement of data collection. The study was conducted in accordance with the National Statement on Ethical Conduct in Human Research (2023).

Participation was voluntary, and all participants received a Participant Information Sheet outlining the purpose of the study, research procedures, potential risks and benefits, and their rights as research participants. Written informed consent was obtained before data collection commenced. Participants were informed that they could decline to answer any question or withdraw from the study at any time without penalty.

To protect participant confidentiality, all interview data were de-identified during transcription and analysis, and participant codes were used when reporting the findings. Digital recordings, interview transcripts, field notes, and organisational documents were

securely stored in password-protected electronic files accessible only to the research team. All research data will be retained and managed in accordance with Torrens University Australia's research governance and data management requirements.

3.7. Use of Generative AI in Figure Preparation

During the preparation of this manuscript, the authors used OpenAI's ChatGPT (GPT-6) to assist with the graphical enhancement and refinement of conceptual figures. The authors provided preliminary diagrams developed from the study's conceptual frameworks and requested improvements to their visual presentation, including colour schemes, layout, alignment, readability, and overall visual clarity. The prompts used during the iterative refinement process included instructions such as "Enhance this diagram", "Improve the colour scheme and visual clarity", "Remove the arrow pointing to a specified element", "Adjust the positioning of the elements", and "Improve the overall layout while preserving the original conceptual relationships". These examples summarise the nature of the instructions provided rather than reproduce a complete verbatim record of all prompts. The underlying conceptual frameworks, theoretical relationships, and research interpretations were developed by the authors. The authors have reviewed and edited the output and take full responsibility for the content of this publication.

4. Findings

The themes reported below were recurrent across the dataset but were not uniformly expressed by all participants. Technological and organisational constraints were widely represented across participant accounts, while the strength and combination of adaptive responses, administrative demands, reduced capacity for digital improvement, and environmental pressures varied across organisations. Six of the 15 participant accounts contained deviant or partial evidence in which one or more elements of the dominant pattern were weak or countered by more successful digital practices. Theme prevalence is therefore interpreted qualitatively in terms of recurrence across participant accounts rather than as a quantitative measure of frequency or importance.

4.1. Adaptive Responses: Workarounds in Organisational Practice

Many participants described developing workarounds to compensate for fragmented and poorly integrated digital systems. Participants reported reliance on spreadsheets, duplicated records, email trails, and manual checking to maintain service continuity in response to technological limitations.

As one operations manager explained, "we've got spreadsheets for this, another system for that, and then we still have to enter it into the main platform" (P6). Similarly, a support coordinator noted, "you can't rely on just one system, so you're constantly checking different places" (P11). Another participant observed that "we're still doing it manually" and described using different systems for finance, rostering, HR and incident reporting (P12), while a frontline worker reflected that "everyone has their own way of keeping track because the system doesn't capture everything" (P14). An executive acknowledged that these practices were necessary, stating, "you do what you need to do to keep services running" (P2).

Viewed through a STS Theory lens, these workarounds reflect a fundamental joint-optimisation problem. Participants adapted the social system of work—leveraging auxiliary spreadsheets, duplicated record-keeping, manual verification, and informal cross-team coordination—to compensate for limitations in the formal technical system. Although these local adaptations supported immediate operational and service continuity, participants

also associated them with greater coordination effort across personnel, software tools, and compliance processes.

Across organisations, participants described workarounds as recurring and routine practices rather than isolated responses to technological limitations. The accounts suggest that repeated reliance on such practices may contribute to their institutionalisation within everyday organisational routines.

4.2. Administrative Expansion and Capability Constriction

Participants described workarounds as embedded within everyday practice and associated them with substantial administrative responsibilities extending beyond routine service delivery. One participant explained, “we spend more time documenting than actually supporting participants” (P7). Similarly, a manager noted that “the administration has grown significantly because every system needs something different” (P5). Another participant reflected that “there’s never enough time to improve processes because we’re busy keeping everything running” (P10). A participant also described the consequences of poorly matched technology, noting that “there was a lot of time wasting” when additional features had to be implemented (P15). As one executive concluded, “the systems are supposed to save time, but they create another layer of work” (P3).

The findings suggest that administrative expansion extended beyond an increase in documentation. Participants associated the resources required to maintain fragmented digital processes with fewer opportunities for learning, service improvement, and innovation. From a systems perspective, this suggests an interdependency between the administrative demands associated with technological limitations and the resources available elsewhere in the organisational system.

4.3. Reduced Capacity for Digital Improvement and Potential Reinforcing Relationships

A recurring pattern across participant accounts was that efforts to sustain existing digital systems were associated with reduced capacity to improve them. Participants described how time and resources devoted to managing fragmented technologies were associated with limited opportunities for staff training, system optimisation, or digital improvement.

As one manager explained, “we’re so busy keeping the systems going that we don’t have time to fix them” (P10). Another participant similarly observed, “every improvement gets pushed back because operational work always comes first” (P5). An executive acknowledged that “we know what needs to change, but we simply don’t have the capacity to do it” (P2), while a support coordinator noted that “we just keep adding another workaround instead of solving the actual problem” (P11). Staff capability also featured in these accounts, with one participant observing that some colleagues “find it difficult to actually operate or manipulate such application and/or a system” (P1). Similarly, another participant identified staff training as an ongoing challenge, stating, “I don’t think training is enough” (P4). Reflecting on this experience, one participant concluded, “the more systems we have, the harder they become to manage” (P8).

A recurring pattern was identified in which organisational responses to technological limitations were associated with additional constraints on digital improvement. This pattern provides empirical support for interpreting the relationships as potentially reinforcing, while the cross-sectional design does not establish their temporal sequence.

4.4. Environmental Pressures and System Constraints

External pressures also featured prominently in participant accounts, particularly evolving NDIS requirements, funding constraints, and increasing compliance obligations. Participants associated these pressures with increased organisational complexity and reduced capacity to address underlying technological limitations.

As one executive explained, “every time the NDIS changes, we have to change our processes as well” (P2). Another manager observed that “there’s never enough funding to invest in the systems we actually need” (P5), while a support coordinator noted that “compliance keeps increasing, so documentation keeps increasing” (P11). Similarly, a frontline worker reflected that “we’re constantly trying to keep up with changes while still delivering services” (P14).

Environmental pressures were described as interacting with existing technological and organisational constraints rather than operating independently. These pressures may therefore strengthen the relationships among technological misalignment, organisational constraints, and adaptive responses identified across the findings.

4.5. Variation and Deviant Cases

Deviant and partial evidence was identified across several participant accounts. Rather than representing wholly contradictory cases, this variation occurred along a spectrum. For example, P10 described client onboarding as “pretty much seamless now” and “very, very quick and easy”, while also reporting difficulties associated with other digital processes. P14 similarly reported relatively limited difficulty with the current digital platform while describing challenges in other aspects of digital work. P12 also described successful system integration and reduced workload alongside continuing fragmentation, manual processes, and financial constraints. These accounts illustrate how confirming and deviant evidence could coexist within individual participant accounts and how the proposed relationships varied across technologies, processes, and work practices. The proposed relationships appeared less evident in accounts describing better alignment between technologies and operational requirements, reduced administrative effort through digitalisation, or effective responses involving system selection, customisation, communication, and training. These cases therefore qualify the dominant pattern and suggest that RCC represents a conditional configuration of relationships rather than a uniform organisational experience.

Variation was also evident in the organisational conditions surrounding these experiences. Participants’ accounts suggested differences in digital infrastructure, resource availability, staff familiarity with technology, and organisational approaches to system selection and customisation. Participants reporting greater automation, better-fitting systems, or stronger capacity to adapt existing technologies described fewer elements of the dominant pattern, whereas accounts characterised by fragmented systems and resource constraints reflected stronger dependence on manual or compensatory practices. The available accounts suggest that resource availability, technological configuration, and organisational capacity may shape the strength of these relationships; however, the sample does not support systematic comparison by provider size or governance structure.

4.6. Synthesis of Findings

Taken together, the findings indicate a dominant, but not uniform, pattern in which technological misalignment was associated with adaptive responses, increased administrative demands, and reduced opportunities for digital improvement. Environmental pressures were described as interacting with these conditions, while deviant and partial cases showed that the strength and combination of these relationships varied across participants and organisational contexts. The cross-sectional evidence does not establish their temporal or causal ordering.

Table 3 summarises the empirical relationships across the findings themes. Collectively, these findings provide the empirical basis for the systems-oriented interpretation and development of RCC presented in the Discussion.

Table 3. Summary of Empirical Findings.

Findings Theme	Empirical Finding	Organisational Implication
Technological Misalignment	Participants associated fragmented and poorly integrated digital systems with increased coordination effort and disruptions to routine work practices.	Technological limitations were associated with organisational adaptation across participant accounts.
Adaptive Responses	Staff relied on workarounds, duplicate records, spreadsheets, and manual processes to sustain service delivery.	Repeated coping strategies were described as embedded within organisational practice in several participant accounts.
Administrative Expansion	Participants associated maintaining fragmented systems increased documentation, coordination, and compliance activities.	Maintaining fragmented processes was associated with fewer resources and opportunities for system improvement.
Reduced Capacity for Digital Improvement	Operational demands limited opportunities for staff learning, innovation, and system optimisation.	Operational demands were associated with reduced opportunities for subsequent digital improvement.
Environmental Pressures	Funding constraints, regulatory change, and compliance obligations were associated with greater operational challenges.	External pressures were described as interacting with and potentially amplifying technological and organisational constraints.
Variation and Deviant Cases	Some participants reported successful automation, improved system usability, reduced workload, or relatively limited technological difficulty.	The relationships among the identified conditions varied according to system fit, resource availability, staff capability, and organisational capacity for technology adaptation.

5. Discussion

5.1. Digital Transformation as a Systems Process

The patterns identified across participant accounts suggest that digital transformation challenges in the NDIS context may not be adequately explained solely through static technological, organisational, and environmental conditions. While the TOE framework identifies the contextual factors influencing implementation [50], it provides limited explanation of how these factors may become interconnected within organisational systems. The present findings suggest that, within highly regulated and resource-constrained environments, technological misalignment is associated with adaptive organisational responses that may, in turn, be associated with wider organisational capability constraints.

This interpretation aligns with Systems Theory, which views organisations as interconnected systems whose behaviour emerges from interactions among mutually dependent subsystems rather than isolated organisational components [18,75]. These practices were described across participant accounts as recurring organisational responses and were associated with increased administrative effort and constraints on opportunities for system improvement. Rather than representing discrete implementation challenges, these recurring associations provide a basis for theorising potential reinforcing relationships among technological misalignment, adaptive practices, and organisational capability constraints.

This interpretation contrasts with more progressive accounts of digital transformation, in which successive digital investments are associated with organisational capability development [59,76]. Under conditions of persistent technological misalignment, participants instead described organisational effort being directed towards maintaining fragmented systems [30,35,47]. Consistent with Schreyögg and Kliesch-Eberl [48], routine

problem-solving can therefore stabilise existing practices while constraining future organisational capability. From an STS Theory perspective, the reported “manual process behind the digital process” (P9) illustrates how staff compensated for technological limitations through workarounds and manual coordination [9,28,49,60]. Where such adaptations recur, they may become embedded in organisational practices and influence subsequent technology use and decision-making [9,48].

Together, these systems and sociotechnical interpretations provide the theoretical basis for RCC, while its temporal ordering and causal direction remain propositions requiring further empirical investigation.

5.2. From Adaptation to Capability Constriction

The workaround literature generally conceptualises deviations from prescribed technology use as temporary, localised responses to shortcomings in formal work systems [30]. While these perspectives explain why individuals adapt, they pay less attention to how repeated adaptations may become associated with broader organisational capability constraints. Participants described these practices as embedded within everyday routines and, in some accounts, as extending across teams and being reinforced through onboarding and supervision [9,30,34]. This does not imply that workarounds are inherently detrimental; they can support productive adaptation, operational resilience, and care continuity under imperfect technological conditions [30,34,49]. The concern arises where compensatory practices coexist with unresolved technological misalignment and continuing administrative demands, potentially constraining subsequent digital improvement.

Three interrelated mechanisms help explain this pattern. First, workarounds appeared to become accepted organisational practices because they enabled staff to satisfy operational and regulatory requirements and were described as part of routine practice and training [9]. Second, participants’ accounts suggested that technology and process decisions were sometimes organised around existing workaround routines rather than the underlying work they were intended to support, potentially reinforcing rather than resolving technological misalignment [30,34]. Third, compliance activities were described as relying on outputs generated through workaround-based processes, allowing such adaptations to function as accepted organisational procedures [9,34]. Taken together, these mechanisms suggest how local coping responses may become structurally embedded within organisational practice.

Once embedded, workaround-based routines may begin to define “how work is done” rather than functioning as temporary solutions [9,48]. Consistent with prior capability research, stabilised routines may preserve immediate operational continuity while constraining opportunities for capability development and organisational renewal [35,48]. This does not establish a temporal sequence; rather, it provides the theoretical basis for the recursive relationship developed as RCC in the following section.

5.3. Recursive Capability Constriction: A Systems-Based Conceptual Framework

Building on the inductively derived themes and their systems-oriented interpretation, we propose Recursive Capability Constriction (RCC) as a systems-based conceptual framework for understanding how technological misalignment, organisational adaptation, and environmental pressures may become recursively interconnected in regulated care environments. As illustrated in Figure 2, RCC represents a proposed reinforcing relationship in which technological misalignment is associated with adaptive responses, including workarounds, manual cross-checks, and duplicated documentation, that support service continuity but may also increase administrative complexity and reduce capacity for system improvement [35,47]. Repeated reliance on these practices may contribute to greater organisational dependence on workaround-based processes, while external pressures, including

regulatory change and resource constraints, may further strengthen these relationships by increasing the need for adaptive responses.

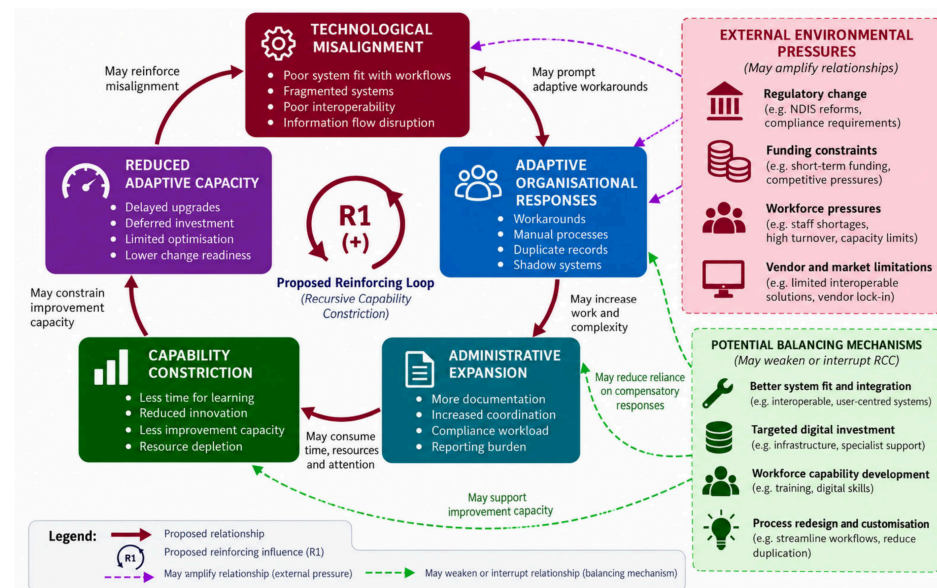


Figure 2. Recursive Capability Constriction (RCC): Proposed conceptual relationships among technological, organisational, and environmental conditions during digital transformation. Note: Solid arrows illustrate hypothesised reinforcing relationships, while dashed arrows represent conditions proposed to weaken, interrupt, or moderate these relationships. Arrow directions indicate theoretical propositions rather than empirically demonstrated causal or temporal pathways. The figure is a conceptual schematic, not a validated causal-loop model. The direction, temporal sequence, and potential reinforcing effects of these relationships require future longitudinal investigation. The conceptual framework was developed by the authors, with graphical enhancement and visual refinement assisted by OpenAI's ChatGPT (model version as disclosed in Section 3.7).

The reinforcing relationships represented in RCC should not be interpreted as implying indefinite or inevitable capability constriction. Figure 2 presents a theoretically proposed configuration of relationships informed by patterns identified across participant accounts. As the study did not observe these relationships unfolding over time, the proposed direction, sequence, and reinforcing effects remain untested and require longitudinal empirical investigation. Systems may also contain balancing mechanisms that weaken or interrupt reinforcing relationships. The findings suggest that better-fitting or integrated technologies, targeted resource investment, workforce capability development, process redesign, and deliberate system customisation may reduce reliance on compensatory work practices and open pathways for digital improvement. RCC is therefore conceptualised as a conditional systems process whose strength depends on the balance between reinforcing constraints and organisational capacities that enable adaptation, resilience, and recovery.

This interpretation is consistent with Systems Theory, which explains organisational behaviour as an outcome of interactions across interconnected subsystems rather than linear cause-and-effect relationships [75,77]. RCC therefore does not assume a unidirectional causal pathway from workarounds to reduced improvement capacity. Technological and organisational capability constraints may encourage reliance on adaptive practices, while continued reliance on these practices may, in turn, reinforce conditions associated with reduced improvement capacity.

The findings also suggest that the strength of RCC may vary across organisational contexts. Accounts characterised by better-fitting technologies, greater automation, stronger staff familiarity, or greater capacity to customise systems reflected fewer elements of

the RCC configuration, whereas fragmented technological arrangements and resource constraints were more strongly associated with compensatory practices and limited improvement capacity. However, the sample does not support systematic comparison across provider sizes, and RCC should not be assumed to operate uniformly across the wider NDIS provider population.

RCC is expected to be most applicable where several conditions coexist rather than wherever regulation or resource constraints are present independently. These conditions include persistent misalignment between digital systems and operational workflows; limited capacity to integrate, customise, or replace inadequate technologies; recurring reliance on manual or compensatory work practices; administrative and compliance demands that compete for resources needed for digital improvement; and limited organisational capacity to invest in technical expertise, workforce development, or process redesign. Under these conditions, locally effective adaptations may become interconnected with wider organisational constraints, strengthening the reinforcing relationships represented in RCC.

Conversely, RCC is expected to be weaker or interrupted where organisations have better-fitting and interoperable technologies, sufficient resources for targeted digital investment, stronger internal technical and workforce capabilities, and the capacity to redesign processes or customise systems in response to operational requirements. Regulation alone is therefore insufficient to produce RCC, and resource constraints alone do not imply capability constriction. Rather, RCC represents a conditional configuration arising from the interaction of technological misalignment, compensatory adaptation, organisational resource pressures, and environmental demands.

RCC contributes to information systems research by conceptualising how technological misalignment, institutionalised workarounds, administrative expansion, and reduced improvement capacity may become interconnected within a reinforcing systems configuration. Existing digital transformation frameworks emphasise contextual conditions associated with implementation [3,50], while sociotechnical research explains how workarounds emerge when technologies inadequately support operational work [9,31]. RCC connects these perspectives by specifying how established mechanisms may become recursively associated across technological, organisational, and environmental conditions [30,34,48]. As a framework derived from cross-sectional patterns, however, its proposed temporal ordering and cumulative development require longitudinal validation. The following section positions RCC against related organisational concepts to clarify its theoretical contribution.

5.4. Comparative Analysis with Related Concepts

RCC shares conceptual ground with established explanations of organisational change, including technical debt, organisational inertia, capability traps, capability erosion, and digital workarounds. Rather than replacing these concepts, RCC provides a complementary systems-based explanation of how their underlying mechanisms may become recursively interconnected during digital transformation. Table 4 clarifies these distinctions and specifies what RCC adds to each perspective.

Table 4. RCC with Related Concepts.

Related Concept	What Existing Literature Explains	What RCC Adds
Workarounds [30,49,61]	Explains how actors adapt when formal systems do not adequately support operational work, including both productive and compensatory adaptations.	RCC explains how repeated compensatory practices may become embedded in organisational routines and become associated with resource demands and subsequent technology decisions.

Table 4. *Cont.*

Related Concept	What Existing Literature Explains	What RCC Adds
Capability traps/capability erosion [35,47]	Explains how short-term operational priorities can constrain longer-term improvement capability.	RCC specifies a sociotechnical configuration linking technological misalignment, compensatory practices, administrative expansion, and reduced improvement capacity.
Technical debt [3,31]	Explains the accumulation of technological compromises and their consequences for subsequent system maintenance and improvement.	RCC connects technological limitations with organisational adaptations and proposes feedback relationships through which underlying constraints may be reinforced.
Organisational inertia/capability rigidification [35,48]	Explains the persistence of established routines and historically shaped organisational choices.	RCC explains how compensatory routines may become interconnected with organisational conditions that constrain subsequent digital adaptation.
Sociotechnical Systems Theory [28,60,62,78]	Explains interactions between social and technical systems, including misalignment, adaptation, and the importance of joint optimisation.	RCC extends this perspective by explaining how sociotechnical adaptations may become interconnected with wider organisational resource demands and improvement capacity.
Systems Theory [75,77]	Explains interdependencies, feedback relationships, and system-level behaviour among interconnected organisational components.	RCC proposes a specific systems-based configuration linking technological misalignment, adaptive responses, administrative expansion, and reduced improvement capacity through reinforcing relationships.

Its contribution lies in specifying how these established mechanisms may become recursively interconnected within a sociotechnical system. It therefore complements existing concepts by explaining the conditions under which adaptations that preserve short-term operational continuity may become associated with wider organisational constraints.

5.5. Theoretical and Practical Implications

The principal theoretical contribution of RCC is not the identification of technological misalignment, workarounds, technical debt, or organisational inertia as new phenomena, but the specification of how these established mechanisms may become interconnected within a reinforcing sociotechnical configuration. RCC proposes that compensatory practices adopted to maintain operational continuity may become associated with additional administrative demands and reduced capacity for subsequent digital improvement, while environmental pressures may intensify these relationships [35,48,61]. In doing so, RCC extends existing explanations by connecting technological constraints, organisational adaptation, and resource demands within a conditional systems-based framework. These reinforcing relationships remain theoretical propositions derived from cross-sectional qualitative evidence rather than empirically established causal mechanisms.

The framework also provides practical guidance for managers operating in regulated, resource-constrained service environments. Rather than treating workarounds solely as routine operational inefficiencies, organisations can monitor recurring manual data entry, duplicate documentation, spreadsheet-based reconciliation, shadow systems, increasing administrative effort, and delayed system improvements as potential indicators of capa-

bility constriction [9,30,34]. These indicators can inform periodic digital process reviews that map where information is duplicated or manually transferred, identify persistent workarounds, assess whether existing technologies adequately support operational and compliance requirements, and distinguish productive local adaptations from compensatory practices arising from unresolved system limitations. Where persistent misalignment is identified, responses may include system integration, process redesign, targeted digital investment, workforce capability development, or system customisation rather than simply requiring staff to adapt existing practices [3,25].

Responsibility for these reviews should extend across organisational levels. Senior management should maintain oversight of digital capability, investment priorities, and unresolved system constraints, while operational managers and frontline staff should identify recurring workflow friction and compensatory practices. Where internal technical capability is limited, designated digital responsibility or appropriate external technical support may help translate operational problems into improvement priorities. At the regulatory level, new compliance and reporting requirements should also be considered in relation to their digital and administrative implementation demands. Clear implementation guidance, adequate transition periods, more standardised and interoperable reporting requirements, and consultation with smaller providers may help reduce unintended duplication and administrative burden.

6. Conclusions

This study develops RCC as a systems-based conceptual framework for understanding how digital transformation difficulties may become recursively reproduced in regulated care organisations. Drawing on evidence from Australian NDIS providers in Sydney, Australia, the framework links technological misalignment, workaround-based adaptation, administrative expansion, and reduced improvement capacity within a proposed reinforcing organisational process.

RCC contributes to digital transformation research by specifying how established technological, organisational, and environmental constraints may become interconnected with compensatory adaptation, administrative demands, and reduced improvement capacity. Its distinct contribution lies in integrating these relationships into a conditional systems-based framework rather than treating them as separate implementation challenges. The proposed reinforcing relationships require further empirical investigation, particularly through longitudinal research capable of examining their temporal development and causal direction.

7. Limitations and Future Research

This study has several limitations that define the scope of its findings and directions for future research. First, the cross-sectional qualitative design captures participants' accounts at a particular period rather than directly observing digital transformation over time. Consequently, the temporal ordering and causal direction of the relationships represented in RCC cannot be established. RCC should therefore be interpreted as a systems-based conceptual framework derived from cross-sectional evidence, with its proposed reinforcing relationships requiring longitudinal validation.

Second, the study relies primarily on self-reported interviews with 15 participants from 15 distinct small and medium NDIS provider organisations in Sydney, Australia, with one participant from each organisation. Although purposive sampling and information power supported the sample for the study's interpretive purpose, individual accounts should not be treated as comprehensive representations of organisational behaviour. Organisational materials were used for contextual orientation rather than as independently coded empirical

data, and digital capability, administrative burden, and system performance were not independently measured. Future research could combine interviews with longitudinal observations, organisational records, system-use data, and quantitative measures.

Third, transferability is bounded by the study's focus on small and medium NDIS providers in Sydney, Australia. Experiences may differ across regional and remote settings, larger providers with greater IT resources, and other national or regulatory contexts. The findings should therefore not be interpreted as representative of NDIS providers across Australia. Comparative research across geographic settings, provider sizes, digital maturity levels, and governance and regulatory contexts would help assess RCC's boundary conditions and wider transferability.

Finally, the field researcher's practitioner-insider experience as an accountant within the NDIS sector provided contextual understanding but may also have influenced interview probing and interpretation. In addition, the emphasis on barriers and challenges in some interview questions may have influenced the experiences participants prioritised. Although the inclusion of contrasting accounts suggests that participants were able to express perspectives beyond the problem-focused framing of some questions, this potential influence cannot be entirely excluded. Reflexive memo writing, an audit trail, repeated checking of interpretations against the interview transcripts, and examination of contradictory and deviant cases were used to strengthen the credibility of the analysis and manage potential interpretive bias. Future studies involving independent or multiple researchers could provide additional perspectives. Research could also evaluate interventions designed to interrupt RCC and develop quantitative measures to test its proposed relationships alongside established digital transformation outcomes.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are not publicly available due to institutional confidentiality, privacy considerations, and the organizational nature of the research data. Aggregated or supporting information may be made available from the corresponding author upon reasonable request, subject to institutional and ethical considerations.

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Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A. Semi-Structured Interview Guides

Demographic Questions:

Could you please provide your age range?

What is your gender?

What is your current employment status?

Could you briefly describe your role within your organization or sector?

How many years of experience do you have in the disability service sector or related field?

If applicable, could you provide the size or category of your organization (e.g., small business or medium enterprise)?

Type of Barriers:

1. Contextual barriers
 - (i) What types of contextual barriers that you have faced?
 - (ii) Do you think complex systems block the path to digital transformation?
 - (iii) Do you think costs and regulations may affect the process of digital transformation?
2. Social barriers
 - (i) Have you faced any social barriers during digital transformation?
 - (ii) Have you observed any delay in implementing new technologies due to lack of digital skills and literacy?
 - (iii) How would you describe digital divide?
 - (iv) Have you faced any digital divide while using digital technologies?
3. Technical barriers
 - (i) What are the technical barriers you have faced that hinder digital transformation efforts in your company?
 - (ii) Do you think ineffective technology design impacts on using digital technologies?
 - (iii) How would you define a lack of interoperability or compatibility between systems?
 - (iv) Has your organisation observed any issues related to interoperability between systems?
 - (v) What do you think about data privacy and IT security risks? How do these impact digital transformation efforts?
4. Cultural barriers
 - (i) How would you describe the organization's culture?
 - (ii) How open are they to change in general, particularly to digital transformation?
 - (iii) Have you observed any resistance to previous efforts to change initiatives like the use of information systems for workflow management? If so, how was it addressed?
 - (iv) How do you think the organization's culture may impact the adoption of digital transformation efforts?

Strategies related questions:

- (I) What would you need to successfully face the digital transformation challenges?
- (II) What are the skills and talents required to complete digital transformation initiatives?
- (III) Do you think leadership is important in undertaking digital transformation?
- (IV) Do you think digital training will help the process of digital transformation?
- (V) Can you thoroughly explain how these strategic actions are undertaken? With which stakeholders did you collaborate?
- (VI) What is the role of technology stakeholders in supporting the digital transformation?
- (VII) Do you perceive inhibitions regarding more collaboration/agile working?

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