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Thesis title:
Organising for Integrated Solutions:
A Dynamic Capabilities View of Digital Servitisation in Supplier Firms

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Declaration

I hereby declare that the work presented in this thesis has not been submitted for any other degree or professional qualification, and that it is the result of my own independent work.

Chukwuka Allor (Candidate)

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Abstract

Servitisation and digitalisation are two converging trends reshaping industrial firms and value chains. Many firms worldwide – from global original equipment manufacturers (OEMs) to small component suppliers – are expanding their service businesses while simultaneously seeking to leverage new and emerging digital technologies. Despite growing research interest, the changes that firms undergo during digital servitisation remain poorly understood, and the specific issue of how firms reconfigure their resource base is underexplored. Moreover, most existing studies focus on OEMs, even though other industrial actors – in particular, component suppliers – are subject to the same forces driving digital servitisation. While the relative advantages and challenges of digital servitisation differ between OEMs and suppliers, little is known about how suppliers specifically navigate this transformation.

This study adopts an exploratory, qualitative approach to address this gap. A longitudinal case study was conducted on a parts and components supplier for industrial gas turbines to trace the firm's transformation into an integrated solutions provider. The empirical observations were analysed through the lens of dynamic capabilities, which provided a valuable focus on change processes within the firm. The process model from this research captures the recursive, multi-level nature of digital servitisation in the supplier context.

The findings reveal change patterns of incremental adaptation and continuous renewal of the supplier's resource base, punctuated by episodes of discontinuity in its strategic goals and managerial capabilities. Two meta-mechanisms – goal-setting and top management team (TMT) reconfiguration – operate alongside sensing, seizing and transforming mechanisms to drive these changes. These mechanisms interplay closely with the use of digital technology in shaping the supplier's digital servitisation trajectory.

By unpacking the digital servitisation journey of a supplier firm, this research extends existing theory in this field and offers actionable insights for practitioners.

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Chapter 1: Introduction

1.1 Introduction to the Chapter

While industrial original equipment manufacturers (OEMs), such as General Electric and Siemens, are strategically investing in digital technologies to create new value-adding opportunities, many component suppliers remain uncertain about how best to pursue digital servitisation and achieve service-led growth (Lohr, 2018). Digital servitisation is understood as the strategic shift from offering standard products and services to delivering integrated solution propositions enabled by digital technologies (Chen et al., 2021). This study examines how a supplier firm navigates this shift through the lens of dynamic capabilities. The dynamic capabilities view (DCV) explains how firms sustain competitiveness in dynamic environments by reconfiguring their resources and capabilities (Teece, 2020). The focus here is on the organisational and managerial processes that enable the supplier to reconfigure its resource base as it advances along the digital servitisation trajectory.

The remainder of this chapter is structured as follows. Section 1.2 presents the background to the study, highlighting the knowledge gap it seeks to address. Section 1.3 outlines the research objectives and guiding questions. Section 1.4 introduces the theoretical foundation of the study, including the three dimensions of digital servitisation from a process perspective, and the relevance of the dynamic capabilities view. Section 1.5 summarises the main contributions of this study to theory and practice. Section 1.6 provides an overview of the thesis structure.

1.2 Research Background

Faced with competitive pressures, many industrial firms have sought to create additional value by integrating services with their product offerings (Visnjic et al., 2016; Cusumano et al., 2015; Neely, 2008). This strategy, known as servitisation, has received sustained research attention since Vandermerwe and Rada (1988) introduced the term in their study of manufacturers bundling products and services to expand their portfolios. Servitisation enables product firms to differentiate themselves by delivering more comprehensive, difficult-to-imitate solutions (Vandermerwe & Rada, 1988). It also enhances customer satisfaction and loyalty, as industrial customers tend to

prioritise value-in-use over ownership of products (Wise & Baumgartner, 1999). Moreover, servitisation fosters ongoing interactions between firms and customers, leading to deeper and more sustainable relationships (Kohtamäki et al., 2019).

In the last two decades, many firms pursuing servitisation have also adopted digital technologies to streamline operations and support their service strategies (Lerch & Gotsch, 2015; Ardolino et al., 2018; Grubic, 2018). Digital technologies – including mobile applications, cloud computing, and data analytics – are being integrated with traditional enterprise systems to enhance operational efficiency. Emerging technologies such as the Internet of Things (IoT) and artificial intelligence (AI) further extend these possibilities by enabling real-time monitoring, predictive maintenance, and more personalised service delivery (Grubic, 2018). Established OEMs, such as Rolls-Royce, make extensive use of digital platforms as integrative infrastructures for coordinating the ecosystems of actors that contribute to their outcome-based business models (Ardolino et al., 2018).

Due to the high level of interdependency between servitisation and digitalisation, academics have recently termed their convergence as “digital servitisation” and begun exploring them together (Vendrell-Herrero et al., 2017; Kohtamäki et al., 2019; Sjödin et al., 2020). Digital servitisation is described as “the transformation in processes, capabilities, and offerings within industrial firms and their associated ecosystems to progressively create, deliver, and capture increased service value arising from a broad range of enabling digital technologies” (Sjödin et al., 2020). However, the literature remains unclear about what this transformation looks like. Clarifying its dynamics is important for developing theoretical insights and offering practical guidance to firms undergoing this shift.

Most existing studies focus on OEMs, even though parts and component suppliers are also strongly affected by the market and technological forces driving digital servitisation (Mosch et al., 2021). As OEMs move from traditional supply chain arrangements toward collaborative ecosystems, suppliers are increasingly expected to make service-oriented contributions that extend beyond the provision of parts. Meanwhile, advancements in digital technologies are lowering barriers to service

provision; even firms without proprietary products can now use digital platforms to integrate components and services from multiple sources into cohesive solutions (Porter & Heppelmann, 2014). Within this evolving landscape, traditional industrial suppliers face growing pressure to reassess their business strategies in order to remain competitive and avoid decline.

Suppliers and OEMs, however, confront markedly different challenges and advantages in navigating digital servitisation. Suppliers, often smaller in scale, typically have more limited access to the resources and networks required to deliver integrated customer solutions (Windahl & Lakemond, 2006; Vendrell-Herrero et al., 2017). At the same time, they are less burdened by bureaucratic structures and legacy systems, which can make them more agile in adopting new technologies (Langley, 1999). Yet empirical research on how suppliers specifically develop the capabilities needed to pursue digital servitisation remains scarce. This study addresses this gap by examining the transformation of a supplier firm's resource base as it advances along the digital servitisation trajectory.

1.3 Research Objectives And Questions

The central aim of this research is to advance knowledge by explaining how supplier firms reconfigure their resource base during digital servitisation. To achieve this, the study sets out three main objectives:

1. To trace the process of digital servitisation as it unfolds within a supplier firm.
2. To explicate the mechanisms that drive changes in the supplier's resource base.
3. To generate practical insights to inform how supplier firms organise for digital servitisation.

Accordingly, the key research questions guiding this study are:

- **RQ1: How does digital servitisation unfold in supplier firms?**
  This question aims to develop a process-oriented account of how a traditional industrial supplier transitions toward providing integrated product-service solutions.

- **RQ2: What mechanisms drive changes in the supplier's resource base during digital servitisation?**

  This question seeks to identify specific organisational and managerial processes that allow the supplier to sense new opportunities, mobilize resources to seize them, and reconfigure its resource base to adapt to new circumstances.

- **RQ3: How can insights from the supplier's digital servitisation journey inform practical strategies?**

  The purpose here is to generate managerial implications that reflect the contextual conditions commonly faced by supplier firms.

1.4 Theoretical Foundation of This Study

This study builds on existing theories of digital servitisation and dynamic capabilities. Although digital servitisation remains in the early stages of theoretical development (Cenamor et al., 2017; Vendrell-Herrero et al., 2017), it draws on extensive research traditions in servitisation and digitalisation. On the other hand, dynamic capabilities theory has evolved over the past two decades into a widely accepted framework for explaining how firms respond to, and shape, environmental changes by reconfiguring internal and external competencies (Teece, 2020).

Following Pettigrew (1987), digital servitisation is examined here in terms of the interrelated dimensions of content, context, and process..

1.4.1 Digital Servitisation Content

The *content* of digital servitisation refers to the substantive changes that occur in firms' offerings, processes, and capabilities as they shift from product-centred to service- and solution-oriented business models. A substantial body of literature has examined these changes, particularly in relation to product-service systems (PSS). A PSS is defined as "tangible products and intangible services designed and combined so that they jointly are capable of fulfilling specific customer needs" (Baines et al., 2009).

The services in a PSS delivery model can be categorised into base, intermediate, and advanced tiers (Baines & Lightfoot, 2013). Base services focus on ensuring product functionality and are generally standardised, transactional, and product-oriented. Examples include spare parts and warranty services provided by manufacturers and

suppliers. Intermediate services aim to maintain or optimise product performance, often by reducing downtime through maintenance, repair, and overhaul (MRO) activities. These services are essential for supporting the product throughout its lifecycle and may be delivered either by the original equipment manufacturer (OEM) or by third-party service providers. Advanced services guarantee outcomes such as equipment availability, process reliability, or specified performance levels, thereby supporting the customer's broader operational objectives. They are typically provided by the OEM, often through the orchestration of suppliers, service partners, and, in some cases, customers (Sjödin et al., 2022).

Digital technologies play an enabling role across all tiers of the PSS delivery model. Traditional enterprise systems – such as enterprise resource planning (ERP) and customer relationship management (CRM) tools – support the efficient coordination required for the delivery of base services (Kindström & Kowalkowski, 2014). More recent technologies, including the Internet of Things (IoT), big data analytics, and artificial intelligence (AI), enhance intermediate services (e.g., predictive maintenance) by enabling real-time monitoring of product performance (Ardolino et al., 2018; Holler et al., 2017). At the advanced tier, digital platforms function as integrative infrastructures that facilitate coordination among the various actors involved in outcome-based delivery models.

Rolls-Royce's *Power by the Hour* business model illustrates the interdependence between servitisation and digital technologies (see Table 1). Traditionally, the company sold jet engines as standalone products, but under servitisation it transitioned to a PSS model in which it retains responsibility for engine performance and generates revenue based on usage rather than ownership (Smith, 2013). In this model, Rolls-Royce engineers continuously monitor the global engine fleet using data transmitted through IoT sensors embedded in the engines. Digital platforms then connect airline crews, maintenance staff, and the company's own specialists, enabling the sharing of data and the coordination of activities that ensure service outcomes.

Digital servitisation, however, entails broader changes within the focal firm that extend beyond the adoption of digital tools. To design and deliver integrated solutions, a

product-oriented firm requires new sets of skills spanning technical, operational, and commercial dimensions (Kohtamäki et al., 2020; Coreynen et al., 2018). Equally important is the need to shift the organisational mindset from a transactional orientation to a service-oriented logic grounded in long-term engagement and collaborative value creation (Porter & Heppelmann, 2014; Ardolino et al., 2018).

Service Tier	Service Characteristics	Enabling Digital Technologies	Examples	Strategic Implications
Basic	Standardised, transactional services such as installation, spare parts, and warranty	ERP, CRM, service management software	Automated service scheduling; parts tracking	Enhances coordination and efficiency in service delivery
Intermediate	Maintenance, repair, and overhaul; supports condition-based or pre-emptive interventions	IoT, big data analytics, artificial intelligence (AI), cloud computing	Predictive maintenance; remote diagnostics	Enables service differentiation and operational cost savings through proactive support
Advanced	Outcome-based services; performance guarantees; continuous value delivery	Digital platforms connect ecosystems of actors	Rolls-Royce Power-by-the-Hour	Shifts value logic from ownership to usage

Table 1 Tiers of Service Maturity & Enabling Digital Technologies

Source: Author's own work.

1.4.2 Digital Servitisation Context

The *context* of digital servitisation refers to internal and external factors which exert interrelated influences on a firm's trajectory. While often treated in the literature as a background condition, this thesis adopts a stronger view of context – positioning it as a conditioning force that both enables and constrains a firm's ability to transform its offerings, capabilities, and processes over time.

External Context

The external context encompasses the broader environmental and industry-level contingencies that shape a firm's trajectory. A central dimension is competitive intensity, which is heightened by globalisation and commoditisation as they erode traditional product-based advantages. As competition moves beyond product features and price, firms are increasingly driven toward service-led strategies that deliver differentiated value to customers (Gebauer, 2008; Morgan et al., 2019).

Customer expectations are also shifting toward value-in-use rather than value-in-exchange (Vargo & Lusch, 2004). Customers now expect suppliers to take responsibility for outcomes such as equipment uptime and reduced life-cycle costs, rather than simply transferring ownership at the point of sale (Baines & Shi, 2015).

In addition, the proliferation of digital technologies is reshaping industry boundaries by redistributing value creation across extended ecosystems (Porter & Heppelmann, 2014). Cloud and platform providers such as Amazon and Microsoft supply the digital infrastructure that underpins connectivity, analytics, and scalability, giving them an increasingly prominent role in industrial service delivery. Specialist firms contribute domain-specific applications that complement OEM and supplier offerings, while customers themselves participate more actively through data-sharing and collaborative use arrangements. Because access to these technologies has become more democratised, firms of all sizes – including smaller component suppliers – can now pilot and scale digital service offerings with relatively modest investments.

However, these external dynamics are influential rather than deterministic: their impact depends on how they are interpreted and acted upon by a firm, and more specifically, how they interact with the firm's internal context (Coreynen et al., 2020).

Internal Context

The internal context refers to firm-specific factors such as resource configurations, capability portfolios, and governance structures that shape how a firm responds to emerging opportunities. Coreynen et al. (2020) note that variation in the internal context can be understood in terms of a firm's orientation toward exploitation and exploration (March, 1991). Exploitation involves leveraging existing capabilities and

accumulated knowledge, typically to enhance current offerings within established markets. For example, firms may exploit service opportunities along the customer's primary activity chain by improving the efficiency, reliability, or performance of the customer's operations (Fischer et al., 2010; Sawhney et al., 2004).

Exploration, by contrast, entails generating new knowledge through experimentation and innovation to address future opportunities (March, 1991; Bierly & Daly, 2007). This may involve identifying value-creation opportunities in adjacent activity chains – such as procurement, logistics, or downstream usage – in order to develop new ways of supporting and enhancing customer processes (Fischer et al., 2010; Sawhney et al., 2004).

Navigating this dual imperative of exploitation and exploration requires an ambidextrous posture (O'Reilly & Tushman, 2008) – the capacity to refine existing competencies while simultaneously developing new ones. Achieving such ambidexterity is challenging, as established routines, legacy systems, and historical decisions often reinforce the status quo and constrain strategic flexibility (Hess et al., 2016; Warner, 2019).

OEM–Supplier Contextual Differences

While OEMs and suppliers operate within the same broader industry environment, their internal contexts – and therefore their strategic options – differ considerably. OEMs typically occupy a dominant position within industrial value chains, characterised by stronger brands, established service portfolios, and direct access to end customers (Story et al., 2017). Their central position affords visibility over how equipment performs in different use contexts and provides structured channels for developing and refining service offerings (Ardolino et al., 2018). OEMs also tend to maintain long-standing customer relationships and service infrastructures that support coordination across product, service, and digital activities. As a result, they are often expected to take responsibility for broader operational outcomes and are generally better positioned to develop and scale digitally enabled service offerings, supported by access to operational and customer data and the organisational arrangements needed to act on that information (Sjödin et al., 2020).

Suppliers, by contrast, operate under more constrained strategic conditions. They typically have leaner organisational structures, reduced access to end-user information, and greater dependence on OEMs and intermediaries for customer-facing opportunities (Salonen, 2011; Vendrell-Herrero et al., 2017). This distance limits their ability to identify emerging service needs or shape value propositions directly (Salonen, 2011; Vendrell-Herrero et al., 2017). Consequently, suppliers often rely on ecosystem partners and digital platforms to obtain market insight and co-develop service offerings (Cenamor et al., 2017). They also tend to have limited influence over ecosystem-level decisions, meaning service strategies are shaped by alliance structures and partner expectations rather than by their own direction (Forkmann et al., 2017).

At the same time, suppliers may benefit from their smaller scale. They are often less constrained by legacy systems, standardised procedures, or deeply established internal routines (Langley, 1999). This can support greater organisational flexibility and faster adjustment when responding to new opportunities or external pressures. Leaner hierarchies and closer cross-functional interaction can facilitate more immediate coordination and adaptive experimentation (Sjödin et al., 2020). In contexts characterised by rapid market or technological change, this responsiveness can enable suppliers to trial new service offerings or adjust commercial arrangements more quickly than larger OEMs.

These contrasts indicate that digital servitisation is not a uniform process. The same external drivers – such as shifting customer expectations, digital affordances, and competitive pressures – are interpreted and acted on differently depending on a firm's position in the value chain and the dependencies associated with that position (Kohtamäki et al., 2019). Suppliers may therefore progress through digital servitisation in more discontinuous or episodic ways, shaped by partnership configurations, leadership changes, or access to specialist knowledge, rather than through planned incremental development. Table 2 summarises the contextual differences that shape these divergent pathways.

Recognising these differences is important because digital servitisation does not automatically generate performance benefits. Achieving value requires alignment

between external pressures and how firms organise and respond internally in practice. For suppliers in particular, strategic progress depends not only on investing in digital and service capabilities but also on navigating ecosystem dependencies and securing the organisational conditions that enable these capabilities to be mobilised effectively.

Contextual Factor	**OEMs**	**Suppliers**	**Supporting Literature**
Customer Proximity	Direct access to end users and operational contexts.	Indirect access, often mediated through OEMs.	Salonen (2011); Vendrell-Herrero et al. (2017)
Strategic Expectations	Expected to provide advanced and outcome-based services.	Historically lower expectations, now increasing.	Story et al. (2017); Sjödin et al. (2020)
Resource Availability	Strong financial, technological, and organisational resources.	More limited resources; selective investment required.	Vendrell-Herrero et al. (2017); Forkmann et al. (2017)
Organisational Flexibility	Less flexible due to scale and formalised routines.	More flexible due to leaner structures.	Langley (1999); Sjödin et al. (2020)
Legacy Constraints	Constrained by established systems and historical practices.	Fewer legacy constraints; more adaptable.	Kindström & Kowalkowski (2014); Warner & Wäger (2019)
Digital Capabilities	Mature digital infrastructures and analytics capabilities.	Emerging capabilities; may depend on partners.	Ardolino et al. (2018); Grubic (2018)
Decision-Making Speed	Slower, hierarchical governance.	Faster, flatter structures.	Langley (1999); Sjödin et al. (2020)
Dependence on Ecosystem Partners	Lower; often ecosystem orchestrators.	Higher; service models shaped by partners/platforms.	Porter & Heppelmann (2014); Cenamor et al. (2017)
Transformation Autonomy	High autonomy to initiate strategic change.	Lower autonomy; changes often reactive.	Salonen (2011); Vendrell-Herrero et al. (2017)

Table 2 OEM-Supplier Contextual Differences

Source: Adapted from Salonen (2011); Vendrell-Herrero et al. (2017); Story et al. (2017); Cenamor et al. (2017); Forkmann et al. (2017); Sjödin et al. (2020); Ardolino et al. (2018)

1.4.3 Digital Servitisation Process

The *process* of digital servitisation refers to the sequence, mechanisms, and dynamics through which it unfolds over time. The literature remains relatively underdeveloped in this respect. Traditional servitisation models tend to depict a staged and linear evolution (e.g., Oliva & Kallenberg, 2003; Baines & Lightfoot, 2013). By contrast, digitalisation is often characterised by abrupt, nonlinear, and self-reinforcing shifts in strategy, structure, and capabilities (Warner & Wäger, 2019; Li, 2020). These contrasting dynamics create both theoretical and practical challenges for understanding how digital servitisation actually unfolds.

Emerging research indicates that it follows a hybrid trajectory, shaped by the interplay between ongoing adaptation and episodic change (Chen et al., 2021; Jovanovic et al., 2021). For example, Jovanovic et al. (2021) observed that while firms often introduce new value propositions in discontinuous steps, underlying changes in service portfolios, digital capabilities, and governance models tend to evolve incrementally and recursively. To better understand the mechanisms underlying this pattern, the dynamic capabilities view (DCV) offers a valuable theoretical lens.

1.4.4 Dynamic Capabilities View as Theoretical Lens

Rooted in the resource-based view of the firm, the dynamic capabilities view (DCV) is particularly well suited to understanding how firms navigate complex transformations such as digital servitisation. It provides a comprehensive theoretical framework that illuminates the mechanisms enabling growth and adaptation in changing environments (Barreto, 2010; Peteraf et al., 2013; Schilke et al., 2018). This focus on resource reconfiguration is especially relevant in the context of digital servitisation, where firms may need to continuously adapt their resource base as they pursue service- and digital-led growth opportunities.

Operational Capabilities

A key theoretical distinction is drawn between operational and dynamic capabilities. Operational capabilities comprise the established routines and practices that allow firms to efficiently deliver existing products and services (Helfat & Winter, 2011; Zahra et al., 2006). These capabilities are path dependent and focus on stability and short-

term performance. For example, many manufacturers develop design-for-service capabilities to ensure product serviceability across the lifecycle (Ulaga & Reinartz, 2011). They also build service data analysis capabilities to extract insights from operational data, supporting maintenance and performance optimisation. As digitalisation advances, connectivity and analytics capabilities are increasingly critical, enabling real-time monitoring of smart products and transforming complex data streams into actionable intelligence (Lenka et al., 2017). Such capabilities provide the foundation for reliable and scalable service delivery in hybrid product–service systems.

Dynamic Capabilities

In contrast, dynamic capabilities are higher-order capabilities concerned with organisational adaptation and renewal. Teece et al. (1997) identify three fundamental types: sensing, seizing, and transforming.

- *Sensing* involves scanning the environment to identify new opportunities, such as through R&D, customer engagement, or market intelligence.
- *Seizing* entails mobilising resources to capitalise on these opportunities – for instance, by investing in new service and digital resources.
- *Transforming* refers to the reshaping operational capabilities and resources to align with new realities and value propositions.

Together, these dynamic capabilities enable firms to continually adjust their resource base in response to external market and technological shifts. Digital servitisation can thus be understood as a process of developing and exercising dynamic capabilities: sensing emerging service and digital opportunities, seizing them through resource mobilisation and strategic commitment, and reconfiguring organisational structures, processes, and cultures to remain aligned with evolving circumstances.

As firms progress along their digital servitisation journey, the way they develop and exercise dynamic capabilities can differ significantly depending on the volatility in their environment and the scale of change required. To capture this variability, scholars have proposed a hierarchical view of dynamic capabilities that differentiates them according to the extent of organisational transformation they support (Collis, 1994;

Winter, 2003; Ambrosini & Bowman, 2009). Within this framework, dynamic capabilities are conceptualised across three levels:

- *Incremental capabilities* refine the existing resource base to improve efficiency and performance. These are typically deployed in relatively stable environments, where efforts focus on enhancing current offerings and delivery efficiency.
- *Renewing capabilities* extend the resource base under conditions of moderate environmental change. This may involve developing new offerings by recombining existing and new resources (Ardolino et al., 2018).
- *Regenerative capabilities* support more radical transformation by enabling firms to modify even their existing dynamic capabilities. These are often required in highly volatile environments, where established routines become obsolete and fundamental shifts in strategy, leadership, and organisational design are necessary (Tushman & Romanelli, 1985).

Despite its theoretical relevance, the digital servitisation literature provides only limited insight into the hierarchical nature of dynamic capabilities. Most studies emphasise incremental and renewing capabilities – those that help firms progressively enhance operations and develop new offerings. For instance, Kindström and Kowalkowski (2014) show how product-centric firms adjust their business models incrementally by extending existing offerings and leveraging established capabilities and relationships, while Fischer et al. (2010) highlight how cross-functional collaboration and organisational learning support gradual, path-dependent change.

By contrast, regenerative capabilities – essential for navigating volatile or disruptive environments – have received little attention. This is a significant gap, as unlocking the full potential of digital servitisation may require not only incremental adaptation but also fundamental reconfiguration of dynamic capabilities to enable radical transformation (Kohtamäki et al., 2019; Cenamor et al., 2017; Sjödin et al., 2020).

Limitations of the DCV Lens

While the dynamic capabilities view (DCV) provides a valuable framework for analysing how firms adapt to change, it has important limitations – particularly in complex, ecosystem-driven contexts such as digital servitisation. A central challenge is its level of abstraction: core constructs such as sensing, seizing, and reconfiguring are conceptually robust but difficult to observe and measure empirically (Arend & Bromiley, 2009; Barreto, 2010). This challenge is compounded by retrospective bias, since dynamic capabilities are often inferred after successful transformations, making causal links to performance outcomes difficult to establish.

A further limitation is the internalist orientation of DCV. Although it acknowledges environmental dynamism, its analytical focus rests primarily on firm-internal processes of resource orchestration. This risks underplaying the significance of external, relational, and ecosystem-level dynamics that are particularly salient in digital servitisation (Kohtamäki et al., 2019; Sklyar et al., 2019).

In light of these issues, this thesis employs DCV as a focused analytical lens rather than a comprehensive theory of organisational performance. It concentrates specifically on the sensing, seizing, and transforming mechanisms through which a supplier firm reconfigures its resource base during digital servitisation. This bounded application allows for a fine-grained examination of how dynamic capabilities operate in practice, while remaining attentive to broader strategic factors at play during the transformation process.

1.5 Contributions of This Research

This research contributes to the digital servitisation literature by shifting attention toward non-OEM firms – a group of actors largely overlooked in prior studies. It provides a contextualised account of how a supplier firm – operating with constrained resources, indirect customer access, and limited institutional power – reconfigured its dynamic capabilities and transformed its resource base.

The study reveals a complex pattern of incremental adaptation and continuous renewal of the resource base, punctuated by episodes of discontinuity in the firm's goals and managerial capabilities. It demonstrates how two meta-mechanisms –

strategic goal-setting and top management team reconfiguration – interacted with sensing, seizing, and transforming mechanisms to shape these changes. These mechanisms closely interplayed with the adoption of digital technologies in steering the supplier's digital servitisation trajectory.

By unpacking these process mechanisms, the study extends theory on digital servitisation in three important ways:

First, it extends existing models that emphasise cumulative or staged development by showing how episodes of managerial discontinuity were not simply disruptive but acted as key enablers of transformation in the supplier context.

Second, it identifies meta-mechanisms of top management team reconfiguration and strategic goal-setting that shaped the conditions under which sensing, seizing, and transforming unfolded. This extends the dynamic capabilities perspective on digital servitisation by demonstrating how leadership and governance levers can either constrain or unlock capability evolution.

Third, it demonstrates the recursive interplay between digitalisation and dynamic capabilities. Digital technologies initially acted as enablers of incremental adaptation, then became integral to devising new offerings, and ultimately emerged as strategic resources embedded within advanced service solutions. This co-evolution advances theorisation of digital servitisation by showing that digitalisation is not only a support for but also an outcome of capability development.

The study also makes a methodological contribution by abductively identifying five analytically distinct domains of resource base change: human capital, digital technology, finance, operations, and external relations. These domains served as conceptual anchors for data collection and as embedded units of analysis, providing a structured framework that can be replicated or adapted in future research.

Finally, the study generates practical insights for strategists and managers in industrial firms seeking to navigate the challenges and opportunities of digital servitisation.

1.6 Thesis structure

This thesis is organised into five chapters. Following this introductory chapter, Chapter 2 reviews and analyses the literature central to the study, with particular attention to digital servitisation and the dynamic capabilities perspective. Chapter 3 outlines the study's philosophical foundations and details the case study research design, including data collection methods, analytical procedures, and criteria for research quality. Chapter 4 presents the empirical findings, structured around the context, content, and process of the case company's transformation. Chapter 5 discusses these findings in relation to existing research, highlighting the theoretical and practical contributions of the study. It also identifies limitations, outlines directions for future research, and concludes with a reflection on the researcher's development over the course of the PhD.

Chapter 2: Literature Review

2.1 Introduction

This thesis is located within the academic discourse on digital servitisation, a term recently coined to capture the convergence of servitisation and digitalisation. Although digital servitisation remains in the early stages of conceptual development, most empirical and theoretical work to date have concentrated on original equipment manufacturers (OEMs). However, other industrial actors – in particular, component suppliers – are also subject to the market and technological forces driving this transformation (Coreynen et al., 2017; Vendrell-Herrero et al., 2017). These firms operate under different resource constraints, relational dependencies, and organisational structures compared to OEMs – factors that influence how they engage with digital servitisation. Addressing this underexplored context, the present study investigates digital servitisation among non-OEM industrial suppliers.

To establish the theoretical foundation for this investigation, Sections 2.2 and 2.3 examine the literature on servitisation and digitalisation separately, outlining their key drivers and transformation patterns. Section 2.4 then turns to the emerging literature on digital servitisation, synthesizing insights from the preceding sections using a content-context-process framework. The gap in current understanding of the digital servitisation process is highlighted, particularly regarding how the process unfolds in non-OEM contexts. Section 2.5 introduces the dynamic capabilities view as the theoretical lens for examining this process. Section 2.6 concludes the chapter by presenting the conceptual framework that informs the study's empirical design and analysis.

2.2 Servitisation

Servitisation has emerged as a significant strategy among industrial firms, particularly the manufacturers with extensive installed bases and long product life cycles. Vandermerwe and Rada (1988), in their foundational study, conceptualized servitisation as a response by such firms to the pressures of globalisation and product commoditisation. They defined it as "the increased offering of fuller market packages

or 'bundles' of customer-focused combinations of goods, services, support, self-service, and knowledge in order to add value to core product offerings."

Baines et al. (2007) later framed servitisation as a management innovation targeted at co-creating value between firms and their customers. They defined it as "the innovation of an organisation's capabilities and processes to better create mutual value through a shift from selling products to selling product-service systems." In this context, "product" refers to a material artifact (e.g., an aircraft engine), while "service" denotes an economic activity (e.g., maintenance, repair, or advice) that does not necessarily result in the ownership of a tangible asset (Baines et al., 2009).

More recently, Kowalkowski et al. (2015) have framed servitisation as an ongoing process of transformation, highlighting the need for firms to continuously adapt their service strategies, structures, and capabilities in response to changing customer demands and competitive conditions. They defined it as "the transformational process of shifting from a product-centric business to a service-centric approach".

The process view reflects that servitisation does not occur in a vacuum but rather is shaped by a confluence of external pressures and internal enablers which collectively influence its pace, trajectory, and outcomes. These drivers help explain why some industrial firms are more proactive and effective in pursuing service-led transformation.

2.2.1 Key Drivers of Servitisation

The external drivers of servitisation are rooted in shifts in the business environment, including intensified market competition, evolving customer expectations, and advances in technology. These dynamics not only erode the viability of product-centric business models but also create new opportunities for service-led differentiation.

Internally, the success of servitisation depends heavily on leadership commitment and capability. Leaders must be able to mobilize internal and external resources in support of emerging value propositions, while fostering an organisational culture that embraces a service-oriented logic (Baines et al., 2009; Kohtamäki et al., 2020; Kindström et al., 2013). Firms often begin by consolidating product-oriented service activities – such as maintenance, technical support, and installed base management –

as a foundation for more advanced development (Oliva & Kallenberg, 2003). Over time, they incrementally adapt their business models and progressively build the capabilities required for delivering use- and result-oriented services (Fischer et al., 2010).

External Drivers

Competitive intensity

In response to globalisation and the commoditisation of manufactured goods, established firms increasingly turned to services as a means of differentiating their offerings and countering declining profit margins (Vandermerwe & Rada, 1988). Services confer more sustainable competitive advantages by drawing on tacit knowledge, customer-specific interactions, and employee expertise. These factors are generally less visible and therefore harder for competitors to imitate (Goedkoop et al., 1999; Oliva & Kallenberg, 2003).

Services can generate substantial and recurring revenue streams for industrial firms (Mont, 2002). Many original equipment manufacturers (OEMs) now derive a greater share of their income from servicing their installed base than from one-off sales of equipment or spare parts. A prominent example is Rolls-Royce's "Power-by-the-Hour" model, which replaced traditional product sales with availability-based service contracts. Under this model, customers pay only for the hours an engine is operational, rather than purchasing engines and aftermarket components separately (Smith, 2013). This approach aligns the provider's incentives with customer outcomes, while offering predictable, performance-based revenue. It also insulates the business from fluctuations in product demand and broader economic cycles, enhancing long-term financial stability (Oliva & Kallenberg, 2003).

Additionally, some incumbents pursue servitisation as a defensive strategy to deter new industry entrants and extend control over their value chains. In the oil and gas sector, major players expanded into logistics and distribution to reinforce their market positions and protect their oligopolistic structures (Schmenner, 2009).

Customer expectations

Customers in sectors such as aerospace, industrial machinery, and energy increasingly prioritise outcomes over product ownership. The high cost and complexity of owning, operating, and maintaining advanced equipment can place considerable strain on internal resources, driving a preference for solutions that ensure performance, availability, and reliability (Baines & Shi, 2015). Rather than valuing the physical possession of assets, these customers seek value-in-use – including predictable expenditure, reduced operational burden, and access to specialist expertise (Baines et al., 2009). In many cases, their performance targets are closely linked to business continuity and operational efficiency, making service-based solutions not just desirable but essential. As a result, customers are becoming increasingly reliant on service models that are tailored to their specific operating environments, industry demands, and performance goals.

Accordingly, many product manufacturers are progressively restructuring their service offerings along a continuum of increasing value and responsibility. This spans from product-oriented services (e.g., spare parts and repairs), which support the equipment itself, through use-oriented services (e.g., leasing or pay-per-use models), which enable functional access without ownership, to result-oriented services that deliver guaranteed outcomes such as uptime, availability, or output efficiency (Baines et al., 2009).

Technological advancement

Technological advancement has fundamentally reshaped the economics of product-based business models, especially by eroding revenue streams tied to traditional aftermarket services. Smith (2013) observed that advances in engine design, materials, and control systems led to greater durability and reliability, sharply reducing demand for spare parts and repair work for Rolls-Royce's engines. For a company whose business historically relied on transactional maintenance income, this shift posed a strategic dilemma (Smith, 2013). In response, Rolls-Royce pioneered outcome-based service contracts, replacing time-and-materials billing with fixed-price agreements tied to engine availability.

The digital transformation of physical products into smart, connected systems has further enhanced the viability of outcome-based service models. Technologies such as embedded sensors, remote connectivity, and real-time data analytics are foundational to how value is created and delivered within such models. For example, Rolls-Royce's ability to perform predictive maintenance and execute targeted service interventions depends on performance data continuously transmitted through telemetry systems embedded in its engines (Grubic, 2014).

Regulatory pressure

Regulatory frameworks such as the circular economy and Extended Producer Responsibility (EPR) are increasingly holding manufacturers accountable for their products across the entire lifecycle. Gebauer et al. (2017) argue that such policies "reshape the competitive logic by encouraging firms to internalize post-sale responsibilities." These compliance demands not only impose operational obligations but also open new avenues for value creation through service-based offerings such as take-back schemes, remanufacturing, and condition monitoring.

By developing these services, firms can deepen customer relationships while positioning themselves as responsible, forward-looking actors in markets that are increasingly attuned to sustainability. As such, regulatory pressure becomes a catalyst for service-led differentiation rather than merely a compliance burden.

Internal Drivers

Leadership

Senior executives play a central role in shaping the firm's response to external pressures and steering the servitisation process. They legitimize service-led objectives, (re)allocate resources, and ensure that change efforts are sustained over time (Baines et al., 2009). Early in the transition, effective leaders communicate a clear vision that positions services as integral – not peripheral – to the firm's long-term strategy. This shared vision supports the delivery of consistent and integrated customer experiences (Kindström et al., 2012). To reinforce this direction, leaders also adapt organisational structures and incentive systems to support service-oriented goals (Eggert et al., 2014).

Leadership is equally important in guiding the shift from product-based thinking to customer-centric value creation. This involves reframing value in terms of outcomes and service performance, and aligning strategic priorities and performance metrics with customer impact rather than product transactions (Ulaga & Reinartz, 2011). At the same time, leaders must navigate internal tensions that often arise during servitisation. As Gebauer et al. (2010) observe, firms frequently encounter conflicting objectives, misaligned incentives, and evolving organisational identities. Sustained executive engagement is therefore essential to ensure strategic, structural, and cultural alignment throughout the transformation.

Integrative capability

In the context of servitisation, *integrative capability* refers to a firm's ability to coordinate and align resources, processes, and knowledge across internal functions and external actors to deliver coherent and customer-centric product-service offerings (Kindström et al., 2013; Davies et al., 2006). It enables firms to bridge technical, commercial, and operational dimensions in support of more advanced service offerings.

Most firms begin this process by consolidating their service-related activities – such as maintenance, technical support, and installed base management – into a more structured and unified service function (Oliva & Kallenberg, 2003). A key part of this foundation involves codifying the tacit knowledge of frontline employees with insight into customer usage contexts and recurring issues (Neu & Brown, 2005).

As firms expand their service portfolios, cross-functional coordination becomes increasingly important. Effective collaboration between service, engineering, sales, marketing, and IT is necessary to design and deliver integrated solutions (Kindström et al., 2012). Availability- and performance-based contracts, in particular, demand alignment of workflows, responsibilities, and information flows across departments (Davies, 2009).

External integration is equally critical. Realizing value for customers involves collaborative mechanisms – such as joint service planning, shared data infrastructures, and negotiated service-level agreements – that define expectations around availability,

responsiveness, and performance (Gebauer et al., 2010). Service delivery frequently depends on coordination with suppliers, subcontractors, and ecosystem partners, especially when offerings include externally sourced components. In such cases, integrative capability must extend beyond organisational boundaries to align delivery schedules, quality standards, and governance structures across the value network (Davies, 2009).

Service-oriented culture

A service-oriented culture is one in which shared values, norms, and behaviours prioritise customer relationships, service excellence, and continuous learning (Brax, 2005; Gebauer et al., 2006). In contrast to product-centric cultures that emphasise efficiency, control, and technical performance, a service-oriented culture places the customer at the centre of value creation (Ulaga & Reinartz, 2011). It encourages employees to engage in relational rather than transactional interactions, fostering trust, responsiveness, and long-term engagement, all of which are essential for co-creating outcomes with customers (Gebauer et al., 2010).

Customer feedback plays a critical role in shaping and refining service offerings over time. Firms that embed structured feedback loops through post-service reviews, usage insights, or complaint handling can identify recurring pain points and make targeted adjustments (Gebauer et al., 2010). This responsiveness reinforces customer trust and loyalty while enabling firms to fine-tune service delivery and resource allocation. By implementing continuous improvement practices, organisations can draw on both customer knowledge and product expertise to maximise the value they create and capture (Penttinen & Palmer, 2007).

To support this cultural shift, firms may need to adapt recruitment and onboarding processes to attract individuals with service-oriented mindsets (Brax, 2005). Internal communication and employee development programmes can also reinforce this orientation by promoting cross-functional collaboration and openness to customer insight (Gebauer et al., 2006).

Table 3 summarises the key internal and external drivers of servitisation alongside supporting sources.

Driver Type	Source(s)	Description
External	Vandermerwe & Rada (1988)	Strategic differentiation from low-cost competitors
	Goedkoop et al. (1999); Oliva & Kallenberg (2003)	Building sustainable competitive advantage through tacit, knowledge-intensive services
	Oliva & Kallenberg (2003)	Enhancing financial resilience through recurring service revenues
	Schmenner (2009)	Deterring new entrants by expanding service-based control of the value chain
	Baines & Shi (2015)	Responding to customer preferences for outcome-based, usage-focused solutions
	Tukker & Tischner (2006); Mathieu (2001)	Deepening customer relationships through embedded service engagement
	Smith (2013)	Strategic shift triggered by technological advancement
	Gebauer et al. (2017)	Complying with lifecycle-based environmental regulations and sustainability pressures
Internal	Gebauer et al. (2005); Eggert et al. (2014)	Leadership commitment to service transformation and strategic alignment
	Oliva & Kallenberg (2003); Neu & Brown (2005)	Consolidating and gradually extending service capabilities based on existing routines and knowledge
	Kindström et al. (2012); Davies (2009);	Integrative capabilities involving coordination across internal functions to support complex service delivery
	Gebauer et al. (2010); Davies (2009); Chen et al. (2021)	Integrative capabilities involving coordination with customers, suppliers, and partners, supported by digital tools, shared governance structures, and collaborative routines
	Brax (2005); Gebauer et al. (2006); Visnjic et al. (2016)	Developing a service-oriented culture focused on learning, collaboration, and customer value
	Gebauer et al. (2010)	Using customer feedback to continuously improve service quality and responsiveness

Table 3 Key Drivers of Servitisation

Source: Author's categorisation of sources and descriptions drawn from the literature.

The Service Paradox

Despite the widely acknowledged benefits of servitisation, early empirical findings were mixed and often contradictory in terms of outcomes. Many firms hesitated to fully embrace servitisation or encountered significant implementation challenges

(Neely, 2007; Neely, 2008; Eggert et al., 2014; Gebauer et al., 2005). For instance, Neely (2007) found little growth in the number of firms actively pursuing servitisation between 1994 and 2004, and that, for many firms, additional revenue gains from services were frequently offset by declining overall profit margins (Neely, 2008).

This service paradox – a situation in which expanding service offerings increases organisational complexity and cost without delivering proportional value – has also been widely discussed in practitioner literature. Firms are cautioned against offering services that are misaligned with customer needs, poorly priced, or insufficiently articulated in terms of their value proposition (McKinsey & Company, 2021). These findings highlight the importance of carefully managing the trade-offs involved in servitisation and underscore the need for a more nuanced understanding of how service transformation unfolds in practice.

2.2.2 Patterns of Servitisation

Scholarly literature presents three main perspectives on how firms transition from product-based to service-oriented offerings: linear transition models, the radical change view, and contingency-based approaches.

Linear Incremental Transition

The dominant perspective is that servitisation follows a linear and incremental trajectory, advancing through a series of definable stages. Scholars such as Vandermerwe and Rada (1988), Oliva and Kallenberg (2003), and Baines and Lightfoot (2013) have developed influential models that illustrate this staged progression.

Vandermerwe and Rada (1988) conceptualized servitisation as unfolding in three overlapping stages. Initially, firms offer either products or services. In the second stage, both are provided in parallel. By the third stage, firms deliver integrated solutions comprising “customer-focused combinations of products, services, support, self-services, and knowledge.”

Drawing on empirical data, Oliva and Kallenberg (2003) proposed one of the most widely cited stage models of servitisation. Based on a study of eleven German manufacturing firms transitioning from selling supplementary services to taking full responsibility for customer operations, they identified four distinct stages. First, firms

consolidate product-based services – such as installation, troubleshooting, and user training – into a coherent service offering that supports product sales. Second, they enter the installed-base market by establishing a dedicated service organisation and begin addressing tensions between product sales and service delivery. Third, firms undergo a strategic shift toward relationship-based engagement, with services focused on improving the customer's operational performance. In the fourth and most advanced stage, firms assume responsibility for aspects of the customer's operations under performance- or outcome-based contracts. The authors emphasise that goals, decision logics, and resource configurations evolve as firms progress through these stages.

Baines and Lightfoot (2013) extended this view by framing servitisation as progressing through three levels of service maturity: basic, intermediate, and advanced. Basic services – such as spare parts and warranties – are transactional and support the product directly. Intermediate services, such as maintenance, repair, and overhaul (MRO), enhance product functionality and efficiency. Advanced services aim to deliver specific customer outcomes (e.g., system availability or performance guarantees), embedding the provider deeply into the customer's operations and shifting risk from the customer to the supplier.

Despite their conceptual differences, these models converge on a shared view of servitisation as a structured, cumulative, and evolutionary process. They suggest that firms transition incrementally from product-based offerings to integrated solutions by systematically reconfiguring their business models, capabilities, and customer relationships through clearly defined stages of service development.

Radical Change

Some scholars challenge the notion of servitisation as a linear, incremental process, arguing instead that it requires radical changes in an organisation. From this standpoint, servitisation entails deep changes that go beyond incremental adaptations, requiring firms to fundamentally reconfigure their strategies, operations, and cultures. Incrementalism, in this view, may not only be insufficient but potentially

counterproductive as it tends to mask underlying tensions that hinder meaningful progress.

Brax (2005), in a case study of a manufacturing firm shifting toward integrated solutions, identified persistent challenges across marketing, production, delivery, and product design dimensions. These difficulties, she argued, stemmed from an entrenched manufacturing mindset that could not be overcome simply by appending service components to an existing business model. Brax concluded that a radical rethinking of organisational logic was essential, cautioning that incremental approaches might be detrimental.

Brady et al. (2005) reached a similar conclusion in their study of five organisations undergoing servitisation, including Alstom, Ericsson, and Thales Training & Simulation. They observed that Alstom, for example, underwent a radical transformation by shifting from a supplier of rolling stock to a provider of comprehensive turnkey solutions, as illustrated by its Total Train Management service. This shift entailed a fundamental reconfiguration of the company's business model and required the development of new capabilities and practices to support a completely different way of operating.

Barnett et al. (2013) conducted an in-depth study of a high-tech capital equipment provider in the aerospace sector. They found that the firm faced significant challenges in adapting to availability-based service contracts, including frequent equipment failures and inefficient maintenance operations. The authors attributed these difficulties to deeper structural and cultural limitations, particularly in supplier coordination and performance management. They concluded that overcoming these barriers required a fundamental shift in the firm's organisational design and practices.

These studies imply that for many firms – particularly those with legacy systems, complex organisational structures, or deeply embedded cultural norms – servitisation cannot be treated merely as a strategic add-on. Instead, it should be approached as a more fundamental and holistic transformation.

Contingency-Based Approach

A third group of scholars adopt a contingency perspective, emphasizing the influence of firms' unique contexts on how they transition toward servitisation. These studies demonstrate that servitisation strategies are contingent on a firm's market positioning, customer configuration, and role within the broader industry ecosystem. By foregrounding the significance of strategic fit, they offer a more nuanced explanation of why transformation patterns differ across firms and sectors.

Windahl and Lakemond (2006) contributed to this perspective by examining how a firm's position in the value chain affects its ability to develop and deliver integrated solutions. In a study of two servitisation initiatives by the same firm, they found that greater success in delivering customer-oriented solutions was achieved when the firm acted as a product integrator. In this role, the firm had more control over system-level outcomes and could better influence the design and delivery of services. By contrast, when operating as a component supplier, the firm struggled to persuade customers and other stakeholders to adopt collaborative, service-oriented approaches. This highlights the constraints lower-tier suppliers may face in steering servitisation initiatives, particularly in relation to value co-creation with customers.

Gebauer (2008) identified four distinct servitisation strategies among Western manufacturing firms, each reflecting a different environment–strategy fit. These include after-sales service providers, who pursue cost leadership; customer support providers, who differentiate through product–service integration; outsourcing partners, who assume operational risks for clients; and development partners, who collaborate on innovation and R&D. These typologies underscore that firms follow divergent servitisation paths depending on their core capabilities, strategic orientation, and external pressures.

Lightfoot and Gebauer (2011) further demonstrated that the scale and structure of customer relationships shape firms' service strategies. Analysing twelve capital goods manufacturers, they found that firms with large and diverse customer bases tended to offer standardised services that complemented their core product offerings. In contrast, firms serving a smaller number of strategic customers were more likely to

develop customised services aimed at enhancing the efficiency and performance of the customer's operations.

Taken together, these studies highlight the transition toward integrated solutions as a complex and context-dependent process. Firms follow different trajectories depending on both internal and external conditions. While linear models provide a general framework for service evolution, contingency-based approaches offer a more differentiated understanding of how servitisation unfolds in practice. These insights inform the subsequent examination of how digitalisation intersects with and accelerates these transformation patterns (Section 2.4). For now, however, the chapter turns to digitalisation more directly.

2.3 Digitalisation

In parallel with servitisation, many industrial firms have been adopting digital technologies – such as analytics, mobility, cloud computing, and artificial intelligence – with the aim of transforming their internal processes, customer relationships, and value propositions (Westerman et al., 2014). Digitalisation is defined as the use of digital technologies to enable, enhance, or transform business operations and offerings (Bharadwaj et al., 2013; Yoo et al., 2010). Digital transformation, in turn, refers to organisational change that is enabled or triggered by digitalisation (Vrana & Singh, 2021).

Historically, digital technologies functioned primarily as back-office enablers. Early research on information-technology-enabled organisational transformation (ITOT) emphasized the need to align the technology with strategic objectives. Information technologies (IT) were typically viewed as tools for improving efficiency, coordination, and planning within administrative and operational contexts (Henderson & Venkatraman, 1992; Orlikowski, 1996). Accordingly, the business value of IT was seen to depend largely on its compatibility with a priori organisational strategies and structures (Venkatraman, 1994; Besson & Rowe, 2012).

However, the emergence of more flexible and adaptive digital technologies has challenged these traditional assumptions. Technologies such as the Internet of Things (IoT), artificial intelligence (AI), and data analytics exhibit generative, combinatorial,

and self-reinforcing properties that permit firms to rethink their business models, launch new value propositions, and experiment rapidly (Kallinikos et al., 2013). *Generativity* refers to the capacity of users to create novel applications and solutions beyond the technology's original design intent. *Combinatoriality* allows these technologies to be integrated with one another, often resulting in the development of new solutions, offerings, and business models. The *self-reinforcing* nature of the technologies means that their adoption generates feedback loops that accelerate further use and innovation. A prime example is the digital platform, which integrates multiple digital technologies, enables user-generated innovations, and grows more valuable as it attracts additional users and complementors.

Consequently, digitalisation is considered to be highly dynamic and capable of driving significant and sometimes unpredictable changes within firms (Hanelt et al, 2020). It no longer simply supports existing strategy but actively shapes how strategy is conceived and executed. The literature reflects that digitalisation influences leadership behaviours and workforce capabilities, (Bharadwaj et al., 2013; Hess et al., 2016) reorients investment priorities, (Sebastian et al., 2017) and enables the reconfiguration of business processes (Tilson et al., 2010). It also facilitates new forms of value creation and capture by mobilizing ecosystems of users, partners, and developers who co-create and extract value from shared digital infrastructures – particularly through digital platforms (Yoo et al., 2012; Svahn et al., 2017). In this way, digitalisation has evolved from a back-office enabler into a transformative force that is reshaping industrial firms and value chains.

2.3.1 Key Drivers of Digitalisation

Digitalisation is driven by a combination of external pressures and internal imperatives. The external drivers stem from ongoing shifts in the competitive landscape, including intensified market rivalry, rising customer expectations, and regulatory pressures related to data, cybersecurity, and sustainability. These developments challenge the adequacy of traditional operating models and create opportunities for firms to explore digital modes of value creation, delivery, and capture.

Internally, the success of digitalisation depends heavily on leadership commitment and capability. Leaders must be able to mobilize internal and external resources to drive digital initiatives, while cultivating an organisational culture that supports experimentation, agility, and data-driven decision-making. Many firms begin by digitalizing core operations to establish a stable digital backbone and, over time, integrate a more modular and adaptive digital layer. This flexible layer enables the rapid development and deployment of new digital offerings while maintaining coherence with foundational systems.

External Drivers

Competitive Intensity

Digitalisation is reshaping the foundations of industry competition by lowering entry barriers and enabling new business models that challenge the dominance of traditional firms. Technology providers, platform operators, and data-driven entrants are leveraging digital infrastructures to bypass legacy constraints and redefine value creation across sectors (Porter & Heppelmann, 2015; Bharadwaj et al., 2013). Many industrial firms now find themselves competing directly with digitally native actors that operate with asset-light structures, scalable architectures, and data-centric capabilities. These new players can personalize offerings, iterate quickly, and respond rapidly to shifting market conditions.

Competitive pressure also stems from incumbent rivals that have progressed further in their digital transformation journeys. The perceived risk of technological lag – in dimensions such as automation, connectivity, and customer engagement – pushes some firms toward digital adoption as a defensive response, even in the absence of a coherent digital strategy (Liere-Netheler et al., 2018). For instance, General Electric's launch of the Predix platform signalled a strategic shift toward digital leadership in the industrial sector, prompting other firms to accelerate their own digital initiatives to avoid falling behind (Porter & Heppelmann, 2015). Here, digitalisation becomes a necessary condition for preserving market position and ensuring ongoing competitive relevance.

Customer Expectations

Digitalisation is also reshaping how industrial customers evaluate and engage with suppliers. Liere-Netheler et al. (2018) argue that customers increasingly expect greater transparency, solution customisation, and supplier responsiveness. These demands are not limited to transactional efficiency but reflect broader expectations around collaboration and visibility across the supply chain. Industrial buyers now seek more interactive relationships with providers, shaped in part by their exposure to digital experiences in consumer markets.

This shift signals a broader redefinition of customer value, where features such as real-time information access, self-service capabilities, and consistent cross-channel experiences have become baseline expectations (Bharadwaj et al., 2013). Customers now anticipate seamless journeys that integrate digital and physical touchpoints, with continuity across interfaces and interactions (Verhoef et al., 2021). In industrial contexts, offerings are often expected to include embedded monitoring and remote diagnostics, repositioning the supplier relationship from one-off transactions to a model of ongoing support and performance assurance (Porter & Heppelmann, 2015).

Technological Advances

Advances in digital technology are a core driver of digitalisation, expanding what is technically and economically feasible for industrial firms. Tools such as cloud computing, embedded sensors, artificial intelligence, and advanced analytics have reshaped how firms manage operations, engage with customers, and deliver value.

Porter and Heppelmann (2015) illustrate this shift through the example of GE's *Predix* platform, which connected industrial equipment to cloud-based analytics and enabled services such as remote diagnostics and performance optimisation. By embedding connectivity and intelligence into its products, GE enhanced service delivery, generated new revenue streams, and established more continuous, data-driven relationships with customers.

The increasing maturity and accessibility of digital technologies have also lowered the barriers to adoption. Firms of varying sizes can now test and scale digital solutions with

relatively low upfront investment, accelerating the pace of technological implementation and reinforcing the strategic imperative to modernize legacy systems.

Regulatory Pressures

Regulatory demands related to data privacy, cybersecurity, and environmental sustainability are accelerating digital transformation. For example, the General Data Protection Regulation (GDPR) has compelled firms to strengthen data governance practices – particularly regarding how personal and operational data is collected, stored, and used (Liere-Netheler et al., 2018). Likewise, emerging policies on carbon reporting and circularity are prompting firms to implement digital tools that enable accurate monitoring and disclosure of environmental performance (Xu et al., 2021).

While often framed as compliance requirements, these regulations have also acted as catalysts for digital investment. By demanding greater transparency and accountability, they have incentivised firms to build digital infrastructure and analytics capabilities that support broader operational improvement and innovation, alongside compliance.

Internal Drivers

Leadership

allocating resources, and embedding digital priorities into the strategic agenda (Sia et al., 2016; Hess et al., 2016). Effective leaders articulate a clear vision that positions digitalisation as a core business driver rather than a peripheral IT function–an essential step for fostering alignment and sustaining organisational momentum.

Crucially, leadership must avoid isolating digital efforts within innovation labs or niche units. Instead, transformation requires diffusing digital capabilities across core operations through new governance mechanisms and dedicated leadership roles, such as Chief Digital Officers or transformation offices (Hess et al., 2016). In more advanced firms, digital initiatives are fully integrated into strategic planning and treated as integral to long-term competitiveness.

Sustained executive engagement is also necessary to balance the competing demands of maintaining legacy operations while advancing innovation. Leaders must manage

internal resistance, address capability gaps, and remain responsive to evolving technologies and markets (Kane et al., 2015). As Sia et al. (2016) argue, digital transformation is not a one-time project but a continuous process of aligning strategy, culture, and capabilities with emerging digital opportunities.

Integrative Capabilities

Integrative capability refers to a firm's capacity to align and coordinate digital systems, data flows, and business processes across internal functions and external partners, enabling scalable, interoperable, and data-driven operations (Sebastian et al., 2017; Svahn et al., 2017; Bharadwaj et al., 2013). This capability supports the reuse of digital resources and underpins the development of platform-based offerings and ecosystem-level integration.

Digital transformation typically begins with establishing a digital backbone–a shared set of IT services, processes, and data infrastructure that ensures efficiency, stability, and reliability (Sebastian et al., 2017). This backbone involves consolidating core systems such as ERP, supply chain management, and CRM to standardize workflows and enable consistent data access across the enterprise.

On this foundation, firms build digital services platforms–flexible layers composed of reusable digital components exposed via APIs–that accelerate innovation and responsiveness (Sebastian et al., 2017). These platforms not only support rapid development of digital services but also facilitate integration with ecosystem actors, including suppliers and external developers, thereby extending the firm's digital reach and enabling collaborative innovation.

Digital-oriented culture

A digital-oriented culture reflects a fundamental shift in how organisations perceive change, solve problems, and adapt routines in response to digital opportunities. It emphasizes experimentation, distributed decision-making, and the integration of digital tools into core processes (Westerman et al., 2014; Kane et al., 2015). In contrast to traditional cultures that prioritise stability and control through centralized hierarchies, a digital-oriented culture encourages agility, responsiveness, and a willingness to challenge established routines (Warner & Wäger, 2019).

This cultural shift reshapes how decisions are made and who is empowered to make them. Kane et al. (2015) observe that digital transformation often requires revisiting long-held assumptions about authority and accountability. Rather than relying on rigid chains of command, firms promote distributed authority, enabling frontline employees and project teams to act on data insights and respond quickly to evolving challenges. Warner and Wäger (2019) emphasize that these dynamics determine whether digital technologies are fully embedded into business processes or remain disconnected from day-to-day realities.

Table 4 summarises the key external and internal drivers of digitalisation.

Driver Type	Source(s)	Description
External	Bharadwaj et al. (2013); Li (2020); Porter & Heppelmann (2015)	Intensification of cross-sector competition enabled by accessible digital infrastructure and platform-based business models
	Coreynen et al. (2017); El Sawy et al. (2016)	Disruption by asset-light and highly scalable digital entrants that challenge incumbents on speed, cost, and adaptability
	Verhoef et al. (2021); Liere-Netheler et al. (2018)	Rising customer expectations for transparency, responsiveness, and real-time service integration
	Tilson et al. (2010); Ng & Wakenshaw (2017)	Technological advances enabling modularity, experimentation, and rapid scaling of digital solutions
	Xu et al. (2021); Liere-Netheler et al. (2018)	Regulatory demands related to data privacy, security, and sustainability prompting digital infrastructure upgrades
Internal	Sebastian et al. (2017); Chanias et al. (2019)	Integrative capabilities involving the development of operational backbone and adaptive service platforms
	Svahn et al. (2017)	Strategic reconfiguration of routines and partnerships to embed digital capabilities into execution
	Westerman et al. (2014); Warner & Wäger (2019)	Cultural shifts that promote initiative-taking, experimentation, and continuous learning in digital environments
	Kane et al. (2015); Sia et al. (2016)	Executive leadership that legitimizes digital transformation and steers sustained implementation

Table 4 Key Drivers of Digitalisation

Source: Author's categorisation of sources and descriptions drawn from the literature.

The Digitalisation Paradox

The digitalisation paradox refers to the disconnect between the scale of investment in digital technologies and the limited performance gains that firms often realize in return, particularly in terms of revenue growth (Gabauer et al., 2020). This paradox is not marginal: empirical studies indicate that more than 70% of digital transformation initiatives fail to achieve their stated objectives (Reeves et al., 2018). This gap between intention and outcome highlights that digital tools, in themselves, do not drive change. Without corresponding shifts in capabilities, processes, and organisational logic, digitalisation risks becoming a technical upgrade rather than a strategic transformation. Firms frequently struggle with structural inertia, path dependencies, and entrenched mindsets that limit their ability to absorb and operationalize new digital possibilities (Gersick, 1991; Orlikowski, 2000). These barriers are not merely operational but cognitive and cultural – rooted in how firms perceive the role of technology and its relationship to value creation. Overcoming them requires leadership capable of framing digitalisation as a catalyst for strategic renewal (Sia et al., 2016).

2.3.2 Patterns of Digital Transformation

Digitalisation is widely associated with disruptive and nonlinear change, often marked by abrupt shifts in strategy, structure, and capabilities (Warner & Wäger, 2019; Li, 2020). Nevertheless, firms exhibit distinct patterns in digital transformation shaped by their internal configurations and external environments. The literature identifies three prominent patterns: iterative-modular innovation, ecosystem integration, and data-driven customer engagement (El Sawy & Pereira, 2013; George et al., 2020; Li, 2020). These patterns highlight different loci of change – whether internal experimentation, collaborative orchestration, or customer intimacy – and reflect how firms strategically deploy digital technologies to reconfigure value creation and capture.

Iterative-Modularity

One prominent transformation pattern emphasizes an iterative and modular approach to digital innovation. Rather than pursuing rigid, pre-defined roadmaps, firms adopt strategies that unfold through cycles of experimentation, learning, and adaptation.

This stands in contrast to traditional models of strategy execution based on a linear 'formulate-implement' logic.

Brown and Eisenhardt (1997) highlight how time-paced, iterative innovation enables firms to maintain agility in turbulent markets. This approach is particularly salient in digital contexts, where competitive advantages are often short-lived and require constant renewal. D'Aveni et al. (2010) similarly contend that firms must be willing to "cannibalize" existing offerings and initiate successive waves of innovation to sustain their position in hypercompetitive environments.

Modular architectures support the iterative logic by breaking digital transformation into discrete, manageable initiatives. Firms can pilot projects on a small scale, evaluate outcomes, and scale up successful modules (Li, 2020). Modularity not only facilitates rapid experimentation and knowledge transfer but also isolates risk, ensuring that failures in one area do not compromise the broader transformation effort (D'Aveni et al., 2010; Li, 2020). As such, the iterative-modular pattern frames digital transformation as a dynamic capability-building process, allowing the organisation to evolve organically as it responds to technological and market change.

Ecosystem Integration

A second transformation pattern is grounded in ecosystem thinking. Rather than treating digital transformation as an internally bounded initiative, firms increasingly embed themselves in broader networks of co-innovation and value creation. El Sawy and Pereira (2013) define digital ecosystems as dynamic, socio-technical networks of interdependent actors that co-create value through shared platforms, data, and services.

Firms that follow this pattern reconfigure their internal resources for participation in ecosystems. This may involve developing platform-based business models, forming strategic alliances with technology partners, or engaging in open innovation with customers, suppliers, and startups.

Internally, this transition demands new governance mechanisms, greater organisational agility, and a cultural orientation toward collaboration and external knowledge integration. Externally, it requires alignment with evolving industry

platforms and standards. Through ecosystem integration, firms extend the scope of digital transformation beyond organisational boundaries, positioning themselves to both shape and be shaped by industry-wide dynamics and emerging digital infrastructures (El Sawy & Pereira, 2013)

Customer-Centricity

The third pattern centres on customer-centric transformation, where digitalisation is driven by the imperative to create superior customer experiences and value. This pattern views data as a strategic asset for deepening customer understanding and engagement. Technologies such as cloud computing, mobile platforms, social media, and advanced analytics are harnessed to reimagine the customer journey, personalise offerings, and improve responsiveness.

Verhoef et al. (2021) emphasise that successful digital transformation requires reorganizing the firm's processes and interfaces around customer needs. This often involves adopting design thinking to identify user pain points and embedding feedback loops into service development. George et al. (2020) describe how real-time analytics functions as a "digital compass," enabling firms to monitor customer behavior, anticipate needs, and dynamically adjust strategies.

Customer-centric transformation does not simply enhance service delivery – it reshapes how firms define and pursue innovation. By orienting digital initiatives around measurable customer outcomes, firms achieve greater strategic agility, strengthen customer loyalty, and enhance long-term competitiveness (Li, 2020; George et al., 2020; Sebastian et al., 2017; Verhoef et al., 2021). This pattern also fosters a culture of experimentation rooted in customer insight and iterative value co-creation.

In sum, these three transformation patterns – iterative-modular innovation, ecosystem integration, and customer-centricity – illustrate the diverse ways firms enact digitalisation. While not mutually exclusive, they represent distinct pathways that firms adopt depending on their strategic goals, existing capabilities, and market conditions.

Having examined the literature on servitisation and digitalisation – including their respective drivers and transformation patterns – the chapter will now delve into convergence of these transformations.

2.4 Digital Servitisation

Digital servitisation is an emerging area of inquiry with few empirical studies yet (e.g. Gabauer et al., 2021; Chen et al., 2021; Jovanovic et al., 2021). It is defined as "the transformation in processes, capabilities, and offerings within industrial firms and their associated ecosystems to progressively create, deliver, and capture increased service value arising from a broad range of enabling digital technologies" (Sjödin et al., 2020). However, the literature remains unclear about what this transformation entails in practice (Chen et al., 2021).

To lay the groundwork for the empirical investigation here, this section utilizes Pettigrew's (1987) content-context-process framework to structure insights from the extant literature, including the preceding discussions on servitisation (Section 2.2) and digitalisation (Section 2.3). The *content* focuses on the substance of change – that is, what is being transformed within the firm. *Context* refers to the internal and external contingencies shaping this transformation. The *process* concerns how the transformation unfolds over time – including the mechanisms, sequences, and patterns through which change is enacted and sustained.

2.4.1 Digital Servitisation Content

As noted by Sjödin et al. (2020), digital servitisation entails the transformation of a firm's offerings, capabilities, and processes – to create, deliver, and capture increased service value – enabled by digital technologies. These three transformation dimensions are not separate initiatives but mutually reinforcing aspects of the firm's strategic shift. Firms must concurrently redefine what they offer (from products to solutions), how they deliver (through integrated capabilities), and how they organise (via service-oriented processes and structures) to unlock the full potential of digital servitisation.

Transformation Of Offerings

The transformation of offerings is perhaps the most visible aspect of digital servitisation. This evolution can be understood through the three-tier service maturity

model proposed by Baines and Lightfoot (2013), which distinguishes between basic, intermediate, and advanced service stages (see Section 2.2.3). These tiers reflect a shift from traditional product-based transactions toward integrated product–service systems (PSS).

- **Basic services** are transactional and standardized, aimed at ensuring product functionality (e.g., installation, spare parts, warranties). These services are typically supported by enterprise systems – such as enterprise resource planning (ERP) – which enable efficient, repeatable delivery across high-volume or geographically dispersed settings.
- **Intermediate services** seek to enhance product performance through activities such as maintenance, repair, and overhaul (MRO). Here, digital technologies enable a shift from reactive service to proactive value creation based on real-time usage data (Ardolino et al., 2018; Grubic, 2018; Holmström et al., 2010). For example, real-time monitoring may allow firms to offer condition-based or predictive maintenance, thereby reducing unplanned downtime and improving operational efficiency.
- **Advanced services** represent a more fundamental departure in how the firm creates and captures service value, centering instead on the delivery of measurable customer outcomes (Kowalkowski et al., 2015). These includes through performance-based contracts, uptime guarantees, and usage-based models in which value is tied to the success of the customer's operations. The design and delivery of such offerings often rely on digital platforms that connect products, users, and multiple service providers within a coordinated service ecosystem (Gawer, 2020; Kohtamäki et al., 2020).

Transformation Of Capabilities

Digital servitisation involves the development and integration of new cabilities acorss technical, operational, and commercial dimensions (Davies et al., 2006; Kohtamäki et al., 2020).

- **Technical capabilities** refer to the expertise needed to design and integrate products, services, and digital components into coherent systems. As digital

technologies become embedded in offerings, firms must ensure interoperability, adaptability, and remote service delivery capacity (Ardolino et al., 2018; Grubic, 2018).

- **Operational capabilities** enable the coordination of internal processes and external relationships to deliver complex solutions at scale. Key elements include project management, cross-functional collaboration, and stakeholder engagement–particularly important when services span departments, geographies, or ecosystems (Sjödin et al., 2020; Baines et al., 2020).
- **Commercial capabilities** involve structuring, pricing, and managing service contracts, especially under outcome-based models. This includes risk-sharing mechanisms, value co-creation strategies, and the monetisation of data-driven services such as predictive maintenance and usage-based pricing (Kohtamäki et al., 2013; Visnjic et al., 2017).

Importantly, digital servitisation depends not on these capabilities in isolation, but on their integration. Internally, firms must align digital, product, and service development through shared routines and coordination mechanisms (Coreynen et al., 2018). Externally, successful digital servitisation requires close integration with customers, suppliers, and partners to enable joint planning, shared goals, and co-created value across organisational boundaries (Sklyar et al., 2019; Cenamor et al., 2017).

Transformation Of Processes

Digital servitisation requires a fundamental transformation in the organizing logic of the firm – from a product-centric, transaction-based mindset to a service-dominant, relational orientation. This process transformation enables firms to move beyond selling discrete goods and toward offering outcome-based solutions built on long-term customer engagement and value co-creation (Vargo & Lusch, 2004; Porter & Heppelmann, 2014). In this paradigm, services are not ancillary but core to strategy, requiring firms to embed service thinking into their strategic intent, operational routines, and governance structures (Ardolino et al., 2018; Sjödin et al., 2020).

This shift entails both cultural and structural realignment. Culturally, it involves reframing value as something realized through customer experience and use, rather

than embedded in products. This demands deeper customer insight, shared risk-taking, and long-term, collaborative relationships (Kohtamäki et al., 2013; Baines et al., 2020). Structurally, it often involves creating dedicated service units, redefining roles and responsibilities, and introducing performance metrics that prioritise relational outcomes over transactional efficiency (Story et al., 2017).

Digital technologies, and especially digital platforms, serve as both enablers and accelerators of this process transformation. These platforms link products, customers, and partners in real time, allowing for continuous interaction, remote monitoring, and data-driven collaboration (Sklyar et al., 2019). As a result, they support a shift from rigid, hierarchical structures to modular, networked configurations, where value is co-created through digitally mediated coordination across the ecosystem (Gawer & Cusumano, 2014; Cenamor et al., 2017).

Collectively, the progression from basic to advanced services illustrates how digital technologies enable firms to create new service opportunities, deliver value more responsively and efficiently, and capture value through new contractual and relational arrangements. These tiers are not merely stages of service sophistication but reflect deeper shifts in how value is digitally mediated and organisationally structured.

2.4.2 Digital Servitisation Context

Just as important as the substance of what is being transformed, the context dimension of digital servitisation concerns the internal and external contingencies that shape how transformation unfolds in practice. While often treated in the literature as a background condition, this thesis adopts a more processual and dynamic perspective, positioning context as a conditioning force that both enables and constrains a firm's ability to reconfigure its offerings, structures, and capabilities over time (Kohtamäki et al., 2019).

To date, research on digital servitisation has primarily focused on original equipment manufacturers (OEMs) (e.g., Cenamor et al., 2017; Sjödin et al., 2020), who are typically situated closer to the end customer and exercise greater control over product platforms and service delivery. In contrast, supplier firms – positioned further upstream in the value chain – remain comparatively underexplored. This oversight is

significant, as suppliers face distinct contextual constraints, including limited autonomy, multi-client dependencies, and weaker platform control, all of which shape their servitisation trajectories. This section highlights how their engagement with digital servitisation is conditioned by constrained resources, asymmetrical power relations with OEMs, and the need to respond to both top-down requirements from OEMs and bottom-up innovation signals from customers.

External Context

As discussed in Sections 2.2.1 and 2.3.1, the external environment places significant pressure on firms to transform, driven by competitive intensity, technological advancement, regulatory change, and evolving customer expectations. While these forces affect both original equipment manufacturers (OEMs) and suppliers, their impact is mediated by each firm's structural role, strategic position, and resource endowments.

Competitive Intensity

OEMs, facing globalisation, price erosion, and product commoditisation, increasingly turn to their installed bases to create service-led value (Baines et al., 2017; Porter & Heppelmann, 2015). As such, OEMs tend to pursue digital servitisation as a deliberate, system-wide transformation. This may include building integrated digital platforms, developing predictive maintenance capabilities, deploying remote diagnostics, and shifting toward outcome-based service models that strengthen customer lock-in and lifecycle value.

Suppliers, by contrast, operate in more fragmented and price-sensitive markets, often with limited strategic autonomy and less direct access to end users. Typically serving multiple OEMs, they contribute to service innovation primarily through strategic collaborations with OEMs or Tier 1 partners. They thus adopt more emergent and incremental approaches to transformation. This may include embedding digital elements within specific components, developing support services tailored to OEM systems, or aligning subsystem features with OEMs' broader digital service architectures.

Customer Expectations

OEMs are typically better positioned to meet customer expectations for integrated, outcome-based solutions due to their proximity to end users, control over product platforms, and ability to combine design, production, and post-sale services into cohesive offerings (Porter & Heppelmann, 2015; Baines et al., 2020). Their access to real-time usage data, strong brand recognition, and comprehensive service infrastructures further enhance their capacity to deliver reliable, data-driven solutions that align with customer performance goals.

Suppliers, while more distant from end users, often engage with evolving needs indirectly through coordination with OEMs. In some cases, they co-develop service features tailored to specific operational contexts, leveraging their agility to provide fast feedback and customisation (Cenamor et al., 2017; Sklyar et al., 2019). However, their ability to shape or directly capture customer expectations is generally limited by their upstream position in the value chain, the mediation of customer relationships through OEMs, and the dominance of OEM-led service architectures. As a result, suppliers tend to respond to rather than define service expectations, aligning their offerings with OEM mandates and integration requirements.

Technological Advancement

OEMs are often better-equipped to capitalize on digital technologies such as IoT, digital twins, analytics, and cloud platforms due to their control over product architectures, financial resources, and integrated IT infrastructures. This enables them to develop end-to-end platforms that support remote diagnostics, lifecycle optimisation, and outcome-based service models (Porter & Heppelmann, 2015; Kohtamäki et al., 2020).

However, suppliers, while often lacking the resources for full digital infrastructure, benefit from organisational agility and narrower scopes. These attributes allow for faster adoption of modular or embedded digital solutions, especially in niche technical applications. However, they must navigate interoperability challenges, frequently aligning with OEM-imposed standards and protocols to remain part of the ecosystem (Cenamor et al., 2017).

Some suppliers co-develop digital capabilities with OEMs, integrating their solutions into connected value chains. Others focus on enabling technologies – e.g., embedded sensors, real-time monitoring, and interface compatibility – that support OEM-driven service models without requiring wholesale transformation (Sklyar et al., 2019; Rymaszewska et al., 2017).

Regulatory Pressures

OEMs are directly accountable for product compliance with sustainability, lifecycle traceability, and circular economy mandates. These obligations are often passed downstream through contractual requirements, prompting suppliers to adopt digital tools for data capture, usage tracking, and environmental reporting (Gebauer et al., 2017).

For many suppliers, digital adoption is driven less by strategic ambition and more by compliance. Tools like sensors, usage monitoring systems, and lifecycle documentation platforms are implemented primarily to meet OEM or regulatory demands, rather than to differentiate offerings (Rymaszewska et al., 2017; Gebauer et al., 2021). These tools enable traceability, sustainability reporting, and integration into OEM-led service ecosystems, often under conditions defined externally rather than by the supplier's strategic vision.

While some suppliers are able to leverage compliance-driven investments to expand or customize service capabilities, for others, regulation acts as a coercive institutional force that enforces minimum digital standards rather than encouraging innovation (Gebauer et al., 2021; Kohtamäki et al., 2020). This dynamic reinforces existing power asymmetries across the supply chain, where OEMs define technical architectures, data protocols, and compliance benchmarks, leaving suppliers to adapt reactively– frequently with limited influence or strategic input (Mosch et al., 2021; Cenamor et al., 2017).

Internal Context

The internal context of digital servitisation refers to firm-specific enablers and constraints that influence how organisations perceive, prioritise, and respond to external pressures. These include governance structures, organisational cultures,

capability portfolios, and resource endowments. A useful way to conceptualize these differences lies in the firm's orientation toward exploitation and exploration (March, 1991). While exploitation focuses on leveraging existing capabilities for efficiency and refinement, exploration emphasizes experimentation and innovation. Digital servitisation demands both – often requiring ambidextrous configurations tailored to each firm's strategic position and constraints (Bierly & Daly, 2007; Coreynen et al., 2020).

Exploitation

Exploitation involves using existing knowledge, infrastructure, and competencies to enhance current offerings, streamline operations, and deliver consistent service quality. For OEMs, this often translates into deploying digital technologies to improve efficiency and customer responsiveness. With extensive installed bases, financial resources, and data infrastructures, OEMs are well-positioned to scale digital offerings such as predictive maintenance, remote diagnostics, and automated scheduling (Porter & Heppelmann, 2014; Kohtamäki et al., 2020). These capabilities are typically institutionalized through formal platforms, centralized analytics teams, and standardized processes that reinforce operational continuity and service performance.

Suppliers, especially SMEs, operate under tighter resource constraints but benefit from flatter structures and greater operational agility. Their proximity to niche product dimensions and responsiveness to specific customer use cases enables more adaptive service refinement and rapid feedback loops (Cenamor et al., 2017; Sklyar et al., 2019). Although suppliers may lack the capacity to build enterprise-scale infrastructures, they often exploit digital tools to meet OEM requirements or to improve reliability, reduce downtime, and optimize part replacement schedules within their own scopes of operation.

Successful exploitation, therefore, depends not only on resource abundance but on the alignment between digital capabilities and strategic positioning. OEMs typically exploit digitalisation to drive systemic efficiencies and orchestrate value across the ecosystem. Suppliers, by contrast, often adopt digital tools to maintain ecosystem

participation and compliance–operating within bounded and sometimes externally defined parameters.

Exploration

Exploration refers to the pursuit of new knowledge, technologies, and business models that enable firms to address emerging opportunities and navigate environmental uncertainty.

OEMs are often better equipped for this kind of innovation. With larger R&D budgets, skilled digital teams, and access to customer data, they can pilot advanced services like AI-powered analytics or outcome-based contracts (Sia et al., 2016; Warner & Wäger, 2019). However, their size and complex structures can slow down decision-making and limit flexibility, even when innovation is a priority.

Suppliers, on the other hand, tend to have fewer resources but greater agility. They often operate in more focused technical areas and maintain close working relationships with OEMs or customers. This allows them to test and refine new digital features quickly (Cenamor et al., 2017; Sklyar et al., 2019). But many still lack the digital skills, autonomy, or funding to drive innovation on their own, and often depend on OEMs to guide or enable their exploratory efforts.

Overall, OEMs tend to explore through formal innovation programs, while suppliers do so through flexible learning and collaboration. Both approaches require adaptability, risk-taking, and the ability to realign resources in response to shifting technologies and customer demands.

Ambidexterity

Ambidexterity – the ability to balance and integrate exploitation and exploration – is necessary for long-term success in digital servitisation. OEMs typically pursue structural ambidexterity by establishing separate business units or innovation teams to explore new digital offerings while maintaining efficient core operations (Bustinza et al., 2018). However, integrating learning across these units can be difficult. Cultural silos, power asymmetries, and incompatible metrics can obstruct knowledge flows unless proactively managed through leadership and coordination mechanisms.

Suppliers, constrained by size and resources, often rely more on contextual or sequential ambidexterity (O'Reilly & Tushman, 2013). Contextual ambidexterity allows employees or small teams to alternate between exploitation and exploration tasks depending on situational needs. Sequential ambidexterity reflects the temporal alternation between periods of innovation and periods of efficiency, often dictated by client contracts or cash flow cycles. These approaches allow suppliers to adapt without major structural reconfigurations – but may lead to underinvestment in exploration if short-term pressures dominate (Jovanovic et al., 2021).

Ultimately, both OEMs and suppliers must integrate learning from both modes to avoid becoming either too rigid or too scattered. Success in digital servitisation depends on maintaining this balance in ways that suit each firm's position, structure, and resources. Having addressed the substance of change and the conditions shaping it, the next section turns to how digital servitisation unfolds over time.

2.4.3 Digital Servitisation Process

Despite growing academic and managerial interest in digital servitisation, the mechanisms underlying the pattern, sequence and mechanisms of this transformation remain insufficiently theorized and empirically underexplored. Much of the extant literature continues to draw from the traditional servitisation paradigm, conceptualizing the transformation as a staged and linear progression. Within this framing, firms are understood to evolve from offering basic services to more advanced, outcome-oriented solutions through planned investments and incremental capability development (Vandermerwe & Rada, 1988; Oliva & Kallenberg, 2003; Baines et al., 2017; Gebauer et al., 2021). While useful in building maturity models and taxonomies, such stage-based frameworks provide limited explanatory power for the actual mechanisms and sequencing of change – particularly in the turbulent and uncertain contexts shaped by digital transformation.

It has been argued that this linear logic can obscure the often recursive, dynamic and temporal unfolding of organisational change (Pettigrew, 2001). As Besson and Rowe (2012) and Langley (1999) emphasize, transformation processes are shaped by the

interplay of historical legacies, strategic choices, institutional structures, and emergent contingencies.

Recent empirical studies that have begun to address these dynamics - for example, Chen et al. (2021) and Jovanovic et al. (2021) – conceptualize digital servitisation as an evolving, hybrid process – marked by episodic disruptions and incremental adaptation. Jovanovic et al. (2021) identify three digital platform archetypes – product platforms, supply chain platforms, and ecosystem platforms – that correspond to different stages of servitisation maturity. Their study reveals that as firms progress along this trajectory, there is a co-evolution between platform architecture, service offerings, and governance mechanisms. These elements evolve together, reflecting and reinforcing one another through iterative cycles of organisational reconfiguration.

Similarly, Chen et al. (2021) identify three transformation stages in business model innovation during digital servitisation. Initially, firms deliver customized solutions via their internal activity systems. Over time, they extend value co-creation to supply chain partners, and eventually, to broader ecosystem actors. This transformation involves both discontinuous and continuous interactions between business model elements and digital technologies. At the onset of each stage, new value propositions and delivery systems emerge in punctuated, often disruptive ways, later stabilized and refined through technological integration. The resulting shifts in value capture mechanisms are driven by performance efficiency, accountability, shared value creation, and novelty, while legacy structures are incrementally improved in parallel.

These findings underscore the interdependencies between digital technologies and business model transformation in the context of servitisation. Digital servitisation is not a straightforward path; firms may introduce new digital offerings but face protracted efforts to align internal routines, governance structures, and external partnerships. Such iterative, multi-level changes require theoretical frameworks capable of addressing both firm-level process dynamics and ecosystem-level shifts.

While OEMs remain the dominant focus of current research, the strategic role of suppliers is rapidly evolving. As platform-based ecosystems become more modular and interconnected, suppliers increasingly serve not only as component providers but also

as co-innovators and integrators of digitally enabled services. Yet the literature remains largely silent on how suppliers avoid the so-called "supply chain trap" – the risk of strategic marginalisation as OEMs internalize value-generating service activities (Mosch et al., 2021). Understanding how suppliers reposition themselves, develop new dynamic capabilities, and navigate digital servitisation is a pressing concern, both theoretically and practically.

To address these gaps, there is a clear need for conceptual tools that move beyond stage-based and actor-agnostic models. In particular, frameworks that capture the recursive, contested, and resource-intensive nature of transformation are essential for understanding digital servitisation among supplier firms operating under technological and relational constraints.

2.5 Theoretical Framing

The Dynamic Capabilities View (DCV) offers a particularly relevant lens, with its emphasis on resource reconfiguration, organisational learning, and adaptation in turbulent environments (Teece et al., 1997; Teece, 2014). Through this lens, digital servitisation can be seen as a strategic process of sensing opportunities, seizing them by reconfiguring the firm's resource base, and then transforming the organisation to maintain relevance and competitiveness in evolving service ecosystems.

2.5.1 The Resource Based View

The DCV is rooted in the Resource-Based View (RBV), one of the most enduring and influential theories in strategic management. The RBV adopts an "inside-out" perspective, holding that firms achieve competitive advantage by developing and leveraging internal resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). This contrasts with the industrial organisation (IO) view, which emphasizes external industry structure as the primary determinant of performance.

The intellectual foundations of RBV trace back to Penrose (1959), who, in *The Theory of the Growth of the Firm*, conceptualized firms as bundles of resources – both human and physical. She argued that growth was shaped not only by market demand but also by a firm's ability to deploy and recombine its internal resources effectively.

Wernerfelt (1984) later formalized this perspective, framing resource positions as the basis for strategic management.

Barney (1991) advanced the RBV by identifying the characteristics that make certain resources strategic and introduced the VRIN framework. He classified firm resources into three broad categories – physical, human, and organisational capital – and argued that only resources meeting the VRIN criteria could confer sustained competitive advantage:

- **Valuable**: contributing to the exploitation of opportunities or the neutralisation of threats.
- **Rare**: not widely possessed by competitors.
- **Imperfectly imitable**: difficult to replicate due to unique historical conditions, causal ambiguity, or social complexity.
- **Non-substitutable**: not able to be replaced by other strategically equivalent assets.

Barney (1995) later added the "O" for organisational support, resulting in the VRIO framework. This work informed related perspectives such as the knowledge-based view (Grant, 1996), the core competencies framework (Hamel & Prahalad, 1994), and, most relevant here, the Dynamic Capabilities View (Teece et al., 1997; Helfat & Peteraf, 2003).

While powerful, the RBV is limited in that it is essentially static – it explains the competitive value of resources but not how they are renewed, recombined, or retired when market conditions shift. The DCV was developed to address this limitation.

2.5.2 Dynamic Capability View

The dynamic capability view (DCV) builds on and extends the resource-based view (RBV) by providing a framework to explain how firms sustain competitive advantage in fast-changing and unpredictable environments. Whereas the RBV emphasizes the possession of valuable, rare, inimitable, and non-substitutable resources, the DCV focuses on the firm's capacity to renew, recombine, and reconfigure those resources in

response to environmental change (Teece et al., 1997; Eisenhardt & Martin, 2000). This perspective is particularly relevant in digital contexts, where organisations must adapt continuously to rapid technological developments, evolving customer expectations, and industry disruptions.

Dynamic capabilities are defined as an organisation's ability to purposefully create, extend, or modify its resource base (Helfat et al., 2007). They consist of learned routines and managerial actions that enable adaptation and innovation. This distinguishes them from operational capabilities, which concern the ability to deliver existing products and services using established resources and processes (Winter, 2003). Dynamic capabilities, by contrast, involve altering those routines to respond effectively to changing conditions.

Teece et al. (1997; 2009) conceptualize dynamic capabilities as three interlinked activities that enable firms to adapt and remain competitive:

Sensing – the ability to identify and interpret emerging opportunities, including new technological possibilities, evolving customer needs, and shifts in the competitive landscape. This involves deliberate activities such as environmental scanning, R&D investment, and engagement with external stakeholders. In digital servitisation, sensing might include anticipating new service models enabled by platform technologies or detecting shifts in outcome-based customer expectations.

Seizing – the capacity to mobilize internal and external resources to capture identified opportunities. This may involve developing new business models, refining value propositions, and reallocating investments toward high-potential initiatives. In digital servitisation, seizing could entail launching connected service offerings, forming alliances to acquire complementary capabilities, or redesigning delivery mechanisms to enhance value capture.

Transforming – the ongoing reconfiguration of structures, processes, and assets to sustain strategic alignment over time. This requires embedding new practices, adapting governance systems, and reshaping organisational culture to support change. In digital servitisation, transformation might involve shifting from product-centric

business units to cross-functional service teams, integrating advanced digital platforms, or institutionalizing outcome-based delivery as a core operating model.

As illustrated in Figure 1, these capabilities are shaped by a firm's asset positions (e.g. technological infrastructure, customer base and financial capacity) and path dependencies (e.g. historical investments, strategic choices, learning trajectories).

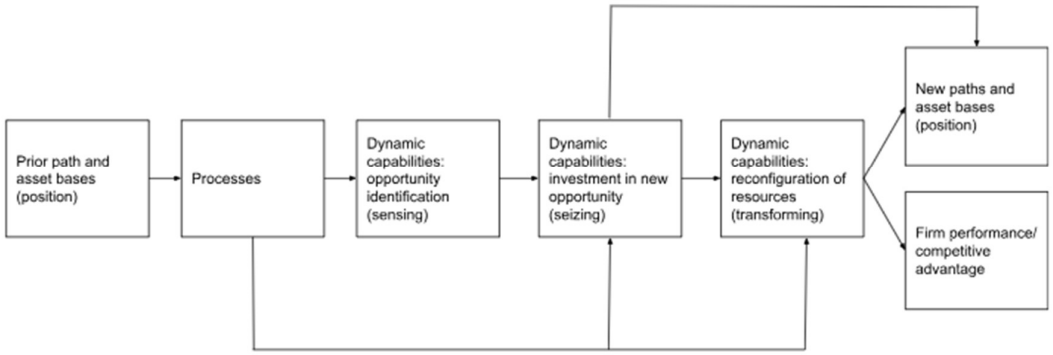

Figure 1 A logic Tree of how Dynamic Capabilities Impact Performance

Source: Adapted from Teece et al. (2009)

These capabilities are embedded in specific managerial mechanisms and organisational routines. In other words, dynamic capabilities represent the firm's potential for change, while mechanisms refer to the managerial processes or routines through which those capabilities are enacted.

In digital settings, these capabilities must operate at greater speed and across wider organisational boundaries. Teece (2017) notes that digital technologies increase the fluidity of business models, accelerate competitive imitation, and deepen ecosystem interdependence. This heightens the need for robust sensing capabilities to anticipate market discontinuities and enable data-driven decision-making. It also demands agile seizing capabilities that support rapid experimentation and iterative value capture. Perhaps most importantly, digital transformation intensifies the requirement for organisational transformation, compelling firms to reconfigure structures, cultures, and processes in alignment with new technologies and shifting customer expectations.

From this perspective, dynamic capabilities can be viewed as "meta-capabilities" that allow firms to modify existing operating routines and resource configurations (Zollo &

Winter, 2002). They are not ad hoc responses but learned, repeatable patterns of collective activity that evolve through experience accumulation, knowledge articulation, and codification. This reinforces the view that dynamic capabilities are not static properties but are shaped by deliberate learning mechanisms and historical contingencies.

Eisenhardt and Martin (2000) offer a complementary interpretation, portraying dynamic capabilities as identifiable and replicable organisational processes such as product innovation, strategic alliances, or structured decision-making routines. While their exact form may be firm-specific, many follow industry "best practices" and exhibit patterned regularity. Teece (2018) extends this view by introducing the notion of micro foundations – the specific routines, practices, and governance mechanisms that collectively constitute a firm's dynamic capabilities.

Other scholars have sought to systematize these capabilities. Wang and Ahmed (2007) identify four subprocesses: integration, reconfiguration, leveraging, and learning. Integration ensures alignment and coordination of internal assets. Reconfiguration reshapes resources to serve new purposes. Leveraging extends resources into new markets or dimensions. Learning – the foundational process – enables the renewal of all other capabilities by internalizing insights from failures, experimentation, and feedback loops. Bowman and Ambrosini (2003) present a similar structure, emphasizing that reconfiguration, learning, and integration are core to adaptability, while leveraging allows existing assets to be deployed in more value-generating ways

Hierarchies of Dynamic Capabilities

Several scholars have proposed that capabilities exist on hierarchical levels, and the notion of a capability hierarchy has become well established within dynamic capabilities theory. Collis (1994) was among the first to conceptualize this structure, identifying four distinct levels. The first refers to the firm's ability to perform routine operational activities and is considered part of its basic resource base. The second level involves the dynamic improvement of existing operations and resources. The third builds on this by recognising the need for new resources and enabling their acquisition, thereby extending the firm's resource base. These second and third categories broadly

align with the concept of dynamic capabilities as defined by Teece et al. (1997) and Helfat and Peteraf (2003), where firms reconfigure existing assets to respond to changing environments. Collis's fourth level refers to meta-capabilities, or "higher-order" capabilities, associated with "learning to learn." Ambrosini et al. (2009) note that such meta-capabilities may evolve recursively, forming a "wave of capability to renew the capability that renews the capability," and so on.

Danneels (2002) proposed a more streamlined hierarchy, distinguishing between first-order and second-order capabilities. First-order capabilities relate to the development of a resource base to produce specific products or serve defined markets. Second-order capabilities, by contrast, refer to the firm's ability to renew its resource base by acquiring or developing new first-order capabilities. While this model clarified the role of dynamic capabilities, it did not explore how these second-order capabilities themselves might evolve over time.

Winter (2003) further developed the hierarchical view by differentiating among zero-level, first-order, and higher-order capabilities. He defined zero-level capabilities as the operational routines that allow a firm to function and survive in the short term. First-order capabilities enable modification of these operational routines. Higher-order capabilities, in turn, derive from organisational learning and allow the firm to adapt or reconfigure its dynamic capabilities in response to environmental change.

Zahra et al. (2006) extended this logic by referring to zero-level capabilities as "substantive" or "ordinary" capabilities—comprising the set of resources and activities used to solve routine problems and achieve operational goals. In contrast, dynamic capabilities represent the higher-order capacity to reconfigure these substantive capabilities in order to sustain competitive advantage.

Building on these contributions, Ambrosini et al. (2009) proposed a three-level hierarchy of dynamic capabilities. Drawing on Eisenhardt and Martin's (2000) view that dynamic capabilities are relevant in both stable and dynamic contexts, they developed a contingency-based framework (see Figure 2) to illustrate how firms deploy different levels of capability depending on their perception of environmental dynamism.

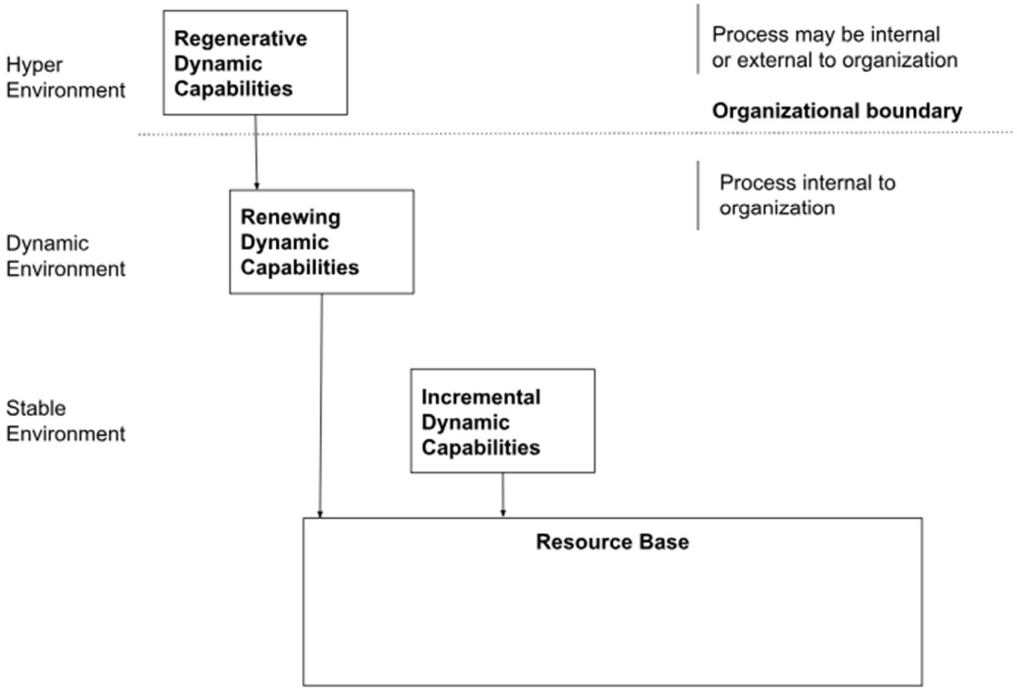

Figure 2 Three Levels of Dynamic Capability

Source: Ambrosini et al. (2009)

These three levels of capability reflect increasing degrees of environmental turbulence and strategic intensity. At the first level are incremental dynamic capabilities, which involve adjustments to a firm's existing resource base in relatively stable environments. These capabilities play a crucial role by enabling continuous improvement processes that preserve the value and performance of existing resources.

At the second level are renewing dynamic capabilities, which allow firms to refresh and extend their resource base in response to dynamic environments. As the external context shifts, resources that once offered strategic advantage may become obsolete or even detrimental. Renewing capabilities go beyond incremental adjustments by modifying the resource base in more substantive ways—either through the creation of new resources or by recombining existing ones in novel configurations. This renewal is essential for maintaining competitiveness in evolving markets.

At the third level are regenerative dynamic capabilities, which act upon the firm's existing dynamic capabilities when these are no longer sufficient to adapt the resource base in highly turbulent conditions. In such contexts, the firm must fundamentally change the way it creates, extends, or modifies its resources. Regenerative capabilities enable firms to move beyond previous change practices by transforming the embedded routines and learning mechanisms that underpin dynamic capability enactment itself. Ambrosini et al. (2009) propose that the deployment of these three types of capabilities is influenced by managerial perceptions of environmental dynamism and the internal needs for organisational change.

2.5.3 Conceptual Framework

Building on the preceding discussion of digital servitisation as a transformation of a firm's offerings, capabilities, and processes (Sjödin et al., 2020), the dynamic capabilities view (DCV) offers a coherent analytical lens for understanding how such transformations are initiated, sustained, and deepened over time. Within this perspective, dynamic capabilities are not viewed as abstract or latent traits but as exercised through concrete managerial mechanisms and organizational routines that enable firms to sense opportunities, mobilize resources to seize them, and reconfigure structures, systems, and offerings in response to environmental change.

In the context of digital servitisation, these capabilities must often operate at increased speed and across broader organizational and ecosystem boundaries. As Teece (2017) notes, digital technologies enhance the fluidity of business models, intensify competitive imitation, and deepen interdependence within service ecosystems. Consequently, the sensing function must encompass continuous scanning for shifts in customer needs, technological trajectories, and competitive logics. Seizing involves rapid experimentation and iterative value capture, while transformation requires the reconfiguration of internal architectures and inter-organizational arrangements to enable new forms of value creation.

Dynamic capabilities, from this standpoint, act as meta-capabilities (Zollo & Winter, 2002) that reshape the firm's resource base in ways that align with evolving strategic and technological conditions. This study draws on the DCV to conceptualize the

resource base as comprising five analytically distinct dimensions, which reflect the transformation categories articulated by Sjödin et al. (2020):

Human capital – encompassing managerial capabilities and workforce composition required to drive and sustain change.

Digital technology – referring to platforms, infrastructure, systems, and technical knowledge that enable connected offerings and operational integration.

Finance – covering capital allocation mechanisms, investment logic, and financial metrics that support resource orchestration.

Operations – involving coordination routines, process efficiencies, and execution systems essential for delivering both products and services.

External relations – including relational capital, inter-organizational interfaces, and collaborative capabilities that underpin ecosystem engagement.

These five dimensions reflect core elements of the resource base that must be reconfigured for firms to transition from product-centric to digitally enabled service models. While Barney's (1991) resource categories of physical, human, and organisational capital provided an important theoretical foundation, they were deliberately broad. The present schema builds on that foundation by distinguishing financial resources as a discrete domain, recognising digital resources as a distinct and increasingly critical category, and treating external relational resources as an explicit dimension of the resource base rather than subsuming them within human or organisational capital. In this sense, the five-domain categorisation offers a more fine-grained conceptualisation of the resource base in digital servitisation contexts. Teece (2017) highlights the transformational demands placed on human capital, digital infrastructure, and financial governance in digital settings, while Kohtamäki et al. (2019) emphasise the role of operational routines and external collaboration in enabling such transitions. Operational resources encompass the organising routines and performance systems that sustain daily functioning, while relational resources facilitate responsiveness to customers and partners and are instrumental in generating new knowledge and market insight.

Following Ambrosini et al. (2009), dynamic capabilities are conceptualized here as operating across three hierarchical levels – incremental, renewing, and regenerative – each associated with different forms of learning and intensities of change. By aligning these three levels with the five resource domains introduced above, it becomes possible to analytically track how capability enactment corresponds with tangible reconfigurations within the firm's resource base throughout the digital servitisation process.

Incremental capabilities (exploitative learning)

In relatively stable environments, firms may initially offer only basic services, such as warranties or corrective repairs. At this stage, dynamic capabilities function incrementally by refining existing resources within the five dimensions. For example, enhancements in operational efficiency may be achieved through improved coordination between internal systems and customer-facing processes, or through upgrades to existing digital platforms that optimize service scheduling. Human capital is enhanced through targeted skill development, while financial and technological resources are aligned to support service delivery. These efforts do not radically alter the resource base but instead improve its performance and responsiveness through exploitative learning mechanisms.

Renewing capabilities (exploitative and exploratory learning)

As environmental conditions become more dynamic – due, for instance, to increased customer expectations for predictive maintenance or performance-based contracts – firms must extend and recombine elements of their resource base. Renewing capabilities facilitate this adaptation by integrating exploitative and exploratory learning. New offerings may require investment in digital platforms, the reallocation of financial resources, the development of cross-functional human capital, and the strengthening of inter-firm collaborations. The renewal process often involves combining internal expertise with externally acquired knowledge, enabling firms to deliver more differentiated and higher-value services while preserving operational coherence.

Regenerative capabilities (transformative learning)

In turbulent or discontinuous environments – such as those shaped by disruptive digital technologies or shifts in customer logic – firms may be required to fundamentally reconfigure both their resource base and the capabilities through which it is mobilized. Regenerative capabilities operate at this level by enabling transformation that cuts across all five dimensions. This may include cultivating new leadership mindsets and workforce compositions (human capital), adopting advanced digital architectures and data ecosystems (digital technology), revising capital budgeting and valuation models (finance), reengineering internal workflows (operations), and renegotiating the firm's role within ecosystems through new collaborative arrangements (external relations). The aim at this stage is not adaptation but the development of new value creation logics – for example, transitioning from a component supplier to an orchestrator of integrated service solutions.

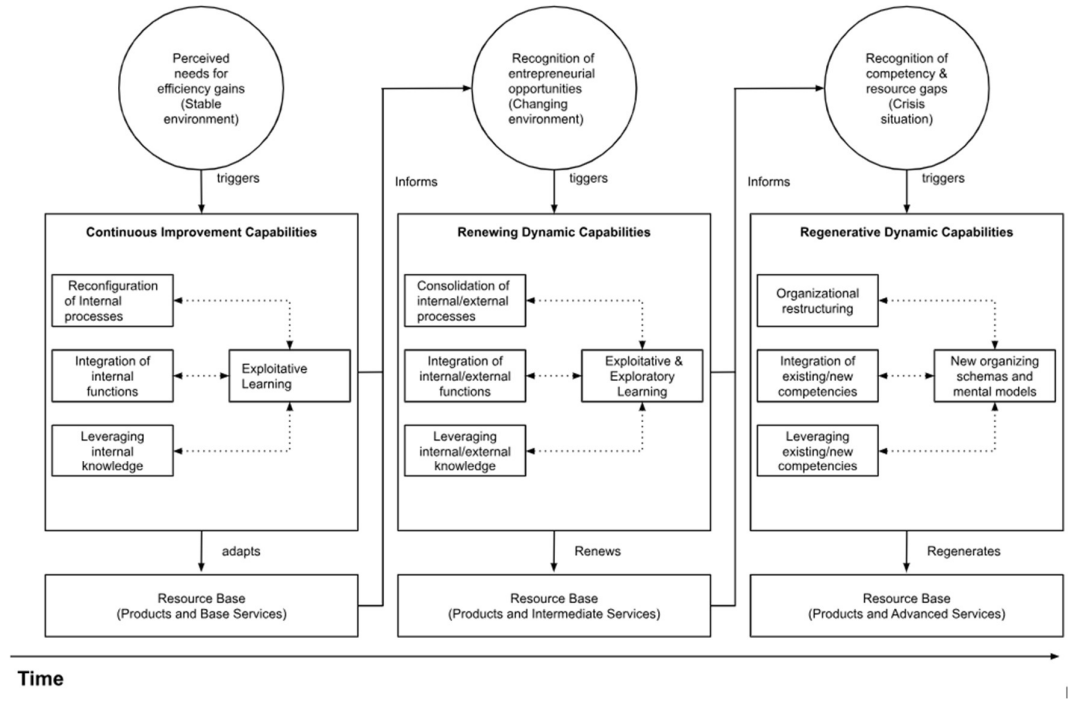

Figure 3 Transforming the Resource-base During Digital Servitisation.

Source: Author's own work.

Across all three levels, digitalization acts as both a driver and enabler of transformation. At the incremental level, digital tools support operational efficiency

and routine coordination. At the renewing level, digital platforms facilitate hybrid product–service integration and enable new service architectures. At the regenerative level, digitalization enhances the firm's sensing capacity and supports experimentation with new business models and ecosystem configurations. In this way, digitalization accelerates the speed, expands the scope, and deepens the reach of dynamic capability enactment across all transformation levels.

By situating these levels of capability within the five resource domains, the conceptual framework developed in this study (Figure 3) operationalizes Sjödin et al.'s (2020) triad of offerings, capabilities, and processes from a dynamic capabilities perspective.

2.6 Literature Review Summary

This chapter reviewed the literature on servitisation, digitalisation, and digital servitisation to establish the theoretical foundations of the study. Sections 2.2 and 2.3 examined these dimensions separately, focusing on the internal and external drivers that initiate and shape transformation, as well as the typical patterns through which change unfolds.

In servitisation, the review identified three main perspectives on how firms shift from product-centric to service-oriented models: linear maturity models, which depict a staged progression; contingency-based transitions, which emphasise alignment between service strategies and contextual conditions; and radical transformation, which frames servitisation as a fundamental redefinition of the business model. While differing in emphasis, all three view servitisation as a process that alters what firms offer, how they operate, and how they create value. The review also explored the external pressures – including competitive intensity, regulation, and shifting customer expectations – and internal enablers – such as leadership commitment, integrative capabilities, and organisational culture – that drive or constrain this shift.

The digitalisation literature highlighted its dual role as both enabler and disruptor of industrial change. Externally, transformation is propelled by digital disruption, rising demand for connected solutions, and tightening compliance regimes. Internally, it depends on integrative capabilities, agile structures, and aligned leadership. The review identified three transformation patterns: iterative modularity, where change is

incremental yet reconfigurable; customer-centricity, where offerings evolve with user needs; and ecosystem integration, where value is co-created across platforms and partnerships.

Section 2.4 integrated these strands to conceptualise digital servitisation as a distinct, multi-dimensional transformation. Drawing on Pettigrew's (1987) content–context–process framework, it examined how digital servitisation reshapes offerings, capabilities, and organising processes, and how these are shaped by both external pressures and internal constraints. This synthesis revealed a key research gap: while existing studies focus heavily on OEMs, little is known about how digital servitisation unfolds in supplier firms with fewer resources, lower autonomy, and structurally asymmetrical relationships.

To address this gap, Section 2.5 introduced the dynamic capabilities view (DCV) as the guiding theoretical lens. DCV provides a framework for understanding how firms sense opportunities, seize them strategically, and reconfigure their resource base to sustain advantage under changing conditions. The chapter concluded by presenting the conceptual framework linking these theoretical insights to the study's empirical design.

Chapter 3: Research Design and Methodology

3.1 Introduction

This research sought to understand how traditional suppliers reconfigure their resource base during digital servitisation. The chapter begins by outlining the strategy of engaged scholarship that informed the research design, along with its philosophical underpinnings.

It then details the longitudinal case study methodology employed in the empirical investigation. This includes a discussion of the pilot study and its role in shaping the main study. Following this, the chapter presents the sampling approach, data collection techniques, and data analysis procedures used in the main study. Finally, the chapter outlines the quality criteria applied to ensure the rigor and credibility of the research findings.

3.2 Research Strategy

This study followed the research strategy of engaged scholarship as the means of producing knowledge that could be useful for theory and practice. Van de Ven & Johnson (2006) advocated for engaged scholarship in tackling real world questions that are too complex to be captured by any one perspective. In this study, it entailed a collaborative inquiry between the researcher and practitioners in the field to address the issue of how their resources and capabilities were being transformed. The goal was to enable an understanding of this phenomenon from both the researcher's and practitioners' perspectives (Van de Ven, 2007) and ultimately make the research relevant to both academics and practitioners (Barge & Shockley-Zalabak, 2008). As Pettigrew (2001) notes, such collaborations in knowledge production can help to bridge the longstanding gap between theory and practice.

Just as no strategy for conducting social and organisational research is flawless, engaged scholarship also has its critics. It has been described, for example, as "pluralistic" and "idealistic" (McKelvey, 2006). However, as argued in the subsequent sections, the suitability of engaged scholarship for the research problem and context was deemed to outweigh these concerns. Moreover, this study was conducted in a systematic and rigorous manner, as will be set out further along in this chapter.

3.2.1 Philosophical Underpinnings

The perspective from which a researcher approaches his or her work is shaped by underlying philosophical assumptions they make about the nature of the phenomenon being studied (ontology) and how it can be understood (epistemology). Engaged scholarship has its philosophical roots in critical realism, which combines an objective ontology with a subjective epistemology (Van de Ven, 2007).

In summary, engaged scholarship rests on the following philosophical assumptions (Van de Ven, 2007; Easton, 2010):

1. A real world is assumed to exist (consisting of material, mental, and emergent entities), though our individual understanding of it is necessarily limited. Physical, material things are generally easier to understand than reflexive and emergent social processes.
2. All facts, observations, and data are theory-laden, either implicitly or explicitly. There are therefore no absolute, universal, error-free truths or laws that can be applied as scientific knowledge in the social sciences.
3. No form of inquiry can be value-free or impartial; each is value-full. However, some methods are better warranted than others depending on the nature of the phenomenon under investigation.
4. Knowledge about complex realities requires the use of multiple perspectives.
5. Robust knowledge emerges through theoretical and methodological triangulation, where evidence may not always be convergent but may also be inconsistent or even contradictory.
6. Models are selected based on their fit with the problems they are intended to solve, allowing for the evolutionary development of knowledge.

There are, of course, alternative philosophies of social science research. For example, Guba & Lincoln (1994) provide an analysis of the four main research paradigms in social sciences as: positivism, post-positivism, critical theory and constructivism. Similarly, Johnson & Duberley (2000) distinguish among four philosophies of science as: positivism, relativism, pragmatism, and realism. However, as critical realism is

increasingly viewed as the way forward for problem-solving research (Easton, 2010), it provides the philosophical orientation that guided this study.

3.3 Research Methodology

Complementary to ontology and epistemology, the research methodology provides the framework for executing a study. Methodological fit, that is the internal consistency among the elements of a research project, is key to conducting social science research (Yin, 2009; Edmondson & McManus, 2007). Edmondson & McManus (2007) note that to ensure methodological fit, the state of prior work needs to be reflected in the research objectives, design, and intended theoretical contribution.

As discussed in Section 2.4.2, digital servitisation remains an emerging area of inquiry, with only a limited number of empirical studies to date. Much of the literature continues to rely on stage-based, linear models (e.g., Vandermerwe & Rada, 1988; Baines et al., 2017; Gebauer et al., 2021). These models offer useful categorizations but provide limited explanatory power in digitally mediated, turbulent environments where transformation is often recursive, contested, and path-dependent (Pettigrew, 2001; Langley, 1999).

While some research has begun to trace the processes and sequences involved (e.g., Chen et al., 2021; Jovanovic et al., 2021), these studies have exclusively examined original equipment manufacturers (OEMs), who are typically positioned closer to end users and enjoy greater control over product platforms and service delivery (Cenamor et al., 2017; Sjödin et al., 2020). In contrast, suppliers remain underexplored, despite facing distinct challenges such as multi-client dependencies, constrained resources, and weaker control over platforms. These conditions significantly shape their digital servitisation trajectories.

Given this study's focus on the supplier context, it was designed as an exploratory, qualitative inquiry (Eisenhardt, 1989). A qualitative approach allows researchers to access the situated meanings of social actors and to interpret phenomena within the contexts in which they naturally occur (Gephart, 2004). This approach is well aligned with the study's three core objectives:

1. To combine insights from the field and the literature to develop a process-oriented understanding of digital servitisation in the supplier context.
2. To explicate the mechanisms that drive the transformation process.
3. To develop practical knowledge that can support supplier firms in transitioning toward integrated solutions.

An exploratory orientation enables researchers to stay close to theoretical constructs as they emerge from the field, while also encouraging open-minded learning (Yin, 2009; Edmondson & McManus, 2007). This proved particularly fruitful in the present study, enabling the uncovering of novel theoretical connections and practical insights. In other words, the theoretical contributions of this research crystallized toward the end of the process rather than being predetermined at the outset.

3.3.1 Pilot Study

A pilot study was conducted at the outset of this research to assess and refine the preliminary analytical categories for the main study. These categories reflected theoretically anticipated dimensions of change within a firm's resource base: human resources, digital technology, finance, internal operations, and external relations.

As outlined in Section 2.5.3 of the literature review, these dimensions extend the definition of digital servitisation as a transformation in "offerings, capabilities, and processes" (Sjödin et al., 2020) through the lens of dynamic capabilities. Teece (2017) emphasises that digital transformations often involve reconfiguring human resources (skills, leadership, and managerial practices), upgrading digital technologies (enterprise systems, platforms), and reshaping financial structures (investment logic, capital allocation). Likewise, Kohtamäki et al. (2019) highlight the role of operational routines and external collaboration in enabling firms to move toward digitally enabled service offerings.

The pilot was guided by an abductive approach (Dubois & Gadde, 2002), involving iteration between theory and data to refine these categories. Its purpose was not to generate findings in their own right but to test whether the categories were sufficiently clear, applicable, and empirically workable. Insights from the pilot informed

the main case study design by sharpening the interview protocol, clarifying subdimensions within each domain, and ensuring that the coding framework could capture both anticipated and emergent patterns of resource reconfiguration.

Case Selection

Three firms were purposefully selected from the service sector, each operating with mature, digitally enabled service delivery models. While these were not supplier firms – the focus of the main research – they were chosen deliberately to gain conceptual insight into how digital service provision operates in practice.

This cross-sector approach was justified on the grounds that digital servitisation involves product-oriented firms transitioning toward service-led models. By studying firms in the service sector, the pilot offered a forward-looking lens: one that helped clarify the resource base dimensions that suppliers need to reconfigure to advance toward digitally enabled service offerings. Service firms are often early adopters of digital technologies, both internally and in customer-facing dimensions (Barrett et al., 2015; Ostrom et al., 2015), making them valuable analogues for theoretical refinement.

Participants and Data Collection

Participants were senior decision-makers with strategic oversight and first-hand knowledge of their organisation's transformation trajectory. They included:

- IT Projects Director of a professional services firm
- Managing Director of a software development company
- Digital Transformation Lead of a bank.

Each participant engaged in a semi-structured interview guided by a preliminary protocol (see Appendix A). Interviews lasted 60–90 minutes, were conducted virtually, and were audio-recorded and transcribed in full.

The interview protocol was structured around the five dimensions of resource reconfiguration. Example prompts included:

Human Resources: "How has your workforce evolved in response to digital transformation?"

Finance: "How were investment decisions made, and what metrics were used to evaluate them?"

Digital Technology: "What core digital capabilities or systems have been introduced?"

Internal Operations: "What operational changes have been implemented to support transformation?"

External Relations: "How have your relationships with partners or customers changed as a result of digitalisation?"

This structure balanced theoretical focus with flexibility to accommodate novel insights.

Data Analysis And Emergent Themes from the Pilot

The pilot data was analysed using a Gioia methodology, structured around a three-level coding process whereby first-order concepts were derived inductively using participants' own language and phrasing. These were then grouped into second-order themes based on theoretical interpretation and pattern recognition. Finally, related themes were clustered into the five pre-defined aggregate dimensions.

This approach was informed by an abductive logic (Dubois & Gadde, 2002), supporting iterative refinement between empirical patterns and conceptual categories.

Emergent Themes

While participants' contexts differed, the analysis revealed several cross-cutting themes mapped onto the five dimensions:

- **Human Resources**: Workforce development (e.g., recruiting digital talent, evolving internal roles) and leadership engagement (e.g., articulating a digital vision, maintaining momentum).
- **Finance**: Capital allocation for innovation (e.g., R&D funding) and alignment of financial metrics with digital performance outcomes.
- **Digital Technology**: Capability-building (e.g., new digital channels, infrastructure upgrades) and legacy system integration challenges.

- **Internal Operations**: Process redesign for greater efficiency, agility, and cross-functional coordination.
- **External Relations**: Strategic use of partnerships to fill capability gaps and proactive engagement with industry networks.

These patterns are summarised in Table 5, which illustrates the structured coding progression from first-order quotes to second-order themes and aggregate dimensions.

First-Order Concepts (Representative Quotes)	Second-Order Themes	Aggregate Dimensions
"We began bringing in people with strong digital skills."	Recruiting digital talent to address capability gaps	Human Resources
"It required active leadership to keep things moving and maintain momentum."	Leadership engagement to sustain transformation	Human Resources
"We have made substantial investments in new technologies."	Allocating capital to support digital innovation	Finance
"The expectation was that this would ultimately reduce our costs."	Linking digital investment to financial performance	Finance
"We're engaging customers through different digital channels."	Expanding digital customer touchpoints	Digital Technology
"Moving from the old system came with its challenges."	Overcoming legacy system constraints	Digital Technology
"Client onboarding needs to become much more efficient."	Redesigning processes for efficiency	Internal Operations
"Coordinating across locations was another area where we saw real benefits."	Enhancing cross-location coordination	Internal Operations
"Partnering with them helps us to move faster."	Leveraging ecosystem partners for speed	External Relations
"Being active in industry forums has helped shape our strategy."	Engaging with industry networks to inform strategy	External Relations

Table 5 Pilot Study Code Table Structure

Informing the Main Study

The pilot study was useful for refining the design of the main study in the following ways:

- **Interview protocol**: Questions were made clearer and more specific, especially regarding leadership roles, inter-functional coordination, and digital maturity.

- **Clarifying subdimensions**: The pilot helped articulate subthemes within each domain (e.g., ecosystem strategy under external relations), improving the depth of analysis.
- **Testing the coding structure**: The Gioia-informed coding approach was validated, confirming that the five aggregate dimensions were both analytically robust and empirically grounded.
- **Sharpening theoretical sensitivity**: The abductive process helped establish a systematic method for recognising emergent themes while maintaining alignment with the theoretical framework.

In sum, the pilot strengthened the methodological rigour and empirical focus of the main study, helping ensure that the categories, protocol, and coding framework were fit for purpose.

3.3.2 Longitudinal Case Study

A longitudinal research design is particularly well suited to investigating how organisational change processes unfold over time (Langley et al., 2013). Such a design makes it possible not only to trace the chronological sequence of events but also to identify the mechanisms that drive and sustain transformation. By combining retrospective and real-time perspectives, this study surfaced patterns of capability building, adaptation, and strategic decision-making that would likely remain obscured in a cross-sectional design.

Case Selection

Case sampling in social research can follow either probabilistic or non-probabilistic logics. Probabilistic sampling selects cases randomly from a population to support statistical inference (Silverman, 2010). By contrast, non-probabilistic sampling selects cases based on their relevance to the research aims. While the former is often associated with “objectivity,” it is poorly suited to process-oriented, theory-building research.

A recurring critique of single-case designs is that they offer only “a sample of one” and therefore lack generalizability (Sjoberg et al., 1991). However, as Siggelkow (2007) and

Yin (2003) argue, this critique misunderstands the purpose of case study research: the aim is theoretical generalizability, not statistical inference. In process studies, analytic power derives less from the number of cases than from the number of temporal observations (Langley et al., 2013). This logic underpins the design of the present study and is elaborated further in the data analysis section.

In line with the study's objective of extending existing theory (Eisenhardt, 1989; Eisenhardt & Graebner, 2007), case selection combined purposeful and theoretical sampling. Purposeful sampling identified an information-rich case aligned with the phenomenon of interest (Siggelkow, 2007), while theoretical sampling guided subsequent data collection and iterative analysis (Breckenridge & Jones, 2009).

Case Context

The focal case was a traditional industrial supplier undergoing a major transition from a product-sales model to integrated solutions underpinned by digital services. Founded in the early 1990s as an after-market parts supplier for gas turbines in the marine, aviation, power, and oil and gas sectors, the firm initially focused on distribution and expanded through alliances with major original equipment manufacturers (OEMs). From 2013, under new executive leadership, the company embarked on a staged transformation: introducing MRO services in 2014, expanding into field services from 2018, and launching digital offerings by 2021. By 2020, it had restructured into a holding group with distinct product, field service, and digital service units, and achieved substantial revenue growth – from USD $18 million in 2013 to USD $80 million in 2021.

The case was selected for three reasons:

1. **Alignment with the phenomenon** – The firm was actively navigating the organisational and technological transitions central to digital servitisation.
2. **Rich empirical access** – Unfettered access to leadership, operational staff, and archival material provided the basis for multi-level, longitudinal analysis.
3. **Strategic relevance** – The organisation's gradual, multi-year shift toward digital servitisation created a natural setting for tracing changes in its resource base.

Gaining Access

Initial access was facilitated by the company's chief financial officer (CFO), known to the researcher from prior professional contact, who acted as the organisational "gatekeeper" (Tushman & Katz, 1980). Exploratory calls were used to confirm the case's fit with the research criteria and to establish mutual expectations, including the potential value of reflective feedback for the firm. The organisation's commitment to providing wide-ranging access was a critical enabler of this study, ensuring that a nuanced and longitudinal account of its internal change processes could be captured (Yin, 2003).

3.3.3 Data Collection

Yin (2009) identifies six potential sources of evidence for case study research: documentation, archival records, interviews, direct observations, participant observations, and physical artefacts. No single source is inherently superior; rather, their value lies in the way they complement each other to construct a robust and credible case narrative. Triangulation – the convergence of evidence from multiple sources – is therefore a central principle, enhancing construct validity and strengthening the credibility of findings.

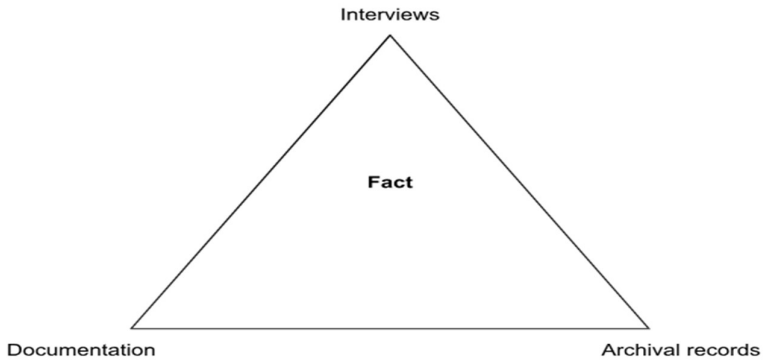

Figure 4 Sources of Evidence

This study relied primarily on three sources of evidence: interviews, internal documentation, and archival records (Figure 4).

Interviews

Interviews were a primary source of evidence, generating rich, contextually grounded data on the firm's digital servitisation trajectory (Eisenhardt & Graebner, 2007).

Following an initial period of familiarisation with the case organisation, theoretical sampling was used to identify informants with first-hand knowledge of key events, strategic decisions, and capability developments.

Phase	Time Period	Focus	Interview Count
Phase 1 - Exploratory	Apr – Oct 2021	Strategic perspective, chronology of change	13
Phase 2 - Explanatory	Nov 2021 – Apr 2022	Operational mechanisms, validation of emerging themes	16

Table 6 Interview Timeline

Data collection was organised in two sequential phases (Table 6), each aligned with the evolving analytical focus:

Phase 1 (exploratory): This phase concentrated on eliciting retrospective accounts and strategic framing from senior executives. Interviews were semi-structured, lasting between 60–90 minutes, and guided by a protocol refined from the pilot study (Appendix B). Questions probed organisational changes, capability development, strategic leadership, external engagement, and transformation challenges. These interviews surfaced key change events and decisions and generated a broad chronology of the firm's transformation.

Phase 2 (explanatory): This phase expanded the perspective by incorporating technical specialists, middle managers, and customer-facing staff alongside senior leaders. The semi-structured protocol (Appendix C) was refined in light of Phase 1 findings, embedding concrete examples of mechanisms identified earlier. Participants were asked to reflect on these examples and to provide additional insights on how strategic intentions were linked to day-to-day operations. This phase deepened the analysis by triangulating perspectives across organisational levels and clarifying the mechanisms through which transformation was enacted.

Across both phases, interviews were semi-structured and adaptive, allowing new lines of enquiry to emerge in response to participant accounts. Follow-up probes were used to clarify discrepancies, surface overlooked details, and explore interconnections. Importantly, interviews were not treated as stand-alone encounters: insights generated in one were tested and elaborated in subsequent discussions, ensuring that

the explanatory phase both deepened the empirical account and strengthened the evolving conceptual framework.

Nature of Engagement	Role	Tenure	Phase	Data Collected (All Semi-Structured)
Key Informant	Chief Executive Officer	9 years	Phase 1	1 interview (1h 30m)
Key Informant	Chief Financial Officer	10 years	Phase 1 & 2	4 interviews (6h 30m)
Key Informant	Chief Development Officer	3 years	Phase 1 & 2	2 interviews (3h)
Key Informant	President, Field Services	1 year	Phase 1 & 2	2 interviews (2h 30m)
Key Informant	Financial Controller	6 years	Phase 1 & 2	3 interviews (5h 30m)
Key Informant	Executive VP, Operations	10 years	Phase 1 & 2	2 interviews (3h)
Key Informant	Director of Sales, APAC	5 years	Phase 1 & 2	2 interviews (3h)
Participant	Head, Digital Services	1 year	Phase 2	1 interview (1 hr)
Participant	Director of Sales, North America	8 years	Phase 2	1 interview (1h 30m)
Participant	Director of Controls, Field Services	2 years	Phase 2	2 interviews (2h 30m)
Participant	Accounting Analyst	15 years	Phase 2	1 interview (1h 30m)
Participant	Director of Operations, Distribution	12 years	Phase 2	1 interview (1h 30m)
Participant	Director of Sales, EMEA	5 years	Phase 2	1 interview (1h 30m)
Participant	Director of Sales, South America	7 years	Phase 2	1 interview (1h 30m)
Participant	Director of Operations, MRO	5 years	Phase 2	1 interview (1h 30m)
Participant	HR Manager	6 years	Phase 2	1 interviews (1h 30m)
Participant	Digital Marketing Strategist	2 years	Phase 2	1 interview (1h 30m)
Participant	IT Manager	6 years	Phase 2	2 interviews (2h 30m)

Table 7 Research Participants

In total, 29 interviews were conducted across the two phases generating more than 44 hours of recorded material. Table 7 summarises the dataset, demonstrating the diversity of roles represented – from senior executives to functional managers and

technical specialists – and highlighting the longitudinal engagement, with several informants interviewed multiple times across phases. This structure ensured both strategic visibility and operational depth, and provided the empirical foundation for the data analysis.

Documentary and Archival Review

Documentary and archival evidence was collected from multiple sources, including the company's SharePoint intranet, public website, and social media pages. Documentation included internal memos, project reports, policy documents, and external media posts that provided insight into ongoing initiatives and strategic communications. Archival records included historical financial statements and organisational charts, which offered longitudinal detail on structural and performance changes.

Type of Document	**Volume (pages)**	**Reason for Inclusion**
Internal Memos	60	Data gathering and confirmatory evidence on change events
Project Documents	28	Data gathering on digital transformation strategy
Financial Reports	62	Data gathering on company's performance and the strategic initiatives and priorities
Organisational Charts	12	Data gathering on management transitions and structural changes
Policy Documents	24	Data gathering on change management policies
Website Media Reports	19	Data gathering and confirmatory evidence on acquisitions, alliances, and product launches

Table 8 Documentary and Archival Review

These documents served two main purposes: first, they provided factual detail and chronological precision about key events such as acquisitions, alliances, and product launches; and second, they were used to corroborate and extend interview accounts. For example, project documents obtained from the intranet were reviewed alongside website reports to validate accounts of new initiatives. Likewise, participants' claims about organisational restructuring were cross-checked with archival organisational

charts and financial reports, ensuring that individual perspectives were supported by independent evidence.

In this way, the documentary evidence enhanced the depth of the case narrative by providing confirmatory and complementary perspectives. Table 8 summarises the types of documents reviewed.

3.3.4 Data Analysis

The approach to data analysis in this study was both iterative and abductive, involving continual movement between empirical observations and relevant theoretical perspectives. This back-and-forth process ensured that emergent insights were firmly anchored in established theory while also grounded in the lived realities of the case organisation. Data analysis was not treated as a linear sequence but as a cyclical practice of comparing, revisiting, and refining interpretations as new evidence came to light.

Although exploratory in orientation, the early identification of aggregate dimensions provided a conceptual scaffold for interpreting the empirical data (Lopez & Willis, 2004). These dimensions acted as sensitising concepts: they directed attention to important areas of change without constraining the emergence of novel insights. In this way, the analysis moved progressively from observations to more abstract theorisation, combining abductive openness with theoretical sensitivity.

Empirical narratives were developed through triangulation – comparing interviews and documentary evidence – and examining patterns across the temporal phases of the study. This helped to capture both the sequencing of change and the mechanisms that shaped it. The resulting process constituted a systematic interpretation of the key events, actions, and decisions that unfolded in the organisation over time.

Embedded Units of Analysis

The case company was the main unit of analysis. Within this, the five dimensions of change described earlier – Human Resources, Finance, Digital Technology, Internal Operations, and External Relations – served as embedded units of analysis. These aggregate dimensions were as such a conceptual scaffold that was abductively enriched through the exploratory interviews.

The longitudinal dataset was further organised into three temporal periods (Langley, 1999), each demarcated by significant junctures in the company's transformation journey.

Pre-digital servitisation (2005-2015): this period covered the early development and consolidation of strategic product resources in the company and was demarcated by its initial steps into maintenance, repair, and overhaul (MRO) services.

First digital servitisation (2015-2018): the period saw marked by the efficiency initiatives under significant market pressures and was demarcated by radical changes in the company's management and structure following the takeover of a new board of investors.

Second digital servitisation (2019-2021): the period saw significant expansion into field and digital services and the introduction of an integrated, solutions proposition.

This structuring resulted in a five-by-three matrix – 15 embedded units of analysis – within which key change events were located. Figure 8 in the findings chapter illustrates this structure.

Analysis proceeded in two main phases that align with the interview stages:

Exploratory Phase (April-October 2021)

This phase focused on capturing senior executives' perspectives on the company's transformation, including detailed accounts of key change events, strategic decisions, and the narratives that shaped the development of service and digital capabilities. Using a snowball sampling approach that began with the CFO as gatekeeper, interviews were conducted with six additional senior leaders, ensuring both strategic visibility and historical depth.

The interview protocol, refined from the initial pilot study (Appendix B), was designed to provide coherence while remaining open to new insights. Questions were grouped into five thematic areas aligned with the study's analytical focus:

First-Order Concepts (Representative Quotes)	Second-Order Themes	Aggregate Dimensions (Change Dimensions)
"When the new leadership came in… the old style of 'just do your own thing' disappeared."	Changing leadership styles	Human Resources
"Of course, everybody who was there before left".	Changing workforce composition	Human Resources
"That was the tension: keeping performance steady but also funding change".	Balancing profitability pressures and investments	Finance
Without that acquisition, we'd have been years behind."	Acquiring service resources	Finance
"The ERP was supposed to help with efficiency."	Using digital tools to drive efficiency	Digital Technology
The customer started asking why other processes couldn't be digital also.	Using digital tools to enhance customer interactions	Digital Technology
"There was definitely a transfer of knowledge, not just technical skills from the engineers."	Integrating service operations	Internal Operations
"We began introducing KPIs because otherwise each regional office just did things their own way."	Introducing performance metrics for alignment	Internal Operations
"That [alliance] deal was transformational… it put us inside the OEM supply chains."	Forging strategic alliances	External Relations
"Our approach back then was: whatever works for the customer, go and do it."	Responding to customer demands	External Relations

Table 9 Exploratory Phase Code Table

1. **Changes in company structure and offerings** – capturing shifts in organisational design, business models, and the evolution of service and digital offerings.

2. **Development of digital and service capabilities** – exploring how the firm invested in and built new capabilities.

3. **Role of strategic leadership** – examining the influence of leadership composition, decision-making, and vision on the transformation trajectory.

4. **Internal operations and external engagement** – exploring changes in processes, coordination mechanisms, and the firm's collaborations with partners and customers.

5. **Transformation challenges and enabling factors** – identifying barriers, tensions, and enablers that shaped the pace and direction of change.

This structure made interviews easier for participants to follow, while ensuring that data collection remained aligned with the resource base dimensions and transformation processes at the heart of the study. At the same time, the protocol was used flexibly, with new lines of enquiry pursued as fresh insights emerged.

All interviews were transcribed verbatim and subjected to open, line-by-line coding to capture first-order concepts in participants' own terms. These were then iteratively grouped into second-order themes through constant comparison and interpretation, guided by relevant theoretical perspectives. Finally, themes were clustered into aggregate dimensions corresponding to the five dimensions of change. This Gioia-informed approach (Gioia et al., 2013) ensured both transparency and rigour, while allowing theoretical sensitivity to guide pattern recognition. Table 9 illustrates this coding structure.

Explanatory Phase (November 2021–April 2022)

The second phase of interviews extended and deepened the insights generated in Phase 1. While the exploratory interviews established a broad chronology of the firm's transformation, Phase 2 clarified the mechanisms driving these changes. This stage connected strategic intent with operational realities by incorporating perspectives from technical specialists, middle managers, and customer-facing staff alongside senior executives. In doing so, the analysis developed a multi-level account of how organisational change was both directed from the top and enacted across the firm.

The Phase 2 interview protocol (Appendix C) built directly on the thematic areas of Phase 1 but was refined in light of emerging analysis. These refinements embedded concrete examples from the earlier findings, ensuring participants were prompted to reflect on specific processes rather than respond only to abstract questions. The revised protocol was structured around five themes:

First-Order Concepts (Representative Quotes)	Second-Order Themes (Change Processes)	Aggregate Dimensions (Mechanisms)
"Developing services is a major board-level priority."	New board resets strategic priorities	TMT Reconfigurations
"Every meeting started with; how were we building the service business."	Bringing services to the centre of strategic decision-making	TMT Reconfigurations
"We set targets to have 40% of our revenue tied to services within five years, which changed how resources were allocated."	Setting financial targets to steer service growth	Goal Setting
"Leadership's decision to prioritise data-driven service models also meant that investments in IT were no longer optional."	Prioritising digital investments to enable service goals	Goal Setting
"We started by formalising reporting lines and documenting roles more clearly."	Formalising structures and accountability	Revising
"The ERP was expanded to cover more processes… this helps us monitor performance more consistently."	Using digital technology to coordinate processes and monitor performance	Revising
"The JV in Brazil allowed us to experiment with customised bundles for that market."	Leveraging alliances for service innovation	Devising
"Everything we did was now measured against how it contributed to building an integrated service model."	Changing Key performance metrics	Devising
"It changed how we worked, how we saw ourselves." (EVP Operations)	Shifting organisational identity	Re-orienting
"That's not just a branding exercise; our structure, our people, our capabilities have had to change with it."	Reframing organisational purpose around solutions	Re-orienting

Table 10 Explanatory Phase Code Table

1. **Types and scale of change** – distinguishing between incremental adjustments, capability-building efforts, and step-changes in strategic direction.
2. **Digital and service capabilities** – examining how digital technologies and service resources were developed in tandem, and how trade-offs were navigated.

3. **Leadership transitions** – investigating how changes in leadership composition shaped strategic priorities.

4. **Internal vs. external focus** – assessing how internal improvements to systems and processes were balanced with external engagement of customers and partners.

5. **Challenges and enablers** – identifying constraints that slowed progress, alongside the practices, partnerships, and leadership actions that enabled transformation.

Through this analysis, the identified processes converged around a set of aggregate change mechanisms (Table 10): TMT reconfigurations, goal setting, revising, devising, and re-orienting. These mechanisms form the building blocks of the process model developed in the findings chapter, which theorises how the firm reconfigured its resource base to pursue digital servitisation.

Link to Theoretical Development

In summary, Phase 1 generated a structured chronology of change events, while Phase 2 illuminated the underlying mechanisms driving them. Together, these phases enabled a movement from rich empirical description to analytical abstraction. By tracing not only *what* happened but also *how* and *why* changes unfolded, the study was able to theorise the firm's transformation through a dynamic capabilities lens. This dual-phase analysis revealed how resources were reconfigured, how managerial actions mediated tensions between continuity and change, and how new service and digital capabilities were progressively orchestrated. The abstracted process model that synthesises these insights is presented in Figure 19 in the findings chapter, offering a theoretically grounded account of how the supplier firm navigates digital servitisation.

3.3.5 Quality and Validity

To conclude this chapter, this section examines the quality and validity criteria considered for this research. All research, including qualitative studies, requires clear and justified research questions that are timely, original, and relevant, and demands that researchers are rigorous in their methods (Kajamaa & Bennett, 2020). However, the concepts of validity and reliability have their origins in the natural sciences (Ritchie

& Lewis, 2003), and some authors urge caution in applying them uncritically to qualitative research. Miles & Huberman (1994), for example, argue that issues of quality in qualitative studies deserve attention on the researcher's own terms.

The criteria adopted here follow a "critical realist" perspective, drawing on Miles & Huberman (1994) and Yin (2009): internal validity/credibility, external validity/transferability, reliability/dependability, and objectivity/confirmability.

Internal Validity/Credibility

The credibility of the research refers to its trustworthiness. The research must demonstrate that the results are believable. The credibility of this research is underpinned by the rigor of the data-collection procedures and transparency in the presentation of the findings. This research utilised triangulation (Yin, 2013) to combine multiple sources of evidence and validate the data collected in this study. Interviews were combined with document analysis to construct a picture of how the transition unfolded. Secondly, the longitudinal approach enhanced the study's internal validity by ensuring that key events are accurately placed in sequence, facilitating the detection of possible cause-effect relationships between them (Leonard-Barton, 1990). The chronological structure of the data enabled the researcher to construct a clear chain of evidence and clarifies the steps involved in the knowledge building process. Finally, the research elicited the perspectives of key informants on the observations made to validate emergent findings.

External Validity/Transferability

This refers to the extent to which the findings can be generalized and applied to other contexts. The research ensures transferability in two ways. Firstly, the research design, data collection procedures, and data analysis were conducted in a systematic and transparent manner, as outlined in this chapter. The detailed explanation of the methodological steps enables future researchers to replicate or adapt the study to their contexts. By ensuring consistency and rigor in the overall research process, the study increased the likelihood that its findings can be applicable in other settings or industries facing similar challenges. Second, It clearly establishes the context of digital servitisation that was examined, allowing for theoretical generalisation to be made, and thus increasing the transferability of the findings to similar contexts. The detailed

descriptions of the organisation, its challenges, and the processes involved in its transformation provide a rich empirical basis that other researchers or practitioners can use to assess the applicability of the findings in their own contexts. Consequently, findings from this research can, with due consideration of the contextual variables identified, be transferred over to new and existing studies.

Reliability and Dependability

According to Koch (1994) the key to the dependability of qualitative research is in illustrating clearly how the research arrived at their interpretation of the results. Firstly, this research clearly records key decisions which were made during the research process and how this shaped the methodological orientation of the researcher and the design of the case study. The two stages of the research described earlier outlines how the researcher explored the research questions and the decision-making behind data-collection procedures. The discussion on the data analysis demonstrates how raw data was interpreted, initially through coding to establish early analytic themes, and then through the use of a narrative account, bracketed into phases to help draw inferences about how themes and events were interconnected, before using the dynamic capability theoretical lens to theorize the observations made. By presenting the research in this way, the researcher aims to make it easier for subsequent researchers to repeat the methods implemented in this study.

Confirmability/Objectivity

Objectivity refers to the link between the data collected and the research findings. To address the objectivity criteria in the study, clear descriptions have been presented of the research methods that were employed. The researcher also kept an audit trail of all the activities that were undertaken throughout the research. Nevertheless, as has been made explicit, both the researcher and key informants were actively involved in the interpretation and analysis of the data collected. The researcher recognizes the dangers of subjective bias in such engagements and endeavoured to mitigate this issue by reflexively maintaining some distance from the research process. For instance, it has been explained how the findings that emerged were often reviewed by key informants within the case organisation to check whether the researcher's own interpretations of developments coincided with the participants' perceptions of these

developments. Furthermore, the presentation of the data creates transparency around how the data was collected and analysed.

Criteria	What it means	How to Recognise it	Effort Made here
Credibility	The research findings are plausible and trustworthy	There is alignment between theory, research question, data collection, analysis and results. Sampling strategy, the depth and volume of data, and the analytical steps taken, are appropriate within that framework	Duly Considered
Dependability	The extent to which the research could be replicated in similar conditions	There is sufficient information provided such that another researcher could follow the same procedural steps, albeit possibly reaching different conclusions	Duly Considered
Confirmability	That there is a clear link or relationship between the data and the findings	The researchers show how they made their findings through detailed descriptions and the use of quotes	Duly Considered
Transferability	Findings may be transferred to another setting, context or group	Detailed description of the context in which the research was performed and how this shaped the findings	Duly Considered
Reflexibility	A continual process of engaging with and articulating the place of the researcher and the context of the study	Explanations of how reflexivity was embedded and supported in the research process	Duly Considered

Table 11 Quality Considerations

Similar to Yin (2009) and Miles & Huberman, (1994) Kajamaa & Bennett (2020) suggest a checklist that can be used to assess the trustworthiness of the methodology and findings. The criteria in their checklist include: credibility, dependability, confirmability, transferability and reflexibility. While many researchers oppose the use of such tools and suggest that they may even be counterproductive if used uncritically and without

careful consideration of the research context, they can be useful guides for the person conducting the research and were used in that sense here (Table 11).

3.3.6 Limitations

The research process was highly iterative, involving continuous refinement from the study's design to data collection, triangulation of evidence during analysis, and the eventual writing up of the case report. This required the researcher to adopt a flexible, dynamic approach to handling both data and theory.

The main challenge lay in managing the extensive empirical material generated across multiple levels of analysis. Presenting this in a structured yet meaningful way, while remaining true to the theoretical framing, demanded careful distillation. As with all process studies, the findings inevitably simplify the complexity of organisational reality, but this abstraction was necessary to generate theoretically useful insights.

To address this challenge, the study foregrounded observations most pertinent to the phenomenon of interest. By balancing empirical richness with theoretical abstraction, it identified the key mechanisms of change while remaining grounded in the realities of the case organisation. In doing so, the research offers insights that supplier firms may find useful for navigating digital servitisation, while acknowledging the limitations inherent in studying complex organisational change processes.

Chapter 4: Findings

4.1 Introduction

This chapter presents the empirical findings from the longitudinal case study of a mid-sized parts and component supplier in the global gas turbine industry. The findings are structured to address the three research objectives:

- **RO1**: to trace the process of digital servitisation as it unfolds in a supplier firm;
- **RO2**: to explicate the mechanisms driving changes in the firm's resource base;
- **RO3**: to generate insights with practical relevance for supplier firms.

The analysis draws on senior managers' retrospective account together with explanatory insights from operational managers and technical specialists. This combination makes it possible to show not only what changes took place, but also why and how they occurred. It is presented in two parts.

Part 1 – Content and Context of Transformation. This section charts the company's evolution from a traditional parts supplier to a provider of integrated solutions. The account is organised across three temporal periods identified as the pre-digital servitisation, first digital servitisation, and second digital servitisation phases. The analysis highlights how the firm mobilised and reconfigured its resource base across these phases.

Part 2 – Process Mechanisms. This section moves from describing what changed to analysing *how* change was accomplished. The analysis here followed an abductive logic, iterating between empirical material and theoretical concepts in order to refine the understanding of underlying mechanisms. Using the dynamic capabilities lens, it examines the specific processes that enabled the company to identify new service and digital opportunities, mobilise resources to pursue them, and progressively reconfigure its resource base.

4.2 Part 1 Analysis: Context & Content of Transformation

Pettigrew et al. (2001) observe that "if the change process is the stream of analysis, the terrain around the stream that shapes the field of events, and is in turn shaped by them, is a necessary part of the investigation." Consistent with this perspective, Part 1 reconstructs the case company's journey toward providing integrated solutions, situating key change events within the internal and external contexts that both shaped and were shaped by them. The analysis highlights the evolution of the company's resource base across this trajectory, paying attention to shifts in the human, financial, digital, operational, and external relational resource domains.

4.2.1 Overview of The Transition Toward Integration Solutions

The case company, hereafter referred to as the Company, is a holding group comprising six semi-autonomous divisions within the power generation sector. These include a U.S.-based parts distributorship serving as headquarters, four field service divisions specialising in mechanical, electrical, and control systems for gas turbines, and a digital services division focused on cybersecurity solutions. As of 2022, the Company employed 162 staff and reported revenues of approximately $80 million for the 2021 financial year.

Founded in the early 1990s as a regional parts supplier, the Company reached a defining milestone in 2005 with the signing of an exclusive distributorship agreement with a Fortune 500 manufacturer. This alliance expanded the Company's product access and, more importantly, conferred legitimacy and reputation that helped position it within global OEM supply chains. As the CFO reflected in an interview:

"*The [alliance] deal was transformational… it put us inside the OEM supply chains and gave us a credibility we couldn't have built on our own."* (CFO)

Building on this and subsequent alliances, the Company grew steadily while consolidating its reputation as a trusted parts supplier to both OEMs and end-users in the global gas turbine market. Internal developments soon followed, including geographic expansion in 2006, a private equity buyout in 2009, and the appointment of a new CEO in 2013. Under this new leadership, the Company began building service

capabilities, first through a partnership with a component MRO service provider in 2014 and then through the acquisition of that partner in 2015.

Between 2016 and 2018, the Company faced a downturn in the global market. During this period, it intensified efficiency initiatives and launched its first customised bundled offering for end-users. These measures, however, had only limited impact on financial performance. The outcomes appear to have fallen short of the private equity owners' expectations, leading them to sell their full stake in the Company in 2017.

From 2018 onwards, a new ownership group introduced more ambitious changes. These included the creation of a holding structure, new leadership appointments, and a sequence of acquisitions in both field services and digital technology. By 2021, the Company had repositioned itself as a provider of integrated aftermarket services and solutions, with services accounting for more than 60% of revenues. As the CEO reflected:

"We've moved from being a parts house to a solutions partner… That's not just a branding exercise; our structure, our people, our capabilities have had to change with it." (CEO)

This study interprets this trajectory not simply as a linear sequence of strategic moves but as a dynamic process of resource accumulation, consolidation and reconfiguration. For analytical clarity, the Company's transformation is organised into three temporal phases:

- **Pre-digital servitisation (2005–2015):** expansion of the product-based offerings and establishment of its early service and digital foundations.
- **First digital servitisation (2016–2018):** development of intermediate service offerings, efficiency-oriented initiatives, and selective capability development.
- **Second digital servitisation (2019–2021):** expansion into field and digital service offerings and organisational reorientation toward service-led growth.

The sections that follow examine each phase in detail, situating key developments within the organisational and industry contexts that shaped them (see Figure 5).

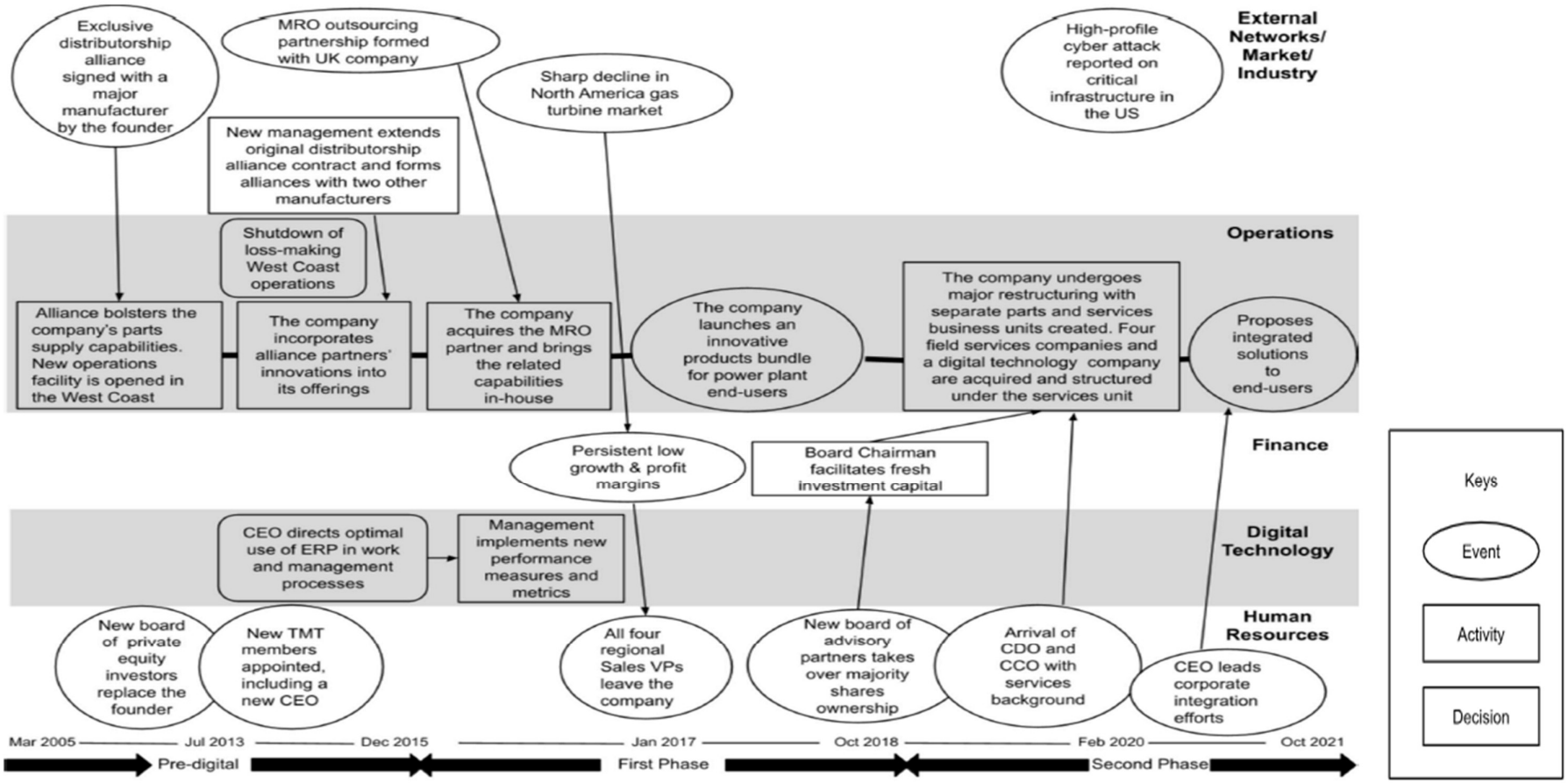

Figure 5 Flowchart of Key Events, Activities and Decisions

4.2.2 Pre-Digital Servitisation Phase (2005-2015)

The gas turbine aftermarket is heavily dominated by original equipment manufacturers (OEMs) such as General Electric (GE). Within this context, the distributorship alliance negotiated by the Company's founder with a Fortune 500 OEM in March 2005 marked an inflection point in its history as an independent parts distributor. The agreement provided tangible resources, including exclusive product access, as well as intangible benefits of legitimacy and reputation, which underpinned the Company's early growth.

Following this milestone, the Company experienced significant management transitions, beginning with its sale to a private equity firm in 2009. Under the new ownership, a process of professionalisation unfolded, culminating in the appointment of a new CEO in 2013. This marked a shift away from the founder-led, entrepreneurial model toward a more mechanistic structure emphasising accountability, role specialisation, and performance measurement.

In parallel, the Company began to extend its scope of activities into services. In 2015, it acquired a component maintenance, repair, and overhaul (MRO) provider, laying the foundations for this development. That same year, the Company's CEO also mandated fuller use of the enterprise resource planning (ERP) system for coordinating its management and operational processes, which reflected initial attempts to embed digital infrastructure.

Positioning For Product-led Growth

The exclusive distributorship alliance which the Company's founder secured with a Fortune 500 parts manufacturer in March 2005 marked a strategic inflection point. Beyond immediate commercial success, the agreement endowed the Company with both tangible and intangible resources that redefined its competitive positioning and gave it credibility in an industry dominated by larger incumbents.

Tangible benefits came in the form of a broadened product portfolio and the introduction of new operational routines aligned with OEM standards. Compliance with these routines elevated the Company's internal practices, forcing it to operate with a degree of professionalism uncommon among independent distributors of its size. As the EVP of Operations reflected:

"Working within the OEM's systems forced us to step up… Their requirements around documentation and compliance – those became our standards too." (EVP of Operations)

Alongside these operational shifts, the alliance also conferred intangible benefits. By associating with an established global brand, the Company gained legitimacy that reshaped how customers perceived it. As the Director of Sales for North America observed:

"After that, customers started treating us differently. They knew we had OEM backing, so we weren't just a reseller anymore – we were a supplier they could rely on." (Director of Sales, North America)

The commercial impact was equally significant. Archival financial reports indicated that in the five years following the alliance, annual revenues grew by more than 120%, while the share of revenue from OEM customers with long-term service contracts rose from 7% in 2005 to 46% by 2015. The alliance thus provided not only expanded market access but also embedded the Company more firmly in the long-term maintenance cycles of OEM customers.

In May 2014, the scope of the distributorship contract was renewed and expanded to cover additional product categories. These renewals were more than commercial milestones: they served as structured review processes through which the Company absorbed OEM expectations and anticipated technology trajectories. As the EVP of Operations explained:

"Each renewal gave us visibility into the OEM's forward plans – what was coming down the pipeline, where standards were tightening, and how technologies were evolving." (EVP, Operations)

In 2015, the Company secured two further manufacturer alliances, consolidating the parts portfolio and strengthening its relational capital. Archived website reports reflected a broader pattern of alliance-based growth over the Company's trajectory, with eight OEM alliances prominently featured in the Company's branding.

This growth underscored not only market traction but also the accumulation of relational capital – intangible resources rooted in trust, credibility, and tacit customer

knowledge – with major industry OEMs. Customer relationships were especially critical in the power generation sector, where long-term confidence determined supplier selection. As the APAC Regional Sales Director explained:

"Being there in person mattered; it was how customers judged whether or not they could deal with you." (Director of Sales, APAC)

Archival organisational charts showed that during this period, the executive team remained organic and sales-oriented, led by the founder and supported by three Sales Vice Presidents (East Coast, West Coast, and Global). The Chief Financial Officer (CFO) noted that these early executives were seasoned veterans with deep industry networks, most having joined from large corporations. This reliance on personal ties, rather than formal systems, was instrumental in securing alliances and growing revenues.

In sum, the Company's early growth was anchored in OEM alliances that expanded the product base and conferred legitimacy, while trust and personal networks supplied the relational capital it leveraged to compete. Yet because these resources were tied to individuals rather than institutionalised systems, the foundations of growth were fragile. This fragility foreshadowed the tensions and vulnerabilities that would surface during later management transitions and restructurings as the Company sought to scale and professionalise.

Shifting To Mechanistic Structures

Another major turning point came in 2009, when the Company was acquired by a private equity firm following the sudden death of its founder. This change initiated a process of professionalisation that reshaped both the leadership team and the wider workforce. Between 2010 and 2013, the new owners appointed a Chief Financial Officer, a Vice President of Operations, and eventually a Chief Executive Officer, each with substantial senior management experience. Unlike the founder-era leadership – dominated by seasoned sales executives with strong industry ties – the new team brought expertise in finance, operations, and governance.

As the Financial Controller explained:

"When the new leadership came in, they wanted structure and accountability… The old

style of 'just do your own thing' disappeared… People needed to justify what they were doing to contribute to success." (Financial Controller)

An accounting analyst, who had been with the Company for more than 15 years, described the contrast more starkly:

"I mean, things were more flexible then [under the previous management], and people had to wear many hats. So, like I said, there was no elaborate planning, there was no trajectory… They [the previous management] were more invested in their employees, and they definitely could see talent and wanted to reward it…. So, I received several raises outside the norm…. They were good to me.... The new team was more interested in results than people. It was about having the 'right person for the job' rather than growing your own talent… Of course, everybody who was there before left; they kind of were made to feel unwelcome and were either bought out or left. It was a very different organisation." (Accounting Analyst)

The Director of Sales for North America similarly reported that the entire sales team in his region was replaced during this period:

"Essentially, what happened was, these people had been hired on for maybe a year and a half, perhaps two years. And then when the review was done of what that meant in terms of success, it was very limited." (Director of Sales, North America)

This turnover reflected a broader reconfiguration of human resources: from reliance on individual networks and tenure-based advancement to performance-oriented recruitment and role-specific expertise. Archived organisational charts from 2009–2015 show that new functional layers were added, reporting lines clarified, and middle-management roles created.

The management also began introducing performance metrics to reinforce the mechanistic form of organisation. As the IT Manager explained:

"We began introducing KPIs because otherwise each regional office just did things their own way. There needs to be common language for success… The metrics forced alignment and comparability across regions, so for the first time we could see clearly who was performing well and where improvements were needed." (IT Manager)

Together, these changes marked the onset of a more systematic approach to managing the Company's operations. Through formalisation, layered reporting, and KPIs, the Company's management embedded a discipline of continuous improvement that helped stabilise it's routines and, more broadly, resource base.

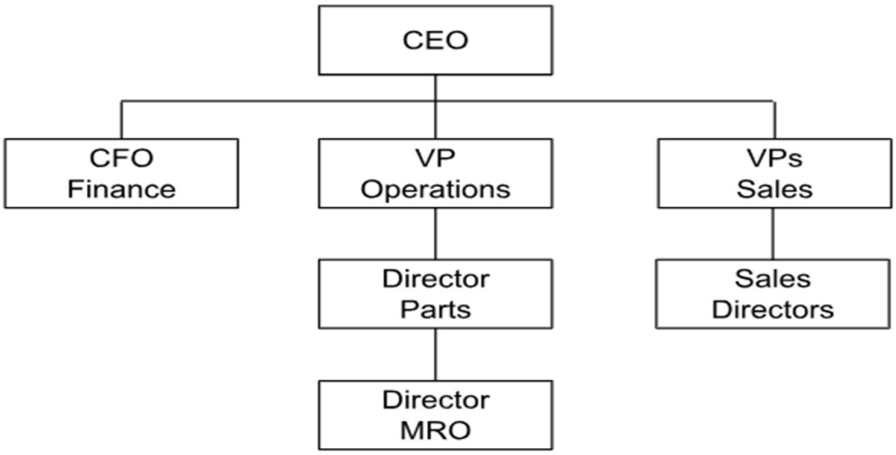

Figure 6 Organisational structure post-integration of MRO service unit

Developing Service and Digital Foundations

From 2014 onwards, the Company began to extend its activities beyond parts distribution, gradually laying the foundations for service provision and digital integration.

Reviewed website media reports indicated that in November 2014, the Company entered into an outsourcing partnership with a UK-based provider of maintenance, repair, and overhaul (MRO) services for gas turbine components. This provided the Company with access to specialised technical knowledge, complementing its existing parts distribution activities. As the CFO explained:

"At that stage we were signalling to customers that we were a comprehensive provider. Partnering with an experienced engineering company gave us that leverage." (CFO)

Within a year, the relationship developed into the full acquisition of the MRO partner in October 2015. The CFO further noted:

"Without that acquisition, we'd have been years behind. In terms of growth, the overall value was within the customer base, which, when we looked at the data, there was clear potential… it gave us a platform we couldn't have created at the pace the market required." (CFO)

The engineering and management team from the acquired firm was relocated to the Company's U.S. headquarters where it was restructured as a dedicated MRO department within the distributorship operations. The EVP of Operations reflected on some of the intangible resources that were absorbed from the acquisition:
"There was definitely a transfer of knowledge… not just the technical experience of engineers, but also the management experience in planning, scheduling, and quality systems needed to run the MRO operation effectively." (EVP of Operations)

These moves marked the Company's first deliberate step into services, embedding component-level MRO expertise alongside its established parts distribution operations.

During this period, the Company also began to strengthen its digital foundations. The accounting analyst noted that although an enterprise resource planning (ERP) system had been in place for some time, its use had been limited and fragmented. She said:

"[The ERP] had tools that nobody was using… I taught myself how to do things. It wasn't built into the way the company worked." (Accounting Analyst)

Archived policy documents show that in December 2015, the CEO issued a directive mandating fuller utilisation of the ERP system across business and management processes. This directive reflected the Company's first formal attempt to standardise processes through digital systems. It read:

"…we shall discontinue the practice of creating external workarounds… the point of having an ERP is to build our processes and management around it, to maximise the use of data contained within it." (CEO directive, 2015)

Together, the MRO acquisition and ERP directive signalled the emergence of a broader resource base – integrating service capabilities with distribution and embedding digital tools into operational routines. This marked the close of the pre-digital servitisation phase. The key events and timelines are shown in Figure 7.

Pre-digital Phase

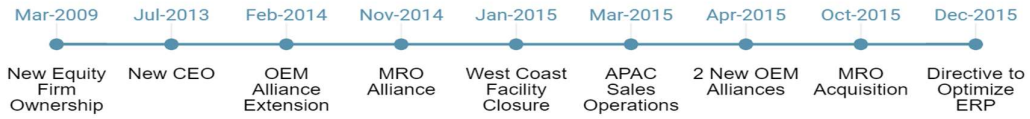

Figure 7 Timeline of Key Events in Pre-Digital Servitisation Phase

Summary Observations on Change Dimensions: Pre-Digital Servitisation

- **Human Resources:** The founder-led, relationship-driven sales force was gradually replaced by a professionalised workforce under private equity ownership. Long-serving staff left or were replaced as recruitment shifted toward role-specific expertise and performance orientation.
- **Finance:** The 2005 OEM alliance drove revenue growth of more than 120% in five years and shifted the revenue base toward OEM customers (46% by 2015). The 2009 private equity buyout reoriented financial priorities toward efficiency and accountability, with new financial controls and performance metrics introduced.
- **Digital Technology:** An enterprise resource planning (ERP) system was in place but its use was limited and fragmented. In 2015, the CEO mandated fuller adoption, marking the first deliberate attempt to fully embed digital systems into its operations.
- **Internal Operations:** The organisation shifted from flexible, entrepreneurial routines toward mechanistic structures. KPIs, reporting lines, and middle-management roles were introduced to standardise practices and enforce accountability.
- **External Relations:** Exclusive distributorship alliances with multiple OEMs expanded the product base and enhanced the Company's legitimacy. The 2014 outsourcing partnership and subsequent acquisition of a component-level MRO provider provided the Company's route into service delivery.

4.2.3 First Digital Servitisation Phase (2016 - 2018)

Between 2016 and 2018, the Company entered what is described here as its first digital servitisation phase. This period was marked by turbulence in the industrial gas turbine sector, particularly in North America, which contracted by nearly 30% (see Figure 8). The downturn was attributed to shifts in electricity demand alongside broader regulatory pressures associated with the carbon transition (Fortune Business Insights, 2018).

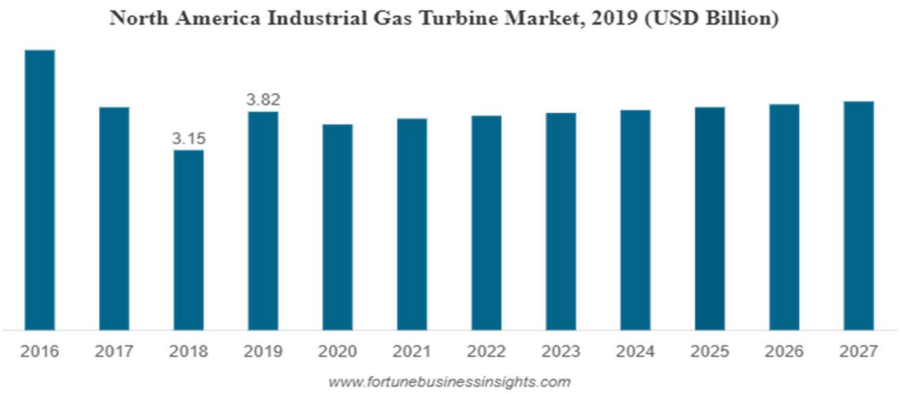

Figure 8 North America Industrial Gas Turbine Market

Internally, financial pressures mounted as revenue growth remained weak and operating costs approached 80% of revenue (see Table 11). In response, the Company's management intensified efforts to improve both operational efficiency and customer engagement, including by optimizing use of its enterprise system. Then in 2017, it took a first step toward addressing customers' operational challenges directly by introducing an integrated bundled offering. This trajectory was further reinforced by ownership and leadership changes in late 2017–2018, as services were subsequently elevated from a peripheral activity to a central growth priority in the Company's decision-making processes.

Driving Efficiency Through Digitalisation

Between 2016 and 2018, the Company's management focus turned inward, toward efficiency, with operating costs approaching 80% of revenue (see Table 12).

Year	2013	2014	2015	2016	2017	2018
Revenue (million $)	18	20	18	19	21	22
Operating Costs (million $)	13	15	14	16	14	12

Table 12 Revenue and Operating costs 2013 to 2018

Central to this efficiency drive was the enterprise resource planning (ERP) system. In line with the CEO's directive, management sought to establish ERP as the digital backbone of operations. Project documents from 2016–2017 listed ERP optimisation as a strategic priority, highlighting the automation of transactional processes, the streamlining of order handling, and the introduction of dashboards and performance indicators to enable comparability across regions. As the Financial Controller pointed out:

"Our aim was to have as many tasks as possible automated. So many of these processes are repetitive… everything up to invoice review should be done automatically." (Financial Controller)

The Director of Sales for APAC described how the introduction of KPIs within the ERP system reshaped sales routines:

"The KPIs showed how long quotes were taking, how many were actually converting… there was visibility, and that creates pressure because everyone could see them. Managers had to start acting based on the numbers." (Director of Sales, APAC)

The efficiency drive was as much cultural as operational. Employees whose responsibilities had centred on routine data entry were now expected to contribute to analysis and decision support. As the Director of Operations observed:

"There were individuals who had built their roles around data entry and filling in blanks. It was made clear they either had to change their mindset, becoming active contributors to analysis and decision-making, or risk being left behind." (Director of Operations, Distribution)

This expectation was reinforced from the top. In a 2017 memo, the CEO stressed the need for the Company to become a "data-driven company," rather than remain a "quoting company." He reminded sales teams that every quotation represented a

decision point with direct implications for profitability:

"Each quote you produce is a moment of control over profitability. You are not islands; every action must connect back to the wider business." (CEO memo, 2017)

The Company also sought to modernise its customer-facing digital presence. In early 2017, it launched a new website with advanced e-commerce features to complement its bundled product offering. Sales teams began adopting mobile devices and social media tools for faster responses and closer engagement with customers. As the Director of Sales for EMEA explained:

"Mobile access to customer histories and product data changed how we worked. It meant we could respond faster, and build closer relationships by being part of the customer's journey, not just turning up when they wanted something." (Director of Sales, EMEA)

Other digital initiatives were customer-driven. In 2016, the Company adopted Electronic Data Interchange (EDI) to streamline ordering and invoicing for its OEM customers. While this improved efficiency for OEM accounts, it also created new tensions. As the Director of Operations noted:

"They wanted us to streamline their process… but many of our other customers were not using EDI, so we had to manage two processes, one for EDI customers and one for the rest of the world." (Director of Operations, Distribution)

This dual-track system illustrated a recurring challenge: balancing efficiency with responsiveness to diverse customer requirements. As the Director of Sales for APAC added:

"Once we began sending EDI, the customer started asking why other processes couldn't be digital also. That pushed us further down the line." (Director of Sales, APAC)

Taken together, these initiatives reflected an emerging shift toward a digital-oriented culture by 2017. KPIs embedded in ERP were being used to drive decision-making, while manual data entry tasks were increasingly automated. Internal communications also reflected stronger language of efficiency and accountability. These changes were, however, accompanied by tensions. As the Director of Operations reflected:

"The ERP was supposed to help with efficiency, though for many it felt more like

oversight than support because it was a new way of working." (Director of Operations, Distribution)

Nevertheless, by 2018 the Company had consolidated ERP as its digital foundation while establishing more consistent performance across its operations.

Developing Customized Solutions

In early 2017, the Company launched a customisable bundled package for power plant end-users, designed as an all-in-one solution to simplify parts sourcing during outage operations. This represented a shift toward value-added services that addressed customers' operational needs more directly. As the CFO explained:
"It came from being there with the customer, seeing their pain point, and asking: how can we solve this more efficiently? The bundle was our way of saying: we'll take the sourcing headache away and save you the cost of holding inventory." (CFO)

Although digitally linked to the Company's ERP, delivering the bundle required the customer service team to adopt new routines. These included monitoring and replenishing inventory remotely after shipment to customer sites. As the APAC Sales Director explained:
"Normally, once the parts left our warehouse, our job was done. With the bundle, we stay engaged throughout the outage, which means being part of the customer's process. We are continuously tracking the stock levels and making sure nothing runs out." (Director of Sales, APAC)

These practices also involved analysing customers' consumption data to anticipate future needs and adjust the Company's own sourcing strategies more proactively.

The launch of the bundle was facilitated by organisational changes made in 2016, when the Company removed its centralised layer of Sales Vice Presidents and devolved authority to regional Directors of Sales. These directors, now reporting directly to the CEO, were accountable for shaping local strategies. As the APAC Sales Director recalled:
"In the old structure, there was too much dependency on the hierarchy… The weakness was a lack of understanding of the marketplace, which meant there was little more

than just a generic strategic plan. Now the regions have more accountability, and they are also responding better to the customer." (Director of Sales, APAC)

This decentralisation placed regional leaders closer to customers, strengthening the Company's ability to sense opportunities and translate them into concrete offerings such as the bundled package. In effect, it created a feedback loop in which operational challenges identified in the field were escalated directly to top management for action.

Not all identified opportunities were pursued, however. The MRO Director recalled that in 2016 the Company had explored a potential collaboration with a major aerospace contractor on a recycling service solution, but the initiative was deferred: *"We had the technical know-how; the challenge was in finding a clear need and a ready market, but also having the resources to sustain the time it takes to get from concept to implementation. We were not prepared to wait it out."* (MRO Director)

The contrast between the bundled solution and the abandoned recycling project reflected an underlying tension. The Company was beginning to reposition itself around services but remained bound by financial discipline and the need to prioritise near-term returns over more ambitious initiatives. As the Financial Controller put it: *"We were under constant pressure to keep margins steady while also funding change. That was the tension: delivering short-term results without losing sight of the long-term shift into services."* (Financial Controller)

Shifting Strategic Direction

Despite efforts to control costs and pursue innovation, revenue growth remained slow and margins thin (see Table 12). With operating expenses approaching 80% of revenue, the Company's financial performance appeared increasingly unsatisfactory to its private equity backers. Archival records show that in October 2017 they sold their stake in full, ending nearly a decade of control and closing a period that had prioritised financial discipline over strategic renewal.

The buyers were a new investment group with prior exposure to the aerospace, defence, and industrial power sectors. Unlike the outgoing owners, the incoming group described themselves as "entrepreneurs" as much as financiers. In a statement published on the Company's website, the new Chairman remarked:

"We're not just financiers; we're entrepreneurs who take a long-term growth outlook. We look to grow capabilities, not just cut costs." (Board Chairman)

This outlook quickly translated into concrete strategic targets. The CFO recalled how the new board reframed priorities:

"The goal was 40% of revenue from services within five years. Once that target was on the table, it meant a different way of thinking about the business and where to put resources." (CFO)

Leadership appointments reinforced this new direction. A Chief Development Officer (CDO) was added to the executive team in late 2018, tasked with driving innovation and developing new service opportunities. For employees, this appointment was a visible signal that innovation was no longer peripheral but a core, board-sponsored priority. As the HR Manager reflected:

"The Company needed new skills for the future. People could see that developing services and new capabilities mattered for their careers, not just keeping the old routines going." (HR Manager)

The repositioning was also communicated externally. In 2018, the Company updated its mission statement to emphasise "simplifying the complex world of industrial gas turbines" and becoming "an integral part of customers' operations." This marked a deliberate departure from its historic role as a distributor and redefined its identity around integrated service solutions.

Internally, senior managers regarded this moment as pivotal. The CDO explained how the reframing of strategy elevated services to the centre of board-level discussions:

"What changed after 2018 was that services weren't a side piece anymore – they became the anchor of every board discussion. Once services took centre stage, the whole organisation had to adjust its mindset and priorities." (CDO)

By the close of 2018, the Company's revenue mix had not yet changed substantially. However, its goals, leadership composition, and governance structures were now aligned around service-led growth, creating the conditions for the more radical transformations that followed. The key events and timelines for this phase are shown in Figure 9.

Figure 9 Timeline of Key Events in First Digital Servitisation Phase

Summary Observations on Change Dimensions

- **Human Resources:** Regional Directors of Sales gained greater autonomy after the removal of centralised VP roles, bringing them closer to customers. Employees were increasingly expected to pivot from transactional tasks, such as data entry, toward analytical and profitability-focused responsibilities, reflecting the CEO's emphasis on building a "data-driven company."

- **Finance:** Revenue growth remained sluggish (<3% annually) while margins stayed thin, sustaining financial pressures. The 2017 change in ownership reset expectations, with new investors setting a target of 40% of revenue from services within five years.

- **Digital Technology:** ERP use expanded, with automation, dashboards, and KPIs introduced across business units. These tools promoted a more disciplined, performance-driven culture, though tensions emerged between efficiency gains and the need for customer-specific responsiveness (e.g., duplicate EDI processes).

- **Internal Operations:** Processes became more standardised and transparent, with ERP-based dashboards and cross-regional KPIs used to enforce accountability. Decentralisation of sales structures created new feedback loops, allowing regional insights to be integrated into innovation efforts.

- **External Relations:** The 2017 bundled offering for power plant end-users marked the Company's first steps toward integrated solution, embedding it more deeply into customer operations.

4.2.4 Second Digital Servitisation Phase (2019-2021)

Between 2019 and 2021, the Company entered what is here described as its second digital servitisation phase. This period marked a decisive shift toward advanced services and integrated solutions. The trajectory was shaped by three major developments: an ambitious sequence of acquisitions in field services and digital technology, the emergence of a hybrid model in the organisational structure, and a decisive reorientation as services became the dominant source of revenue.

Externally, the industry context reinforced the urgency of this transformation. Demand for integrated aftermarket support was rising as turbine operators sought single providers capable of delivering parts, component repair, field maintenance, and digital solutions under a single contract. At the same time, widely reported cyberattacks on critical infrastructure in 2021 highlighted vulnerabilities in digitalised energy systems, elevating cybersecurity from a peripheral concern to a board-level priority across the industry.

Internally, the Company responded by rapidly accumulating service and digital resources. From late 2018 through 2021, it acquired four field service firms and a digital technology start-up, while redesigning its organisational model to coordinate the increasingly complex group. Archival financial reports show that by 2021, services accounted for 64% of total revenue, surpassing parts for the first time in the Company's history. As the CFO reflected:
"It's not only the percentages on a report because when your revenue base is majority services, it changes how you prioritise investments. Also, how do we think like a service company and how do our customers see us?" (CFO)

In combination, these developments represented the Company's redirection from being primarily a parts distributor to becoming an integrated solutions provider, capable of addressing the technical, operational, and digital dimensions of industrial gas and steam engine applications.

Expanding Service and Digital Resources

Between 2018 and 2021, the Company moved decisively beyond distribution and component-level MRO by pursuing a series of acquisitions that expanded its technical

scope and positioned it for more advanced service delivery. Each acquisition extended the Company's expertise, geographic reach, and legitimacy in markets where it had previously played only a marginal role.

The first move came in late 2018 with the acquisition of a specialised offshore turbine maintenance firm. This brought in expertise in aeroderivative turbines for oil and gas customers, a niche that the Company had struggled to access on its own. As the founder of the acquired firm, now EVP of Field Services, explained:

"*We were niche players and on our own we could only go so far. Growth requires scale and capital and joining forces gave us that. At the same time, our capabilities filled gaps they couldn't cover before. It was about combining strengths to build something broader*." (EVP, Field Services)

In early 2019, the Company strengthened its portfolio further by acquiring an established controls business with proprietary retrofit technology. This gave it a foothold in modernising manual control systems and positioned it to offer digital upgrades, addressing a growing customer need for retrofits and system reliability. Two further acquisitions in mid and late 2021 expanded its capabilities into instrumentation, electrical systems, and controls MRO. These moves also extended the Company's market reach in the Middle East and Asia, where one of the acquisitions was a dominant regional player (Company reports, 2021). As the Executive VP for Services recalled:

"*By bringing these capabilities into the group, we could support much more of the plant lifecycle. We had to learn how to integrate them all into one organisation. That breadth is what gives you credibility with customers; by showing you can deliver joined-up support."* (Executive VP, Services)

Alongside these acquisitions, the Company deepened its role within OEM ecosystems. In October 2020, it expanded an existing alliance into a co-distribution and joint aftermarket support agreement, signalling a shift in positioning: no longer only a competitor in spare parts, the Company was also a partner in lifecycle service delivery.

A parallel development was the Company's entry into digital services. In late 2021, against the backdrop of a high-profile cyberattack on critical infrastructure, the

Company acquired a cybersecurity start-up with a patented encryption solution tailored for industrial power applications. The founder of the start-up, now Head of Digital Services, described the opportunity:

"*Cybersecurity wasn't even part of the conversation in this industry five years ago. Now, every customer wants to know how they can protect their assets… it was our entry point into a space where demand was already growing."* (Head of Digital Services)

By 2021, these acquisitions had created more than an expanded portfolio. They marked the absorption of knowledge from highly specialised dimensions – offshore field maintenance, digital retrofits, and cybersecurity – which stretched the Company's managerial routines and reshaped collaboration across its divisions. In this way, the phase marked the Company's early foundations as an integrated solutions provider with technical depth in field and digital services.

Shifting To Hybrid Structures

The rapid acquisition of service resources between 2018 and 2021 forced the Company to rethink how it organised and coordinated its activities. The earlier focus on cost control and ERP optimisation was no longer sufficient; scaling services required a reconfiguration of sales, coordination, and governance processes.

The first step came with the holding group structure introduced in 2018, which formally separated the distributorship from the new service divisions. This acknowledged the distinct requirements of parts distribution versus service delivery. While the parts business retained its mechanistic, hierarchical routines, the service divisions operated more organically, with semi-autonomous leadership and project-based collaboration across units. As the Director of Sales for APAC explained:

"*You can't just bolt companies on and hope for the best. We had to rethink sales coordination, resource allocation, even how leaders spent their time… He [the CEO] was doing one month in parts, one month in services… it was made clear that we were one team and he wanted to stay on top of what was happening*." (Director of Sales, APAC)

In early 2020, the Company introduced new corporate-level functions to support integration, including dedicated roles for human resources, marketing, and enterprise

architecture. Most significant was the appointment of a Chief Commercial Officer (CCO), tasked with unifying sales strategies across products and services. This marked a deliberate move away from siloed selling. As the Director of Sales for South America noted:

"*We have to present a combined story, you can't just say to the customers: Hey! we are not just doing only parts anymore, but here is some field and digital services if you like. That kind of talk is different from just pushing a catalogue… You have to see the customer's journey more holistically*." (Director of Sales, South America)

The hybrid structure that emerged reflected both continuity and change. The mechanistic backbone of the distributorship ensured efficiency and control, while the looser, project-oriented organisation of the service units provided flexibility for customer-specific solutions (see Figure 10). This duality, however, required constant balancing: too much autonomy risked fragmentation, while too much centralisation threatened the service cultures of the acquired firms. The introduction of the CCO role and integrative processes represented early attempts to navigate this tension.

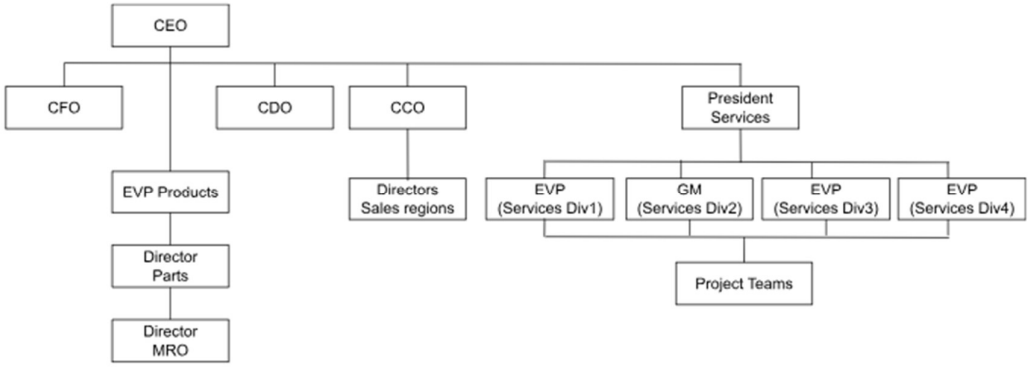

Figure 10 Organisational structure post-Integration of field services units

By the close of 2021, organisational processes were no longer oriented primarily to internal efficiency – as in the previous phase – but to supporting integration across a broadened portfolio. Sales, reporting, and leadership routines had been reshaped to reflect the Company's repositioning as a solutions provider, where coordinated delivery of services, products, and digital capabilities was increasingly the new norm.

Developing Integrated Solutions Proposition

As services became the dominant source of revenue, the Company's identity and capabilities shifted decisively. Whereas in earlier phases services were treated as add-ons to distribution, by 2021 they had become the organising principle of the business.

Symbolically, this shift was reflected in the 2019 rebranding of the corporate mission around the promise of providing "critical power plant and turbomachinery maintenance services through solution-centric operating divisions." This was more than a marketing adjustment; it marked a deliberate move away from a product-centred narrative toward one that emphasised integrated, solution-oriented value creation.

Practically, the transition required building new capabilities. Acquisitions in field services and digital technology brought in specialised expertise – from aeroderivative turbine engineers to cybersecurity specialists. As the Chief Development Officer reflected:

"The priority was building capabilities we didn't have — whether through hiring, acquisitions, or partnerships — and combining them into a portfolio that was greater than the sum of its parts." (CDO)

The reorientation was also cultural. For sales teams, the expectation was no longer to push catalogues of parts but to present unified service solutions tailored to customer needs. For engineers, the challenge was to adapt entrepreneurial practices from their start-ups into the more structured routines of a corporate group. For managers, success was increasingly measured not by quarterly product margins but by the ability to orchestrate long-term service contracts and digital offerings. As the HR Manager explained:

"What really changed was how people saw success. It wasn't about who sold the most parts in the quarter; it was about who could secure the bigger, longer-term service contract deals and build those relationships. It meant taking the entrepreneurial mindset and applying it within a larger organisation to maximise the opportunities." (HR Manager)

The Director of Sales for South America echoed the same transition from the customer-facing perspective:

"We had to learn to present ourselves differently. Customers were used to seeing us as a parts supplier, so the challenge was opening their minds — and our own — to a new world of services. That meant showing how we could integrate contracts, cash flows, and added value, and saying clearly: we're offering solutions solve problems." (Director of Sales, South America)

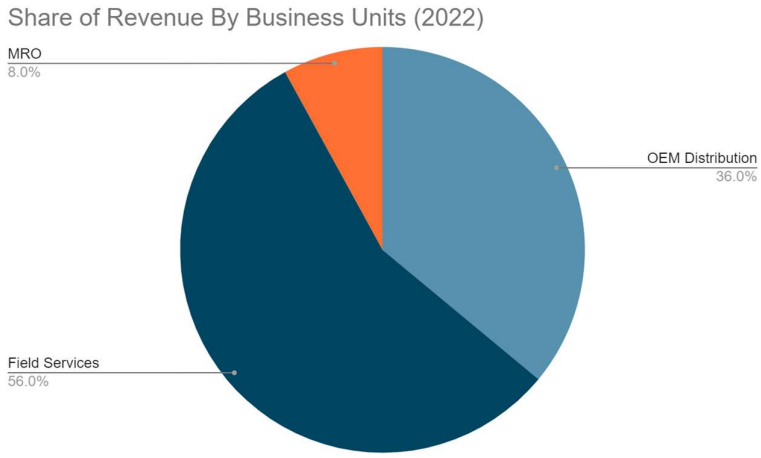

Figure 11 Share of Revenue by Business Units

By 2021, the effects were visible in the Company's financial structure: services accounted for 64% of total revenues, compared to just 26% at the end of the previous phase (see Figure 11). Yet the deeper transformation lay in capabilities and mindset. Services were no longer peripheral; they had become the backbone of the Company's value proposition, supported by new digital expertise and a reframed organisational identity. This marked the Company's early consolidation as a service-led, digitally enabled solutions provider. The key events and timeline for this phase are shown in Figure 12.

Figure 12 Timeline of Key Events Second Digital Servitisation Phase

Summary Observations on Change Dimensions

- **Human Resources:** Leadership roles were expanded, including a Chief Commercial Officer (2020) and Head of Digital Services (2021), reflecting the prioritisation of integrated selling and digital capabilities. The CEO rotated across divisions, signalling greater cross-unit leadership engagement.
- **Finance:** Acquisitions were backed by new financial resources, supporting rapid expansion into services and digital. By 2021, services accounted for 64% of total revenue, marking a symbolic and structural pivot to a service-led model.
- **Digital Technology:** The Company moved from efficiency-oriented ERP use to embedding digital into customer offerings. The 2021 acquisition of a cybersecurity start-up added patented encryption technology, addressing emerging industry risks.
- **Internal Operations:** A hybrid organisational model emerged: mechanistic structures in parts distribution alongside more organic, project-based structures in service divisions. Integrative roles (e.g., CCO, HR, marketing, enterprise architecture) were introduced to coordinate across the growing group.
- **External Relations:** Four acquisitions between 2018 and 2021 expanded the service portfolio into field-based maintenance, controls, and instrumentation, enhancing credibility against OEMs. The 2019 rebranding and mission statement reframed the Company as a solutions provider to enhance its customer-facing legitimacy.

4.2.5 Resource Base Evolution Across Phases

The Company's transformation involved the progressive reshaping of its human, financial, digital, operational, and relational resources. These domains evolved unevenly across the three digital servitisation phases: some developed incrementally, others through more continuous renewal, and some through sharper discontinuities that redefined their trajectory. The following subsections trace these shifts in each domain to illustrate how the resource base was reconfigured over time.

Evolution of Human Resources

In the pre-digital servitisation phase (2005–2015), the workforce that had been built under the founder was reshaped following the private equity buyout. This was marked by high turnover at all levels of the organisation, beginning with the replacement of the top management team by executives from finance and operations backgrounds. Recruitment shifted toward role-specific expertise, accountability, and performance orientation, reflecting a more professionalised leadership and workforce.

In the first digital servitisation phase (2016–2018), sales teams were reorganised to improve customer responsiveness. The removal of Sales Vice Presidents decentralised authority to regional directors, while employees were increasingly expected to pivot from transactional tasks toward analytical, data-driven responsibilities as part of the CEO's drive for efficiency and the goal of becoming a "data-driven company."

By the second digital servitisation phase (2019–2021), leadership appointments renewed the human resource base again. The addition of a Chief Development Officer (2018), Chief Commercial Officer (2020), and new Heads of Digital Services and Field Services reflected the integration of service and digital competencies, alongside stronger cross-unit leadership capacity.

Evolution of Financial Resources

In the pre-digital servitisation phase, revenues expanded rapidly on the back of the 2005 OEM distributorship alliance, rising by more than 120% in five years. By 2015, the share of long-term OEM contracts had increased to 46%. After the 2009 private equity buyout, however, financial discipline was tightened, with controls, performance metrics, and stricter accountability mechanisms introduced.

In the first digital servitisation phase, financial pressures from market contraction dominated, as operating costs approached 80% of revenues. Opportunities requiring longer-term investment, such as the proposed aerospace recycling initiative, were deferred under these constraints. A decisive reset came in 2017 when the private equity owners exited and new advisory investors entered. They introduced fresh capital, reframed the corporate mission around service-led growth, and set a target of 40% of revenues to come from services within five years.

During the second digital servitisation phase, financial resources were redeployed to fund an ambitious series of acquisitions in field services and digital technology. By 2021, services accounted for 64% of revenues, marking both a symbolic and structural reorientation of the financial base from parts distribution to service provision.

Evolution of Digital Technology Resources

In the pre-digital servitisation phase, digital resources were embryonic. The ERP system had been introduced but remained under-utilised until the CEO's 2015 directive mandated fuller adoption, representing the first significant attempt to standardise management processes through digital tools.

In the first digital servitisation phase, digital resources were more systematically embedded. ERP functionality was extended through automation, dashboards, and performance metrics. Customer-facing tools such as Electronic Data Interchange, e-commerce platforms, and mobile applications were introduced, extending digitalisation from internal processes into customer engagement.

By the second digital servitisation phase, digital resources advanced into a new domain: customer-facing digital solutions. ERP continued to support integration, but the acquisition of a cybersecurity start-up in 2021 added proprietary encryption technology, embedding digital innovation directly into the service portfolio.

Evolution of Internal Operations

In the pre-digital servitisation phase, internal operations shifted from entrepreneurial flexibility to formalised routines. OEM compliance requirements and private equity practices introduced formal organising, middle-management roles, annual

performance reviews, and performance metrics, embedding greater discipline and accountability.

In the first digital servitisation phase, operational processes were reorganised to balance efficiency with responsiveness. ERP-driven integration created comparability across regions, while decentralised sales structures provided new feedback loops linking local market insights to corporate-level innovation.

In the second digital servitisation phase, operations were restructured into a hybrid model. A holding group structure separated distribution from services, with mechanistic routines maintained in the distributorship and more organic, project-based coordination in the service divisions. Integrative corporate functions – including HR, marketing, enterprise architecture, and the new Chief Commercial Officer – were introduced to align the expanding portfolio. This hybrid organising enabled the co-evolution of product and service units, ensuring that parts supply and service delivery developed in tandem.

Evolution of Relational Resources

In the pre-digital servitisation phase, relational resources were anchored in OEM alliances that provided legitimacy and exclusive product access. The landmark 2005 distributorship was renewed and expanded in 2014, while two further OEM agreements in 2015 broadened the product base. Entrepreneurial sales routines further strengthened trust with customers, and the 2014 outsourcing partnership – followed by the 2015 acquisition of an MRO provider – extended relational resources into component-level services.

In the first digital servitisation phase, relational resources were reconfigured through the bundled offering of 2017, which embedded the Company more deeply into customers' operational routines. Higher-risk opportunities, such as the aerospace recycling collaboration, were deferred under financial constraints.

By the second digital servitisation phase, relational resources broadened further through acquisitions that opened access to new markets and customer bases. The 2019 rebranding repositioned the Company externally as a solutions provider while in 2020 an OEM partnership was expanded to involve joint aftermarket service support.

Domain	Pre-Digital Servitisation (2005–2015)	First Digital Servitisation (2016–2018)	Second Digital Servitisation (2019–2021)
Human Resources	Founder-led, relationship-driven sales culture shifted toward role-specific expertise and performance orientation.	Authority decentralised from Sales VPs to regional directors autonomy; employees transitioned from transactional to analytical, data-driven roles.	New leadership roles introduced management competencies in services, digital technology and cross-unit integration.
Finance	Financial growth experienced following alliance deal; Financial discipline imposed following new private equity buyout	Financial pressure due to market downturn; Financial constraints on long-term and uncertain investments; Financial targets reset by new investors.	Funding secured for acquisitions by new investors; Financial growth experienced as services account for greater share of revenue
Digital Technology	ERP initially under-utilised but later prioritized for management and business processes	ERP used extensively to drive efficiency; ERP use expanded to support customer engagement	Digital tools used to deliver customer-facing services; Digital security solutions added to core offerings
Internal Operations	Supply chain routines based on OEM standards; shifted from entrepreneurial flexibility to mechanistic structures	Mechanistic structure reinforced to drive efficiency gains; Sales operations decentralised for improved customer responsiveness.	Hybrid structure adopted to balance parts supply efficiency and service operational flexibility; integrative corporate functions introduced.
External Relations	OEM alliances used to build industry legitimacy; MRO partnership used to gain entry into services.	First-hand customer operational knowledge used to identify opportunity for customized offerings;	Board members industry experience and networks used to identify services and digital opportunities; Access to customers expanded through acquisitions

Table 13 Evolution of Resource domains Across Phases

Link To Research Question

Taken together, the Company's transformation reflected a non-linear reshaping of its human, financial, digital, operational, and relational resources (Table 13). Across the three digital servitisation phases, these domains developed unevenly: some changed incrementally, others through continuous renewal, and some through sharp discontinuities. In tracing these shifts, this section answers Research Question 1 by showing that resource base transformation followed uneven, domain-specific pathways that together reoriented the Company from a parts distributor to an integrated solutions provider.

4.3 Part 2 Analysis: Mechanisms of Transformation

Having reconstructed how the Company's resource base evolved across three phases, this part of the chapter examines how those changes were enacted in practice. Here, the term "mechanism" is used to describe the concrete organisational actions and routines through which the dynamic capability processes of sensing, seizing, and transforming are realised. Whereas sensing, seizing, and transforming refer to capability processes at a conceptual level (Teece, 2007), mechanisms denote the situated managerial behaviours that bring about incremental adaptation, renewal, or regeneration of the resource base over time (Ambrosini and Bowman, 2009). As outlined in the methodology, an abductive approach was used to identify and refine these mechanisms by iterating between empirical evidence and theory. Building on Section 2.5.3 of the literature review, the analysis integrates Teece's (2007) triad with Ambrosini and Bowman's (2009) hierarchy of incremental, renewing, and regenerative capability levels. This combined framework (Figure 13) provides the basis for a fine-grained account of how dynamic capabilities were enacted within the Company and how specific mechanisms underpinned the patterns of incremental adaptation, continuous renewal, and regeneration discussed in Section 4.2.5.

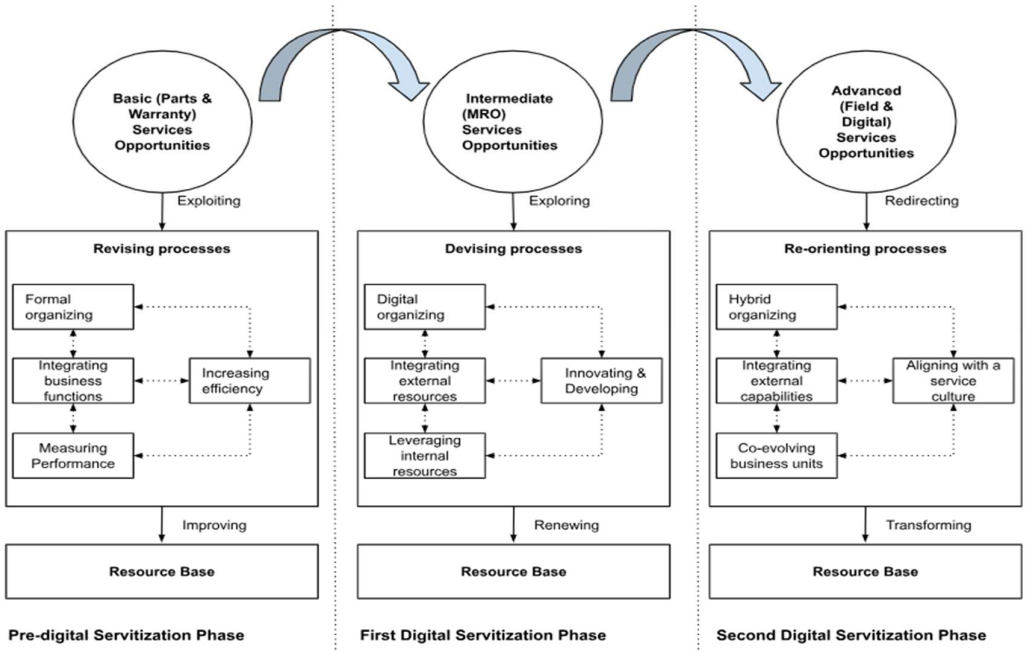

Figure 13 Dynamic capability levels and processes transforming the resource base.

Three overarching insights emerge. First, the Company's dynamic capabilities strengthened progressively across the three phases, culminating in the introduction of an integrated solutions proposition in the second digital servitisation phase. Sensing evolved from reliance on OEM signals, to customer-led engagement, and ultimately to scanning wider industry dynamics. In parallel, seizing advanced from incremental revisions of parts-sales routines to devising new capabilities for intermediate and, later, advanced services. Transforming mechanisms reconfigured the organisation more fundamentally, reshaping its structures and culture as it moved through the patterns of incremental adaptation, continuous renewal, and, eventually, regeneration.

Second, two meta-mechanisms – top management team (TMT) reconfiguration and strategic goal-setting – were pivotal in enabling these patterns of capability development. By redirecting priorities, refreshing expertise, and legitimising resource commitments, they unlocked shifts in focus and allowed the organisation to progress from exploiting product opportunities, to exploring service opportunities, and ultimately to orienting the business around integrated solutions.

Third, the mechanisms observed can be distinguished by orientation: some were internally facing, consolidating or reconfiguring the Company's resource base, while others were externally facing, centred on interactions with OEMs, end-users, and broader industry networks. Across both orientations, digital technologies acted as an enabler, mediating and amplifying capability development within and across phases.

The sections that follow are organised around: developing strategic insights (sensing); revising and devising the resource base (seizing); reconfiguring structures and re-orienting culture (transforming); and the two meta-mechanisms of TMT reconfiguration and goal-setting, which were observed to unlock and sustain the patterns of change.

4.3.1 Sensing: Developing Strategic Insights

Sensing mechanisms refer to the processes through which the Company generated insights about technology, customer needs, and wider industry trends. These insights shaped managerial perceptions of opportunities and threats and formed the basis for

later seizing and transforming processes. The nature of sensing evolved over time: from OEM-based learning in the pre-digital phase, to customer-led sensing in the first digital phase, and finally to industry-wide scanning in the second digital phase.

Sensing Basic Service Opportunities: OEM Insights

In the pre-digital phase, sensing was anchored in the distributorship alliance negotiated in 2005. The agreement formalised structured review processes that exposed the Company to OEM standards, compliance requirements, and technology roadmaps. As the EVP of Operations recalled:

"*Working within the OEM's systems forced us to step up… Their requirements around documentation and compliance – those became our standards too*." (EVP, Operations)

Contract renewal cycles provided systematic visibility into product innovations and forward plans. This enabled managers to anticipate technology shifts and prepare for tightening supply chain expectations. As the EVP further explained:

"*Each renewal gave us visibility into the OEM's forward plans, what was coming down the pipeline, where standards were tightening, and how technologies were evolving*." (EVP, Operations)

Through these reviews, the Company absorbed structured knowledge about industry standards and trajectories. This early form of sensing sharpened its ability to adapt routines and laid the groundwork for more customer-focused sensing practices.

Sensing Intermediate Service Opportunities: End-User Insights

By 2016–2018, sensing shifted closer to end-users as the Company sought to move beyond commoditised parts supply. The central mechanism was customer site visits, supported by the decentralisation of authority to regional sales directors. This autonomy created space for frontline engagement, where regional teams gathered tacit intelligence from customers in their operating environments. As the APAC Sales Director explained:

"*Because we were in the plants so often, we could see the issues before they became formal requests. That's how we started to anticipate what services customers would need, not just what parts they wanted*." (Director of Sales, APAC)

Shadowing customers allowed sales directors and service managers to identify operational pain points that could not be solved by product sales alone. The 2017 bundled outage offering was a direct outcome of this process. In this way, decentralised authority combined with embedded customer engagement to ground sensing operationally, enabling the Company to capture intermediate service opportunities and strengthen its position during a turbulent market phase.

Sensing Advanced Service Opportunities: Industry Insights

From 2019 onwards, sensing became more strategic and outward-looking as the Company moved toward advanced services. A central mechanism was the integration reviews conducted after each acquisition, which exposed managers to specialist knowledge in offshore maintenance, control systems, and cybersecurity. As the EVP of Field Services explained:

"*With new acquisitions, it wasn't just adding services — it gave us insights into whole new areas of the industry*." (EVP, Field Services)

At the same time, board-level scanning and executive networks expanded the Company's external orientation. Directors interpreted emerging trends such as rising cybersecurity concerns and the growing demand for integrated aftermarket support as strategic signals. The Head of Digital Services explained:

"*Cybersecurity wasn't even part of the conversation in this industry five years ago. Now every customer wants to know how they can protect their assets*." (Head of Digital Services)

The entry of a new ownership group in 2017 further amplified this outward orientation, bringing networks across aerospace, defence, and energy that introduced new partnerships and broadened strategic learning. In combination, these mechanisms shifted sensing toward a more future-oriented process, positioning the Company to anticipate advanced service opportunities and reshape its strategic priorities.

4.3.2 Seizing: Mobilising the Resource Base

Seizing mechanisms refer to the processes through which the Company mobilised resources to act on identified opportunities. They involved revising existing routines to improve efficiency and devising new capabilities that enabled the move from parts

sales into service provision. Across the trajectory, seizing evolved from incremental process revisions in the pre-digital phase, to devising bundled offerings in the first digital phase, and finally to developing advanced service capabilities in the second digital phase.

Revising the Resource Base

Revising mechanisms were evident throughout the Company's transformation, but were most prominent in the pre-digital servitisation phase as the professionalised executive team sought to stabilise and systematise operations. These processes improved efficiency, coordination, and legitimacy, laying the groundwork for more ambitious renewal.

Revisions were initiated through formal organising. The founder-led entrepreneurial model, with its overlapping responsibilities and ad hoc arrangements, was replaced with clarified roles, reporting lines, and functional consolidation. As the EVP of Operations recalled:

"There were too many ad-hoc processes and overlapping responsibilities from the way we operated in the past. We needed to create clarity and accountability, so formalising roles was our first priority." (EVP, Operations)

This structural clarity was reinforced by performance metrics. Key performance measures (KPMs) created visibility across regional units and allowed managers to intervene quickly when targets were missed, establishing a shared yardstick of accountability across geographies.

From 2015, the ERP system was mandated as the backbone of operations, extending from order processing into sales, inventory, and finance. Dashboards and standardised reports replaced fragmented spreadsheets, enabling cross-regional comparability and informed decision-making. In the first digital servitisation phase, ERP functionality was further extended to automate invoicing and reconciliation, reducing reliance on manual oversight. As the Financial Controller explained:

"Our aim is to have as many tasks automated as possible. So many of these processes are repetitive. Everything up to invoice review should already be done." (Financial Controller)

Revising also encompassed outward-facing mechanisms. Digital tools such as mobile applications, e-commerce platforms, and Electronic Data Interchange (EDI) strengthened responsiveness and credibility with OEM and end-user partners. Two additional OEM distributorships signed in 2015 broadened the product portfolio and reinforced legitimacy within OEM supply chains. As the CEO observed:

"Each new alliance wasn't just about adding to our product line, it was about reinforcing our entire supply network and ensuring we could consistently meet customer expectations to maintain our edge." (CEO)

Taken together, these revising processes – formal organising, embedding performance metrics, mandating ERP use, automating tasks, and strengthening alliances – consolidated operational coherence and external credibility. They did not radically transform the resource base but provided the stability and alignment required for renewal.

Devising the Resource Base

Devising processes went beyond incremental adjustments, as managers actively sought new ways to renew the Company's resource base. These efforts involved identifying and assembling capabilities, integrating external resources, and shaping customised offerings that progressively shifted the Company from a parts supplier toward an integrated solutions provider.

One decisive step was the pursuit of external expertise. In 2014, the Company outsourced MRO services to access engineering capabilities before acquiring the provider outright in 2015. As the CFO recalled:

"Buying the MRO business gave us a capability we couldn't have built in-house quickly enough…Without that acquisition, we'd have been years behind." (CFO)

By the first digital servitisation phase, devising was increasingly customer-driven. The delayering of VP oversight empowered regional Directors of Sales to surface end-user pain points more directly. One outcome was the 2017 bundled offering, which combined outage-related parts with ERP-linked inventory monitoring on a pay-per-use model. As the Operations Director explained:

"There are hundreds of moving parts and you have to deal with uncertainty about their

lead time – customers wanted a simpler, more reliable process. The bundle was our way of devising a solution that reduced that risk." (Operations Director)

Localised bundles were devised to meet distinct customer needs. As the Director of Sales for South America explained:
"Customers in Brazil have shorter outage windows, tighter budgets – so we had to devise something that worked for their context… Having a local partner made it easier to test these ideas and adjust quickly." (Director of Sales, South America)

Digitalisation underpinned devising processes. ERP systems were connected to customer-facing platforms for proactive inventory management, while sales teams adopted mobile applications, e-commerce platforms, and EDI to improve responsiveness and deepen integration with customer operations. Performance measures were also reframed as part of devising. As the Financial Controller noted:
"Everything we did was now measured against how it contributed to building an integrated service model." (Financial Controller)

These processes accelerated in the second digital servitisation phase with the acquisitions of four field service firms which were integrated to broaden the Company's service portfolio. As the EVP of Field Services noted:
"It was devising through combining and putting together different pieces to build something stronger." (EVP, Field Services)

The 2021 cybersecurity acquisition also exemplified devising in response to industry-level signals, particularly rising concerns over cyberattacks. As the Head of Digital Services noted:
"Cybersecurity wasn't even part of the conversation in this industry five years ago. Now, every customer wants to know how they can protect their assets." (Head of Digital Services)

The acquisition provided a scalable digital capability and positioned security as a core element of the integrated service offering.

The Company's existing alliances were further repurposed. In 2020, one OEM partnership was expanded into co-distribution and joint aftermarket support, shifting its role from product access to lifecycle solutions.

Taken together, devising processes – experimenting with new ventures, acquiring and integrating external resources, developing customised bundles, harnessing digitalisation, scaling through acquisitions, and repurposing alliances – allowed the Company's management to create new means of renewing its resources and capabilities. Unlike revising, which stabilised and aligned existing routines, devising practices enabled more fundamental modification of the resource base and supported the shift from adaptation toward renewal.

4.3.3 Transforming: Reconfiguring Structures and Reorienting Culture

Transforming mechanisms are the processes through which the Company reconfigured its organisational structures and culture. Unlike revising, which adjusted existing processes, or devising, which introduced new capabilities, transforming involved altering the deeper frame of the organisation. These mechanisms progressively shifted the Company's identity from a parts distributor to an integrated solutions provider.

Reconfiguring Structures

Structural reconfiguration was expressed through governance reforms, the creation of new leadership roles, divisional restructuring, and the introduction of integrative corporate mechanisms. The first major change came with the governance restructuring initiated by the 2009 private equity acquisition. The founder-led model of informal decision-making was replaced with clarified reporting lines, formal accountability, and a professional managerial hierarchy. As one executive recalled:

"Before the acquisition, decisions were made in corridors and over phone calls. After 2009, everything had to go through formal reporting lines…it gave us the discipline to manage growth." (EVP, Operations)

Although disruptive, these structural reforms introduced the discipline required to scale and coordinate a more complex organisation.

The creation of new leadership roles further reconfigured the organisation's structure once services became a strategic priority. The appointment of a Chief Development Officer (CDO) in 2018 formalised responsibility for service-led growth at board level, while a dedicated senior executive was tasked with managing the parts business to free leadership capacity for transformation. As the CDO reflected:

"The new board shifted the conversation. Developing services was no longer an add-on; it became a major board-level priority." (CDO)

Divisionalisation and hybrid structuring were introduced in the second digital servitisation phase to accommodate the expansion of service activities. The legacy parts business retained mechanistic routines, while service divisions were allowed greater flexibility through project-based collaboration and semi-autonomous leadership. This dual structure generated tensions, as one regional director noted:

"You can't just bolt these companies on and hope for the best. We had to rethink sales coordination, resource allocation, even how leaders spent their time." (Director of Sales, APAC)

Integrative corporate mechanisms were subsequently deployed to manage these tensions. The appointment of a Chief Commercial Officer (CCO) in 2020 unified sales strategies across divisions, while cross-divisional planning forums and group-wide reviews supported alignment. The CEO also reinforced integration symbolically by rotating his office between divisions, signalling that leaders were expected to span boundaries rather than operate within silos.

Together, these mechanisms – governance restructuring, role creation, hybrid structuring, and corporate integration – progressively reoriented the Company's structural foundations, enabling it to coordinate diverse units and present itself as a unified solutions provider..

Re-orienting Culture

Cultural transformation accompanied, but was distinct from, these structural changes. Whereas new reporting lines and leadership roles formalised the Company's governance, the deeper shift concerned how performance and identity were

understood. The move from relational informality to performance discipline began with the 2009 governance reforms, as loyalty and flexibility gave way to accountability, measurement, and professional standards. As the Accounting Analyst put it:

"Previously people advanced because they were trusted but after 2009 it now also depended on hitting targets. The message was that results mattered more than relationships." (Accounting Analyst)

While initially experienced as restrictive, this change provided the cultural discipline required for service expansion.

Embedding a service ethos next became a defining mechanism after 2016, as new investors reframed the mission around services. Managers were recruited into marketing and HR and tasked with communicating a new identity. Internal campaigns, including weekly "Brand Feature Friday" messages, repeatedly reinforced the idea that services were central to the business rather than peripheral add-ons. As the Digital Marketing Strategist explained:

"Everyone needs to see us as a solutions provider…. That meant changing how people thought about the brand internally as much as externally… We were reminding staff every week that services were the future, and that every role was part of that bigger story." (Digital Marketing Strategist)

Fostering cultural integration across divisions became essential once multiple service firms were acquired between 2019 and 2021. Rather than imposing uniformity, the leadership encouraged collaboration between legacy staff and new teams. Engineers from field service firms worked alongside the parts supply-chain specialists to combine complementary expertise. As the EVP of Field Services noted:

"We were niche players – we could only go so far on our own. By joining [the Company], it gave us access to scale, capital, and a broader service network. For them, our capabilities filled critical gaps." (EVP, Field Services)

Symbolic leadership practices further reinforced this integration. The CEO reportedly rotated his office between divisions to model boundary-spanning behaviour, underscoring that cultural alignment was an organisational expectation. Over time,

"lifecycle support" became a shared reference point across divisions, embedding service orientation as the dominant cultural norm.

To summarise, structural transformation introduced the formal systems, roles, and coordination mechanisms needed to scale, while cultural transformation shifted values and identity from founder-led informality to performance discipline and, later, to service orientation. Taken together, these processes enabled the Company to redefine itself as a solutions provider and to sustain this transformation through a coherent structural and cultural foundation.

4.3.4 Unlocking Sensing, Seizing And Transforming

It was evident that two higher-order mechanisms – top management team (TMT) reconfiguration and strategic goal setting – acted as enablers of dynamic capabilities across the Company's trajectory. Unlike the orchestration mechanisms of revising, devising, or transforming, these meta-mechanisms created the leadership direction, legitimacy, and strategic intent that allowed other processes to unfold. They were most visible at inflection points in ownership and governance, when shifts in leadership composition and corporate objectives unlocked new phases of capability development.

TMT Reconfiguration

Whereas structural reconfiguration (Section 4.3.3) referred to changes in governance arrangements, reporting lines, and divisional structures, TMT reconfiguration concerned changes in *who* occupied leadership positions and the competences they brought. Leadership change thus represented not just an adjustment of formal systems, but a renewal of the interpretive frames and capabilities guiding the organisation.

The first major reconfiguration occurred in 2009 following the private equity acquisition. The founder-led executive team, dominated by sales backgrounds and informal coordination, was replaced with professionals from finance and operations. This brought managerial discipline, imposed reporting structures, and prioritised formal performance oversight. As the EVP of Operations explained:

"There were too many ad-hoc processes and overlapping responsibilities from the way

we operated in the past. We needed to create clarity and accountability, so formalising roles was our first priority." (EVP Operations)

This leadership change represented more than managerial substitution: it altered the interpretive frame through which opportunities and risks were assessed. The emphasis shifted from entrepreneurial sales growth to structured efficiency, laying the foundation for revising mechanisms such as performance metrics, ERP integration, and OEM alliance consolidation.

A second, more radical reconfiguration occurred in 2017–2018 after the exit of the private equity owners. The incoming investors introduced a new board with backgrounds in aerospace, defence, and energy, and recruited executives with explicit service and digital expertise. The appointment of a Chief Development Officer (CDO) in 2018 and a Chief Commercial Officer (CCO) in 2020 anchored service-led and integrative priorities at the top of the organisation. As the CFO recalled:
"The new board's experience and connections helped us tap into the steam engine customer segment… They brought new ideas and wanted to explore these new spaces." (CFO)

This reconfiguration shifted the leadership repertoire from enforcing discipline to pursuing renewal. The combination of entrepreneurial ownership perspectives and specialised executives provided the cognitive diversity required to devise new bundles, scale through acquisitions, and embed services at the centre of the business model.

Goal Setting

Goal setting reinforced these leadership changes by providing explicit targets and legitimising resource commitments. After the 2009 leadership transition, goals remained largely product-oriented, focused on expanding distributorships and securing OEM legitimacy. Profitability policies emphasised cost discipline, directing attention to incremental revisions rather than radical renewal. These goals aligned with the stabilising intent of the first reconfiguration, embedding efficiency and reliability as the dominant frame.

By contrast, the 2017–2018 reconfiguration introduced a decisive reframing of strategic intent. The new board articulated an ambition to become "a premier

Capability Mechanisms	**Examples of Processes Identified**
Reconfiguring the TMT	• Replacing founder-led executives • Adding advisory partners to the board • Appointing CCO and CDO
Setting Goals	• Defining service-revenue targets • Revising investment policies • Reframing mission around solutions
Developing Strategic Insights	• Customer site visits • Acquisition reviews • Decentralising decision-making • Board-level industry scanning
Revising the Resource Base	• Formalising roles and reporting lines • Embedding performance metrics • Establishing ERP backbone • Automating routine tasks
Devising the Resource Base	• Acquiring external resources • Forming alliances and joint ventures • Creating cross-functional teams • Repurposing acquisitions
Reconfiguring Structures	• Restructuring governance • Designing hybrid divisional model • Cross-divisional planning and reviews • Symbolic leadership practices
Re-orienting Culture	• Shifting to performance discipline • Embedding service ethos in communications • Promoting cross-divisional collaboration

Table 14 Capability Mechanisms Transforming the Resource Base

aftermarket solution provider for gas and steam turbine customers," accompanied by an explicit target of deriving 40 percent of revenue from services within five years. As one EVP of Field Services explained:

"Every planning meeting started with how we were building the service business…It set the tone that everything else – even parts sales – had to be considered in relation to how it advanced our service growth." (EVP Field Services)

Alongside explicit revenue targets, digital investment priorities were reframed as integral to service-led growth. As the Operations Director noted:
"Leadership's decision to prioritise data-driven service models also meant that investments in IT were no longer optional." (Operations Director)

These goals legitimised the mobilisation of significant investments, including the acquisitions of four field service firms and a cybersecurity start-up. Profitability policies were revised to prioritise long-term service revenue, even at the expense of short-term parts margins.

Link to Research Question

The identification of these mechanisms (Table 14) provides a direct answer to Research Question 2, which asked *how supplier firms enact dynamic capabilities during digital servitisation*. By distinguishing between orchestration mechanisms (revising, devising, and transforming) and higher-order meta-mechanisms (TMT reconfiguration and goal setting), the analysis demonstrates that capability development is not a linear or automatic process. Instead, it unfolds through concrete managerial practices that stabilise routines, mobilise new resources, and reconfigure structures and culture, while being periodically unlocked by shifts in leadership composition and strategic goals. This fine-grained account highlights that digital servitisation is enacted through the interplay of identifiable managerial mechanisms, rather than through abstract categories alone, thereby showing how dynamic capabilities operate in practice within a supplier context.

4.3.5 Interplay of Capability Mechanisms and Digitalisation

In terms of interplay, TMT reconfiguration and goal setting acted as unlocking mechanisms that redirected the Company's developmental path. The first wave of

changes imposed discipline and created the organisational conditions for incremental revision. The second wave expanded leadership expertise, reframed strategic intent, and legitimised renewal through service-led and digital investment. By linking leadership composition to strategic priorities, these mechanisms enabled the Company to progress from product exploitation, to service exploration, and ultimately to the transformative pursuit of integrated solutions.

A consistent finding across this trajectory is that digitalisation acted simultaneously as an enabler and as an outcome of the dynamic capability mechanisms. In other words, digital technologies were not only tools through which resources were coordinated and routines revised; they also became central to the firm's ability to seize new opportunities and, eventually, to transform its value proposition. The relationship was therefore recursive: dynamic capabilities shaped how digitalisation was adopted and applied, while digitalisation, in turn, expanded the firm's capability set.

In the pre-digital servitisation phase (2005–2015), digitalisation primarily enabled incremental revisions to the resource base. The enterprise resource planning (ERP) system was gradually positioned as the backbone for cross-functional integration, particularly after the CEO's 2015 mandate to standardise processes around it. ERP facilitated the implementation of performance metrics, harmonised reporting across semi-autonomous units, and supported managerial oversight through dashboards and key performance indicators (KPIs). By making inefficiencies more visible, the ERP underpinned the Company's ability to sense internal misalignments and to transform fragmented routines into more standardised and coordinated processes.

In the first digital servitisation phase (2016–2018), digitalisation provided the foundation for devising processes. Automation of data entry and reconciliations reduced the reliance on manual labour, freeing employees for more value-adding analytical activities. Dashboards and real-time reporting allowed managers at multiple levels to adjust practices dynamically rather than wait for periodic reviews, reinforcing flexibility and responsiveness. Digital tools also extended into external engagement: e-commerce platforms and mobile applications broadened customer interaction channels, while Electronic Data Interchange (EDI) allowed compliance with the

requirements of major OEM customers. Although the latter created parallel systems for non-EDI clients, it nonetheless illustrated how digitalisation was increasingly intertwined with external-facing capabilities. Importantly, the flagship outage bundle offering launched in 2017 was underpinned by ERP-enabled inventory monitoring, making digitalisation inseparable from the firm's first steps toward customised service propositions.

In the second digital servitisation phase (2019–2021**)**, digitalisation shifted from an enabling infrastructure to a central element of value creation itself. Here, the Company's dynamic capabilities seized upon external digital opportunities, most notably following a cyberattack on a major customer in 2021. Recognising the rising salience of cybersecurity in critical infrastructure, management acquired a start-up with proprietary digital security software and integrated it as a dedicated division. This represented a qualitative change: whereas earlier phases emphasised digitalisation as a means of improving efficiency or supporting service bundles, in this phase digital became part of the Company's integrated solution proposition. Digital capabilities were thus reconfigured into outward-facing resources embedded within customer offerings, extending the Company's reach into the domain of operational resilience and security.

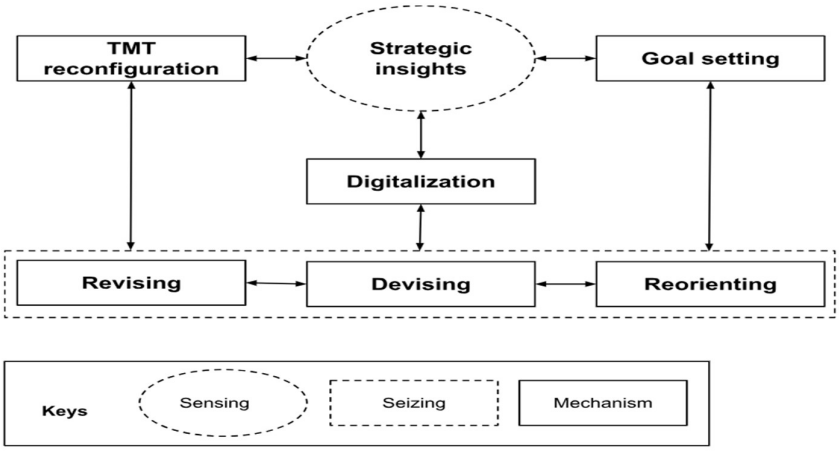

Figure 14 Interplay of Capability Mechanisms and Digitalisation

These observations point to a strong interplay between dynamic capabilities mechanisms and digitalisation across the trajectory (Figure 15). Initially, digital tools

were deployed to sense inefficiencies and incrementally revise internal routines. In the next phase, digitalisation became foundational to devising new offerings and coordinating customer engagement. Finally, digital technology was seized and transformed into a strategic resource in its own right, enabling the Company to reposition itself as a solutions provider in an increasingly digitalised industry.

4.3.6 Research Propositions

Based on the analysis of the company's transformation mechanisms (Sections 4.3.1–4.3.5), the following refined research propositions capture the key insights:

P1: Dynamic capabilities develop through shifting patterns.

The firm's ability to sense, seize, and transform evolved across the servitisation trajectory – beginning with incremental adaptation, advancing to renewal, and culminating in regeneration that re-oriented the organisation around integrated solutions.

P2: Leadership renewal unlocks higher-order capability development.

Top management team (TMT) reconfigurations and strategic goal-setting functioned as meta-mechanisms that refreshed focus and legitimised new resource commitments, enabling shifts from product exploitation to service exploration and ultimately to integrated solutions.

P3: Capability orientation shifts from internal to external.

Early phases centred on internal consolidation and efficiency, while later phases relied on customer engagement, industry scanning, partnerships, and acquisitions to reconfigure resources in line with market demands.

P4: Digitalisation intertwines with dynamic capabilities.

Digital technologies first enabled incremental efficiency gains, then underpinned new service offerings, and later became strategic resources embedded within advanced solutions.

Chapter 5: Discussion and Conclusion

5.1 Introduction

The central aim of this research was to extend theory by explaining how supplier firms reconfigure their resource base during digital servitisation. Digital servitisation refers to the strategic shift from providing standard products and services to delivering integrated solution propositions enabled by digital technologies (Chen et al., 2021). In this study, and building on the dynamic capabilities view, it was conceptualised as a process of developing strategic insights into emerging service and digital opportunities (sensing), mobilising resources to realise those opportunities (seizing), and reconfiguring the firm's structures and culture to align with evolving circumstances (transforming).

This chapter develops the discussion by situating the findings from a longitudinal case study of a supplier firm within existing knowledge. It is structured as follows. Section 5.2 examines the patterns of change observed in the supplier's resource base. Section 5.3 considers the mechanisms through which these changes were enacted. Section 5.4 outlines the theoretical contributions to digital servitisation research, while Section 5.5 reflects on managerial implications. Section 5.6 addresses the limitations of the study and identifies avenues for future research. Section 5.7 concludes with reflections on the author's development as an independent researcher.

5.2 How Suppliers Transform Their Resource Base

Through an abductive analysis of longitudinal data alongside the literature, Part 1 of Chapter 4 charted a supplier firm's trajectory toward providing integrated solutions. This was bracketed into three temporal phases: pre-digital servitisation, first digital servitisation, and second digital servitisation. The supplier's progression resonates with servitisation models that describe how firms move from basic to more complex service offerings. For example, Baines and Lightfoot (2013) distinguish between base services (e.g., equipment provision and spare parts), intermediate services (e.g., maintenance, repair, and overhaul contracts), and advanced services (e.g., outcome-based or performance contracts).

In this case, the pre-digital servitisation period saw the supplier expand its product portfolio and acquire a component MRO firm to establish the foundations for services. During the first digital servitisation period, the firm expanded its MRO service operations and developed its first customised solution. In the second digital servitisation phase, the firm extended its activities further into field services and digitally enabled solutions.

This study extends understanding of these phases by illuminating the managerial and organisational dynamics that unfolded within them in a supplier's context. Viewed through the dynamic capabilities lens, the case revealed patterns of incremental adaptation, continuous renewal, and regenerative change in the firm's resource base. These patterns broadly align with the hierarchical accounts of dynamic capabilities proposed in the literature (Ambrosini & Bowman, 2009). The discussion that follows examines each pattern in turn and situates the findings in relation to existing knowledge.

Incremental Adaptation

Incremental adaptation in the case firm appeared as gradual, cumulative improvements across routines, structures, and resource configurations. It became visible in the pre-digital servitisation phase, following the transition from founder ownership to private investors and the installation of a professionalised leadership team, but it remained a consistent feature throughout the firm's trajectory. The literature emphasises that such continuous improvement practices are essential for sustaining operational effectiveness (Bititci et al., 2012; Bourne et al., 2000; Ittner & Larcker, 2003). The case illustrates this dynamic across human, financial, digital, operational, and external relational domains. While these incremental shifts did not radically redefine the business model, they consolidated efficiency and legitimacy, laying the groundwork for more ambitious forms of renewal and regeneration in subsequent phases.

The professionalisation of the workforce exemplifies how incremental adaptation reshaped human resources. Informal practices characteristic of the founder-led era, reliant on a few key individuals, gave way to clearer role definitions, performance-

based hiring, and targeted training programmes. These adjustments gradually enhanced capabilities and instilled greater accountability, echoing Ocasio's (1997) attention-based view: by codifying processes and reducing the need for constant "firefighting," leadership attention was released for higher-level concerns such as innovation and renewal. Incremental human-resource changes thus operated not merely as operational refinements but as enablers of higher-order transformation.

A similar process unfolded in finance, where accounting and reporting practices were progressively formalised. The introduction of cost tracking, margin analysis, and systematic reporting enhanced transparency and discipline, while also providing legitimacy in the eyes of external investors. Kaplan and Norton's (1996) balanced scorecard highlights how financial and operational metrics can be aligned with strategic priorities, and this dynamic was evident in the case: financial discipline created the stability required to invest in more complex service initiatives and to attract external capital, which was especially significant given the limited internal resources typical of supplier firms.

Digitalisation advanced incrementally during this period, centred on the progressive constitution of the enterprise resource planning (ERP) system as the firm's digital backbone. Following a CEO mandate, ERP was increasingly used to integrate business functions, automate repetitive tasks, and embed performance metrics. This development resonates with Sebastian et al.'s (2017) notion of a digital backbone as the foundation for broader digital transformation and with Kohtamäki et al. (2019), who emphasise its importance for service innovation. While modest in scope at first, the cumulative effect of ERP optimisation was to create transparency across regions, embed accountability through dashboards and KPIs, and free resources for more advanced digital applications in later phases.

Operational processes also evolved through incremental refinements. Standardised procedures and the introduction of KPIs streamlined workflows, reduced variability, and strengthened accountability. These improvements align with Bessant and Caffyn's (1997) and Imai's (1986) emphasis on continuous improvement, as well as with servitisation research that underscores the role of process discipline in enabling

customised solutions (Oliva & Kallenberg, 2003). In the case firm, operational adjustments not only improved efficiency and quality but also fostered coordination across departments, ensuring reliable delivery of existing offerings while creating organisational capacity to pursue new ones.

Finally, the firm's external relationships benefited from the cumulative effects of incremental adaptation. By consistently meeting OEM standards and compliance requirements, the firm gradually strengthened its legitimacy and credibility within its industry network. This reliability built trust over time, making the supplier a more attractive collaborator and opening the door to deeper involvement in OEM support services. In this way, legitimacy was not transformed in a single leap but accumulated through repeated, incremental interactions.

Taken together, these interlocking adjustments illustrate how incremental adaptation consolidates resources into a more coherent and efficient configuration. Though such changes did not alter the firm's business model outright, they played a stabilising role, providing the efficiency and legitimacy that underpinned subsequent renewal and regeneration. In other words, incremental adaptation functioned as a platform: by "greasing the wheels" of day-to-day operations, it created the conditions under which more ambitious transformations could later unfold.

Continuous Renewal

Where incremental adaptation consolidated stability, continuous renewal represented the purposeful extension of the firm's resource base through recombination, adaptation, and capability development. This pattern became particularly prominent in the first digital servitisation phase, when turbulence in the industrial gas turbine sector and mounting financial pressures demanded more than efficiency gains. Reduced demand and cost constraints forced the company to explore new growth avenues, experiment with integrated service solutions, and reframe its trajectory around services. Renewal thus emerged as a response to external turbulence, but it continued to shape the firm's development into later phases. This corresponds to Ambrosini and Bowman's (2009) notion of "renewing" dynamic capabilities, which refresh and augment resources in dynamic environments.

Human resources were central to this renewal. The removal of the Sales VP layer devolved authority to regional directors, strengthening accountability for local strategies and creating closer ties with customers. Employees were increasingly expected to go beyond transactional roles toward analytical and service-oriented responsibilities, reinforcing the CEO's emphasis on data-driven practices. These shifts repositioned the workforce around responsiveness to customer problems rather than mere processing of transactions. Such competence development and leadership alignment echo Kindström and Kowalkowski's (2014) and Rabetino et al.'s (2018) arguments that investment in people – in skills, roles, and mindsets – is critical to building the capabilities needed for advanced servitisation.

Financial renewal followed a similarly deliberate trajectory. During the first digital servitisation phase, the firm began experimenting with new revenue models, most notably a pay-per-use structure underpinning its bundled outage offering. This demanded adjustments in profitability measurement, with revenues tracked over longer time horizons and under risk-sharing arrangements. Yet renewal was constrained by financial discipline: operating costs remained high, growth sluggish, and investor expectations short-term. A decisive shift occurred in 2017, when new investors set a target for services to account for 40% of revenue within five years. This reset priorities and signalled a willingness to underwrite service-led growth. Such developments illustrate Kaplan and Norton's (1996) argument that financial controls must evolve with strategic priorities, and Teece's (2014) view that service-based offerings require new approaches to revenue recognition and risk management.

Digital technologies provided another important arena for renewal. Beyond ERP optimisation, digital tools became integral to both operational discipline and customer engagement. Dashboards and KPIs reinforced accountability and transparency across regional operations, while automation freed employees from routine data entry and enabled more analytical work. Simultaneously, customer-facing technologies such as e-commerce, mobile sales tools, and Electronic Data Interchange (EDI) were introduced, enhancing responsiveness but also creating tensions where parallel processes were required for different customer groups. This duality reflects Sebastian et al.'s (2017) distinction between a stable digital backbone and adaptive digital platforms. The case

confirms that suppliers must balance efficiency with flexibility, echoing Sjödin et al.'s (2020) observation that digital renewal requires an ability to layer new applications onto established systems without disrupting operational reliability.

Operational renewal was also evident as the company moved away from siloed, product-based routines toward more integrated modes of working. Cross-functional collaboration became increasingly important for designing and delivering customised maintenance solutions, requiring sales, engineering, and IT teams to work in tandem under new coordination mechanisms and incentive systems. These hybrid arrangements preserved efficiency-driven routines in the product business while introducing more project-based practices in services, consistent with research that highlights the tension between efficiency and flexibility in servitisation (Oliva & Kallenberg, 2003; Story et al., 2017). In the case firm, the deliberate creation of integrative roles to bridge divisions exemplified efforts to manage this tension and enable greater agility.

Finally, external relations were extended through partnerships and ecosystem involvement. More complex offerings often required collaboration with OEMs for technical support or with software providers for specialised analytics. Credibility, painstakingly built during earlier phases through reliability and compliance, now made the supplier a more attractive collaborator. Participation in industry networks, joint training initiatives with OEMs, and co-marketing arrangements embedded the company more deeply within its ecosystem. This progression reflects Kohtamäki et al.'s (2019) and Sjödin et al.'s (2021) emphasis on ecosystem integration as a prerequisite for digital servitisation, and Chen et al.'s (2021) argument that manufacturers must leverage partners to fill capability gaps. By the end of the first digital servitisation phase, the supplier was beginning to operate not only as a dependable contractor but also as a nascent network orchestrator capable of mobilising external expertise.

Taken together, these developments illustrate how continuous renewal moved the company beyond stabilisation toward deliberate extension of its resource base. Through shifts in human competences, financial priorities, digital tools, operational routines, and external partnerships, the firm progressively expanded its capabilities.

Renewal did not represent a wholesale break with the past – the stabilising role of incremental adaptation remained – but it added layers of experimentation and recombination that reoriented the firm's trajectory around service-led and digitally enabled growth.

Regeneration

Where incremental adaptation consolidated stability and renewal extended capabilities, regeneration marked moments of discontinuous change that punctuated the supplier's trajectory and reset its strategic direction. Within the dynamic capabilities literature, this corresponds to the exercise of "regenerative" capabilities that fundamentally alter how a firm reconfigures its resource base, typically triggered by significant internal or external shocks (Ambrosini & Bowman, 2009; Schilke et al., 2018). In the case firm, regeneration became most evident toward the end of the first digital servitisation phase, when leadership transitions and major acquisitions catalysed a reorientation of the business from parts distribution toward becoming a service-led, digitally enabled solutions provider. These shifts were not incremental adjustments or extensions of existing capabilities but a decisive break with prior logics that redefined the company's identity.

Human resources were at the forefront of this regenerative turn. The introduction of new executive roles – including a Chief Commercial Officer to integrate product, service, and sales efforts, and a Head of Digital Services to spearhead the digital business – signalled a strategic departure from the product-centric mindset of the founder era. These appointments infused expertise in service management and digital innovation, competences that had been absent in the legacy team. Consistent with Ambrosini et al.'s (2009) observation that regenerative change often enters via leadership renewal, the case demonstrates how top management reshaping provided both the symbolic and practical anchor for redefinition. This aligns with Gebauer et al. (2010), who show that executive turnover and new appointments can catalyse strategic reframing in servitisation contexts.

The financial model also underwent fundamental recalibration. Services, which had previously been peripheral, became a central driver of growth, altering both risk

profiles and measures of success. Investments were channelled into acquisitions and digital innovation, with a willingness to absorb early service-related losses in exchange for longer-term relational returns. Metrics shifted from product volumes and quarterly margins toward customer lifetime value, contract renewals, and service-attached product sales. Such changes echo Gebauer et al.'s (2012) characterisation of solutions-oriented growth logics and underscore the point that regenerative change requires redefining how value is created and measured.

Digital technology played a particularly transformative role. Whereas in earlier phases digital tools primarily supported internal efficiency and service delivery, regeneration involved embedding digital capabilities directly into the firm's value proposition. The acquisition of a cybersecurity start-up in 2021 exemplified this shift: by integrating proprietary encryption technology into its offerings, the supplier repositioned digital not merely as an enabler but as a core element of value creation. This resonates with Kohtamäki et al. (2019) and Sklyar et al. (2019), who highlight the fusion of digital and service logics in advanced servitisation. In this case, digitalisation became a strategic resource in its own right, underpinning outcome-based service models that embedded the supplier more deeply into customers' operations.

Organisational structures also reflected this regenerative break. With the business spanning product distribution, conventional services, and digital solutions, a hybrid divisional structure was adopted. Mechanistic routines were retained in the product division to protect efficiency and scale, while service units operated more flexibly with project-based teams. Integrative mechanisms – including cross-divisional steering groups, enterprise architecture functions, and personnel rotations – were introduced to manage tensions across the portfolio. This approach echoes the ambidexterity literature (O'Reilly & Tushman, 2013; Sjödin et al., 2020), which stresses the need to balance exploitation of established activities with exploration of new ones. By institutionalising mechanisms for cross-unit integration, the firm managed the "two-culture problem" (Spring & Araujo, 2013), enabling coherence across divergent business logics.

Finally, regeneration extended into external relations. A deliberate rebranding campaign emphasised “solutions” and “digital,” signalling to customers, OEMs, and industry partners that the company was no longer just a parts supplier. Acquisitions in specialised service domains further reinforced credibility, while co-branding with partners lent legitimacy in markets where OEMs or technology firms had traditionally dominated. Through long-term contracts and digital monitoring links, the supplier became more deeply embedded in customers’ operations, consistent with Windahl and Lakemond’s (2006) description of firms transitioning into lifecycle solution providers.

Taken together, these developments illustrate how regeneration punctuated more gradual processes of adaptation and renewal. Leadership reshaping, financial recalibration, digital repositioning, structural ambidexterity, and external rebranding combined to reset the firm’s strategic intent. Rather than building incrementally on the past, regeneration created a new growth logic and identity centred on digitally enabled solutions. In this sense, regenerative capabilities provided the discontinuous breaks necessary to realign the organisation with new industry realities and to reposition it as a credible solutions provider in increasingly digitalised ecosystems.

Summary

The analysis of the case firm’s trajectory shows that transformation unfolded through three interrelated but distinct patterns of change: incremental adaptation, continuous renewal, and regeneration. Incremental adaptation consolidated efficiency and legitimacy through gradual refinements across human, financial, digital, operational, and relational domains. These steady improvements stabilised the organisation and provided the credibility and discipline on which more ambitious changes could later build. Continuous renewal went further, as managers recombined existing resources with new ones to extend capabilities, experiment with new service offerings, and forge external partnerships. This reflected a more dynamic mode of capability development, enabling the company to adapt to turbulence and progressively reposition itself around services. Regeneration punctuated these processes, introducing discontinuous shifts that redefined the firm’s strategic intent. Leadership transitions, acquisitions,

and the embedding of digital technology into the value proposition reset the company's identity from a parts supplier to a digitally enabled solutions provider.

These findings highlight that suppliers do not transform their resource base in a linear sequence but through a layered interplay of adaptive, renewing, and regenerative patterns. Incremental refinements created stability, renewal extended capabilities in response to evolving opportunities, and regeneration provided the breaks needed to realign strategy and identity. This interplay maps closely onto the hierarchical levels of dynamic capabilities theorised in the literature, while also showing how they manifest unevenly across resource domains in supplier contexts. Having established these patterns of change, the discussion now turns to the mechanisms through which they were enacted in practice.

5.3 Mechanisms of Transformation

While Section 5.2 identified incremental adaptation, continuous renewal, and regeneration as the key patterns of change, these patterns did not unfold automatically. They were enacted through specific mechanisms that channelled managerial attention, directed strategic intent, and embedded adjustments into the organisation. Two meta-mechanisms – reconfiguring the top management team (TMT) and setting strategic goals – created the conditions under which sensing, seizing, and transforming could occur. These leadership and governance shifts provided the impetus and legitimacy required to break path dependencies and pursue new directions.

Within this overarching frame, three further sets of mechanisms became visible. Sensing mechanisms developed strategic insights through activities such as customer engagement, decentralised decision-making, and board-level industry scanning. Seizing mechanisms were enacted through revising and devising the resource base – the former consolidating discipline and stability, the latter extending capabilities and experimentation. Transforming mechanisms involved reconfiguring structures and re-orienting cultural logics, embedding the organisational scaffolding and identity required for service- and digitally-led growth.

Top Management Team Reconfiguration

Reconfiguring the top management team (TMT) emerged as a critical meta-mechanism in the supplier's transformation. By introducing leaders with different professional backgrounds and external networks, the firm broadened its competence base and expanded its repertoire for problem-solving. This finding resonates with prior research linking leadership renewal to dynamic capability development (Tushman & Rosenkopf, 1996; Sune & Gibb, 2017), but it also shows how reconfiguration is not a peripheral adjustment but a turning point that often coincided with the start of new phases, when the capabilities of the legacy team were no longer sufficient.

The contrast between product- and service-oriented managerial logics helps explain why new leadership was necessary. Product-oriented executives typically prioritise upstream efficiency and product development, whereas service-oriented leaders adopt a downstream orientation, emphasising customer engagement, co-creation, and long-term relationships (Callaway & Dobrzykowski, 2010). As the supplier progressed into digital servitisation, this downstream orientation became indispensable. New service-oriented executives infused the TMT with mindsets centred on customer intimacy and proactive problem-solving – competences largely absent in the original, product-dominated team.

The findings also highlight that external hires were particularly effective in breaking organisational inertia. Long-tenured managers tended to reproduce established practices, while new executives brought the critical distance required to challenge entrenched assumptions and path dependencies. This supports arguments that fresh leadership perspectives are often essential for breaking from product-based histories in servitisation contexts (Chen et al., 2021). At the same time, the case shows that leadership change alone was insufficient: unless accompanied by explicit goals and new strategic insights, even sweeping reconfigurations risked translating only into incremental revision. This reinforces the view that dynamic capabilities must be enacted coherently across mechanisms to generate genuine transformation (Helfat & Peteraf, 2003).

Finally, the evidence underscores the role of senior directors in driving reconfiguration. While much of the literature privileges the CEO, in this case directors shaped the trajectory by identifying capability gaps, drawing on external networks, and ensuring alignment between governance expectations and managerial competences. This points to TMT reconfiguration as not only an executive-level intervention but also a process anchored in board-level oversight and investor influence.

Goal Setting

Goal setting emerged as a second pivotal meta-mechanism, shaping the supplier's trajectory by translating broad strategic intentions into actionable direction and legitimising resource commitments. Organisational goals provide reference points for decision-making and performance evaluation (Locke & Latham, 2002). In the case firm, directors and senior managers used goal setting to align internal activities with strategic intent, communicate priorities across the organisation, and signal externally to investors and partners where future value creation would lie.

The trajectory of goals mirrored the firm's changing service orientation. In the early phases, goals centred on market expansion and efficiency improvements, consistent with incremental adaptation. As the company progressed into intermediate services, objectives broadened to include life-cycle contracts and customer learning, representing a renewal logic. At more advanced stages, goals explicitly targeted service revenues and the provision of integrated solutions, signalling regenerative ambition. This progression supports Sune and Gibb's (2017) view that the magnitude of goals determines the breadth of managerial competences required, with more ambitious objectives demanding new capabilities.

Yet goal setting was neither linear nor uncontested. Product-expansion objectives persisted alongside service-oriented ones, producing tensions over resource allocation and managerial focus. Such tensions are well documented in servitisation research (Gebauer et al., 2005) and underline that goal setting is not a once-and-for-all exercise but a dynamic process requiring recalibration. In the case firm, recalibration was informed by bottom-up insights from regional sales teams and external knowledge from ecosystem partners, consistent with West and Bogers' (2014) emphasis on

distributed learning and with Inkpen and Currall's (2004) argument that partner knowledge can help organisations overcome internal blind spots.

The findings also reveal that goal setting and TMT reconfiguration were mutually reinforcing. Ambitious service-led objectives would likely have remained aspirational without leaders capable of pursuing them, while new leadership teams required explicit goals to orient and legitimise their actions. This interdependence highlights how governance and leadership combined to unlock the conditions for sensing, seizing, and transforming (Teece, 2007; Helfat & Martin, 2015).

Sensing: Developing Strategic Insights

Strategic insights emerged as the primary trigger for transformation, providing the interpretive frames through which managers perceived opportunities and threats. These insights shaped whether incremental adjustments, resource renewals, or regenerative shifts were mobilised, consistent with Ambrosini and Bowman's (2009) observation that managerial perceptions of environmental dynamism dictate which levels of dynamic capability are activated. In practice, insights were generated through customer engagement, decentralised decision-making, and board-level scanning of industry developments.

The findings highlight both the power and limitations of managerial cognition. As Mezias and Starbuck (2003) note, cognitive inertia – the reliance on established mental models – can lead managers to underestimate the scope of change required or to perceive major shifts as prohibitively risky. This was particularly visible in the supplier's product-oriented legacy, where established routines reinforced a preference for incremental revision even when circumstances demanded renewal or regeneration (Tushman & Romanelli, 1985). Strategic insights therefore depended not only on information flows but also on overcoming entrenched ways of thinking.

Crucially, the case extends existing theory by showing that insights were not confined to the incumbent leadership team. They were also introduced by external actors, especially new board members and investors, who brought vantage points unencumbered by the firm's product-dominant history. These outsiders arrived with pre-formed interpretations of industry trajectories, emergent risks, and unexploited

opportunities, enabling them to challenge cognitive lock-in and reshape managerial attention. This underscores that sensing is not solely an internal cognitive process but also a relational one, mediated by governance structures and external perspectives.

Intentionality was another defining feature of sensing in the case firm. Harreld et al. (2007) argue that dynamic capabilities differ from ad hoc responses in being deliberately cultivated and applied with purpose. This intentionality was evident when new leaders framed digitalisation as a strategic priority, invested in ERP optimisation and customer-facing platforms, and identified disruptive opportunities such as cybersecurity as central to the firm's future. Such deliberate framing ensured that insights were not simply observations but foundations for aligning resource mobilisation and organisational transformation (Teece, 1997).

Seizing: Mobilising the Resource Base

If sensing provided the interpretive foundation for transformation, seizing mechanisms translated these insights into organisational action. In the case firm, seizing was expressed through two distinct but interdependent processes: revising the resource base to consolidate existing activities, and devising new configurations to extend capabilities. Both processes align with Teece's (2007) conception of seizing as the mobilisation of resources to capture opportunities, yet they enacted different patterns of change and played complementary roles in the firm's transformation.

Revising processes were most visible in the pre-digital servitisation phase, when ownership changes and new leadership imposed discipline on the legacy organisation. Executives formalised roles and reporting lines, embedded performance metrics, and consolidated operations around an ERP backbone. These actions stabilised the company by reducing reliance on informal practices, enforcing accountability, and ensuring consistency across semi-autonomous units. Automation of routine tasks further entrenched efficiency. Such revisions align with what the literature describes as incremental adaptation: they consolidated operational effectiveness and enhanced legitimacy with OEM partners, creating the stability necessary for more ambitious transformations (Bititci et al., 2012; Oliva & Kallenberg, 2003).

Devising processes became more prominent as the company moved into the first and second digital servitisation phases. Managers began recombining internal and external resources to create new offerings and extend capabilities. Examples included forming cross-functional teams to design bundled service packages, developing alliances and joint ventures, and acquiring firms that could be repurposed to broaden engineering expertise and digital capacity. The 2017 bundled outage package epitomised this devising logic: by integrating parts supply, ERP-linked monitoring, and simplified contracting, the supplier generated a customer-facing solution directly from operational insights. These activities align with continuous renewal, extending the resource base and embedding new logics of value creation (Kindström & Kowalkowski, 2014; Rabetino et al., 2018).

Importantly, revising and devising were not sequential stages but recursive and mutually reinforcing. Revisions to systems and routines created the discipline and transparency that enabled devising, while devising initiatives fed back into revising by generating new demands for further formalisation. For instance, the expansion of service bundles required additional ERP automation and cross-divisional coordination, illustrating how innovations in devising necessitated fresh revisions. This dynamic reflects Helfat and Martin's (2015) argument that seizing is not a one-off entrepreneurial act but an ongoing balance between stabilisation and renewal.

The findings also demonstrate that seizing in supplier contexts is shaped by governance and financial constraints. Investor expectations channelled devising toward opportunities with demonstrable returns, such as service bundles and acquisitions with proven market demand, while more speculative projects were postponed. This reinforces the view that seizing is always filtered through institutional logics and investment horizons, rather than being solely the product of managerial entrepreneurship.

Transforming: Reconfiguring Structures and Culture

While seizing mechanisms enabled the firm to mobilise and extend its resource base, deeper transformation required more fundamental reconfiguration of structures and cultural logics. In the case firm, transformation unfolded through two intertwined

processes: structural reconfiguration and cultural reorientation. Together, these mechanisms supported a shift away from a product-centred identity toward positioning as a service-led, digitally enabled solutions provider.

Structural reconfiguration involved deliberate changes to governance and organisational design. The company moved toward a hybrid divisional model that separated product distribution from emerging service and digital units, while introducing integrative functions to connect them. Cross-divisional planning reviews, steering groups, and personnel rotations between units were designed to bridge silos and foster coherence across a widening portfolio. These initiatives resonate with the literature on structural ambidexterity (O'Reilly & Tushman, 2013), which highlights the importance of balancing efficiency in established operations with flexibility in new ventures. In this case, structural changes enabled the co-existence of mechanistic routines optimised for product efficiency with more organic, project-based processes required for services and digital solutions.

Cultural reorientation complemented these structural changes by embedding new values and legitimising the service transition. Leadership communications increasingly emphasised customer solutions and digital priorities, while symbolic practices such as promoting cross-divisional collaboration signalled a departure from the product-dominated identity of the founder-led era. Over time, performance discipline, accountability, and a service ethos became institutionalised across the organisation. This echoes studies noting that servitisation requires not only structural but also cultural shifts to overcome the "two-culture problem" that arises when product and service logics clash (Spring & Araujo, 2013). In the case firm, cultural reorientation made digital initiatives and service priorities credible both internally and externally, aligning managerial focus with the firm's evolving identity.

Taken together, these structural and cultural changes underpin what Ambrosini and Bowman (2009) describe as regenerative capabilities – transformative adjustments that reset strategic intent and enable new modes of competition. Structural reconfiguration provided the scaffolding for new business models, while cultural reorientation supplied the normative foundations to sustain them. Crucially, these

transformations extended beyond internal adjustments: they repositioned the firm in its wider ecosystem, rebranding it as a credible solutions provider and embedding it more deeply in networks previously dominated by OEMs and technology firms.

Interplay of Mechanisms with Digitalisation

A central insight from this study is that digitalisation was not a separate layer added to existing processes but a thread woven through each mechanism of transformation. Digital technologies shaped the way strategic insights were generated, how resources were mobilised, and how structures and cultures were reconfigured. At the same time, the mechanisms themselves determined how digitalisation was interpreted, prioritised, and embedded in practice.

For sensing, digitalisation expanded the information base available to managers. The optimisation of ERP and the introduction of dashboards provided visibility into performance gaps, while customer-facing applications such as EDI and e-commerce platforms opened new channels for understanding market needs. Yet the findings suggest that technology alone did not drive insight. Rather, digital tools were filtered through managerial interpretation and governance frames. When new board members highlighted cybersecurity as an emergent risk, for instance, it was their strategic framing that transformed digitalisation from an internal enabler into a domain of opportunity. In this way, digitalisation acted both as a data source and as a stimulus for reframing competitive realities.

In seizing, digitalisation underpinned both revising and devising processes. Revising was reinforced through ERP-based automation, KPI tracking, and digital standardisation, which stabilised operations and created the accountability demanded by investors. Devising, by contrast, leveraged digitalisation more creatively: mobile tools and monitoring applications were combined with parts supply and service expertise to produce bundled offerings. Acquisitions of digital capabilities, such as cybersecurity, further extended the service portfolio. These findings echo arguments that digital platforms provide firms with opportunities for recombination, but they also show that such recombination is conditioned by financial discipline and governance

expectations. Digitalisation thus enabled devising but did not guarantee it; its enactment was mediated by organisational priorities and investor horizons.

Transformation was likewise inseparable from digitalisation. Structural reconfiguration involved creating dedicated digital units alongside product and service divisions, with integrative functions ensuring coherence across them. Cultural reorientation reinforced this by embedding digital priorities into organisational identity, positioning the firm as a credible provider of digitally enabled solutions. Here, digitalisation served not only as infrastructure but also as a symbolic marker of strategic renewal, signalling both internally and externally that the firm had entered a new competitive space.

The interplay between digitalisation and capability mechanisms therefore operated in two directions. On one hand, digitalisation enabled new forms of sensing, seizing, and transforming by providing data, platforms, and symbolic resources. On the other, the mechanisms determined whether digital technologies were harnessed incrementally for efficiency, extended for renewal, or embedded for regeneration. This recursive relationship underscores that digitalisation in supplier firms is not a deterministic force but one whose impact depends on how it is interpreted and channelled through organisational mechanisms.

Summary

Taken together, the analysis of mechanisms provides a deeper understanding of how the patterns of incremental adaptation, continuous renewal, and regeneration were enacted in practice. Revising processes aligned with incremental adaptation, consolidating structures and routines to create stability and efficiency. Devising mechanisms reflected renewal, extending the resource base through recombination and experimentation with new offerings and partnerships. Transforming processes captured regeneration, resetting strategic intent by reconfiguring structures and reorienting culture. Crucially, these mechanisms did not unfold in isolation: they were unlocked and shaped by the meta-mechanisms of TMT reconfiguration and goal setting, which provided the leadership capacity and strategic direction needed for change.

The findings also highlight that digitalisation was deeply interwoven with each mechanism. It expanded the informational base for sensing, stabilised operations during revising, enabled devising of digitally enhanced services, and became embedded in the structural and cultural reorientation that underpinned transformation. In this way, supplier transformation in digital servitisation emerges from the recursive interaction of patterns of change, the mechanisms that channel and enact them, and the digital technologies that both enable and constitute new forms of value creation.

5.4 Contributions To Digital Servitisation Literature

This research revealed digital servitisation to be a complex, recursive, and multi-level process shaped by the interaction of internal managerial actions and external governance forces. The findings showed how a supplier firm deployed dynamic capabilities at incremental, renewing, and regenerative levels to adapt to technological change, shifting customer needs, and evolving industry structures. These capabilities were being enacted through six interrelated mechanisms: reconfiguring the top management team (TMT), setting strategic goals, developing strategic insights, revising the resource base, devising the resource base, and reconfiguring organisational structures and cultures. Together, these mechanisms interacted with digital technologies and broader contextual factors to drive patterns on incremental adaptation, renewal and regeneration of the supplier's resource base.

Empirically Grounding Capability Trajectories

One contribution of this research is providing an empirically detailed account of how dynamic capabilities are enacted over time in the trajectory of digital servitisation. Rather than treating servitisation as an abstract process, the study traced how transformation actually unfolded in practice across three phases within a supplier firm.

The first phase, prior to digital servitisation, showed how early steps such as adopting an ERP system and standardising routines under OEM partnerships represented incremental changes. These changes optimised existing practices without fundamentally altering the resource base. The second phase, the initial digital servitisation effort, required more substantial reconfiguration. The introduction of

bundled offerings, the decentralisation of authority to regional sales teams, and the development of cross-functional collaboration reflected renewing capabilities that combined incremental efficiency with exploratory innovation. The third phase, triggered by ownership changes and acquisitions, went beyond incremental or renewing adjustment. It required regenerative change, which reconfigured leadership, governance, and organisational identity and enabled the firm to position itself as an integrated solutions provider.

By linking incremental, renewing, and regenerative levels of capability to observable changes in specific domains of the resource base, this study extended prior models of servitisation that tended to emphasise linear or cumulative development. The case showed that gradual embedding of digitalisation was punctuated by discontinuous shifts in governance and leadership, which acted as catalysts for deeper transformation.

Supplier-specific Contextualisation

A second contribution lies in providing a contextualised account of digital servitisation in a supplier setting. Most of the existing literature focuses on OEMs and frames servitisation as an extension of product–service systems. Suppliers, however, operate under a different set of conditions. They frequently have more limited financial resources, they lack direct access to end-users, and they are dependent on OEM contracts.

The case of the supplier firm demonstrated how these constraints shaped its trajectory. On the one hand, they slowed innovation and narrowed the firm's focus to less risky opportunities during its early servitisation efforts. On the other hand, they created a reliance on external governance actors such as private equity investors and advisory partners, who became critical in supplying the resources and intent for regenerative change. This reliance illustrates the structural vulnerabilities highlighted in prior research on supplier dependence and OEM power asymmetry. At the same time, the findings showed that such vulnerabilities need not become permanent traps. Suppliers can offset their disadvantages by leveraging governance actors and selectively developing direct relationships with downstream customers. This makes

clear that supplier servitisation trajectories are shaped by both constraint and agency, and that their paths to digital servitisation cannot be assumed to mirror those of OEMs.

Integrating Internal and External Perspectives

A third contribution lies in integrating internal and external perspectives to provide a more holistic explanation of how dynamic capabilities are enacted. Much of the dynamic capabilities literature emphasises managerial perception and decision-making as the primary source of capability deployment. While this internalist view remains important, the case of the supplier firm demonstrated that external governance actors can be equally decisive in shaping transformation.

From an internal perspective, managers were revising and devising the resource base by standardising routines, integrating digital tools into daily work, and creating hybrid offerings such as service bundles. They were also developing strategic insights through customer engagement, site visits, and decentralised decision-making in regional sales teams. From an external perspective, investors and new board members reshaped the broader conditions for capability enactment. They reconfigured governance structures, set ambitious service revenue goals, and reconstituted the TMT with new roles such as Chief Commercial Officer and Chief Digital Officer. Cultural change was also promoted, as new leaders introduced symbolic practices, such as rotating offices between divisions, to model integration and encourage a service-oriented mindset.

By combining these internal and external perspectives, the study went beyond conventional internalist explanations and offered a more comprehensive account of how dynamic capabilities are enabled and constrained in supplier contexts. This holistic approach enriches the understanding of digital servitisation and highlights the particular vulnerabilities and opportunities that supplier firms encounter.

Interplay of Digitalisation and Servitisation

A fourth contribution concerns the interplay between digitalisation and servitisation. Much of the prior literature has treated digitalisation as a one-directional enabler of service innovation. The case of the supplier firm showed that the relationship is more recursive and sequential.

In the pre-servitisation phase, digital technologies such as ERP were adopted but under-utilised, laying latent foundations for later change. During the first phase of digital servitisation, digitalisation was primarily applied to efficiency improvements and internal coordination. It enabled bundles and cross-functional collaboration but was still viewed as a support function rather than as a strategic resource. In the later phase, digital resources became central to the firm's offerings. Acquisitions in areas such as cybersecurity and the development of new platforms embedded digitalisation in customer solutions and ecosystem engagement.

This sequencing showed that digitalisation not only supported servitisation but also became an outcome of capability development. By first stabilising operations and then enabling customer-facing innovation, digitalisation was both a driver and a product of transformation. This recursive relationship helps explain why supplier firms often appear to be "lagging" OEMs: their digitalisation initially serves to stabilise operations before becoming the foundation for advanced service solutions.

Continuity, discontinuity, and regeneration

A fifth contribution relates to the balance of continuity and disruption in transformation processes. Prior research on servitisation and digital transformation often emphasises incremental and cumulative change. The case of the supplier firm showed that such incremental and renewing processes were indeed present, especially in the early phases, but that they were not sufficient to explain progression towards advanced solutions.

Regenerative change was required. Such change was triggered not by managerial agility alone but by governance shifts, acquisitions, and leadership restructuring. These interventions did not merely adjust structures but also reshaped organisational culture, with new leaders promoting service integration and modelling new ways of working. This demonstrated that supplier firms may need externally supplied intent and cultural renewal to overcome inertia and reposition themselves strategically.

By combining evidence of incremental, renewing, and regenerative change, the study challenged the assumption that digital servitisation is primarily an evolutionary process. Instead, it showed that discontinuous shifts are often decisive in enabling

supplier firms to break from established patterns and move into advanced service provision.

Methodological contribution

Finally, the study made a methodological contribution by refining how the resource base can be analysed in process research. Barney's (1991) framework identified three broad categories of resources: physical, human, and organisational. This tripartite classification has provided the foundation of the resource-based view but is deliberately broad. While useful at a theoretical level, it offers limited traction for empirical analysis of how specific domains of resources change over time in contexts such as digital servitisation.

To address this, the study abductively identified five analytically distinct domains: human capital, digital technology, finance, operations, and external relations. These domains were used as conceptual anchors in both data collection and analysis. Treating them as embedded units of the resource base enabled reconfigurations to be systematically traced across the three phases of the case and across different levels of dynamic capability enactment. This methodological refinement not only strengthened the analytical rigour of the study but also produced a framework that can be replicated or adapted in future research. For scholars examining digital servitisation or similar transformation processes, the five-domain schema provides a practical way of operationalising resource base changes that would otherwise remain difficult to capture using Barney's original broad categories.

5.5 Managerial Implications

For practitioners in supplier firms contemplating digital servitisation, this study provides insights into how transformation unfolds and how different dynamic capability patterns emerge in practice. In volatile industries especially, shifting from selling products to providing integrated solutions cannot be achieved through incremental adaptations alone. Instead, managers must deliberately pursue deeper changes in capabilities – patterns of renewal and sometimes regeneration – where even the dynamic capabilities used for adaptation are themselves reshaped.

A first implication is the importance of critically assessing the firm's resource base domains before embarking on transformation. Executives need an honest evaluation of current resources and competencies to identify gaps or weaknesses. This requires open debate among top managers and board members (Finkelstein & Mooney, 2003). It is also crucial to determine how existing product-focused resources could support services and integrated solutions, because product-based competencies often do not carry over directly into services (Danneels, 2010). Such assessments should cover all resource domains – human, financial, digital, operational, and relational. Taking an ecosystem view helps clarify what to build internally, what to phase out, and what to source externally, ensuring the firm does not overstretch its limited resources.

A second implication is that strategic insights are crucial. The trigger for deploying new capabilities lies in sensing and interpreting opportunities for services and customer solutions. Such insights come from both inside the firm (e.g., frontline sales feedback) and outside (e.g., investors or board members offering broader industry perspectives). Managers should embrace multiple perspectives by listening to internal signals and engaging with external voices that challenge assumptions. Without this pluralistic approach, firms risk cognitive inertia and may miss market turning points. Practical measures like customer site visits, decentralising decisions to regional teams, and active industry scanning and networking can institutionalise this breadth of insight.

A third implication is the need for continuous calibration. Managers must constantly assess not only the firm's resources, but also what type of change the environment currently demands – whether incremental, renewing, or regenerative. In this study, calibration often meant adjusting goals to signal the required level of change. For example, leaders set explicit service-revenue targets, reframed the mission around integrated solutions, or revised investment policies to reflect new priorities. Misalignment is costly: investing in advanced analytics before customers are ready or delaying the renewal of managerial skills until financial pressures mount can stall transformation. In practice, leaders have to balance continuous versus episodic change (Weick & Quinn, 1999), recognising when gradual improvement is sufficient and when disruptive action is needed.

A fourth implication concerns the orchestration of different patterns of capability deployment over time. Incremental adaptations (such as ERP optimisations, automating routine tasks, or using performance dashboards) stabilise operations and free managerial attention for strategic priorities. Continuous renewal (for example, bundling services, forming cross-functional teams, or repurposing acquired resources) extends capabilities in line with evolving customer needs. Sometimes a regeneration step is needed – for instance, renewing managerial competencies by reshuffling the top management team – to refresh the resource base. The key is recognising which pattern suits the moment. Incremental tweaks cannot drive transformation if governance or market shocks demand deeper change; conversely, far-reaching restructuring implemented too early can undermine valuable routines.

Finally, managers need to align digitalisation and servitisation. Digitalisation and servitisation should be treated as intertwined, not separate, initiatives. This study shows that digital tools initially supported incremental efficiency gains, later enabled renewal (for instance, through e-commerce and EDI for customer-facing improvements), and even contributed to regenerative shifts. The key lesson is to sequence and align digital investments with the service transformation path. Overinvesting in advanced technologies without a clear service model leads to misalignment, while pursuing services without a digital backbone undermines scalability. Managers should therefore treat digitalisation and servitisation as ongoing, interdependent processes whose combined evolution drives long-term transformation.

Taken together, these implications suggest that digital servitisation should not be seen as a one-off project but as an ongoing process of reconfiguring resources through shifting patterns of adaptation, renewal, and regeneration. For supplier firms, success depends on sequencing capability deployment appropriately, aligning digital and service strategies, and drawing on both internal strengths and external partners to sustain transformation over time.

5.6 Limitations and Future Work

This thesis has advanced understanding of digital servitisation by showing how changes to a non-OEM supplier's resource base unfold over time. It illuminated how

patterns of incremental adaptation, continuous renewal, and regenerative transformation emerged in response to shifting technologies, customer needs, and governance pressures. Yet, as with all research, it is essential to recognise the parameters of the study. The following limitations should be seen not as weaknesses but as boundary conditions that shape the scope of the claims and point toward directions for future inquiry.

A first limitation lies in the single case study design. This approach was deliberately chosen to allow for deep, contextualised analysis of the firm's trajectory. As Yin (2018) observes, single cases can yield powerful insights into complex processes when the aim is analytical rather than statistical generalisability. Here, the design enabled close tracing of resource base changes, their sequencing, and the interplay between internal and contextual factors — insights that broader designs might have missed. However, reliance on one firm inevitably narrows the contexts captured. Supplier firms vary in scale, industry position, and governance structures. The patterns of change observed in this case therefore extend theory but cannot be assumed to apply universally. Future research could employ multi-case or comparative designs to test whether similar sequences of adaptation, renewal, and regeneration emerge elsewhere, or whether alternative trajectories can be identified. Cross-sectoral studies in industries such as aerospace, automotive, or energy could further clarify the boundary conditions of the process model developed here.

A second boundary concerns the industrial positioning of the case firm. By focusing on a non-OEM supplier, the thesis responded to calls to move beyond OEM-centric views of servitisation (Windahl & Lakemond, 2006; Vendrell-Herrero et al., 2017). Suppliers operate under distinctive constraints, often facing limited financial capital, technological assets, and managerial capacity, which shape the pace and scope of transformation. Yet they may also benefit from greater agility, with fewer entrenched bureaucratic processes and less dependency on legacy systems (Meredith, 1987). By contrast, OEMs typically possess stronger resources but face slower decision-making and deeper path dependencies. These contrasts enrich understanding of servitisation but also limit transferability. Future work should therefore compare suppliers and

OEMs, or different supplier tiers, to assess how structural position shapes trajectories and whether the observed patterns of change are generalisable.

The temporal scope presents a further limitation. The fieldwork captured an eight-year trajectory that ended in the early stages of an integrated solutions strategy. This provided valuable insight into transformation as it unfolded, but later developments necessarily fall outside the study. Digital servitisation is ongoing, continually reshaped by technological advances, regulatory shifts, and market dynamics. While this research traced movement from basic distribution to advanced services, it cannot predict whether adaptation, renewal, and regeneration will be sustained, scaled, or reversed in the longer term. Future longitudinal research could examine how regenerative transformations mature, whether integrated solutions are consolidated, and whether incremental and renewal patterns remain embedded over time. Such studies might also ask whether regenerative intent persists once external pressures ease or whether it erodes without continued reinforcement.

A further limitation lies in the balance between internal and external perspectives. A key contribution of this thesis was to show how external governance actors—particularly private equity investors and advisory partners—catalysed regenerative change. This challenges conventional dynamic capabilities theory, which emphasises internal managerial cognition and decision-making (Teece, 2007; Ambrosini & Bowman, 2009). Yet with only one case, the study cannot establish whether such reliance on external triggers is widespread. Some suppliers may be able to generate regenerative intent internally, while others may depend heavily on outside interventions. Future research could explore variation across ownership forms, governance logics, and partnership arrangements. Studies comparing family-owned, publicly listed, and private equity-backed firms would help clarify when external governance drives transformation and when change emerges from within. There is also scope to investigate how managers absorb, adapt, or resist external interventions, and under what conditions these pressures result in lasting capability reconfiguration rather than temporary compliance.

Finally, some methodological considerations must be acknowledged. This study employed a qualitative, abductive design, combining retrospective interviews with archival and documentary sources. While this enabled rich process tracing, reliance on retrospective accounts introduced the risk of interpretive bias, despite efforts at triangulation. Future research could use mixed-methods to balance qualitative depth with quantitative breadth – for example, surveys to test the prevalence of observed patterns, longitudinal data to examine outcomes, or archival datasets to trace digital investments and link them to service innovations. Methods such as event history or sequence analysis could also sharpen understanding of the temporal dynamics of digital servitisation across firms and industries.

Taken together, these boundaries point to several directions for future research. Comparative studies across firm types and supplier tiers could clarify how structural position and resource endowment shape transformation. Longitudinal analyses are needed to assess whether regenerative change endures and whether incremental and renewal patterns provide lasting foundations. Further work on governance and ownership could show when regenerative intent is externally induced or internally cultivated. Greater attention to the interplay of managerial action and external intervention would deepen understanding of digital servitisation as a relational, multi-actor process. Finally, mixed-methods and multi-case designs would broaden the empirical base and test the propositions developed here across diverse contexts.

5.7 Reflections on the PhD Journey

This thesis marks the culmination of a long research journey that has been both intellectually demanding and personally transformative. Beyond its substantive contributions to the field of digital servitisation, the doctoral process itself has been a learning experience in cultivating the mindset, skills, and resilience required for independent scholarship.

A defining aspect of this journey has been the transition from consuming knowledge to producing it. At the outset, the literature on digital servitisation and dynamic capabilities appeared as a set of fixed theories and frameworks. Over the course of the PhD, however, I came to understand that theory is not static but continually evolving, contested, and extended through empirical work. This realisation was reinforced by the process perspective that underpinned my research.

Looking back, the evolution of my research practice mirrors the transformation patterns I observed in the case firm. Just as the company's trajectory unfolded through incremental adaptation, continuous renewal, and regeneration, my own development moved beyond rigid frameworks to embrace complexity, temporality, and ambiguity. In the early stages, my progress was incremental, grounded in mastering the literature and methodology. As the project advanced, I was compelled to renew my mental models – moving away from static frameworks toward a more dynamic conceptualisation of resource transformation. An inflection point came in the first third of my PhD following a supervisory transition, which required me to reframe key aspects of the research, adapt to new expectations, and rearticulate my approach. What initially felt disruptive became an opportunity for redirection and learning. These experiences resonated with the regenerative shift I observed in the case firm and underscored the iterative, and at times discontinuous, nature of scholarly growth.

This trajectory also demanded increasing confidence in my interpretive abilities. Where I initially sought reassurance in established frameworks, I gradually became more comfortable advancing arguments that extended and occasionally challenged prevailing perspectives. The support and guidance of my supervisors were invaluable in this regard. Pettigrew's emphasis on studying "history in action" also encouraged me

to think with time: to trace the interplay of internal dynamics and external conditions in the case, and to cultivate reflexivity about my own role in shaping the narrative. The shift from "theory application" to "theory extension" marked a turning point in my development as a researcher.

The challenges of the journey were not limited to conducting the research. Writing itself proved transformative. Early drafts were largely descriptive, but through successive cycles of feedback and revision I learned to craft stronger arguments, synthesise the literature more effectively, and position my contributions within scholarly debates. In many respects, the mechanisms that shaped my writing mirrored those shaping the case firm's transformation: revising drafts incrementally, devising new connections as insights emerged, and occasionally reorienting the framing altogether. Scholarship, like organisational change, is rarely linear but emerges through cycles of adjustment and learning.

Alongside these intellectual and methodological lessons, the doctoral process also shaped my academic identity. Participation in conferences and scholarly networks underscored the collaborative, dialogical nature of knowledge creation: ideas evolve not in isolation but through critique, exchange, and co-construction. Engagement with managers and practitioners during fieldwork reinforced the need for academic inquiry to be both rigorous and relevant. Just as the case firm grappled with balancing efficiency with responsiveness, I came to appreciate the importance of balancing theoretical contribution with practical insight.

In sum, this PhD journey has been a process of immense intellectual and personal growth. Pettigrew (1997) observes that processual research is liberating because it shifts attention from static variables to lived dynamics, illuminating how strategies and structures unfold over time within specific contexts. This insight resonated strongly with my own scholarly development: what initially appeared messy or fragmented in my empirical observations became, through a process lens, an opportunity to capture the richness of organisational life. Liberated from static mental models, I learned to embrace complexity and temporality as essential features of understanding transformation. While the thesis represents a completed piece of scholarship, the

journey has equipped me with the intellectual, methodological, and personal capabilities to continue the lifelong process of scholarly inquiry.

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Appendix A: Pilot Study Interview Protocol

Purpose:

To explore how senior managers in service firms perceive and implement digital transformation, and to surface early themes relevant to digital servitisation.

Participant Criteria:

Senior managers or executives with oversight of digital transformation, IT, innovation, or service strategy.

Interview Format:

Type: Semi-structured interview
Duration: 60–90 minutes
Mode: Virtual (via Zoom or MS Teams)

Section A: Introduction (5–10 minutes)

- Briefly explain the purpose of the study and the pilot nature of the interview.
- Inform participants of confidentiality and anonymity.
- Seek consent for recording the session.
- Allow participant to ask questions.

Section B: Background and Role (10 minutes)

1. Can you tell me about your role and responsibilities?

2. How long have you been involved with your company and can you briefly describe your professional background leading up to this role?

Section C: Digital Strategy and Services (20–25 minutes)

3. Can you walk me through your company's digital transformation journey so far?

4. How have digital technologies influenced the types of services or experiences you offer to customers?

5. What role have external factors (e.g. partners, government regulations, customers) played in shaping your transformation journey?

Section D: Resource and Capability Development (15–20 minutes)

6. What kind of changes in human resources (e.g. new skills, roles) have occurred as part of your transformation?

7. Can you describe any other internal changes (e.g. processes, structure) that has been part of your digital transformation efforts?

8. How have financial resources been allocated to support digital transformation?

Section E: Challenges and Reflections (10–15 minutes)

9. What challenges have you experienced with your digital transformation?

10. What lessons from your experience might help product-oriented firms (e.g. manufacturers or product suppliers) considering a move into services?

Section F: Closing (5 minutes)

11. Is there anything else you think is important to understand about digital transformation in your context?

12. Would you be open to sharing relevant documents or participating in a follow-up discussion if needed?

Appendix B: Main Study Interview Protocol (Phase1)

Introduction

1. Researcher Introduction and Study Focus

Thank you for agreeing to participate in this study, which I am conducting as part of my doctoral research. The focus is on the company's transformation towards services and integrated solutions.

2. Purpose and Significance of the Research

The purpose is to gain a deeper understanding of how the company has reached its current stage in this journey, with particular attention to how its resources and capabilities have evolved over time.

3. Confidentiality and Consent

All responses will remain confidential. Identifying information will be anonymised, and the data will be used solely for academic purposes.

Background Information

4. Participant Role and Background

- Can you describe your current role and main responsibilities?
- How long have you been with the company, and what roles have you held?

Changes in Company Structure and Offerings

5. Company Evolution and Strategic Shifts

- How has the company changed over the last decade?
- What have been the key moments or turning points in this evolution?

6. Service Offering Development

- How would you describe the company's roadmap towards services?
- What services were introduced in particular?

  Example Prompts:

  - What were the main reasons for introducing these services?

- Were the necessary capabilities developed internally or acquired externally?
- How did customer needs and feedback influence service development?

Development of Digital and Service Capabilities

7. Role of Technology in Service Transformation

- Which digital technologies have been impactful in the company's journey?
- In what ways have they changed internal processes or ways of working?
- Has technology shaped decision-making within the organisation?

Example Prompts:

- Can you give an example of a specific technology that improved operations or service delivery?
- How did you decide which technologies to adopt?
- Has this or any technology enabled (or limited) new service opportunities for the company?

Strategic Leadership

8. Executive and Board-Level Influence

- What role has the top management team played in driving the transformation?
- What leadership decisions have been most impactful?
- Were there moments when leadership had to make trade-offs or prioritise certain initiatives over others?

Example Prompts:

- Were certain initiatives board-driven, CEO-led, or collaborative?
- How was alignment maintained across leadership levels?
- Did leadership approaches change as the transformation progressed?

Internal Operations and External Engagement

9. External Influence and Partnerships

- How have partnerships with external organisations shaped your transformation journey?

  Example prompts:

  - Were certain initiatives board-driven, CEO-led, or collaborative?
  - How was alignment maintained across leadership levels?
  - What kinds of partners were involved – e.g. technology firms, customers, others?
  - Did external actors help shape internal strategy?

Transformation Challenges and Success Factors

10. Challenges

- What major challenges have you faced in introducing service offerings?
- How were these addressed?

Example prompts:

- Were there gaps in skills, technology or any other resources?
- How did employees respond to these changes?
- What helped overcome internal resistance?

11. Success Factors and Lessons Learned

- What has helped ensure success in developing service offerings?
- Are there lessons that could benefit other supplier firms attempting a similar transition?

Example prompts:

- What worked particularly well?

- Were there moments when specific changes made a big difference?
- What would you do differently if starting again?

Concluding Thoughts

12. Future Outlook and Recommendations

- How do you see the company's transformation progressing in the next few years?
- Are there particular opportunities or risks you anticipate?
- Is there anything else you think is important for understanding this journey?

13. Closing:

Thank you for sharing your insights. If you think of anything further that might be relevant, please feel free to contact me. Is there anyone else in the organisation you think I should interview?

Appendix C: Main Study Interview Protocol (Phase 2)

Introduction

1. Researcher Introduction and Study Context

Thank you for agreeing to participate in this interview. I am following up to discuss key changes in the company's journey towards services and integrated solutions.

2. Purpose of the Interview

The aim is to confirm and refine themes coming from my analysis of earlier interviews. They concern the types of changes involved in the company's transformation and how they relate to each other.

3. Confidentiality and Consent

All responses will remain confidential. Identifying information will be anonymised, and the data will be used solely for academic purposes.

Changes in Company Structure and Offerings

4. Types and Scale of Changes

Key examples of change processes:

- **Revising:** formalising roles and reporting lines; revising key performance metrics; using digital tools to streamline business processes.
- **Devising:** customising product-service bundles; developing MRO and field services capabilities; leveraging alliances and joint ventures to enter new markets.
- **Re-orienting:** adopting service-oriented values; major organisational restructuring; embedding service expertise within product teams.

Questions:

4.1 Does this characterisation and examples fit your experience?

4.2 Are there other examples or perspectives you would add?

4.3 What made these changes possible or difficult?

Development of Digital and Service Capabilities

7. Digital vs Service Capabilities

Key examples:

- **Digital Capabilities:** data-driven decision-making; embedding digital tools in customer service delivery; acquisition of digital security patent.
- **Service Capabilities:** development of MRO and field services; recruitment of service-oriented staff; partnerships to access specialised service knowledge.

Questions:

7.1 Does this characterisation and examples fit your experience?

7.2 Are there other examples or perspectives you would add?

7.3 Were there trade-offs between developing digital and service capabilities?

Strategic Leadership

5. Leadership Transitions vs Goal Setting

Key examples:

- **Leadership Transitions:** board-level changes; new executive appointments; changes in leadership composition and expertise.
- **Goal Setting:** redefining strategic priorities; introducing new value propositions; setting goals requiring new capabilities.

Questions:

5.1 Does this characterisation and examples fit your experience?

5.2 Are there other examples or perspectives you would add?

5.3 How did these leadership and goal changes influence what the company focused on and how quickly it acted?

Internal Operations and External Engagements

6. Internal vs External Focus

Key examples:

- **Internal:** ERP integration; formalised processes; cross-functional coordination.
- **External:** new OEM alliances; MRO partnership and acquisition; joint venture in Brazil; embedding staff in customer operations.

Questions:

6.1 Does this characterisation and examples fit your experience?

6.2 Are there other examples or perspectives you would add?

6.3 Were there trade-offs between internal improvement and external relationship building?

Transformation Challenges And Success Factors

8. Challenges vs Enablers

Key examples:

- **Challenges:** resource and skills gaps; market uncertainty; organisational inertia.
- **Enablers:** leadership changes; strategic partnerships; early “small wins” in transformation initiatives.

Questions:

8.1 Which challenges and enablers stand out now?

8.2 Have new ones emerged since earlier stages?

8.3 Which have been resolved, and which persist?

Concluding Thoughts

9. Reflections and Future Outlook

Questions:

9.1 Which turning points do you consider most important?

9.2 What changes do you expect in the future?

9.3 What factors will be critical?

9.4 What could slow progress?

10. Closing

Thank you for your time and insights. If anything else comes to mind that could help this research, please let me know. Is there anyone else you recommend I speak with for another perspective?