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From data to value realization: data servitization in industrial B2B

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Abstract: Industrial manufacturers increasingly invest in digital technologies to generate value from data embedded in equipment and connected operations, thereby extending value creation beyond physical products. However, despite the strategic potential of data, many incumbents struggle to translate data resources into scalable service- and data-centric business models with consistent value capture. In particular, it remains unclear how cyber-physical interdependencies in industrial B2B contexts both enable and constrain data-driven value creation and realization. To address this gap, this study investigates how cyber-physical interdependencies shape firms' ability to create value from data and translate it into value realization. The paper draws on a qualitative single-case study of an internationally active B2B manufacturer of electric infrastructure solutions. The findings show that physical assets act as strategic gateways to data access and control; digital capabilities enable service and monetization innovation; and cyber-physical architecture co-evolves with business model design. The study advances research on digital innovation, servitization, and B2B platforms.

Keywords: data, value capture, cyber-physical integration, platforms, business models.

1 Introduction

Industrial manufacturers are increasingly investing in digital capabilities to create value from data generated through their products and industrial equipment. The installation of digital technologies into physical products creates new opportunities for innovation and value creation facilitated by digital connectivity between various assets (Porter & Heppelmann, 2014; Yoo, Henfridsson & Lyytinen, 2010; Yoo et al., 2024). For example, digital technologies, sensors and cloud platforms enable firms to monitor operations, improve asset performance and develop advanced services (Kohtamäki et al., 2019; Soellner et al., 2024). Thus, digital innovation in industrial settings is nowadays often driven by increasing availability and utilization of data, and the intelligent and AI-enabled services built on top of that data.

Correspondingly, data is often regarded as a central driver to fuel AI transformation and is widely seen as a boundless source of strategic value. With this in mind, industrial incumbents have invested in data harvesting via digital technologies, IoT sensors, and software, to enable AI capabilities into their products, often developing complementary or outcome-based data-driven services (Gebauer et al., 2020; Paiola & Gebauer, 2020). This shift has prompted a transition from product-centric to service-enhanced strategies built around digital interfaces, data, and collaborative ecosystems (Cenamor, Rönnberg Sjödin & Parida, 2017).

In industrial settings, cyber-physical (CP) integration facilitates this data-driven value potential by enabling continuous data connectivity that supports both value creation and capture. However, harnessing the value stemming from collected data is a complex matter in industrial B2B contexts (Jovanovic, Sjödin & Parida, 2022; Springer et al., 2025). Thus, to date, the full potential of such data-driven value propositions in industrial B2B contexts and platforms remains relatively untapped and many incumbents struggle to convert these data resources into scalable service- and data-centric business models (BMs) that enable consistent value capture and monetization.

Despite some notable emerging models and approaches for industrial data-driven value realization, conceptual understanding remains nascent. For example, by combining the digital servitization view (Kohtamäki et al., 2019) and data monetization literature, Ritala et al. (2024) provide initial conceptual understanding of data-driven value propositions for B2B firms. Notwithstanding the growing interest in digital BMs, servitization and industrial platforms, it remains unclear to what extent the distinctive characteristics of industrial B2B environments and CP integration, particularly those in which physical and digital assets are closely intertwined, both constrain and enable data-driven value creation and realization. Therefore, our main research question is: *How do cyber-physical interdependencies in industrial B2B contexts shape firms' ability to create value from data and translate it into value realization?*

We answer the research question through an empirical qualitative single-case study of an internationally active B2B manufacturer of electric infrastructure solutions, who focuses on the utilization of data generated through its equipment base for value creation and capture. Our findings show that data-based value creation in industrial B2B is materially grounded in CP design. Physical assets and digital architecture both determine the accessibility to data and how this data can be combined, enhanced and translated into value. Secondly, digital capabilities of the CPS strengthen data-based innovations and facilitate value realization strategies. Thirdly, CP architecture and BM design are interdependent and must be addressed simultaneously. Finally, these results advance the understanding of how industrial firms leverage data by demonstrating how CP architectural design shapes data accessibility, innovation opportunities and value capture in industrial B2B contexts.

2 Conceptual background

2.1 Data-based value propositions in industrial B2B contexts

In industrial B2B contexts value creation and capture have traditionally been primarily tied to physical assets like industrial machinery and material components. However, the advancement of digital technologies like the IoT-technologies, sensor capabilities and cloud computing and data analytics, has significantly transformed this value creation logic in B2B contexts (Paiola & Gebauer, 2020). Value is now derived from product usage rather than from machine ownership (Smania et al., 2024). As physical assets become more integrated with digital technologies, the connectivity across industrial assets enables to gather considerable amounts of data on product conditions and performance (Gebauer et al., 2020). The acquired data can be utilized to add customer value for example, by enabling advanced features such as remote diagnostics, optimization, predictive maintenance, autonomous operations and predictive analytics (Gebauer et al., 2020; Kohtamäki et al., 2019).

Relatedly, research on B2B industrial value creation and platforms highlights that value creation in industrial B2B context is largely driven by the accumulated data through the integration of physical and digital assets rather than the deployed technology (Jovanovic, Sjödin & Parida, 2022; Ritala et al., 2024; Springer et al., 2025). Correspondingly, the DI literature conceptualizes data as a central vehicle for innovation and a key source of value (Yoo et al., 2024). In digital contexts, such value creation is often attributed to generativity, for example through the recombination of miscellaneous information (Lyytinen, Yoo & Boland Jr, 2016).

2.2 Cyber-physical design and platform business models

In industrial B2B settings, data-driven value creation is facilitated through the CP integration between physical and digital assets which support continuous data collection and processing (Springer et al., 2025). Building on these capabilities, scholars have demonstrated how connectivity of industrial assets through ecosystem collaboration creates conditions for B2B platforms that open new avenues not only for value creation but also for value capture and realization through the BM lens (Kohtamäki et al., 2019). Relatedly, by "platformizing" their products, incumbents can drive innovation by developing new functionalities for product and service offerings based on data (Ritala & Jovanovic, 2024). Moreover, due to the great value potential of platforms, industrial incumbents adopt industrial platforms as “a separate form of business model” for example as platform-as-a-service (Tian et al., 2022, p. 3).

Furthermore, in industrial B2B environments, platforms can act as infrastructures that provide the CP integration between variety of assets, capabilities, and value propositions. Correspondingly, platforms have become prevalent sociotechnical arrangements of value creation and capture (Grover & Lyytinen, 2022). Thus, the role of platforms for data-driven value realization is described in academic literature as two-fold, highlighting the technological and the social dynamics of value realization through industrial platforms.

Firstly, platforms represent sophisticated technological architecture that drive value creation through advanced analytics through which innovative value propositions are created (Compagnucci et al., 2025; Jovanovic, Sjödin & Parida, 2022; Tian et al., 2022). By harnessing the connectivity capabilities and data analytics, platform sponsors can learn from data insights and drive innovation for their existing value propositions (Kohtamäki et al., 2019; Paiola & Gebauer, 2020; Ritala et al., 2024) or develop new value offerings on top of existing ones (Ritala & Jovanovic, 2024) by enriching them with additional data (Günther et al., 2022).

Secondly, platform ecosystems strengthen value creation and capture potential through their collaborative nature (Compagnucci et al., 2025; Jovanovic, Sjödin & Parida, 2022; Ritala & Jovanovic, 2024). By promoting platform utilization among customers and partners, industrial incumbents can harness data network effects (Gregory et al., 2021) to Building on this, incumbent can generalize insights from collected data and apply them across multiple customer environments, consequently introducing innovations and drive platform service scalability (Jovanovic, Sjödin & Parida, 2022; Smania et al., 2024).

In such collaborative platform environments, ecosystem partners may contribute essential components or digital capabilities, they yet may also compete for access to customer interfaces and revenue streams (Adner, 2017). Value capture is often divided between the platform provider firm and its complementary partners (Ritala & Jovanovic, 2024). Academic literature therefore suggests that value capture mechanisms in B2B industrial platforms are subject to evolution and readjustments as firms´ roles in the platform ecosystem can change over time (Ritala & Jovanovic, 2024).

3 Methodology

We employ an empirical qualitative single-case study of an internationally active B2B manufacturer of electric infrastructure solutions, who focuses on the utilization of data generated through its equipment base for value creation and capture. We also interview ecosystem partners from various industries.

Data is gathered via several rounds through in-depth and semi-structured interviews with open-ended questions. The informants are business managers and engineers, selected based on their involvement in digitalization and data-related projects. Secondary data is used to complete the understanding from interviews. Data collection is ongoing.

Our coding approach is inductive to allow patterns to emerge from data. However, the overall research approach is "abductive" and follows the logic of systematic combining (Dubois & Gadde, 2002) where we go back and forth between the inductive insights and the concepts and theoretical angles from the digital innovation, digital servitization, and B2B platform literatures.

4 Findings

As industrial manufacturers increasingly tap into data collection and digital capabilities, our findings show that value creation and capture from data in industrial B2B is shaped by

how physical assets, digital infrastructures and BMs are configured around data. In particular, CP design affects who can access data, how data can be combined and upgraded into services. The CP integration of B2B platforms thus impacts the ability of the firm to capture value from these offerings as markets and ecosystems expand.

4.1 Physical assets as gateway to data accessibility

Our first finding is that physical equipment function as a gateway to data accessibility and can be developed to be a competitive stronghold. The incumbent firm capitalizes on the privileged data access through its physical assets by analysing, refining, and recombining data insights from different data points from across diverse machinery, clients and usage context. By harnessing this complementary data (Thomas, Leiponen & Koutroumpis, 2023), operational observations become more valuable when they are linked to related datasets and contextual information. Correspondingly, the case firm can develop new data-driven services based on such cross-case-analyses. More concretely, the case firm developed and offered benchmark services against other use cases for its clients. Relatedly, the physical hardware acts not only as an access point but also as a unique and strategic control point for value appropriation as it restricts other players to acquire data across diverse assets and clients (Thomas, Leiponen & Koutroumpis, 2023). Thus, physical hardware emerges as a major source for value creation based on data and a foundation for value appropriability through access control.

4.2 Digital capabilities strengthen data-based innovations and monetization

Our second finding is that data and digital capabilities strengthen industrial firm´s ability to introduce innovations and hence, facilitate value realization. For instance, the internal innovations in the digital layer, such as the case firm´s internally developed solution for identifying specific equipment characteristics enabled the firm to penetrate installed-base information opacity. By rendering previously unknown asset characteristics visible, this digital solution generated new data that became a critical ingredient for further value creation and value capture. On the one hand, this newly discovered data was used for service innovations. On the other hand, this data carries value potential to other market players beyond firm´s traditional markets. Thus, these innovations originating in the digital layer, can be monetized by selling the newly discovered data. To be able to do this, the case firm had to identify the market players to whom the generated data might be useful, even outside of their traditional business markets. Additionally, the case company needs to uncover the concrete value propositions that prospective customers are willing to pay for. Often, this data-driven market entry is accomplished by partnering with other ecosystem partners.

Our findings from the single case firm further show that innovations originating in different internal domains can be harnessed to strengthen CP integration and improve data flows and analytics, ultimately reinforcing the data-driven learning and innovation cycle. Rather than emerging from a single technological advance, these developments stem from the combination of data, analytics, internal experimentation, and the accumulation of both digital and technical competences. Through such internal discovery processes, the firm improved its ability to generate, interpret, and recombine data, which in turn enabled new value propositions as well as new mechanisms for value realization.

As a result, the case firm introduced multiple monetization strategies to capture value from its data-based innovations. First, it offered premium digital features as paid add-ons, for example through pay-per-feature or subscription-based upselling via the platform. In this sense, the platform functions as the carrier of digital value, much as hardware traditionally acts as the carrier of aftersales services and related revenue. Second, the firm bundled several digital services into integrated packages or offered them as upgrades to optimization services. This indicates the simultaneous use of multiple BM logics to capture value from data-driven innovation (Visnjic, Neely & Jovanovic, 2018).

4.3 Co-evolution of cyber-physical architecture and business model design

Our third finding indicates that there is a strong interconnection between technical and digital design of CP systems as well as BM design. Specifically, value propositions and monetization strategies shape architectural design decisions, and vice versa. The kinds of value propositions the firm intends to offer and monetize, shape the digital architectural decisions concerning data flow, interfaces and platform control. At the same time, these architectural decisions condition what kind of offerings can be developed, scaled and commercialized. Awareness of this interplay is important for identifying both short-term opportunities and long-ter scalable pathways for digital B2B value propositions and platforms.

This mutual shaping was visible in how architectural priorities were linked to commercial ambitions. When the firm sought scalable digital B2B offerings, it needed more standardized and interoperable data architectures. When it pursued more differentiated or premium value propositions, architectural choices emphasized control over interfaces, data access, and service delivery. Architecture was therefore not designed solely for technical functionality, but it was also designed for commercial relevance. In turn, those CP architectural choices either enabled or constrained subsequent service development and value capture.

5 Conclusion

This study examined how CP interdependencies shape data-driven value creation and realization in industrial B2B contexts. Our findings show that value from data is not solely determined by analytical capabilities or platform strategies but is fundamentally grounded in the configuration of physical assets, digital architectures, and BMs.

First, we demonstrate that physical assets act as critical gateways to data accessibility and control, positioning them as strategic assets for both value creation and appropriation. Second, we show that data and digital capabilities enable not only service innovation but also BM innovation, as firms experiment with multiple monetization mechanisms such as subscriptions, feature-based pricing, and bundled offerings. Third, we uncover the co-evolutionary relationship between CP architecture and BM design, highlighting how technical and business decisions mutually shape each other over time.This resonates with research showing that organizations increasingly operate multiple, interdependent BMs (Visnjic, Neely & Jovanovic, 2018) and that digital technologies and data intensify both opportunities and tensions (Smania et al., 2024).

Overall, these insights contribute to the emerging conversation that bridges digital innovation, platforms and ecosystems, and to the more focused literatures of digital servitization by incorporating the CP integration perspective to conceptualize suitable pathways for industrial incumbents towards innovative value creation and value realization from data.

Our findings provide strategic and operational insights for innovation practitioners and managers for effective deployment of digitalization strategies towards innovative data-driven service provision and value capture. Our results emphasize that successful data monetization requires coordinated design across technical and business domains. Firms must strategically manage data access through physical assets, invest in scalable and interoperable CP architectures, and continuously adapt their BMs to emerging ecosystem opportunities.

In conclusion, this study highlights that data-driven transformation in industrial B2B contexts is not purely digital in nature but is fundamentally cyber-physial, requiring ongoing alignment between assets, architectures, and BMs.

6 Areas for feedback and development

I would particularly appreciate feedback on whether the paper's central argument is clear and sufficiently focused, especially regarding the role of CP interdependencies in data-driven value creation and realization. I would also welcome comments on the conceptual framing of the paper and whether the integration of digital innovation, servitization, and B2B platform research is coherent. Finally, I would appreciate suggestions on the distinctiveness and logical flow of the findings, as well as on how to strengthen the paper's theoretical contribution and overall positioning.

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