Proceedings of the 5th International Conference on Financial Technology and Business Analysis
DOI: 10.54254/2754-1169/2026.38471

Digital Transformation and Business Portfolio Reconfiguration: Nippon Telegraph and Telephone Corporation

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Abstract. Digital conversion is re-understanding the limits between telecommunications, media, and entertainment sectors, presenting new chances for well-established telecom companies to broaden their operations outside of traditional connectivity offerings. This research probes into the relationship between digital transition and business portfolio enhancement via a case analysis of Nippon Telegraph and Telephone Corporation (NTT). Based on the theories regarding dynamic capabilities, digital business model innovation, and platform ecosystems, this study shows how NTT employs its network infrastructure, customer communication channels, and data resources to organize entertainment-related services. The analysis pinpoints four beneficial operating mechanisms: accessing end-customers through communication services, achieving personalized service backed by data, creating superior entertainment experiences enabled by technologies, and facilitating integrated service transactions. In the meantime, four significant challenges are found. There is competition over resources between the telecom and entertainment sectors. Disputes emerge in organizational frameworks and corporate cultures. The company depends significantly on external content suppliers, and its business portfolio becomes overly diversified. This research proposes several solutions, such as cross-business cooperation frameworks, combined units for technological and content innovation, graded portfolio management, inter-departmental performance assessment systems, and enhanced data governance. The study reaches the conclusion that sustainable value generation cannot be accomplished solely via technology investment. Enterprises are required to dynamically integrate digital capabilities, organizational resources, and portfolio strategies within a unified ecosystem.

Keywords: Digital Transformation, Business Portfolio reconfiguration, Dynamic Capabilities, Ecosystem Strategy, NTT Group

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DOI: 10.54254/2754-1169/2026.38471

1. Introduction

1.1. Research context and industry convergence

The media business is being reshaped from the ground up. Smartphones, streaming platforms, and algorithm-driven feeds have steadily pushed traditional distribution aside [1, 2]. As telecom, media, and entertainment converge, the old boundaries between them are fading, and carriers with strong networks are chasing integrated value. Yet in saturated markets, connectivity alone no longer secures an edge. Zong et al. note that AT&T, Verizon, and China Mobile all moved into content to strengthen demand and pricing power—a shift they read as fundamental resource restructuring, not simple diversification [3]. NTT DOCOMO illustrates the pattern: it now bundles video, music, and sports into DOCOMO MAX, a package introduced in NTT's 2025 Integrated Report, with entertainment perks designed to tie network access to content services. In theory, digital transformation redraws how firms create, deliver, and capture value [4, 5]. The NTT case offers a concrete look at how an incumbent converts network assets into broader digital value—and the growing pains that come with it.

1.2. Theoretical framework and literature synthesis

Scholarship on digital transformation and portfolio decisions runs in several directions. Work on media and OTT has mostly followed shifting consumer behavior and the disruption of old business models, while Piepponen et al. describe digital transformation as an ongoing renegotiation of value propositions between firms and their customers [1, 2, 4]. For Trischler, Li-Ying, Ancillai and others, digital business model innovation is essentially a deliberate redesign of value creation, delivery, and capture, bound up with customization and modularity [5-7]. The dynamic-capabilities literature, by contrast, insists that transformation succeeds only when firms sense opportunities, seize them, and reconfigure resources—technology alone is not enough—and that organizational readiness and IT support matter just as much [8-11]. Platform ecosystem research shifts attention to data, showing how complementarity and modularity allow telecom infrastructure and content services to be stitched together [12, 13]. More recent studies push operators beyond connectivity, arguing that partnerships and higher-value services are what keep them competitive [3, 14]. Strategic foresight research, grounded in sensemaking and organizational learning, treats portfolio optimization as a continuous adaptive process rather than a one-off restructuring [15].

These streams have produced rich insights into digital transition, business model renewal, dynamic capabilities, and platform ecosystems, but they rarely connect. Telecom scholars have examined carriers' moves into content, yet few have asked how multinational firms pull network access, user data, and entertainment products into a single service system. The organizational tensions that follow are even less explored: telecom operations prize stability and reliability, while entertainment demands fast iteration and agility. For large integrated incumbents such as NTT, these contradictions remain largely unexamined.

1.3. Analytical framework and research trajectory

This paper examines NTT's digital transformation, with a focus on its digital capabilities and portfolio realignment. It traces how NTT deploys connectivity, data, and platforms to upgrade its entertainment offerings, paying attention both to where the synergies actually show up and where

DOI: 10.54254/2754-1169/2026.38471

structural limits kick in. Drawing on strategic foresight and digital service innovation, it also outlines governance approaches intended to tighten cross-business integration [14, 15].

2. Case overview: NTT's strategic progression and ecosystem incorporation

The Nippon Telegraph and Telephone Corporation (NTT), a well-known Japanese telecommunications group, has expanded its scope from connectivity services to integrated ICT and consumer-oriented digital services. NTT DOCOMO has created a wide-ranging entertainment collection that includes services such as Lemino, Anime Store, and DAZN for docomo, which shows the official incorporation of entertainment into its ecosystem. DOCOMO MAX showcases this collaboration by integrating connectivity along with high-quality content, re-conceptualizing communication as a center for digital interaction. Although this transition to a digital ecosystem takes advantage of network infrastructure and data resources, it also brings about cross-business difficulties concerning investment emphasis and operational collaboration. The key strategic focus isn't just about expanding the market; rather, it's about harmonizing these varied portfolios to bolster NTT's central telecommunications standing (Table 1).

Table 1. Strategic integration of telecommunications and entertainment services within the NTT group

Classification	Detailed Information
Business Profile	NTT stands as a prominent Japanese telecommunications conglomerate that has diverse operations covering network infrastructure, integrated ICT, and consumer digital services.
Entertainment Portfolio	NTT DOCOMO runs a well-developed ecosystem that consists of Lemino, d Anime Store, DAZN for docomo, as well as d Magazines/Music/Books, and combines video, anime, sports, and digital publication.
Pricing Integration	DOCOMO MAX combines connectivity along with entertainment perks (such as sports streaming), presenting telecom services as the entry point to a unified digital consumption encounter.
Strategic Trajectory	Making the shift from a network-centered to a digital ecosystem paradigm, capitalizing on the synergies among network access, customer data, platforms, and content services.
Core Challenges	Overseeing diverse investment rationales and organizational cultures among units to guarantee that the entertainment portfolio strengthens—instead of weakening—the central telecom value proposition.

3. Mechanisms and constraints in NTT's digital transformation

3.1. Synergistic mechanisms of digital integration

3.1.1. Leveraging telecommunications footprints for content access

One clear payoff of NTT's shift is that it can lean on the customer relationships it already holds through telecom as a launchpad for entertainment. Standalone entertainment platforms typically have to win subscribers on content quality, marketing spend, and standalone subscriptions. A telecom carrier, by contrast, already sits in daily touch with users through mobile and broadband accounts. That lets it roll entertainment into the interfaces customers already use and fold it into broader service bundles. Zong and co-authors show that telcos can use content services to pull demand toward their traditional data offerings, meaning the link between connectivity and content runs both ways [3].

DOI: 10.54254/2754-1169/2026.38471

This narrows the distance between what people pay for as communication and what they consume as entertainment. A user already on a mobile plan may stumble on video, sports, music, or e-reading inside the same app ecosystem. In effect, the carrier broadens the basket that a single customer already pays for, without having to acquire someone new. Looked at through a portfolio lens, the communications business is the customer-acquisition and retention layer; entertainment is where additional value gets captured. This mechanism echoes Piepponen et al., who argue that digital transformation reshapes the value offering through ongoing interaction between provider and user [4].

3.1.2. Data-driven personalization and ecosystem convergence

Data is NTT's second major source of competitive advantage. Telecom operators stay in regular touch with users through mobile apps, subscription portals, and a range of digital services. With regulated collection and governance in place, they can see fairly clearly what users prefer and how they consume. Those insights feed tailored entertainment recommendations and shape content development and marketing across departments. Kazantsev makes a related point: data only drives business model innovation when platforms have dependable ways to turn raw information into usable value [12]. The real worth of data, though, is not the volume collected but how well it connects service delivery to corporate decision-making. For NTT, data links users' communication habits with their entertainment interests, which in turn supports retention through more customized services. The result is a self-reinforcing loop—service use generates user data, data refines service design, and better design draws users back in. Li et al. arrive at a similar conclusion, showing that platform integration, resource sharing, and complementary functions push business model innovation forward on several fronts [13].

3.1.3. Technological enablement of experiential value

Digital transformation also lets telecom carriers turn technical capabilities into new entertainment experiences. Network infrastructure, cloud infrastructure, digital distribution, and broader ICT skills can underpin streaming, interactive content, and other forms of digital entertainment. For NTT, this opens a way to differentiate its entertainment offerings on technical strength rather than outbidding rivals on content alone. Laudien shows that digital business models increasingly rest on modular services, personalization, and real-time co-creation of value with users [7]. These traits matter particularly in entertainment, where customer expectations shift quickly. Digital service packages let firms rearrange bundles, roll out new content, and refresh user interfaces far faster than traditional physical distribution ever could. NTT can therefore lean on its engineering base to support a more flexible entertainment portfolio. The catch is whether that technology actually gets turned into experiences users find worth paying for.

3.1.4. Transaction cost mitigation via integrated billing systems

The telecommunications customer relationship is also capable of lessening the friction related to digital payments and subscription management. When communication and amusement services are offered within the same client account, users might find it more convenient to handle multiple services. This has the potential to enhance the ease of buying low-cost or recurring digital content and might raise the probability that consumers stay within the same ecosystem.

DOI: 10.54254/2754-1169/2026.38471

The mechanism aligns with the business-model innovation viewpoint put forward by Trischler and Li-Ying [6]. Digital models in business innovation consist of significant alterations in the components of the business model, not just individual technological advancements. Integrated invoicing modifies the customer interaction and value-capture approach simultaneously. The connection in telecommunications turns into a part of the business infrastructure that backs entertainment services. This gives rise to a type of cross-business mutual support that is hard for a single-entity entertainment firm to replicate without building its own customer and payment ecosystem.

3.2. Structural constraints and strategic dilemmas

3.2.1. Resource allocation trade-offs and investment horizon mismatch

The primary significant issue is the possible competition for organizational assets. Telecom infrastructure needs consistent investment in networks, spectrum, computing capabilities, and service dependability. The entertainment industry demands diverse types of investment, such as content procurement, production, promotion, and platform building. These investment initiatives yield diverse time spans and risk characteristics. A network-based investment can uphold stable long-term infrastructure worth. In contrast, an entertainment-related investment might rely on unpredictable consumer inclinations and the performance of individual content.

Witschel elucidates that well-established enterprises can encounter substantial challenges when creating dynamic capabilities for digital business model innovation, as pre-existing structures and routines might restrict novel business operations [9]. The identical issue may surface when a telecommunications consortium assesses entertainment undertakings with criteria formulated for infrastructure enterprises. An initiative with unclear short-term financial yields might still add to customer interaction and long-term ecosystem worth, yet these advantages could be hard to measure via traditional departmental bookkeeping. In the absence of a suitable resource-distribution mechanism, the entertainment industry might get inadequate investment or overly rely on external collaborators.

3.2.2. Organizational inertia and cultural-logic divergence

Diverse business logics may also lead to organizational friction. Telecom operations emphasize dependability, safety, standard-setting, and process management. Entertainment endeavors demand innovation, exploration, and swift market reactions. These disparities aren't necessarily adverse, yet they can lead to coordination challenges when a single organizational system is applied to all enterprises.

Montasser shows that organizational preparedness and IT-enabled dynamic competencies are crucial mechanisms in digital business model innovation [10]. Civelek Likewise, they highlight the significance of dynamic capabilities in helping enterprises adjust their existing resources to digital transformation [8]. NTT requires organizational frameworks enabling the technology and entertainment teams to collaborate while preserving the distinctive features that render each business efficient. Excessive regulation may impede creative undertakings, whereas inadequate coordination might give rise to technological, monetary, and governance hazards. The difficulty lies in setting up a common strategic orientation while enabling various business units to keep suitable operating mechanisms.

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3.2.3. Reliance on external content ecosystems and value capture erosion

A different challenge pertains to content capacities. Telecom service providers have robust infrastructure and customer connections, yet these assets do not inherently generate appealing entertainment content. Content-related industries rely significantly on innovative talent, intangible property, production capacities, and connections with creators. When an operator primarily depends on external content suppliers, its platform could become reliant on the accessibility and allure of third-party content.

Mulla indicates that the growth of OTT platforms has heightened competition for digital viewership and altered the connection between conventional telecommunications firms and content platforms [2]. A telecom service provider cannot presume that merely providing network access will ensure customer loyalty. In case customers can readily access the same entertainment content via rival platforms, the telecommunications service provider might mainly serve as a distribution avenue. Constructing distinct content capabilities or long-term strategic alliances is thus essential if entertainment is anticipated to turn into a significant part of the group's competitive edge.

3.2.4. Portfolio complexity and strategic dilution

Business diversification might equally bring about an issue of over-extensive portfolio spread. Digital tech reduces the obstacles to accessing neighboring markets, making it appealing for big telecommunications groups to engage in numerous entertainment sectors. The resulting collection might consist of video, music, sports, books, magazines, anime, and other offerings. Although each activity might possess strategic significance, over-diversification could disperse management focus and marketing assets.

Ancillai underline that digital transformation has the potential to change various aspects of the business model, yet digital prospects do not directly result in sustainable value [5]. Likewise, Laudien demonstrates that digital business models demand ongoing assessment and adjustment to evolving market circumstances [7]. NTT thus has to differentiate between businesses that directly strengthen the telecommunications ecosystem and those that ought to be mainly managed for strategic choices or financial gains. Without this kind of differentiation, the expansion of the portfolio may bring about complexity without creating enough synergy.

3.3. Synthesis: the dual dynamics of digital transformation

The favorable and unfavorable impacts recognized in the NTT case uncover a shared mechanism. Digital evolution equips NTT with the technical and organizational prerequisites for merging connectivity and entertainment. However, this very merger heightens the intricacy of resource distribution and organizational cooperation. Digital competencies bring about fresh opportunities, whereas portfolio growth gives rise to novel management demands. Liu et al. show that dynamic capabilities can enhance the connection between digital transformation and business model innovation. Meanwhile, Moqaddamerad and Ali indicate that strategic foresight, sensemaking, and learning play a part in business model innovation [11, 15]. These results indicate that NTT's future competitive edge relies not merely on increasing the quantity of entertainment offerings but on constantly assessing how various businesses add to the total worth of the group.

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4. Strategic recommendations for portfolio governance and synergy realization

4.1. Establishing cross-business coordination platforms

NTT ought to set up a cross-business cooperation mechanism that links telecom services and entertainment businesses. The aim shouldn't be to combine all business units into a single organization. A more feasible approach is to establish a strategic cooperation platform in charge of customer consolidation, service packaging, resource assessment, and cross-business performance appraisal. Communication companies can assess entertainment offerings based on their impact on customer loyalty and service worth, instead of just relying on the standalone profit of the entertainment segment.

This method is in line with Zong et al., whose study shows that content services can have an impact on the demand for conventional telecommunications services [3]. It further mirrors the perspective of Trischler and Li-Ying, stating that innovation in digital business models entails alterations spanning multiple business model components [6]. NTT was able to assess entertainment investment based on its overall ecosystem contribution, such as customer involvement, subscription upkeep, data worth, and cross-service usage. Such a system would lower the danger of regarding telecommunications and entertainment as rival internal enterprises.

4.2. Fostering integrated technology-content innovation hubs

NTT could start by forming joint innovation teams that bring together technical specialists, content managers, and customer experience staff. Such cross-functional groups would run small pilot tests of new entertainment products before the company commits substantial investment. Experiments on this scale give the firm a read on user acceptance without betting heavily on unproven ideas.

Organizational routines can stand in the way of digital business model innovation, as Witschel notes, and Montasser et al. point to organizational readiness and IT-enabled dynamic capabilities as key counterweights [9, 10]. A collaborative setup relieves this tension by putting technical and creative staff in shared decision-making. What NTT should aim for is keeping telecom-grade reliability and governance intact while leaving entertainment teams enough room to experiment and iterate.

4.3. Implementing a tiered portfolio management strategy

NTT may sort its entertainment businesses by their strategic functions. Core services with high user demand and tight links to the telecom ecosystem should receive stable long-term funding. Strategic services create competitive edges via technology, partnerships, or unique user experiences. Peripheral projects demand selective management and ought not take up too many leadership resources.

This tiered method follows the portfolio logic put forward by Laudien et al. and Ancillai et al. [5, 7]. Digital transformation brings plenty of new possibilities, but having technical capability does not require firms to turn every chance into lasting business. Portfolio choices need evaluation of strategic fit, customer value, technical compatibility, revenue potential, and resource needs. Such a layered portfolio helps NTT concentrate its entertainment strategy while keeping space to test new opportunities.

DOI: 10.54254/2754-1169/2026.38471

4.4. Designing integrated performance measurement systems

Better coordination inside NTT will also depend on performance metrics that cut across departments. Under traditional divisional accounting, each unit guards its own resources instead of sharing them: the communications side books entertainment investments as pure cost, while the entertainment unit charges itself for internal network resources. A shared framework could instead benchmark performance on user retention, uptake of bundled services, content consumption, and contribution to the wider ecosystem.

This approach has support in the literature. Liu et al. link dynamic capabilities and business model innovation to stronger firm performance, and Moqaddamerad and Ali tie organizational learning to the translation of strategic foresight into updated business models [11, 15]. Metrics of this kind encourage learning and cooperation between departments. Crucially, the system has to weigh short-term financial results against long-term strategic value, so that promising entertainment ventures are not killed off just because they cannot post steady profits in the early years.

4.5. Enhancing data governance and customer lifetime value analytics

NTT's portfolio strategy leans heavily on customer data, which makes strict data governance a precondition. Kazantsev observes that data only enables new business models when companies have solid systems for converting raw information into actual value [12]. Data from communication and entertainment services should therefore be combined under one consistent governance framework, with user consent, privacy protection, and data security treated as non-negotiables for any personalized service.

Better analytics would also let NTT pick out entertainment offerings that genuinely improve the user experience. Rather than counting how many services it offers, the firm could measure engagement, retention, and the synergy between communication and entertainment. In that sense, data stops being a mere recommendation tool and becomes a strategic asset that guides ongoing portfolio adjustment.

5. Conclusion

5.1. Key findings

This study examines how NTT is transforming from a network connectivity provider into an integrated digital ecosystem. In that ecosystem, value is generated through continuous user engagement, data-driven customization, technical cooperation, and better operational performance—so the shift renews the overall value proposition rather than simply upgrading existing channels.

Four operational hurdles emerge from the case: internal resource rivalry, cultural gaps between departments, heavy dependence on external content providers, and the growing complexity of a widening portfolio. Together they suggest that durable diversification is about more than spotting market opportunities. Telecom firms need adaptable organizational structures and deliberately built capabilities if digital advantages are to turn into lasting competitive strength.

5.2. Research significance

Drawing on NTT's move into digital entertainment, this paper brings together media digitization, business model innovation, and dynamic capability and platform theories to extend current research

DOI: 10.54254/2754-1169/2026.38471

on digital transformation. On the theoretical side, it ties the internal reshaping of corporate resources at the micro level to market expansion strategies at the macro level in telecom.

For practice, the findings point to a clearer priority: telecom operators should build out their ecosystems instead of rolling out one new service after another or chasing short-term revenue. NTT's case shows that crossing old industry lines pays off strategically. That said, as the business diversifies, organizational complexity rises, so lasting value still comes down to disciplined portfolio management and real cross-unit cooperation.

5.3. Limitations and future research

This research has several notable constraints. All analyses draw on public secondary data, which restricts the observation of NTT's internal resource arrangements and the real profitability of its individual businesses. Future work can adopt questionnaires and semi-structured interviews to collect primary data and validate the strategic mechanisms concluded in this study. Moreover, cross-country comparisons among mainstream telecom incumbents can better clarify whether NTT's transformation features represent general industry trends or firm-specific strategic outcomes.

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