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2024

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Darko, Simon Yaw Osei . (2024). Dynamics of digital servitisation transformation in earthmoving equipment dealerships [Master's dissertation, University of the Witwatersrand, Johannesburg]. WireDSpace.

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Dynamics of digital servitisation transformation in earthmoving equipment dealerships

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business

Johannesburg, 2024

ABSTRACT

In the rapidly evolving earthmoving equipment industry, this study investigates the challenges and opportunities stemming from digital servitization transformation. As conventional dealership models face disruption from digital technologies, the necessity for adaptation to maintain competitiveness becomes evident. This research seeks to address the gaps in understanding regarding the transformation process and the implications of digital servitisation within this industry context.

Drawing upon a conceptual framework that integrates principles of digital transformation and servitisation, the study examines the critical stages of transformation and the pivotal role of leadership. Qualitative methods, including interviews with 9 senior managers and executives from two earthmoving equipment dealerships, were employed to capture insights into the transformation journey, challenges encountered, and the leadership dynamics driving the process.

Key findings underscore the multifaceted nature of digital servitization transformation, emphasizing the importance of strategic alignment, IT transformation, process digitization, organizational change, customer service innovation through artificial intelligence and machine learning and leadership adaptability. The research offers a structured framework to assist industry practitioners in effectively navigating the transformation journey.

In conclusion, this study emphasizes the imperative for earthmoving equipment dealerships to embrace digital servitization as a strategic imperative for long-term viability. By providing actionable insights and guidance, the research advocates for proactive adaptation to capitalize on the opportunities presented by digital technologies, thereby ensuring sustainable growth and competitiveness in the digital era.

KEYWORDS

Servitisation, Digital transformation, digital servitisation, digital servitisation transformation, Digital leadership

DECLARATION

I, Simon Yaw Osei Darko, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Name: Simon Yaw Osei Darko Signature: 

Signed at Tete Mozambique

On the 17 day of February 2024

DEDICATION

This research report is dedicated to my children Paul Osei Darko, Timothy Osei Darko and Jessica Osei Darko – a constant reminder to never settle.

ACKNOWLEDGEMENTS

I am deeply grateful to my beloved family and friends for their unwavering support, encouragement, and understanding throughout this research journey. Their love, patience, and belief in me have been a constant source of strength and inspiration.

Special thanks to my esteemed research supervisor Dr Manessah Alagbaoso for his invaluable guidance, mentorship, and constructive feedback. His expertise and encouragement have been instrumental in shaping the direction and quality of this research.

I am indebted to the respondents who generously shared their time, knowledge, and experiences, without whom this study would not have been possible. Their insights have enriched the depth and relevance of my research findings.

To my fellow research students at the time, your camaraderie, encouragement, and shared experiences have made this journey more fulfilling and enriching. I am grateful for the friendships forged and the collaborative spirit that propelled us forward.

I extend my heartfelt appreciation to my employer Barloworld Equipment Southern Africa for their continuous support and flexibility during this academic pursuit.

Lastly, I offer my deepest gratitude to the Almighty God and Creator for granting me the wisdom, resilience, and fortitude to embark on this academic pursuit. His divine guidance and blessings have been my guiding light throughout this endeavor.

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Abbreviations and Acronyms

AI	Artificial Intelligence
CAQDAS	Computer-Aided Qualitative Data Analysis Software
CDO	Chief Digital Officer
CEO	Chief Executive Officer
CIO	Chief Information Officer
CRM	Customer Relationship Management
ERP	Enterprise Resource Planning
IoT	Internet of Things
IT	Information Technology
KPI	Key Performance Indicator
ML	Machine Learning
OEM	Original Equipment Manufacturer
PSE	Prioritised Service Event
RFMS	Recency, Frequency, Monetary and Sensitivity model
4IR	Fourth Industrial Revolution

1. INTRODUCTION

1.1 Purpose statement

This study explores the critical stages involved in implementing a digital servitisation transformation and the role of leadership in facilitating such a transformation.

1.2 Background

The earthmoving equipment industry has evolved significantly since the 19th century, with advancements in technology and increasing demand for infrastructure development driving growth. Earthmoving equipment dealers sell a wide range of heavy-duty machinery, including excavators, bulldozers, tractors and trucks, which are used in industries such as construction, mining, agriculture and forestry. The earthmoving equipment dealership model, which has long involved distributing Original Equipment Manufacturer (OEM) products and providing aftersales' service, is undergoing a significant business model transformation driven by digital technologies (Baines et al., 2019; Goel et al., 2022; Kowalkowski et al., 2017). The rise of e-commerce platforms and online marketplaces has transformed the channels to market (Hoffman et al., 2019), allowing OEMs and suppliers of third-party parts direct access to customers. Additionally, the integration of autonomous technology, telemetry and predictive analytics models is expected to lower owning and operating costs of machines by reducing the frequency and intervals of maintenance and repair activities (Hoffman et al., 2019), thus reducing dealer aftersales' revenue. Finally, the push for the electrification of earthmoving equipment as alternatives to traditional diesel-powered equipment is expected to reduce dealers' revenue in the future (Hoffman et al., 2019). These alternatives require fewer and minimal moving parts and have extended maintenance intervals, which would further reduce dealer aftermarket revenue.

These technologies do not only impact the dealer revenue model; they also introduce new actors into the traditional OEM-dealer-customer ecosystem, changing the structure and dynamics within it (Porter & Heppelmann, 2014). Ecommerce platforms and online marketplaces allow OEMs and third-party suppliers to supply genuine or grey parts respectively to customers, in this way impacting dealer retail revenue and margins.

Technologies such as the Internet of Things (IoT) and big data analytics provide technology service providers with entry into the earthmoving equipment ecosystem.

There is no end in sight in terms of the proliferation of digital technology, with generative Artificial Intelligence (AI) technologies such as chatbots and ChatGPT also emerging in the fold. Thus, the traditional earthmoving equipment business model will continue to be disrupted and dealers will have to adapt their business models if they are to survive.

1.3 Research problem

Academics and practitioners agree that dealers must transform their business models toward digital servitisation by integrating digital technologies to provide innovative products and services (Goel et al., 2022; Kolagar et al., 2022). Digital servitisation is the process by which a company transforms its traditional business model to integrate digital technologies and services into its products or services. This approach not only enables firms to differentiate themselves from competitors but also creates new revenue streams (Goel et al., 2022). For example, a company that offers maintenance and repair services could offer advanced digital services that monitor the performance of the equipment in real time, predict maintenance needs, and optimise the equipment's operation to reduce downtime and improve efficiency. Digital servitisation combines two business models in the form of digitalisation and servitisation (Favoretto et al., 2022).

Digital servitisation is a new phenomenon and despite a growing body of literature on the subject, little is known about its nature and how the process unfolds (Chen et al., 2021). The transformation process is often complex (Chen et al., 2021), requiring significant organisational change (Bustinza et al., 2018), investments in technology or platforms, organisational capabilities and ecosystems of partners (Baines et al., 2019; Kamalaldin et al., 2021). Leaders leading a servitisation transformation must navigate significant changes in the organisation's culture, structure and strategy while efficiently orchestrating the ecosystem actors (Sjödin et al., 2022). Digital servitisation is an ambidextrous process where leaders must contend with operating their current businesses efficiently whilst exploring servitisation transformation (Matusek, 2022). Kowalkowski et al., (2017) point to the need for new leadership skills beyond those needed to develop a separate service business within a product firm or to set up a service. These leaders must also drive collaboration and alignment with their ecosystem partners, who have vastly different agendas and trust issues.

Generally, many large manufacturers have been providing value-added services of varying complexity to customers; however, the emergence of digital technologies has forced them to transform their offerings through digital transformation (Favoretto et al., 2022). Firms are taking different approaches to digital servitisation transformation. Many have started by overlaying digital tools on their existing service offerings, while others have begun by investing in internal Information Technology (IT) systems and core skills development. Currently, there is no systematic approach for implementing digital servitisation transformation. The lack of a clear and logical approach for dealers to use in implementing digital servitisation transformation successfully is a concern, as many practitioners invest in digital technology without fully understanding the value equation or appreciating the challenges ahead (Chen et al., 2021). This lack of understanding of the key concepts of and requirements for implementing digital servitisation can result in the failure of these types of initiatives in the industry.

1.4 Research objectives

The objectives of the research are:

1. To identify the key stages or steps involved in the digital servitisation transformation process for earthmoving equipment dealers.
2. To identify the logical sequence of the transformation stages.
3. To examine challenges faced by dealerships during the digital servitisation transformation process.
4. To examine the role of leadership in driving the digital servitisation transformation process in earthmoving equipment dealerships.

1.5 Rationale

Literature on digital servitisation has focused on providing practitioners with frameworks related to the core technology, service offerings (Chen et al., 2021), business models (Chen et al., 2021) and ecosystems (Kamalaldin et al., 2021; Kolagar et al., 2022). It has also investigated transformational challenges (Khanra et al., 2021) that practitioners may encounter as they embark on the digital servitisation journey. Kimita et al., (2022) recently developed a maturity model for servitisation that may assist practitioners in measuring the maturity levels of an incumbent firm on the transformation process. This could help a business to identify its

current state and develop improvement plans to close the gap between this state and achieving digital servitisation transformation. However, a clear and in-depth process that firms can use to implement digital servitisation transformation successfully is lacking.

Baines et al. (2019) have developed a four-stage servitisation progression model which describes the transformation process that takes place as a product-centric manufacturer servitises to compete through advanced services. While such a phased approach is very relevant to the practitioner, it does not define the process within the phases or stages nor their level of importance. Chen et al. (2021), in their examination of a Chinese air conditioning manufacturer, found digital servitisation transformation to follow a structured process that is characterised by both discontinuous and continuous interplay between business model and digital technology.

The current study sheds light on the logical process for digital servitisation transformation through a study in a specific industry and geographical context. This research thus provides an understanding of the process in a different industry and geographical context. Discussions about digital servitisation in the country are relevant as most servitisation studies to date have been carried out in mature economies in Western and Eastern Europe and Asia (Chen et al., 2021; Favoretto et al., 2022; Paschou et al., 2020).

In addition, the current study explores the role of leadership in digital servitisation transformation. The link between leadership and digital transformation is well documented as captured in the term “digital leadership”. Many studies have focused on identifying the key competencies and behaviours of digital leaders and their role in leading digital transformation initiatives (Kane et al., 2019; Kotter & Schlesinger, 1979). In addition to the attributes included in the classic change management theories, these studies have identified additional leadership attributes such as adaptability, digital literacy, and being transformative and forward looking, as key traits for digital leaders. Only a few studies have suggested links between leadership and servitisation (Antioco et al., 2008; Nie & Kosaka, 2014). More recent research by Kim and Toya (2019) in Japan leveraged the work from classic change management and leadership theories to identify the most suitable leadership styles to advance servitisation effectively in a manufacturing industry in Japan. The study identified charismatic leadership as an enabler, with autocratic and autonomous styles as a hindrance to digital servitisation transformation. Whilst literature links leadership and digitalisation and leadership and servitisation, literature

that links leadership and digital servitisation is limited. There is thus a need for research to explore the role of leadership in digital servitisation transformation.

In light of the above discussion, this research aims to explore the critical stages involved in the digital servitisation transformation of earthmoving equipment dealerships. The study will contribute to the existing literature by providing insights into the practical implications of digital servitisation for dealerships and the leadership role needed to navigate this transformation. The findings can help dealerships to develop a roadmap for implementing digital servitisation and help leaders to acquire the necessary insights to lead the transformation process effectively.

1.6 Terms

The key terms used in the research report are defined below.

Aftermarket:	The aftermarket can be defined as activities that take place after a product has been sold, such as maintenance, repair and customer support.
CRM systems:	Customer Relationship Management (CRM) systems are software applications that help businesses to manage their interactions with customers, including tracking customer interactions, managing customer data and automating certain customer-related processes.
Digital servitisation:	This is a process of transformation in which a company that primarily focuses on producing physical products shifts its business model to a service-oriented approach, supported by digital technologies. This transformation allows the company to reorganise its business processes, capabilities, products and services to provide greater value to customers and improve both financial and non-financial performance (Favoretto et al., 2022).
Digital transformation:	This involves the integration of digital technology into all areas of a business, resulting in fundamental changes to how the business operates and delivers value to customers.
Digitalisation	digitalization is a transformation of business processes, operations and interactions using digital technologies

Digitisation	Digitization is the process of converting analogue information into digital format
Earthmoving equipment:	Earthmoving equipment is heavy-duty machinery, including excavators, bulldozers, tractors and trucks, that is used in industries such as construction, mining, agriculture and forestry.
Grey parts:	These are non-genuine parts that are produced by third-party manufacturers and sold in the market.
OEMs:	Original Equipment Manufacturers (OEMs) are companies that produce and sell products or components that are used in the production of other products by other companies.
Servitisation:	This is a business model that involves providing services in addition to selling physical products.

1.7 Delimitations

This research has the following delimitations:

a. The study focuses specifically on the earthmoving equipment industry and does not include other industries or sectors.
b. The study is limited to the critical stages involved in implementing digital servitisation transformation and the role of leadership in facilitating the transformation and does not explore other aspects of digital transformation or servitisation.
c. The study explores the leadership role in the transformation process and does not include characteristics, traits or styles of leadership.

1.8 Assumptions

The study makes the following assumptions:

a. The earthmoving equipment industry is undergoing significant disruption and transformation owing to the proliferation of digital technologies.
b. Digital servitisation is seen as a viable strategy for dealers to use to transform their business models and remain competitive.

c. The current lack of understanding of the key concepts of and requirements for implementing digital servitisation can result in the failure of digital servitisation initiatives in the industry.
d. Leadership plays a crucial role in driving the digital servitisation transformation process.

1.9 Chapter outline

This research report is structured into the following chapters.

Chapter 1: Introduction

- Introduces the purpose of the research and its significance;
- Provides background information on the earthmoving equipment industry and digital servitisation transformation; and
- Presents the research problem and research objectives.

Chapter 2: Literature Review

- Provides a review of relevant literature on digital servitisation and its implementation in the earthmoving equipment industry;
- Discusses the challenges faced by dealerships during the digital servitisation transformation process; and
- Examines the role of leadership in driving the digital servitisation transformation process.
- Selects a theoretical framework to aid understanding and develops a conceptual framework along with research questions

Chapter 3: Methodology

- Outlines the research design and approach;
- Describes the data-collection methods, including interviews
- Discusses the data-analysis procedures.

Chapter 4: Presentation of Findings

- Presents of findings related to research questions.

Chapter 5: Discussion of Findings

- Discusses findings related to research questions.

Chapter 6: Conclusion and Recommendations

- Concludes on research problems.
- Offers recommendations for researchers and practitioners.
- Provides suggestions for future research.

1.10 Conclusion

In conclusion, this introductory section of the report provides background to the industry under study, outlining its evolution, the challenges posed by digital technologies, and the imperative for earthmoving equipment dealerships to leverage digital services to remain competitive in the long term. It emphasizes the need for systematic approaches to navigate the transformation process and highlights the research objectives, which include identifying transformation stages, understanding challenges, and exploring leadership dynamics. The research aims to offer insights into practical implications for industry players and provide guidance for effective implementation. It underscores the urgency of adaptation in the face of technological disruptions and presents a structured framework for inquiry and analysis.

2. LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature related to digital servitisation, beginning with a comprehensive exploration of the theoretical foundations and components of digital servitisation. It examines the underlying processes, stages and challenges encountered in digital servitisation transformation, and the critical role of leadership in this transformation. Understanding these foundations provides insights into their successful implementation and identifies key factors and milestones for organisations to navigate. The review is used to develop a conceptual framework for understanding the complex dynamics of digital servitisation, including factors that impact implementation and potential challenges.

2.2 Defining digital servitisation

Digital servitisation transformation has its roots in the broader concept of servitisation (Kohtamäki et al., 2022), which refers to the process of shifting from selling physical products to selling services that provide value to customers (Martinez et al., 2017). The goal of servitisation is to create long-term relationships with customers by offering ongoing services and support that meet their evolving needs. Digital servitisation transformation takes this concept further by leveraging digital technologies and services to create even more value for customers. The convergence of servitisation and digitisation gives rise to four strategic positions for organisations, based on the level of digitalisation and servitisation (Frank et al., 2019).

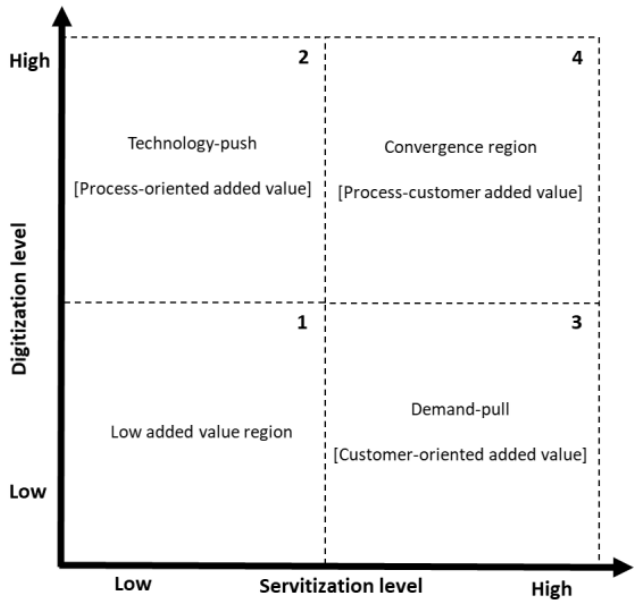


Figure 1: Innovation trajectories on Industry 4.0 and servitisation, as adapted from Frank et al. (2019)

Figure 1, adapted from Frank et al. (2019), illustrates these positions and contributes to the understanding of the digital servitisation concept. The level of digitisation focuses on implementing Industry 4.0 technologies and enhancing internal processes (e.g., cost reduction, flexibility and productivity), while the servitisation level considers the importance of service offerings and customer-focused value propositions (Frank et al., 2019). Digital servitisation occurs when these two concepts converge, as depicted in Figure 1.

Digital servitisation requires companies to reorganise their processes, products and services with digital technologies to deliver greater value and improve both financial and non-financial performance (Favoretto et al., 2022; Chen et al., 2021; Tewari, 2020). By integrating digital technologies and services, companies can create new revenue streams, increase customer loyalty and gain valuable insights into customer behaviour, driving internal process efficiency (Baines & Lightfoot, 2013; Goel et al., 2022).

2.3 Stages in transitioning to services and the transformation process

There are several theories that aim to explain the servitisation transformation process. Lütjen et al. (2017) conducted a study of German utility firms and identified three transition stages to servitisation: service initiation, service anchoring and service extension. Each of the three stages is defined by the complexity of service offerings provided by the firms. Firms in the

service-initiation stage offer basic information about their services but maintain absolute focus on traditional product-related services. They are limited to a no-services budget and place a greater emphasis on cost efficiency on the high-volume selling products. In the service-anchoring stage, firms offer not only product-related services but also services that require high customer integration such as smart and digital services. In the service-extension stage, firms focus on innovating and experimenting to expand their services. While this framework helps practitioners with how to transition towards advanced levels of digital servitisation, it does not provide any guidance on how to undertake this transformation process.

Baines et al., (2019) propose an aggregated level servitisation model that consists of four stages: exploration, engagement, expansion and exploitation. The exploration stage involves searching and finding out about the concept and opportunity, while the engagement stage seeks to evaluate and demonstrate advanced services until the potential is accepted within the organisation (Baines et al.,2019). The expansion stages involve increasing the scale and speed at which advanced services are innovated and implemented until significant value is demonstrated within the organisation (Baines et al.,2019). This includes the increasing of service budget, resources and development of services process as well as the balancing of service and product business models. The exploitation stage seeks to optimise the innovation and delivery of an advanced services portfolio unless the business is adversely disrupted. Baines et al.'s (2019) first three steps are consistent with Lütjen et al.'s (2017) service-initiation, service-anchoring and service-extension stages; however, Baines et al. (2019) go further by acknowledging contextual factors that drive the transition.

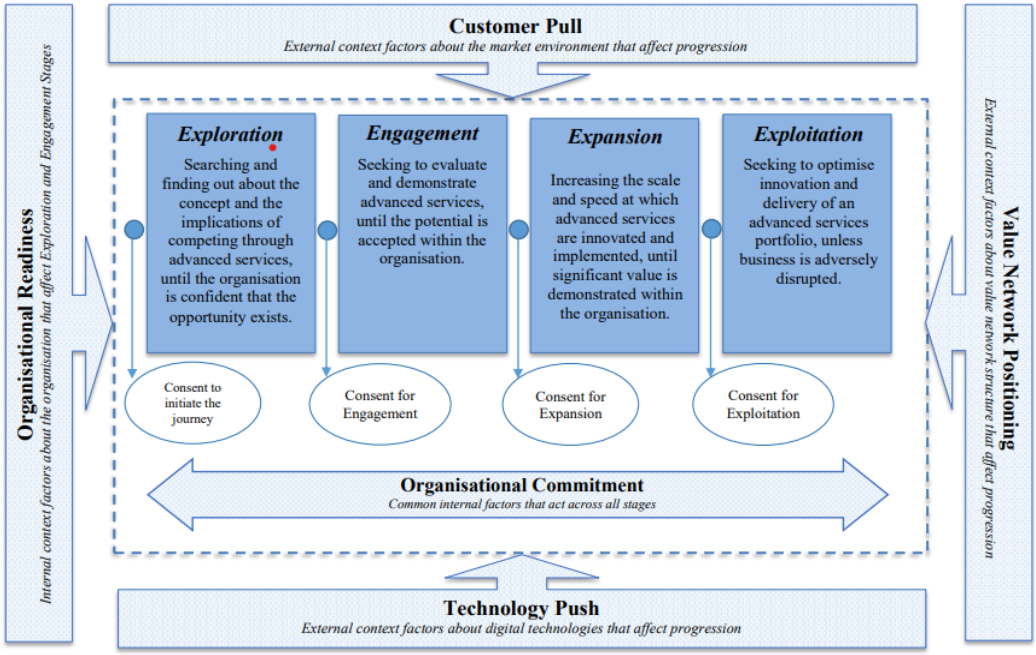


Figure 2: Baines et al. (2019) Four-stage servitisation progression model

In their research on a Chinese air conditioning manufacturer, Chen et al. (2021) outlined three distinct stages in the process of digital servitisation similar to Lütjen et al.'s (2017) stages. The first stage involves offering standard product services, using an internal activity system to capture value through efficiency gains. The second stage focuses on providing customised solutions through a supply and distribution chain, capturing not only efficiency gains but also accountability and shared customer value. The third and final stage is characterised by the provision of smart solutions through an ecosystem that captures efficiency, accountability and novel customer value.

Chen et al.'s (2021) study contributes to the understanding of digital servitisation in several ways. Firstly, they highlight that servitisation and digitalisation evolve in parallel, with digital technology enabling even the most basic service value propositions from the beginning. Secondly, they emphasise the interplay between the business model and digital technology within and across the stages of digital servitisation. Finally, they identify both continuous and discontinuous process features of digital servitisation, with the development of existing business model elements being continuous and the addition of new elements being discontinuous along the digital servitisation trajectory.

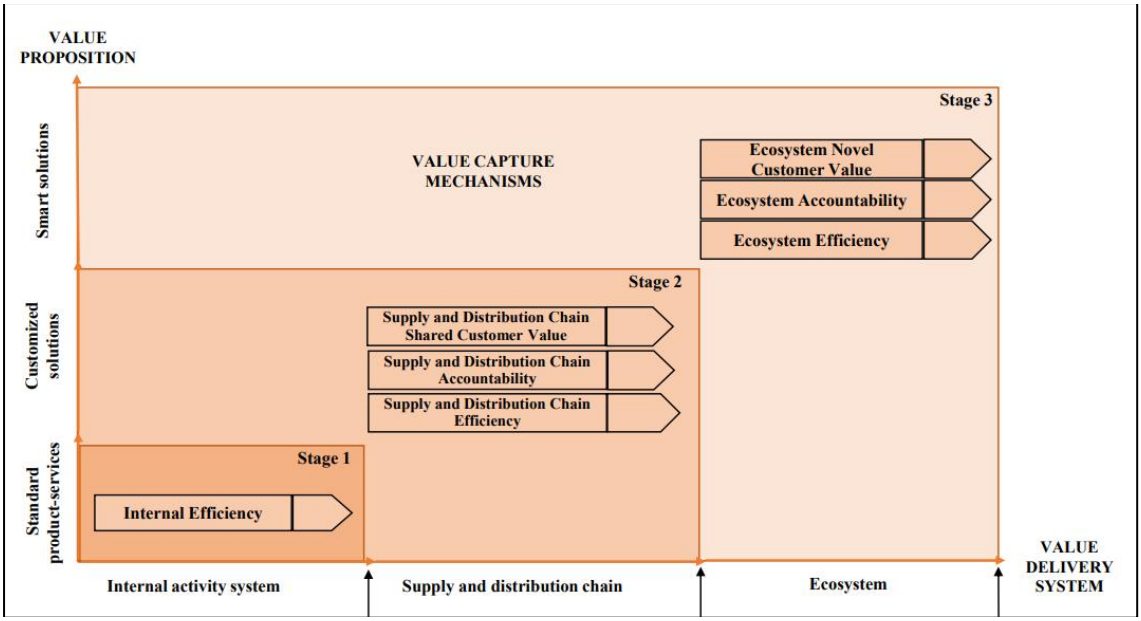


Figure 3: Chen et al. (2021) three stages of digital servitisation

The studies conducted by Lütjen et al. (2017), Baines et al. (2019) and Chen et al. (2021) contribute to the understanding of the digital servitisation process and the stages involved. However, while these studies provide insights into the transition from basic services to complex services, they do not provide a detailed depiction of what a service journey might entail. Martinez et al. (2017) conducted a study on the service journeys of three firms in the context of smart or complex services. They initially identified 12 stages in the service journey. However, they later refined these stages into a service strategy model consisting of seven stages. This model offers valuable guidance for practitioners involved in service transformation programmes. The seven stages in the service strategy model are as follows:

1. Assess the market and internal readiness for the transformation, thus, developing the burning platform .
2. Create strategic and cultural context, thus, defining the service vision, developing the service culture and engaging partners.
3. Develop the structures and governance, including defining the leadership to drive the programme and setting out the organisational structure to execute the transformation.
4. Develop the service processes, i.e., designing the service model, planning, piloting and scaling.
5. Engage and build trust with customers and ecosystem partners and enabling change.

6. Define resources and initiate skilling.

7. Optimise and communicate best practices.

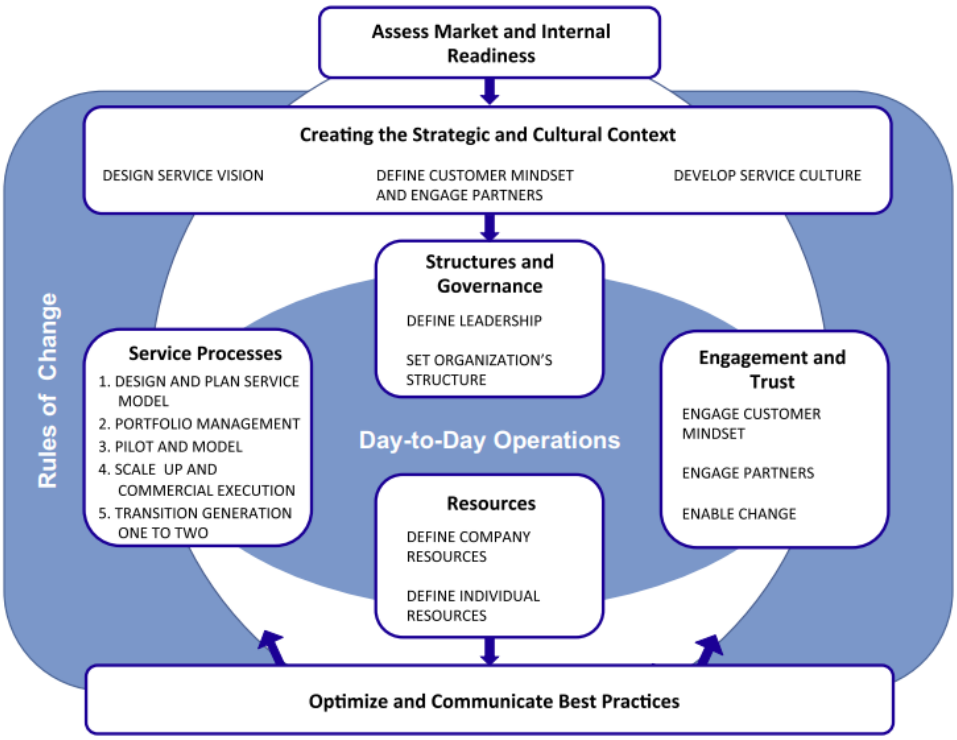


Figure 4: Seven-stage service strategy model (Martinez et al., 2019)

This model provides a more comprehensive and detailed approach to the servitisation transformation process; however, it does not explicitly consider the impact of the pervasive nature of digital technology on the process in respect to agility and adaptation. Sjödin et al. (2020) introduced the agile co-creation model to drive digital servitisation. Their study proposed an iterative and adaptive approach to the digital servitisation transformation process. The model highlights the importance of customer involvement in service design and delivery, the need to embrace agility and adaptability, and the importance of co-creation in generating value for both the customer and the company. This approach provides a more dynamic and flexible perspective of the digital servitisation transformation process, acknowledging the impact of digital technology on the process and the need for ongoing adaptation and evolution.

2.4 Challenges in transitioning to digital services

The journey towards digital servitisation poses significant challenges, demanding considerable investments in technical, human, and organisational resources and capabilities (Lütjen et al., 2017; Martinez et al., 2017). Lütjen et al. (2017) investigated the various phases of service transition, suggesting that companies encounter distinct challenges that correspond to their specific transformational stage. Through empirical data analysis, the authors identified that companies in the early service-transition phase grapple with strategy-related barriers, whereas firms in the service-anchoring phase struggle with a lack of systematic innovation management. Companies in the service-extension stage have primarily circumvented strategy and implementation impediments but are currently contending with market-associated barriers.

Martinez et al. (2010) highlighted the critical role of strategic alignment during the transition to digital servitisation. It is incumbent upon firms to ensure that their digital servitisation strategy corresponds seamlessly with their overarching business strategy and objectives. Moreover, firms are compelled to address the digital servitisation paradox, as postulated by Sjödin et al. (2020), in which companies are required to strike a balance between providing custom services tailored to specific customer needs and maintaining profitability, alongside investing in novel digital technologies and capabilities to meet customer demands. Maintaining this balance requires a clear understanding of the market and customer needs, coupled with careful strategic planning and effective management of competing priorities (Martinez et al., 2010).

Vial (2019) recognised inertia and resistance as key impediments to transformation. Inertia relates to entrenched resources and capabilities that pose barriers to radical change, encompassing established relationships, optimised production procedures and inflexible resources that are challenging to reconfigure. Similarly, Martinez et al. (2010) identified the product-service culture that is deeply ingrained in many organisations as a formidable challenge to servitisation. Firms that have been supplying products for decades may find it difficult to make a mental shift towards providing integrated offerings of products and services. Employee resistance, characterised by a reluctance to adopt disruptive technologies, further compounds this challenge (Vial, 2019). Such resistance may stem from innovation fatigue or a lack of clarity about the benefits of digital technologies (Vial, 2019). Overcoming these hurdles calls for cultural changes at the organisational level (Bustinza et al., 2018), facilitated by

transformational leadership (Matt et al., 2015), process alterations, stakeholder involvement, and alignment with employees' expectations and organisational culture (Vial, 2019).

Another obstacle lies in the provision of integrated offerings (Martinez et al., 2010). Companies must seamlessly integrate their products and services, which necessitates extensive alterations to internal processes and capabilities. To construct integrated offerings and respond appropriately to customer needs, it is imperative to synchronise product and service design processes. Additionally, it is crucial to establish performance metrics to gauge the organisation's collective capacity to deliver integrated offerings efficiently and effectively. Conventional manufacturing-based metrics are unsuitable for measuring product-service provision, as they fail to capture the subtleties of integrated offerings. This means that it is essential to devise novel performance metrics in alignment with digital servitisation goals, to provide a comprehensive view of the organisation's performance.

Supplier relationships also play a vital role in the transition to digital servitisation (Martinez et al., 2010). Companies may need to collaborate closely with suppliers that possess complementary capabilities and resources to deliver integrated offerings. This implies ecosystem transformation (Kolagar et al., 2022) and may involve contract renegotiations and the establishment of new relationships with suppliers that are better positioned to fulfil the requirements of a digital servitisation strategy.

2.5 Digital servitisation transformation and leadership

Digital servitisation is a business transformation that calls for organisational change (Bustinza et al., 2018). Thus, it requires strong leadership to drive change and ensure successful implementation. Leaders play a crucial role in creating a culture of innovation, motivating employees and aligning resources towards the digital servitisation strategy.

Several studies have emphasised the importance of leadership in the digital servitisation transformation process (Kowalkowski et al., 2017; Martinez et al., 2017) journey. Favoretto et al. (2022), Kane et al. (2019) and Tewari (2020) suggest that leadership plays a crucial role in promoting digital servitisation by providing a clear vision and building engaging leadership. This vision should encompass the organisation's customers, products and services (Tewari, 2020). Leaders must communicate the vision and strategy (Kane et al., 2019) effectively and inspire and motivate their teams to achieve their goals through charismatic leadership (Kim & Toya, 2019).

Leaders must also possess a deep understanding of the business model and align the organisation's digital strategy with the overall business strategy. Kowalkowski et al. (2017) highlight the need for leaders to build agile service organisations within product organisations, prioritise service growth routes in the face of new and disruptive technologies, and address business model questions on value creation, delivery and capture to overcome old business model barriers (Sjödin et al., 2022).

Since digital servitisation relies heavily on ecosystem partnerships, Foerster (2023) emphasises the need for leaders to assume the role of finding, orchestrating and maintaining the proper alignment structure of the ecosystem of partners.

Digital servitisation is rooted in the broad concept of servitisation and digital transformation. Leaders who are responsible for driving digital servitisation transformation may need to possess the ability to lead service transformation and digital transformation programmes, including creating a culture of innovation and experimentation (Kane et al., 2019). In addition, digital servitisation is an ambidextrous process where leaders must contend with the exploitation of their current businesses whilst exploring servitisation transformation (Matusek, 2022).

Overall, existing research suggests that leadership plays a critical role in promoting digital servitisation transformation by providing a clear vision, making business model decisions, aligning stakeholders, and building trust and cooperation between stakeholders.

2.6 Theoretical framework

Digital servitisation is a relatively new concept, with limited theoretical foundations. To develop a comprehensive understanding of this phenomenon and address the study's research objectives, existing theories and frameworks were selected from the broader digital transformation literature.

Bowersox et al. (2005) introduced the Digital Enterprise Integrative Management framework, which emphasises the importance of digital business transformation for supply-chain excellence. The framework focuses on integrating core processes, real-time information sharing and operational excellence to promote collaboration within the supply chain. However, it lacks detailed guidance on the transformation process and may require updating to align with current practices and technologies.

A more recent framework proposed by Nugraha et al. (2022) specifically for creative industries has five stages: readiness assessment, involvement, process, organisation and product evaluation. This framework offers detailed guidance on the actions and steps that organisations should take at each stage. However, the framework falls short in addressing the role of leadership in the transformation.

In contrast, Abdallah et al. (2021) propose a framework for manufacturing industries that integrates people, strategy and leadership, business processes and enabling technologies. This framework comprehensively covers critical aspects of the transformation process, including the role of leadership in the process. However, it lacks detail on how the process should unfold.

A notable framework proposed by Matt et al. (2015) focuses on four dimensions of digital transformation strategy: the use of technologies, changes in value creation, structural changes and financial aspects. This framework provides a solid starting point for understanding the dimensions of digital transformation. It prescribes a high-level process step in the transformation process and, even though this is not explicitly indicated as a dimension, it acknowledges the role of leadership along the entire transformation.

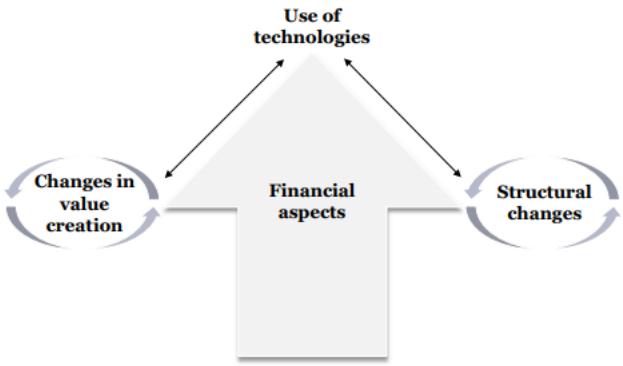


Figure 5: Matt et al. (2015) digital transformation framework

Despite extensive research on digital transformation, academic frameworks that address the transformation process are not as prevalent. Business-led frameworks, such as the digital reinvention model proposed by Berman et al. (2016) and the digital compass framework of Wade et al. (2023), provide more comprehensive approaches to digital transformation. However, it is worth noting that these frameworks are not grounded in theory (Nwaiwu & Tomas Bata University in, 2018).

From an academic standpoint, the framework proposed by Matt et al. (2015) offers a solid foundation for addressing the study's research objectives as they relate to digital transformation. The framework is founded on the premise that organisations adopt digital technologies to transform their value-creation paths and maintain competitiveness. This requires implementing structural changes and overcoming barriers that impede the transformation. These changes should have positive impacts on organisations, and the broader ecosystem (Vial, 2019). The following sections explore the various dimensions of this framework.

2.6.1 Use of technology

Digital transformation relies on various Fourth Industrial Revolution (4IR) technologies such as AI, IoT, cloud computing, big data analytics and blockchain (Abdallah et al., 2021). These technologies improve efficiency, data collection, security, decision-making and operational processes in organisations. Enterprise Resource Planning (ERP) software facilitates real-time information flow, with cloud ERP offering enhanced privacy and speed compared to traditional ERP systems. However, digital technologies alone do not provide significant value; their value emerges from their context of use (Vial, 2019). The use of technologies in a company depends on the company's attitude toward and strategic leverage of new technologies to create, capture and deliver value. The use of technology therefore incorporates the strategic role of IT for a company and its future technological ambition (Matt et al., 2015). The organisation must have the ability to select and exploit technologies to develop new capabilities, drive new service offerings and improve its operations. The organisation must also decide if it intends to be a market leader in technology usage or to rely on established standards and use technologies as a means to fulfil business operations (Matt et al., 2015). While being a technological leader can bring advantages, it also carries risks and requires high investments and specific competencies.

2.6.2 Changes in value creation

From a business perspective, the adoption of new technologies typically brings about changes in value creation (Matt et al., 2015). These changes pertain to the effects of digital transformation strategies on the value chains of companies, specifically how the new digital activities differ from the traditional, often analogue, core business (Matt et al., 2015). Embracing these deviations presents opportunities for expanding and enhancing the existing portfolio of products and services. This suggests that leaders need to shift their focus towards developing new ways of realising and monetising value, creating innovative business models

and financing methods (Berman et al., 2016). Opportunities include, first, that digital technologies enable the creation of new value propositions, including focused-on service offerings rather than solely physical products. Secondly, digital technologies facilitate changes in distribution and sales channels, leveraging social media and algorithmic decision-making (Vial, 2019). Finally, digital technologies enhance organisational agility and ambidexterity, enabling quick adaptation, process optimisation, identification of market opportunities and the integration of digital innovation with existing resources (Vial, 2019).

2.6.3 Structural changes

Digital transformation requires organisations to make structural changes (Matt et al., 2015; Nugraha et al., 2022; Vial, 2019) that are essential for promoting agility, fostering collaboration and effectively integrating digital technologies (Vial, 2019). An organisation has the choice of establishing a separate team or cross-functional teams. It is important to assess whether products, processes or skills are the most affected by these structural changes (Matt et al., 2015). If the changes are relatively limited, integrating the new team into existing corporate structures may be more reasonable (Matt et al., 2015). However, for more important changes, it might be preferable to establish a separate subsidiary within the firm. These teams would maintain a level of autonomy while having access to existing resources where necessary.

Human capital forms the foundation of any organisational change effort (Abdallah et al., 2021). Digital transformation often requires organisations to develop specialised capabilities in their employees. This can involve acquiring new technical skills, such as data analysis, AI or digital marketing, as well as fostering a mindset that embraces innovation and change. Employees may need to adapt to new technologies, processes or ways of working. In order to enhance an organisation's human capital for digital transformation, it is crucial to identify the gaps in digital capabilities within the organisation (Abdallah et al., 2022). This involves assessing the current skill set and knowledge of employees and comparing them to the skills and capabilities required to support digital transformation initiatives. By identifying these gaps, organisations can develop targeted training programmes, hire new talent or reassign existing employees to roles that align with the digital strategy.

2.6.4 Financial aspects

Financial aspects of an organisation are crucial in driving digital transformation, serving as both motivators for and constraints on the transformation (Matt et al., 2015). They include a firm's urgency to act and its capacity to finance the transformation. Lower financial pressure

may reduce the urgency to transform, while financial constraints may hinder funding (Matt et al., 2015). Organisations should acknowledge the need for digital transformation, explore options and have open discussions about finances. These should take into consideration the operational efficiency benefits (Vial, 2019), from automation to process improvement and cost savings, as well as broader organisational performance (Vial, 2019) in terms of financial performance, growth, reputation and competitive advantage. Financial aspects also include determining the profit formula or digital revenue model (Linde et al., 2023) to sustain motivation and support the continuation of the transformation process.

2.6.5 Procedural aspects of the transformation

The procedural steps involved in digital transformation strategies are as follows:

- Assigning clear responsibilities (Matt et al., 2015; Nugraha et al., 2022): It is crucial to designate someone with sufficient experience in transformational projects as the operational leader responsible for the digital transformation strategy. The leader's incentives should align directly with the strategy's targets and progress.

- Determining senior management role (Abdallah et al., 2022; Matt et al., 2015): There is no definitive answer as to which senior manager should be in charge of the digital transformation strategy. Candidates may include Chief Information Officers (CIOs), Chief Executive Officers (CEOs), dedicated business transformation managers or Chief Digital Officers (CDOs). Consistency in this role is preferred as transformational processes can take a long time.

- Obtaining top management support (Matt et al., 2015): The support of top management is essential throughout the entire transformation process since digital transformation strategies affect the entire company. Resistance from different areas of the company may arise, and effective leadership skills is required to address and overcome such resistance.

- Ensuring adequate staffing and external expertise (Matt et al., 2015): Firms need to make sure that they have the right staffing and expertise for formulating, implementing, evaluating and adapting digital transformation strategies. Additional support from experts both within and outside the company may be necessary.

- Continuously reassessing the strategies (Matt et al., 2015): Digital transformation strategies should be subject to continuous reassessment. This involves evaluating

underlying assumptions and assessing the progress made at various stages. Given the swift changes in digital technologies, there is often high uncertainty, and reassessment helps identify the need for corrective actions.

- Defining clear procedures and measures (Matt et al., 2015): Clear procedures and measures should be established to evaluate intermediate progress and set thresholds for corrective actions. This ensures management credibility and avoids decision-making biases, especially when the organisation is faced with high sunk costs that may hinder necessary adjustments.

2.7 Conceptual framework

The proposed conceptual framework for digital servitisation is based on the existing knowledge of digitisation and servitisation, incorporating elements from the digital transformation framework by Matt et al. (2015) and insights from the servitisation literature. The proposed framework consists of five dimensions: strategy and leadership, the use of technology, the financial aspects, changes in value creation and structural changes.

The dimensions of the framework, apart from strategy and leadership, align with the theoretical framework developed by Matt et al. (2015). These dimensions reflect the key areas that need to be considered during the digital servitisation process. Matt et al. (2015) acknowledges the importance of these dimensions in formulating the transformation strategy and recognise the role of leadership in driving the transformation. However, the proposed conceptual framework explicitly includes strategy and leadership as a distinct dimension, highlighting its significance in guiding the digital servitisation journey.

By incorporating strategy and leadership as a separate dimension, the conceptual framework recognises the need for a strategic vision and effective leadership to navigate the complexities of digital servitisation, as highlighted by much of the literature consulted (Favoretto et al., 2022; Tewari, 2020). Strategy and leadership encompass activities such as envisioning new possibilities (Berman et al., 2016), setting servitisation as an organisational ambition, defining a new business model, allocating resources and orchestrating (Wade et al., 2023) a transformation programme. This dimension emphasises the crucial role of strategic thinking and leadership in driving the overall transformation process.

At an aggregate level, both a digital transformation framework and a digital servitisation transformation framework address similar dimensions. However, there are key variances in terms of the specific sub-activities and focus areas within each dimension.

For instance, in the proposed conceptual framework for digital servitisation, the dimension of structural changes has been expanded to include activities related to resourcing and training, in line with recommendations by Abdallah et al. (2022) and Martinez et al. (2017).

Under the dimension of changes in value creation, ecosystem development (Foerster, 2023) and agile and co-developing methods (Sjödin et al., 2022) have been introduced. The inclusion of the latter methods is in line with Sjödin et al.'s (2022) findings, which highlight the significance of adopting agile methodologies and engaging in co-creation processes with customers and partners to develop and refine service offerings. These methods enable organisations to be more adaptive, iterative and customer-centric in their approach to value creation. Adopting these methods recognises the importance of building and orchestrating a network of suppliers and customers to support the servitisation process.

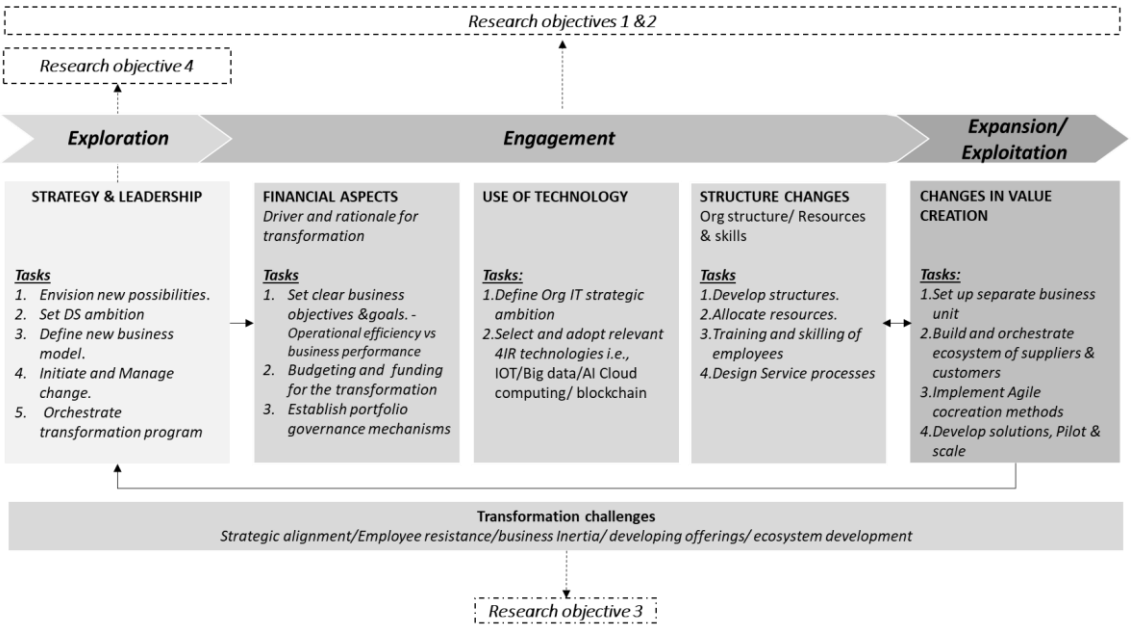


Figure 6: Conceptual framework

These variations in sub-activities and focus areas introduced by the conceptual framework proposed for this study reflect the specific considerations and challenges that arise in the context of digital servitisation. While the overall dimensions align with a broader digital transformation framework, the expansions and additions in the proposed framework for digital servitisation address the unique requirements and complexities associated with the

transformation of traditional product-oriented businesses into service-oriented ones. By incorporating these specific sub-activities and focus areas, the digital servitisation framework provides a more tailored and comprehensive approach to guide organisations through the intricacies of transforming their business models, operations and value-creation processes to embrace digital servitisation successfully.

Additionally, the conceptual framework draws upon the four-stage servitisation progression model proposed by Baines et al. (2019). This model includes the stages of exploration, engagement, expansion and exploitation. The exploration stages within the framework encompass the strategy and leadership aspect, while the engagement stages incorporate the financial considerations, use of technology and structural changes. The expansion and exploitation stages are encapsulated within the changes-in-value-creation dimension of the framework. By adapting this servitisation progression model, the conceptual framework provides a comprehensive structure for examining the different stages and dimensions of the digital servitisation transformation process.

In summary, the proposed conceptual framework provides a multidimensional approach to digital servitisation. It requires strategic leadership to envision new possibilities, define a business model, allocate resources and drive transformation. The financial dimension necessitates clear business objectives and goals, operational efficiency, budgeting, funding and effective portfolio governance to underpin the servitisation efforts. Use of technology is critical, requiring IT strategic ambition and the adoption of suitable technologies to facilitate and enhance the process. Structural changes are also imperative, encompassing the appointment of a person to the position of transformation lead, the creation of a transformation team (integrated or separate), employee training and governance setup. Finally, the transformation also necessitates changes in value creation, involving the design of service processes, implementation of agile co-creation methods, orchestration of a supplier and customer ecosystem, and development of solutions through pilot testing and scaling. The subsequent section explores gaps in literature that leads to the formulation of research questions.

2.7.1 Key stages in the transformation process

The extant literature, including works by Baines et al. (2019), Chen et al. (2021) and Lütjen et al. (2017), principally underlines the stages of transition to servitisation. While these models offer valuable insights into the overall stages of servitisation, it is important to note that they

operate at a higher level of aggregation and do not outline the specific steps or actions within each stage. Martinez et al.'s (2017) seven-stage servitisation strategy model, for example, offers foundational insights but does not comprehensively address crucial dimensions such as technology adoption, financial aspects or the implementation of agile and co-creation methodologies. Current literature, therefore, provides fragmented perspectives on the digital servitisation transformation process, leaving a comprehensive overview wanting. This gives rise to the following research question:

Research Question 1: What are the key stages or steps involved in the digital servitisation transformation process for earthmoving equipment dealers?

The research by Chen et al. (2021), Baines et al. (2019), Lütjen et al. (2017) and Martinez et al. (2017) points to the fact that the process of transitioning to advanced services is neither linear nor strictly ordered; it involves iterations and reciprocations. Martinez et al. (2017) specifically identified the service journey as intuitive and emergent rather than logical or structured. However, it is important to note that while this may be true for the service journey itself, it is unclear whether the overall transformation process, including strategy and leadership, financial aspects, use of technology, structural changes and changes in value creation, also lacks structure and logic. This leads to the second research question:

Research Question 2: What is the logical sequence of the transformation stages?

2.7.2 Challenges in the digital servitisation transformation process

While extant literature on the process of digital servitisation transformation underlines the challenges that companies face and the strategies for surmounting these challenges, the majority of these studies primarily focus on large manufacturing corporations in developed economies. As a result, the specific challenges faced by earthmoving equipment dealers in emerging economies, as they navigate towards digital servitisation, are unclear. It is particularly important that this research gap is addressed, considering the impact of manufacturer-dealer alignment (Kumar et al., 2020) on the transformation process, along with the well-known characteristics of emerging economies such as insufficient infrastructure, skill gaps, market immaturity and lack of technological readiness (Lambrechts et al., 2020). Consequently, the third research question is developed with the aim of shedding light on these specific challenges, considering the aforementioned factors and their influence on the transformation journey of earthmoving equipment dealers in emerging economies.

Research Question 3: What are the challenges faced by equipment dealers during the digital servitisation transformation process?

2.7.3 The role of leadership in digital servitisation transformation

The role of strategy and leadership in driving digital servitisation efforts has been highlighted in the literature (Kowalkowski et al., 2017; Martinez et al., 2017). Leaders are tasked with establishing a clear vision and setting strategic goals that align with the organisation's transformation into a service-oriented digital business (Kowalkowski et al., 2017; Martinez et al., 2017). Business-led research (Berman et al., 2016; Wade et al., 2023) and academic theories (Chen et al., 2021; Matt et al., 2015) acknowledge the importance of leadership in the digital servitisation context, including activities such as conceiving, resourcing and orchestrating the transformation while managing barriers to change (Berman et al., 2016; Matt et al., 2015). However, some of these leadership activities are outlined in generic terms that fail to specify the key roles or actions demanded of leaders to provide actionable guidance to the transformation. These observations lead to the question:

Research Question 4: What is the role of leadership in the digital servitisation transformation process in earthmoving equipment dealerships?

2.8 Conclusion of literature review

The primary objective of the literature review as set out in this chapter was to gain a comprehensive understanding of the theoretical foundations of digital servitisation transformation. This was undertaken in order to address research objectives concerning the stages, sequence, challenges and leadership role in the transformation process for earthmoving equipment dealerships. The review provided a clear definition of digital servitisation as the integration of digital technologies into traditional businesses to offer value-added services. The review also highlighted the potential benefits of digital servitisation for organisations.

The review identified a convergence of literature on service transition models within the context of servitisation transformation. However, it also recognised the focus of previous studies as being primarily limited to the stages of service transition, leaving gaps in understanding other crucial dimensions such as strategy, finance and structure in the broader digital servitisation transformation process.

Challenges encountered during the transformation process were explored, including the need for strategic alignment, overcoming inertia and resistance, delivering integrated offerings and managing supplier relationships. These insights shed light on the complexities that organisations face in their digital servitisation journey. However, there is a lack of clarity regarding potential contextual factors that could impact the successful implementation of services, particularly within emerging economies.

The literature also emphasised the vital role of leadership in driving the digital servitisation transformation process. Leaders are responsible for providing a clear vision, aligning resources, making strategic decisions, and fostering a culture of innovation and change. They play a critical role in overcoming challenges, navigating transformation stages and ensuring successful implementation. However, the existing literature presented a fragmented view of leadership roles, lacking a comprehensive perspective.

In reviewing several theoretical frameworks proposed by Bowersox et al. (2005), Nugraha et al. (2022), Abdallah et al. (2021) and Matt et al. (2015), the study identified Matt et al.'s (2015) framework as the most comprehensive. This framework encompasses the use of technology, changes in value creation, structural changes and financial aspects. As such, it served as the foundation for the study.

A conceptual framework for digital servitisation was proposed, incorporating five main dimensions: strategy and leadership, use of technology, financial aspects, changes in value creation and structural changes. This framework offers a comprehensive view of digital servitisation transformation, emphasising the significance of strategic vision, technology adoption, financial aspects, value-creation processes and organisational changes.

To validate and further refine the proposed framework, in-depth interviews were conducted with senior executives in earthmoving equipment dealerships with the aim of providing valuable insights and contributing to the practical application of the framework in real-world contexts. The results of these interviews are presented in Chapter 4 of this research report.

Overall, the literature review enhances the understanding of digital servitisation by examining its various aspects. It establishes a foundation for the research and provides valuable insights for the digital servitisation journey.

3. RESEARCH METHODOLOGY

3.1 Introduction

In this chapter the methodology used by the study is presented. The chapter begins with a description of the research approach and design. It then presents an account of the methods used for data gathering and analysis. Lastly, steps taken to ensure the quality of the study and ethical considerations are discussed.

3.2 Research approach

The study used a qualitative research approach to investigate the subjective experiences and interpretations of individuals engaged in digital servitisation processes. This choice of research approach was motivated by the limited knowledge surrounding the concepts of digital servitisation and its transformation process as revealed by the literature review conducted for the study. Currently, there is no established means of quantitatively assessing the dimensions and interrelations of digital servitisation and its impact on other factors. For this reason, a qualitative research approach was deemed the most suitable approach for facilitating a comprehensive and detailed understanding of the practices along with the complexities and challenges associated with digital servitisation transformation. This aligns with Sofaer's (1999) perspective that qualitative research enables a nuanced exploration of complexities.

3.3 Research design

An exploratory research design was chosen for this study with the aim of conducting a thorough investigation into the process of digital servitisation transformation within two earthmoving equipment dealerships. The rationale for selecting an exploratory research design stemmed from the limited existing knowledge and understanding of digital servitisation within these particular contexts. Adopting an exploratory research approach allowed for an in-depth exploration and understanding of the transformation process in real-world settings. The exploratory nature of this design facilitated the collection and analysis of diverse forms of evidence, including documents, interviews and observations, in this way ensuring a comprehensive and holistic examination of the phenomenon under investigation. This research design was particularly suited to the study's research questions and enabled flexibility in

adapting the research process according to emerging findings. It also facilitated the identification of patterns and trends across the selected cases. Ultimately, the exploratory research design provided a valuable foundation for generating insights in the realm of digital servitisation transformation.

3.4 Data-collection method

Data was collected through semi-structured interviews. Semi-structured interviews were chosen as they allowed for in-depth exploration of participants' experiences and perceptions while providing the researcher with the flexibility to probe interesting areas that emerged during the interviews. Data was collected from managers and senior executives in earthmoving equipment dealerships who had been directly involved in their organisation's digital servitisation journey. The interviews were conducted through video conferencing platforms owing to logistical constraints particularly to accommodate participants residing in Türkiye. The interviews were audio-recorded, transcribed verbatim, and anonymised for analysis.

3.5 Population and sample size

The population for this study consisted of earthmoving equipment dealerships undergoing digital servitisation transformation at the time of the study. The sample size was determined through purposive sampling, with organisations that represented a diverse range of characteristics such as location and level of digital servitisation implementation selected. Two organisations, one in South Africa and the other in Türkiye were chosen to enhance diversity. Given the qualitative nature of the study, data was collected through semi-structured interviews with CEOs, executives and digital leads from these organisations. The sample size for the interviews was nine participants. This sample size was considered sufficient to ensure that a comprehensive range of perspectives was captured across the dealerships. These senior executives were chosen because of their direct involvement and crucial roles in the digital servitisation transformation process, making them valuable sources of insights and experiences.

3.6 Research instrument

The main research instrument was an interview guide developed on the basis of the proposed conceptual framework and research questions developed for the study, as set out in Chapter 2 of this report. The interview guide included open-ended questions to encourage participants to

provide in-depth insights and share their experiences on the research topics, including the stages of digital servitisation transformation, challenges faced and the role of leadership during implementation. Refer to Appendix C for the interview guide and interview questions.

3.7 Procedure for data collection

Data collection began after the researcher had been granted ethics approval by the Wits Business School Ethics Committee to conduct the research and had received informed consent from the participants to participate in the interviews. Participants were contacted via email and invited to participate in the study. The interviews were conducted using video conferencing tools, recorded with permission of the participants and transcribed verbatim. With the participants' consent, the interviews were recorded for transcription and analysis purposes.

3.8 Data-analysis strategies and interpretation

As its data-analysis strategy, the study employed thematic analysis to examine and interpret the data obtained from the interview transcripts. Initially, the data was segmented into manageable categories through the process of coding. This initial coding involved identifying meaningful units of data and assigning descriptive labels to them. The codes were refined and developed into themes, which represented patterns and connections within the data. These themes were further analysed and interpreted in relation to the research questions.

To enhance the credibility and efficiency of the data analysis, ATLAS.ti, a Computer-Aided Qualitative Data Analysis Software (CAQDAS), was utilised. The CAQDAS aided in organising, sorting and managing the large volume of data collected. It facilitated the coding and thematic-analysis process by allowing for systematic data exploration, coding and retrieval. The software enabled the researcher to track and compare codes and themes across different transcripts, ensuring consistency and accuracy in the analysis.

Throughout the analysis, the researcher engaged in constant comparison, examining similarities and differences within and across the data. This iterative process helped refine and validate the identified themes and ensured that the interpretations aligned with the data.

The final step of the data analysis involved synthesising the themes and findings to generate a coherent and comprehensive interpretation of the data. This interpretation is presented in the findings section of the report, in a way that is consistent with the research questions and supported by evidence from the data.

3.9 Possible limitations of the study

One possible limitation of this study was the potential for bias in participant selection and self-reporting. Purposive sampling has the potential to introduce selection bias, and participants' responses may be influenced by their own perspectives and experiences.

3.10 Quality assurance

To ensure the robustness and trustworthiness of the study, in line with the qualitative research approach adopted, various measures were implemented for quality assurance. These measures included the following:

- **Reliability:** To enhance the reliability of the study, the research interviews were conducted using a structured approach with standardized questions. Each interview session followed a predetermined protocol to ensure consistency in data collection. Additionally, the interview transcripts were carefully reviewed for accuracy and completeness, and any discrepancies or ambiguities were addressed through follow-up inquiries or clarifications with participants. This meticulous approach aimed to minimize potential biases and errors in data interpretation, thus contributing to the overall reliability of the study findings.

- **Transferability:** The transferability, or generalisability, of the research was addressed by providing rich descriptions of the research context, participants and data-collection procedures. This aimed to enable other researchers to apply the findings to other contexts or settings. Detailed documentation of the research process allowed for potential transferability and comparison to similar studies.

- **Validity:** To enhance the validity of the study, member-checking was employed. This involved sharing a summary or interpretation of the findings with participants to ensure accuracy and alignment with their experiences and perspectives. Participant feedback and verification helped to establish the credibility and validity of the data interpretation. In addition, triangulation of data sources and researcher reflexivity contributed to enhancing the validity of the study.

- **Researcher reflexivity:** The researcher's reflexivity was maintained throughout the research process. This involved recognising and addressing potential biases, assumptions or preconceived notions that the researcher might bring to the study. Reflexivity allowed for transparency and reduced the potential influence of the researcher's subjective viewpoints on data collection, analysis and interpretation.
- **Detailed documentation:** Comprehensive documentation of the research process, including the research design, data-collection methods and data-analysis procedures, was maintained. This ensured transparency and allowed for the replication and verification of the study by other researchers.

3.11 Ethical considerations

Ethical considerations were used to guide the research process. Informed consent was obtained from all participants, ensuring their voluntary participation, confidentiality and anonymity. Participants were assured of their right to withdraw from the study at any time without consequences. The research adhered to ethical guidelines and regulations regarding data protection and privacy. The participants were assured of the confidentiality of their information, and all data was stored securely.

3.12 Timeline

The research took place over a nine-month period. The first month was dedicated to planning and gaining ethics approval; the following four months were devoted to the collection of primary and secondary data, with the next four months focused on data analysis, and finally the writing up of the findings. Regular check-ins were scheduled with the researcher's academic supervisor to ensure steady progress and address any issues that might arise.

3.13 Conclusion

This chapter presented the research methodology that was adopted to explore the digital servitisation transformation process within earthmoving equipment dealerships. The study aimed to bridge the gaps in the literature and contribute to both theory and practice. The next chapter presents the findings from this investigation.

4. PRESENTATION OF FINDINGS

4.1 Introduction

Chapter 4 presents the findings of the study. This research took the form of a qualitative study, where nine participants who worked for earthmoving equipment dealers were interviewed to obtain their insights concerning the research topic. The investigation was guided by four research questions that focused on the key stages in the digital servitisation transformation process; what constitutes the logical progression; challenges encountered during the digital servitisation transformation; and how leadership influences the digital servitisation transformation process.

This chapter begins by providing an overview of the sample characteristics, which is important for its relevance in a qualitative study. This section is followed by the findings regarding each of the research questions, based on the content analysis of the data and presented as codes, subthemes and themes.

4.2 Overview of sample

The profiles of study participants are summarised in Table 1, which sets out their organisational roles and geographical locations. Table 1 also highlights the diverse range of expertise and experience that the participants brought to the study. The inclusion of participants from both South Africa and Turkey introduces an international dimension to the research, offering a broader perspective of and diverse insights into the digital servitisation process in the earthmoving equipment industry. See Appendix D for codes from international (Turkish) participants and Appendix E for codes from local (South African) participants.

Table 1: Organisational profile of research participants

Participant ID	Role	Organisation	Region	Experience
RPT 1	Executive – Customer Fulfilment and Technology	Organisation A	South Africa	7 years

Participant ID	Role	Organisation	Region	Experience
RPT 2	Head of Technology	Organisation A	South Africa	10 years
RPT 3	Executive Construction Industries	Organisation A	South Africa	8 years
RPT 4	Chief Executive Officer	Organisation A	South Africa	10 years
RPT 5	Executive – Digital	Organisation A	South Africa	7 years
RPT 6	Head of Digital, Machine and Artificial Intelligence	Organisation B	Türkiye	3 years
RPT 7	Chief Executive Officer	Organisation B	Türkiye	7 years
RPT 8	Manager – Digital Commerce and Marketing	Organisation B	Türkiye	3 years
RPT 9	Head of Digital Technology	Organisation B	Türkiye	5 years

The participants represented a mix of local and international expertise, adding significant diversity to the study. The inclusion of CEOs from both regions indicates that high-level decision-makers were involved in the research, providing strategic insights into the digital servitisation process.

Participants from Organisation A (South Africa) brought a wealth of experience primarily in industry and product-related roles, while those from Organisation B (Türkiye) held positions that were more focused on technology, particularly in the digital and AI domains. This contrast in focus between the two organisations added depth to the study, as Organisation A's journey in digital servitisation began in the early 2000s but had yet to advance to more sophisticated services at the time of the study. In contrast, Organisation B, starting its journey in 2017, had rapidly moved into more advanced stages of the process and at the time of the study was regarded as a benchmark in the Caterpillar (An American multinational corporation that manufactures construction, mining and agricultural equipment) dealership world.

The diverse roles of the participants, ranging from executives to heads of technology and digital departments, offered a comprehensive view of the digital servitisation process from multiple perspectives. This diversity was considered to be crucial as it would contribute to a richer and more holistic understanding of the digital transformation taking place in the earthmoving equipment industry. The study's approach in selecting these participants, based on their direct involvement and expertise in digital transformation initiatives, ensured that the findings were grounded in practical experience and provided real-world insights.

Overall, the participant profiles underscored the study's commitment to capturing a wide range of perspectives, ensuring a well-rounded and thorough exploration of the digital servitisation process in the earthmoving equipment industry.

4.3 Findings pertaining to Research Question 1: Stages or steps in the digital servitisation transformation.

Research Question 1 reads: *What are the key stages or steps involved in the digital servitisation transformation process for earthmoving equipment dealers?* Table 2 presents the codes, subthemes and themes obtained from the data analysis that related to this research question. All the codes, subthemes and themes were derived from the interview transcripts of the nine participants.

Table 2: Codes, subthemes and themes related to Research Question 1

Codes	Subthemes	Themes
Lack of Organisational Strategy	Strategy Formulation	Strategic Visioning and Planning
Lack of Unified Digital Strategy		
Fragmented Approach		
Lack of Vision	Leadership	
OEM Interest-Driven	External Influence	
ERP Platform Implementation		

Codes	Subthemes	Themes
Establishing Technology Platforms	Develop Foundational Capabilities	IT Transformation
Focus on Foundational Capabilities		
Data Integration	Technology Implementation	
Digitisation	Digitisation	Digitisation and Organisational Change
Establishing Organisational Structure	Organisational Setup	
Silos	Organisational Barriers	
People-Centric Focus	Organisational Culture	
Lack of Responsibility	Business Integration	
Cross-Department Collaboration	Collaboration	
Transitioning into Advanced Services	Service Evolution	Customer Service Evolution and Innovation
Building Customer Connections		
Product-Centred	Product Focus	
Predictive Technologies	Technology Advancement	
AI & ML Expertise	Capability Development	

The empirical data analysis explored the steps or stages of the digital servitisation transformation process for earthmoving equipment dealers, examining and developing the themes and subthemes: Strategic Visioning and Planning, IT transformation, Digitisation and organisational change and Customer Service Evolution & evolution (Table 2). By exploring these stages and steps, the study aimed to gain valuable insights into the overall strategic

direction guiding this transformative journey, the external influences encountered and the challenges faced. The stages identified by the participants are described below.

4.3.1 Stage 1: Strategic visioning and planning

The interviews revealed that the digital servitisation transformation process for earthmoving equipment dealers involves several stages and steps. The first stage of the transformation process involves the formulation of strategy for the transformation. In reflecting on this, participants from Organisation A acknowledged the first step of the transformation to relate to strategic visioning.

> *"Let's start first with the vision regarding the end state, defining what that end state looks like for us and our customers … and engineer it back to say from where we are now, do we have the right leadership to take us there. Start with the leaders to understand what it takes for people within the organization to think about digital and the end state." [RPT 4]*

> *"What we have done is not started with the end in mind, so we haven't said this is what the business needs to do, or this is what the business looks like 2-3, five years from now and this is what digital transformation journey we're going to take or undertake or strategy to get us to that point." [RPT 1]*

Despite recognising the need for strategic visioning, RPT 4 characterised Organisation A's approach as fragmented, indicating a lack of cohesion in the organisational strategy for digital transformation. The acknowledgement of being driven by external pressures, such as those from the OEM, suggests a reactive rather than a proactive strategy, as expressed below.

> *"I would describe it as fragmented. We know that we need to drive digital transformation, but we're not driving it as an organisational strategy. We're driving it in silos and in response to pressure from Caterpillar." [RPT 4]*

In contrast, Organisation B showcased a more proactive approach to transformation, with a clear vision of the future and a plan to go with it.

> *"We thought that if we could digitalize everything and involve the customer inside the process, we could monitor, measures and then manage process and find the gaps and improvement areas. So that's how we started, and it worked out very well, and from that*

angle we started to see the problems, opportunities as well and that helped our customers embrace our solution, our services." [RPT 7]

"They [university and consulting companies] helped us draw a future together. We didn't have a plan. We made a five-year plan with them. That included resourcing, and organizations like Yunus's team started executing on that plan. That's how it began." [RPT 6]

4.3.2 Stage 2: IT (Information technology) transformation.

For the participants, the next stage involved the establishment of IT platforms and data-management systems, with this foundational step laying the groundwork for the rest of the transformation. The participants mentioned that they had spent many years establishing platforms and organisational structures, particularly in Eurasia:

"Really in that area where we've spent many years establishing platforms and organisational structure probably more so in Eurasia than in South Africa. We've spent a lot of time building foundational capabilities, and now we're really in that fuel using digital fuel performance type area." [RPT 5]

This foundational work was seen as crucial, and other responses suggested it as a key enabler for the rest of the transformation.

"Fixing your ERP and data is foundational. It is impossible to go on the journey without getting that right. It's like the foundation of a building. If you don't have a proper foundation, it's not only data, it's process also. I've seen many of the dealerships, it could be businesses, they don't have proper data, they don't have a proper process, they have transition, and that are not under control. And if you go to the ERP systems, whether it's SAP or DBS or Microsoft, or anything, you'll end up seeing bad data which is useless. So, if you don't fix that one, you cannot go to next stages." [RPT 7]

"You can't have digital transformation without investing in digital capabilities, and this is also where we failed significantly is you want to drive digital transformation but one of the key initiatives or? The key pillar of digital transformation is data. And so, we are running, we are running, but we haven't invested in fixing almost the base of what it is that will drive our understanding of customer, what processes we need to fix and what potential business models are out there. Transformation is insights. So if you haven't

sorted out the data portion, you have no insights, so you're going to transform blindly Critical it's a critical enabler." [RPT 1]

4.3.3 Stage 3: Digitisation and organisational change

The participants indicated that this stage was marked by significant steps taken by organisations to digitise their operations and services, enhancing customer experiences and interactions.

> *"The basic of digitalization for us is really, putting everything on the digital environment all the processes…. when you have everything digitalized, you are getting a lot of data, and you are also having a capability to fix things much easier than on an untraceable transactional way." [RPT 7]*

This foundational step of digitising processes was seen as laying the groundwork for subsequent advancements. RPT 9 further illustrated this transition by moving from manual methods to digital solutions, such as applications for technician positioning.

> *"We focused on both business process improvement and value-added services, we started firstly, as I said, putting pen and paper away while calculating the technician position? We built in application for that, so every letter was accurate and there was data with these applications because the otherwise other case is the paper method." [RPT 9]*

Furthermore, elaborating on the integration of digital process within the business operations, RPT 1 described how digitisation had been embedded in various aspects of the business. RPT 5 added,

> *"We incorporated within the business how we do aftermarket how we do sales we've got workflows. Integrating with S&OP, planning and, lead management, flowing through, SAP and actually having data analytics, driving sales." [RPT 5]*

With digitisation, organisational change management becomes paramount. RPT 6 and RPT 9 stressed the importance of collaboration and collaborative decision-making in digital-process adoption.

> *"The most critical parameter in digital transformation is not just technology, but also the transformation or adoption of the people. Decisions regarding the digitization of processes should be made collaboratively with input from all stakeholders." [RPT 6]*

"We have we have six countries, each of them is different dealership. Our central teams design solutions and expect countries to implement them and if they don't use them, it doesn't work. For example, we've moved to boom 360 a Digital solution. They go up, it's perfect. It's getting updated almost every week. The Digital and Technology Team is also checking the usage, downloads, active users, and how many type of businesses are using it." [RPT 9]

In summary, this stage underlines the synergy between business process digitisation and organisational change management, emphasising the need for a comprehensive approach that encompasses both technological upgrades and human factors in digital transformation.

4.3.4 Stage 4: Customer service evolution and innovation

The "Customer service evolution and innovation" stage in the digital servitisation process for earthmoving industry firms highlights a critical phase of continuous development and transformation in customer services, driven by digital advancements. This stage revealed varying degrees of progress between Organisations A and B.

Organisation A acknowledged historical advancements in servitisation but was grappling with the challenge of effectively leveraging digital tools for enhanced customer services, as expressed by RPT 2, RPT 4 and RPT 5:

"From a servitisation perspective, very much developed maybe ten years ago, we were doing things that most of the people would not be doing. And I think we just lost that plot, to be honest with you. And we were not able to convert a lot of the digital tools that we have in our reach and to make them additional servitisation to customers yet. It doesn't mean that we don't have a plan, but it means that I'm afraid that we might be too slow and somebody else will take that from us." [RPT 2]

"Yeah, look at it as an organization. We are still product centric but also when we look at the services that we are rendering to customers, there's still that level of disconnect. ... from a mining point of view, we have managed to unlock that with CVA's [customer value agreements]. We've managed to unlock that with the rental solutions. With the MARC [Maintenance and Repair Contracts] sites, that's the total service that you render to your customer. But do we offer that solution across the board in terms of all the retail customers? ... How do we make sure that we are connected with our retail customers through e-commerce?" [RPT 4]

"Much of the services that that we provide today can be just incredibly enhanced and leveraged with the with the digital tools that we have access today and it's a matter of making sure that our customer facing people know what those tools are and are competent enough to use those tools and can start engaging in that sort of meaningful discussion." [RPT 5]

In contrast, Organisation B demonstrated more significant advancements, particularly in integrating advanced technologies such as AI and machine learning (ML) into customer services. RPT 6 described their proactive approach as follows:

"I have been working on AI and ML sites…. We have two products to predict machine breakdown based on AI, and they use IoT data and robotic technology but integrate AI and human knowledge." [RPT 6]

This participant's statement provided valuable insights into Organisation B's work and the application of AI and ML in the organisation. An analysis of the key points made in the interview by this participant on this issue revealed the following:

- **AI and ML Teams**: The participant was involved in AI and ML sites and led two teams. This suggests that the organisation was actively investing in AI and ML technologies, which are crucial for digital transformation and servitisation.

- **Predictive Products**: Organisation B had developed two products that predicted machine breakdown. These products leveraged AI, IoT data and robotic technology, integrating both AI and human knowledge. This indicates a proactive approach to maintenance, which can reduce downtime and increase efficiency.

- **RFMS Model**: The organisation used a model called RFMS (recency, frequency, monetary and sensitivity) to predict whether a customer would buy a machine or not. This model used ML algorithms to track customer behaviour and past data. This suggests a customer-centric approach and the use of advanced analytics to understand customer needs and behaviours.

- **Benefits Realisation**: Over time, the organisation had helped people to understand the benefits of their products. This indicates a focus on education and awareness, which is crucial for the adoption of new technologies.

Despite Organisation B's progress, challenges in customer adoption and service improvement were reported as persisting. RPT 6 noted:

> *"Our main challenge has been adoption. It's challenging situation to overcome the customer behavior. Customer believes and colleague believes this is the challenging situation and we are focused on this area." [RPT 6]*

Similarly, RPT 8 emphasised the role of customer feedback in service development:

> *"So, the customer visits are always of crucial importance for us because it helps us to understand their needs and bring those into our developments…. We even track comments on the social media…. We always try to understand the customer's needs. When we first launched Boom 360 it was not that big. We launched to the customer, and through their feedback brought this latest version of the software." [RPT 8]*

This proactive approach to customer engagement is crucial for aligning digital initiatives with customer expectations. RPT 9 and RPT 7 further highlighted the importance of internal and external customer engagement and feedback in enhancing services:

> *"If it is an internal customer in the company, we build it together. If it is the end users of the application like Boom 360. We engage with the customer, listening to them and they give us lots of ideas to improve the application…." [RPT 9]*

> *"Yesterday I learned one of our tough customers loved the tool and he's asked his operator to do the TA1 inspection every morning. I loved it because he's using it for his own benefit … I love that such type of good stories also happens." [RPT 7]*

In conclusion, the "Customer service evolution and innovation" stage is characterised by varied approaches to integrating digital processes into customer services. While Organisation B showed progress in leveraging technology, Organisation A faced challenges in digital-tool adaptation. This stage highlights the importance of a customer-centric approach, continuous innovation and addressing challenges in customer adoption for successful digital servitisation.

Figure 7 contextualises and presents a thematic map, visually representing the stages or steps involved in the digital servitisation transformation process.

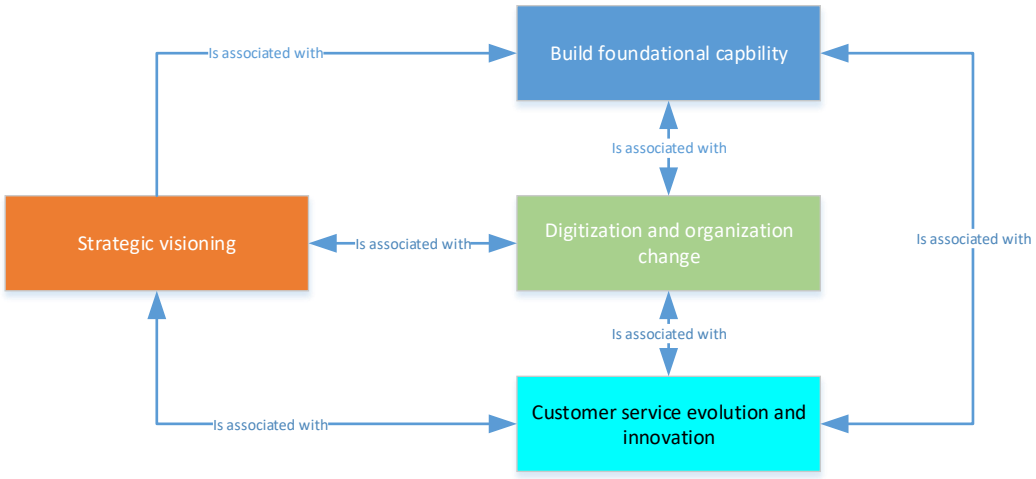


Figure 7: Stages or steps in the digital servitisation transformation process

4.4 Findings pertaining to Research Question 2: The logical sequence of the transformation stages

The second research question focuses on understanding: *What is the logical sequence of the transformation stages?* The study findings revealed that in the dynamic landscape of digital servitisation, equipment dealers specialising in earthmoving face a transformative journey that unfolds in a logical sequence of stages, as shown in Table 3 below.

Table 3: Codes, subthemes and themes related to Research Question 2

Codes	Subthemes/Subcodes	Themes
Connectivity and Integration	Foundation with OEM	Organisational Evolution and Integration
ERP Platform Implementation	Technological Infrastructure Milestone	
Building Foundational Capabilities	Skillset Development Phase	
Cross-Departmental Collaboration	Interdisciplinary Synergy	
Organisational Structure	Adaptive Organisational Framework	
Defining the Long-Term Vision	Strategic Vision Crafting	

Codes	Subthemes/Subcodes	Themes
Prepare Organisation for Change	Change-Readiness Initiatives	Strategic Innovation and Competitiveness
Leadership Capability for Change	Change-Enabling Leadership	
Shift from Reactive to Proactive Business	Proactive Business Culture	
Shift from Red Ocean to Blue Ocean Market Dynamics	Market Strategy Innovation	

This journey encompasses various dimensions, from foundational steps to strategic evolution, that underpin the integration of digital technologies into core business operations. Table 3 encapsulates this journey, delineating the key codes, subthemes and overarching themes that define the sequential evolution. The interview data offered a perspective on the sequential progression in the digital servitisation transformation process for earthmoving equipment dealers. The insights from RPTs 1, 2, 4 and 7 collectively unveiled a nuanced understanding of the strategic pathways undertaken by organisations in this transformative journey.

4.4.1 Organisational evolution and integration

The participants' responses indicated that the organisational evolution and integration stage, as the first stage of the transformative journey, was made up of two phases. The first was a foundational phase in which a solid foundation was established. This was followed by a transitional phase in which the focus was on building foundational capabilities by digitising business processes and focusing on staff development.

4.4.1.1 Initiation: Foundational phase

The insights from participants emphasised the crucial initial stages of transformation that laid the groundwork for subsequent phases. RPT 5's observation established the period as foundational, with this participant noting,

> *"In the early 2000s, we started this digital transformation journey, putting in basic connectivity to the OEM, different integrations, establishing the ERP platform." [RPT 5]*

This period was analysed as essential for setting up the IT infrastructure that was indispensable for the organisation's digital evolution. RPT 7's comment underscores this:

> *"We started building foundational capabilities…. We fixed the ERP first, that was a big thing. Fixing your ERP and data is foundational. It is impossible to go on the journey without getting that right. It's like the foundation of a building…. So that's what we have done first." [RPT 7]*

RPT 1's insight underscored the critical role of data as a foundational pillar for informed transformation.

> *"The key pillar of digital transformation is data. And so, we are running, we are running, but we haven't invested in fixing almost the base of what it is that will drive our understanding of customer, what processes we need to fix and what potential business models are out there. Transformation is insights. So if you haven't sorted out the data portion, you have no insights, so you're going to transform blindly. Critical it's a critical enabler." [RPT 1]*

Lastly, the continuous improvement aspect of this phase was highlighted, with RPT 5's comment about updating foundational systems in South Africa illustrating the dynamic nature of technology and the need for alignment with evolving business goals.

> *"We are going back to that foundational component, such as upgrading our ERP system in South Africa. I think some of that technology hasn't really kept up with us." [RPT 5]*

4.4.1.2 Transition: Building foundational capabilities

After establishing a solid foundation, the focus shifted to digitisation of business processes and staff development. RPT 7 explained:

> *"Our initial approach wasn't to jump straight into advanced technologies like AI but to implement practical solutions like RPAs [Robotic Process Automation] in the accounting department, solving major issues and showcasing the value of digital investments." [RPT 7]*

Furthermore, RPT 9 noted,

> *"Following our IT system overhaul, we began transforming our workforce, developing applications for both internal use and customer interaction to improve data collection, operational efficiency, and sales." [RPT 9]*

The data collected and generated from the digitalised process provided the business with the insights to improve its internal processes and operations continuously.

RPT 4 stressed the importance of transforming internal processes as a prerequisite for improving customer experience.

> *"We have to transform first to be able to transform the customer." [RPT 4]*

4.4.2 Strategic innovation and competitiveness

According to the participants, in the digital servitisation journey, post the organisational evolution phase, the focus shifted towards a pivotal transition: the development of customer-facing applications and advanced services. This shift was not just a step forward in technology but a strategic pivot towards customer-centricity, leveraging AI for sophisticated data analytics. This evolution signified the organisation's dedication not only to maintaining current achievements but also to pushing the boundaries for continuous innovation.

Respondents RPT 3, RPT 7 and RPT 8 offered profound insights into the necessity of embedding a customer-centric approach within the digital servitisation process. RPT 3 critically observed a prevalent gap in process design, noting that customer perspectives were often overlooked in the design of dealership processes, which could impede both innovation and continuous improvement.

> *"If you look at most of our processes as a dealer, they are designed by a Caterpillar and the customer is not included in that process. But the customer is the one that's going to take the product or service at the end, but it's just the outcome is never included. How would [you] be successful on continuous improvement if you don't have your customer? How can you be successful on innovation if you don't have your customer?" [RPT 3]*

This insight was complemented by RPT 7 and RPT 8's emphasis on the indispensable role of customer involvement in any development process, affirming that effective digital solutions emerge from a deep understanding of customer needs and preferences.

> *"Anything we develop we involve the customers. Of course, without customer involvement, it's impossible. You really need them." [RPT 7]*

> *"So we always try to build something with our customer because we are doing for them, but we are doing for them and for their needs. So first we try to understand what they need, what which tool can be easy for that one." [RPT 8]*

Integrating customer feedback and requirements into the development of digital tools and services fosters a more interactive and responsive approach. RPT 7's introduction of the concept of evolving from reactive to proactive, and ultimately to interactive phases, is testament to this dynamic interaction with customers. This progression enhances customer engagement and service, as illustrated in RPT 7's statement: "We moved from reactive to proactive and interactive, involving customers from the initial request phase through to active collaboration."

> *"There's one more phase which we are now planning, which I am calling phase three. I haven't deployed it yet, anyway. By the way, this is our next phase, which I'm calling Interactive; so we moved from, reactive to proactive and interactive, because reactive starts with customer request, proactive is mainly dealership push and interactive is both sides." [RPT 7]*

The vision for the future, as shared by RPT 5 and RPT 9, aligns with this customer-focused approach, envisioning a digital landscape where personalised user experiences become the norm. RPT 1's anticipation of a future where users have personalised experiences upon logging onto their platforms and RPT 9's focus on data-driven, personalised digital business strategies illuminate the trajectory towards more tailored and customer-specific digital solutions.

> *"I think the next milestone will be like a real personalized experience when you log onto our platform." [RPT 5]*

> *"So this may be our second step and now we are working on this data driven and personalized experience for the future of digital business." [RPT 9]*

This journey from foundational groundwork to advanced, personalised digital strategies is not just a technological transformation but a strategic realignment towards customer-centricity. It integrates cutting-edge technologies such as AI with a deep understanding of customer life cycles, in this way enhancing the overall value proposition. Such strategies not only advance digital servitisation but also strengthen the competitive edge and market positioning of the organisations involved.

Figure 8 contextualises the participants' ideas and presents a thematic map, visually representing the logical sequence of the transformation stages identified by the participants.

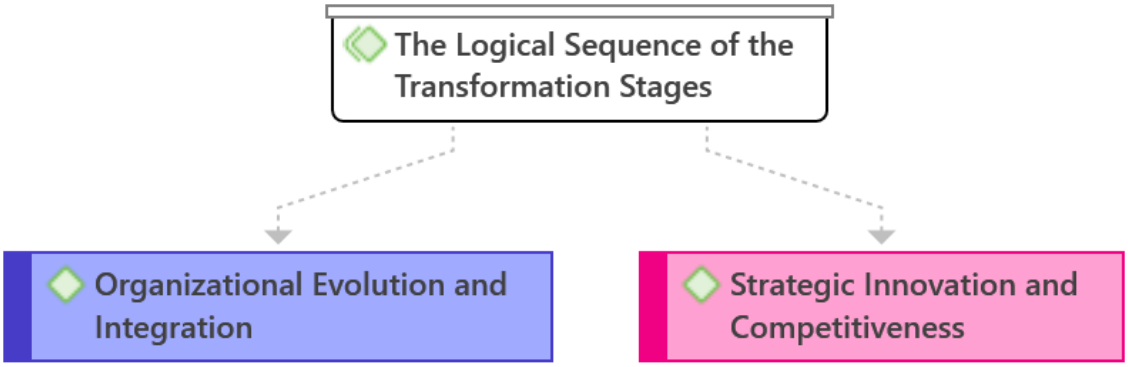


Figure 8: Logical sequence of the transformation stages

4.5 Findings pertaining to Research Question 3: The challenges encountered in digital servitisation transformation

The third research question asks: *What are the challenges faced by equipment dealers during the digital servitisation transformation process?* In the domain of digital servitisation transformation for equipment dealers, a comprehensive understanding of the challenges faced emerged from participant insights. Thematic exploration, as set out in Table 4, revealed a nuanced landscape characterised by distinct themes and their corresponding subthemes and codes.

Table 4: Codes, subthemes and themes related to Research Question 3

Codes	Subthemes	Themes
Lack of Vision	Strategic Challenges	Strategy-Related Challenges
Strategy Misalignment		
Disjointed Business Processes	Operational Barriers	
Unclear Motivation for Transformation	Motivations for Transformation	

Codes	Subthemes	Themes
Momentum Loss		
Slow Progress		
OEM Dynamics and Influence	External Influence	
Resistance to Change	Change Management	Internal and External Resistance
Workforce Challenges		
Customer Adoption		
Legacy ERP and Technology Platform Challenges	Technology Platform and Data Hurdles	Legacy Challenges in Digital Services Evolution
Data Accuracy		
Need to shift from Product-Centricity to Services		

4.5.1 Strategy-related challenges

Participants from Organisation A revealed that they faced significant strategy-related challenges during the digital transformation process in their organisation. RPT 4 highlighted a fundamental challenge as the absence of a clear and articulated vision of what the organisation needed to transform into. This uncertainty led to a reluctance to invest in resources, as the outcomes of such investments were unclear. This finding underlines the importance of having a well-defined digital transformation strategy that is clearly communicated across the entire organisation. It suggests that a lack of strategic clarity can significantly hinder the willingness of an organisation to invest in and commit to the transformation process.

> *"We had an understanding that we needed to transform … but what we needed to transform to was not clear, I don't think that was clearly articulated or defined for the entire business and approach…. Hence, we were not comfortable to invest not knowing what was the going to be the outcome of the investment and so forth…. And I think that's where it got stuck." [RPT 4]*

RPT 2 echoed this sentiment.

> *"I don't think everybody's got the same vision around you know what the new world could look like." [RPT 2]*

RPT 1 pointed to a specific instance of strategic misalignment within the organisation. While the use of machine telemetry data to drive prioritised service events (PSEs) was successful in boosting sales, it was not aligned with the parts strategy. This indicates a siloed approach where different departments or initiatives are not strategically integrated. Such misalignments can lead to inefficiencies and missed opportunities, as different parts of the organisation are not working cohesively towards a common goal.

> *"If you look at it from an after-sales perspective, we're driving PSE, which are prioritized service events using machine telemetry data to drive sales great, but that's not aligned to the parts strategy." [RPT 1]*

Momentum loss and slow progress were identified as issues that stemmed from the absence of a unified digital strategy, a lack of vision and external influences. RPT3's comment cited below sheds light on the lack of strong internal motivation for digital transformation. The participant noted that even attempts to create motivation led to disparate interpretations and actions, reflecting a lack of unified direction. Additionally, the reliance on external motivation from Caterpillar suggests that the drive for transformation was more reactive to external pressures than proactive and internally driven.

> *"Honestly, we didn't create a strong motivation or drive and even if we try to create it, we create it in a way that people will interpret it in different ways, so they go on different ways. The internal motivation was not that strong; instead, Caterpillar was a big factor motivator in our transformation." [RPT 3]*

This response underscores the importance of establishing clear and compelling internal motivation for successful transformation. The reliance on external motivators, such as companies like Caterpillar, suggests an opportunity for the organisation to strengthen its internal motivational strategies and improve communication to ensure a more cohesive and aligned transformation journey.

In contrast, Organisation B had a strong vision and motivation for the change.

"I guess the main difference is that we believe in digital so does our management team. They are believing in that, so the future is there. So we try to be early adopters. Not followers." [RPT 8]

Despite this strong internal drive, they also recognized the importance of staying aligned with the OEM.

"Look Caterpillar supports us ... so before doing something we discussed with Caterpillar, if they have a solution for that or if they are planning soon enough as solution for that. If they don't, we start our research and development. So, in this ..., we always try to be aligned with Caterpillar." [RPT 9]

"And now we are teaching Caterpillar. But there will be one day they will, really reach us and pass us because they have more resources, more data, more capability, which I'm OK, which I will be glad because if somebody else will develop for the sake of everybody, we are open to use. But until that moment they match our level, we will keep going." [RPT 7]

4.5.2 Internal and external resistance

The digital servitisation process faces significant challenges from both internal and external resistance, as underscored by the insights of RPT 1, RPT 4, RPT 5, RPT 6, RPT 7, RPT 8 and RPT 9. These perspectives highlighted the complexity of managing change and the diverse sources of resistance that affect the success of digital initiatives.

RPT 1 observed a reluctance in sales teams to embrace new digital products, highlighting a gap in integrating digital solutions into the company's core operations.

"We've introduced new digital products, but the sales teams aren't coming on board from a machine sales perspective. So, things like connectivity and point of sale should be a part of our DNA." [RPT 1]

RPT 4, RPT 7 and RPT 8 pinpointed a major source of internal resistance as being employees who perceived digital transformation as a threat to their job security and income. The participants' perspectives underscored the delicate nature of overcoming resistance within the workforce, where perceptions of digitalisation as a threat necessitate proactive efforts in fostering understanding and alignment with organisational goals. Thus, a dual emphasis on

education and effective communication emerged as a pivotal strategy in addressing the diverse hurdles posed by digital servitisation transformation.

> *"The major source of resistance has been people seeing digital as a threat to them, income, and job security. It's internal resistance and change management because we haven't invested time in making sure that people understand." [RPT 4]*

> *"The main challenge is the people and people include customers…, change management is the key. Most people like the organization would say that they want to change, don't believe in that, until they see that, until they get adapted, they don't change. That's the key thing and it's the biggest problem in the organization. 95% of the projects are failing because of change management." [RPT 7]*

> *"People usually wants to survive, they want to do what they are used to. So, it is very hard to change things, but I guess…. we need to show the benefits to them." [RPT 8]*

RPT 3 and RPT 9 elaborated on the difficulties faced in managing change, especially in the context of long-tenured employees accustomed to traditional methods. RPT 9 noted, "The main challenge is the cultural shift, especially for those who've been in the same position for over two decades." The resistance to changing applications and processes from those accustomed to traditional methods poses a significant challenge. This participant acknowledged that while some employees might be willing to participate in the cultural shift, others might not. This points to the variability in employee attitudes to and readiness for change and indicates the importance of inclusive strategies that consider the diverse attitudes and adaptability levels of employees.

> *"The main challenge would still be just like every transformation; it may still be the cultural shift. You're changing the applications and the processes of the people who may have been working for more than 20 years in the company. Most of them may be willing to participate. Others may not be. This is a cultural shift." [RPT 9]*

> *"I think the other challenge … is a difficulty to manage change. Change management is something we don't do well, so we end up having totally disconnect views on things because there was not a clear change management process." [RPT 3]*

RPT 7's strategy of role rotation within the organisation highlights an effective approach to breaking down resistance by moving employees out of their comfort zones.

> *"Since the transformation, everybody has changed position within the company except me…. Because if anyone stays in the same position long time, they are in the comfort zone, don't expect them to change. I rarely see people who are doing the same job for decades for long time change and because they become expert in their area and behave like the know it all, which is true by the way." [RPT 7]*

While internal resistance is a significant hurdle, external factors also play a crucial role. RPT 6 pointed out challenges in altering customer approaches and perceptions, stating, "Transforming business processes is one thing, but changing customer approaches is more difficult." This suggests that external resistance, such as customer hesitancy, can also impede the digital transformation process.

> *"Yeah, we have transformed our business processes but customer approach little bit difficult to change. It's a challenging situation. But overtime we believe we can change the customer aspects." [RPT 6]*

4.5.2.1 Strategies for overcoming resistance

A multifaceted approach is essential for overcoming these challenges. This includes fostering a culture of agility and continuous learning, as emphasised by RPT 5, cited below. Educating both employees and customers about the benefits of digital transformation is crucial for reducing resistance and garnering support.

> *"The digital landscape is ever evolving; we must be agile to navigate its changes." [RPT 5]*

Furthermore, involving all stakeholders in the decision-making process, as advised by RPT 6, can facilitate a smoother transition.

> *"The most critical parameter in digital transformation is not just technology, but also the transformation or adoption of the people. Decisions regarding the digitization of processes should be made collaboratively with input from all stakeholders." [RPT 6]*

Overcoming internal and external resistance is pivotal in the digital servitisation journey. It requires a comprehensive strategy that encompasses effective communication, education and a

culture shift towards embracing digital opportunities. By addressing these challenges holistically, organisations can enhance their ability to adapt to digital changes, ensuring a successful transformation that aligns with both internal objectives and external market dynamics.

4.5.3 Legacy challenges in digital services evolution

In its digital servitisation journey, Organisation A grappled with significant legacy system challenges, as prominently highlighted by RPT 5, RPT 2 and RPT 3. RPT 5 specifically cited outdated technology and subpar data quality as major impediments that created barriers to implementing effective digital strategies. This issue of "antiquated technology", suggests that existing systems are not only inefficient but also incompatible with modern, advanced digital solutions, as underscored in RPT 5's statement:

> *"The unfortunate challenge is that we've got antiquated technology and platforms … and the quality of our data is not very good…. I think that's probably our biggest challenge at this point." [RPT 5]*

RPT 4 expanded on these challenges, noting the difficulty arising from multiple systems interfacing with the current ERP setup, leading to data management complications and operational inefficiencies. This necessitates a thorough cleanup and foundational reset, as RPT 4 explained:

> *"We have so many systems that are talking to SAP. To close a month, it takes 9 days, which is unheard off. That's why we have to clean up … to make life easier … because our foundation is wrong…. But with what we are proposing, NAXT [An Enterprise Resource planning software for dealerships], after cleaning up, making sure that the foundation is correct." [RPT 4]*

RPT 3 pointed out that the organisation's legacy technology was a major limitation, prompting investment in newer solutions such as NAXT. However, this participant also highlighted a crucial aspect of technology implementation as the skills and knowledge required to utilise these systems effectively. This insight suggests that merely upgrading technology is not sufficient; there is also a need to invest in developing the skills and knowledge of the workforce to leverage these new technologies fully.

> "*The old technology we have was a limitation, hence our investment in NAXT. However, another limitation from a technological standpoint has been the skills and knowledge that we have." [RPT 3]*

In contrast, Organisation B, as indicated by RPT 7, demonstrated a proactive approach to overcoming similar legacy issues. The organisation prioritised fixing its ERP system as a foundational step, underscoring the necessity of a solid technological base for any digital transformation. RPT 7's insight, "We fixed the ERP first, that was a big thing", reflects the organisation's understanding of the critical role of foundational technology in digital servitisation.

> *"We fixed the ERP first, that was a big thing. Fixing your ERP and data is foundational. It is impossible to go on the journey without getting that right.… I met several guys from other large companies that had embarked on this transformation before us. But they struggled to implement their ERP." [RPT 7]*

These responses indicate that legacy platform challenges are a significant impediment in the journey towards digital servitisation. Outdated technology not only limits the potential for adopting new digital solutions but also results in poor data quality, with good data quality being a critical component of effective digital servitisation. Additionally, the skill gaps in utilising new technologies point to the need for investment in workforce training and development.

4.5.3.1 Legacy business practices

RPT 3 and RPT 2 from Organisation A discussed the challenges associated with their legacy business practices. RPT 3 noted the reliance on long-standing formulas, which created a resistance to change:

> *"I feel we have a formula that's been working for many, many years, and this is the problem with the legacy business that you know that legacy has proven itself to work well." [RPT 3]*

RPT 2 pointed out the product-centric focus over service orientation, which had the effect of limiting the scope of digital transformation:

> *"Look at it as an organization. We are still product centric.… Are we as an organization focusing on not necessarily selling the product, but selling a service? The answer is resounding no." [RPT 2]*

RPT 8 from Organisation B highlighted the challenge of aligning daily operations with long-term digital strategies:

> *"It's a challenge to get unto people's agenda for them understand what we are doing is because on daily operation they have something to do to do, so they can't look at our future roadmap. It takes time to get them on the same … but we need to convince our partners." [RPT 8]*

These insights illustrate that overcoming legacy challenges, both in terms of systems and business practices, is vital for a successful digital servitisation journey. Outdated technology, poor data quality and resistance to new business models pose significant barriers. Addressing these issues requires not only technological upgrades but also a shift in organisational mindset and practices, with an emphasis on training, skill development and strategic alignment, as pointed out by the participants.

Figure 9 contextualises the participant responses and presents a thematic map, visually representing the challenges in the transformation process.

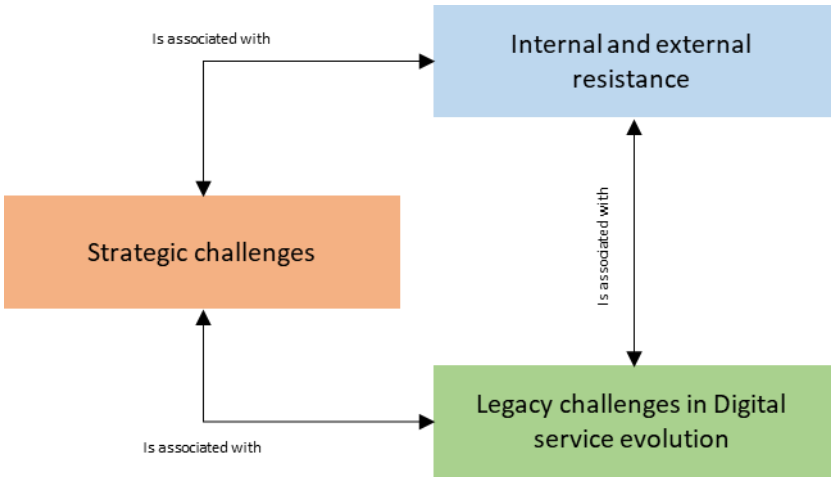


Figure 9: Challenges faced by equipment dealers in digital servitisation transformation

4.6 Findings pertaining to Research Question 4: The role of leadership in the digital servitisation transformation process

The fourth research question was: *What is the role of leadership in the digital servitisation transformation process in earthmoving equipment dealerships*? As organisations grapple with

the intricate landscape of digital servitisation transformation, the pivotal role of leadership becomes increasingly apparent. This research explored the nuanced dynamics of leadership in steering the complex journey towards digital servitisation. Table 5 outlines the key codes, subthemes and themes identified in the exploration of the impact of leadership on the transformation process.

Table 5: Codes, subthemes and themes related to Research Question 4

Codes	Subthemes	Themes
Lack of Vision		Leadership Dynamics in Digital Transformation
Misaligned Leadership KPIs	Misaligned Leadership KPIs and Silo-driven Organisation	
Silo-Driven Organisation		
Customer-Centric Approach	Business Approach to Digital Transformation	
Product-Centric Approach		
Leadership	Leadership Influence	
Customer Focus	Customer Focus	
Disconnect	Disconnect Challenges	

4.6.1 Leadership dynamics in digital transformation

The responses from both Organisation A and Organisation B concerning the fourth research question provided a comprehensive view of the role of leadership in the digital servitisation transformation. These insights pointed to the critical importance of leadership in guiding, facilitating and championing digital initiatives. Leadership in Organisation A seemed to struggle with defining a clear and cohesive vision for the digital transformation. RPT 4 and RPT 3 emphasised the need for a clear vision.

> *"Let's start first with the vision regarding the end state, defining what that end state looks like for everyone in terms of usage, whether it's in the cell phone industry or media. Then, the engineer goes back to say, from where we are now, do we have the right leadership to take us there? Start with the leaders to understand what it takes for*

people within the organisation to think about digital and the end state. Is pivotal for guiding our digital evolution." [RPT 4]

"First leadership need to create the right vision for the company, and I don't think we have the right vision for the company to give us those big jumps that we so need." [RPT 3]

RPT 4 also highlighted the need for future-focused leadership that goes beyond immediate returns to leave a legacy.

"I still believe that visionary leadership is important, to say how many of us have been trained in understanding the mega trends five years down the line. Think about it, someone had dreamt about Uber ten years ago." [RPT 4]

RPT 4 discussed the necessity of receiving support from parent company.

"Let's also talk about the parent company, if you speak to other dealers, you can see that they were driving this transformation, right. And they allocated the resources accordingly. We internally we do also have a parent company. Did they see what we needed to do? Were they aligned with that? And leadership to craft the vision and give the support in terms of resource allocation. And then the buy in of the parent company, it's important that there is that alignment." [RPT 4]

RPT 1 critiqued the existing leadership approach:

"We [leadership] impacted the transformation negatively … and the reason I'm saying it is because we've driven the transformation in Silos…. it's been incidental and purely because of how we were measured." [RPT 1]

In contrast, the leaders of Organisation B were actively involved and keen on digital transformation, setting the tone for the rest of the organisation. RPT 7 and RPT 8 stressed the importance of top-level support and consistent messaging for successful digital transformation.

"It has to start from the top level. If I were not keen and so much keen on digital transformation it wouldn't happen. Because people are looking at me every time, to what I'm saying, if I'm mumbling, if I'm complaining. If I'm blaming somebody on that one. If I'm doing that one, they would immediately find one reason not to do that one. But I must keep pushing that all the time. Asking about the results, sometimes strongly,

sometimes gently, but eventually trying to show the benefits to all parties, still, by the way." [RPT 7]

"For instance, our ecommerce thing, it is very hard to explain to about customer and the salespeople. It is. It is a game changer thing. So, you shift all experience from offline to online. So, because the management team believes that, so they insist on and the strategy, the vision always explains this way. So, they are repeating the messages every time, so it is good to be understandable from the organization that OK if we are working here, this is the way we need to go." [RPT 8]

From the participants' comments it appears that Organisation B demonstrated more effective leadership management of the digital transformation process. Regular evaluations and action plans were a part of their approach, indicating an active and engaged leadership.

"Leaders are managing this process quite effectively, holding regular evaluation meetings to discuss what we are doing well and where we could improve. Based on frequently quarterly evaluations, we talk to all processes and according to this discussion results, we create new action plans and improve our products." [RPT 6]

RPT 9 from Organisation B emphasised the role of leadership in fostering innovation and a customer-focused approach. This participant underscored the need for management support in providing resources, motivation and clear direction for the digital initiatives.

"They will really need the support of the management and the shareholders by heart, not only in saying but my heart, if they're not actually support, it doesn't go on they cannot continue because we are big, we are big organizations. You know, lots of people. Thousands of people are working in the organization. If they management doesn't support you, doesn't clear your way, give you tools, give you investment, give you initiative to take ideas, to make the decisions. It cannot grow. Yeah, just not like the money (investment), but also all other things. They need to motivate, they need to talk about it so people see and understand that it is not something on the IT department is creating." [RPT 9]

4.7 Conclusion

This chapter presented the findings of the study. Codes, themes and subthemes were identified in relation to each of the four research questions posed for the study. The first area, in answering the first research question, focused on the stages and steps in digital servitisation

transformation. This area highlighted an initial emphasis on strategic visioning and planning as fundamental to defining the trajectory of the transformation. This was closely followed by the necessity for IT transformation, establishing robust IT platforms and data-management systems as the backbone of the process. A significant shift was observed towards a focus on digitisation and organisational change, which underscored the need to adapt operations and services to digital mediums and necessitated a concurrent shift in organisational culture. Furthermore, the evolution of and innovation in customer service, particularly through the adoption of AI and ML technologies, marked a transition towards more sophisticated, customer-centric services.

Addressing the second research question, the study's second focal point explored the logical sequence of these transformation stages. The participants' responses indicated a progression from establishing foundational capabilities, such as connectivity and ERP platform implementation, to building cross-departmental collaboration and adaptive organisational structures. This progression naturally led to strategic innovation and a shift towards a proactive business culture, integrating customer feedback into service development and innovating market strategies.

In answer to the third research question, challenges encountered during this transformation process formed the third area of focus. Participants identified key strategic challenges, including a lack of unified vision, strategy misalignment and operational barriers. Additionally, change management emerged as a significant hurdle, characterised by internal and external resistance, particularly from employees and customers accustomed to traditional methods. Challenges with legacy ERP systems and data accuracy further complicated the transformation process.

Lastly, in answering the fourth research question, the study shed light on the pivotal role of leadership in the digital servitisation transformation process. Effective leadership dynamics, encompassing the establishment of a clear vision and overcoming siloed organisational approaches, were revealed to be fundamental. The need for strong management support was underscored, emphasising the importance of top-level commitment and consistent messaging for a successful transformation. Leadership was also identified as crucial in fostering innovation and a customer-focused approach, providing the necessary resources and strategic direction.

5. DISCUSSION OF FINDINGS

5.1 Introduction

Building on the data gathered and analysed and the findings presented, as described in previous chapters of this report, this chapter contextualises and interprets the results within the broader framework of existing literature and theoretical models. The discussion of the findings seeks not only to draw connections between empirical findings and established theories but also to identify and explore emerging patterns, discrepancies and insights that contribute to a deeper understanding of the digital servitisation process. By examining the nuances and implications of the results, this chapter endeavours to offer valuable contributions to the field, highlighting practical applications, potential challenges.

5.2 Discussion pertaining to Research Question 1: Stages or steps in the digital servitisation transformation

The research findings on the stages of digital servitisation transformation in the earthmoving equipment industry provide detailed and context-specific insight into this complex process. These findings can be compared with the existing literature on digital transformation and servitisation to draw broader conclusions and understand industry-specific nuances. The findings revealed four stages in the digital servitisation transformation process. These are discussed below.

5.2.1 Stage 1: Strategic visioning and Planning

The strategic visioning and planning stage underscores the primacy of strategic visioning and planning as an inaugural stage, echoing the sentiments of Lütjen et al. (2017) and Baines et al. (2019), who highlight service initiation and exploration, respectively, as the beginning of the digital servitisation transformation process. This stage also resonates with the first two stages of Martinez et al.'s (2017) model — assessment of the market and internal readiness and the creation of a strategic and cultural context. These prior studies all emphasise the importance of understanding the broader market dynamics and setting a clear strategic direction. This stage highlights a dichotomy in approaches between the two organisations studied. Organisation A's fragmented strategic approach, characterised by a lack of unified direction, resulted in significant operational challenges, whereas Organisation B demonstrated a more coherent and effective transformation that was underpinned by strong leadership and comprehensive stakeholder commitment. This contrast points to the critical role of cohesive strategic visioning,

bolstered by robust leadership and stakeholder alignment (Abdallah, 2022), in driving successful digital servitisation initiatives. It is evident that such a transformation demands a significant investment in resources (Bustinza et al., 2018; Abdallah, 2022), requiring a firm and total commitment to the process. For Organisation B, digital servitisation was perceived as an indispensable part of the organisation's future, necessitating an all-in approach, and forming a primary agenda for senior management and board members. This unified commitment (Bustinza et al., 2018) from the board and executives proved crucial to the programme's viability.

In addition, the nuances in the current study, particularly regarding OEM-led and dealer-led transformation strategies, provide a deeper understanding of the complexities involved in setting a strategic direction for digital servitisation transformation in a niche industry. The research into the two organisations highlighted different strategic paths: Organisation A had adopted an OEM-led strategy, while Organisation B was pursuing a dealer-led strategy. This divergence significantly influenced the pace and nature of their respective transformations. An OEM-led strategy, while benefiting from OEM investments and insights, is contingent upon the OEM's strategic pace and vision. On the other hand, a dealer-led strategy, while requiring substantial investment and resources (Bustinza et al., 2018; Abdallah, 2022), offers the advantage of crafting an independent vision. This indicates that it is imperative for dealers to make a strategic decision upfront, choosing between an OEM-led or dealer-led approach in their journey towards digital servitisation. However, the decision to adopt either an OEM-led or dealer-led strategy is not solely at the discretion of dealers. It is significantly shaped by the dynamics of the dealer-OEM relationship, as highlighted by Skinner et al. (1992) and Lassar and Kerr (1996). These dynamics can dictate the feasibility and attractiveness of each strategy, influencing the strategic direction that dealers ultimately choose.

5.2.2 Stage 2: IT transformation

The second stage encompasses the development of both technological infrastructure and human skills, parallels the "service anchoring" stage of Lütjen et al. (2017) and the "engagement" stage of Baines et al. (2019). These stages in the literature underscore the necessity of developing robust internal capabilities and a supportive infrastructure to facilitate servitisation. The current study brings to light the critical role of early investments in information technology and skills as suggested by Bustinza et al. (2018), Abdallah (2022) and Zhang (2023), highlighting how delays in these areas can have a detrimental impact on the transformation process. The comparative analysis of the organisations revealed that Organisation A's delayed

implementation of an essential ERP system and digital skills adversely impacted its transformation process, in contrast to Organisation B's timely foundational investments.

This stage also highlights the criticality of high-quality customer data and the standardisation of business processes to support digital initiatives. The lack of both supports is a major stumbling block for many dealers and a crucial step involves getting them fixed.

Building a strong foundation is critical for ensuring that the organisation is equipped to handle the changes and challenges of digital servitisation.

5.2.3 Stage 3: Digitisation and organisational change

The digitisation and organisational change stage corresponds with Lütjen et al.'s (2017) "service extension" stage and Baines et al.'s (2019) "expansion" stage. It also mirrors the engagement and trust phase of Martinez et al. (2017). Similar to these stages in the servitisation literature, the research underscores the need for a holistic integration of digital processes and the fostering of an organisational culture that is open to innovation and change (Khan, 2022; Sæland, 2018), emphasising the symbiotic relationship between technological integration and cultural adaptation in successful digital servitisation. This stage is vital for ensuring that digital initiatives are not just implemented but are also effectively adopted and embraced across the organisation. Cultivating a culture that supports innovation, agility and continuous learning is key to successful digital transformation (Kane et al., 2019). The human element highlighted in the research adds an essential dimension to the digital servitisation narrative, emphasising the importance of people and culture in successful servitisation. This aspect, while recognised, is often underestimated in broader servitisation models and literature.

5.2.4 Stage 4: Customer service evolution and innovation

The customer service evolution stage identified in the current study aligns with the "exploitation" stage of Baines et al. (2019) and the advanced stages of Chen et al. (2021). In this stage, the research highlights the importance of enhancing customer experiences through the strategic use of digital tools and technologies, a notion that is resonant with the continuous innovation emphasised in current servitisation models. This stage synergistically combines the themes of customer service evolution and technological advancement. The practical application of AI and ML (Nicoletti & Appolloni, 2023) for predictive maintenance and customer behaviour analysis exemplifies this stage, showcasing the effective integration of technology in service delivery. This stage underscores the need for earthmoving equipment dealers to

continually adapt (Sjödin et al., 2020) their customer service strategies in line with advancing digital technologies, ensuring competitiveness and relevance in a rapidly evolving market.

Figure 10 contextualises and presents the proposed stages or steps involved in the digital servitisation transformation process.

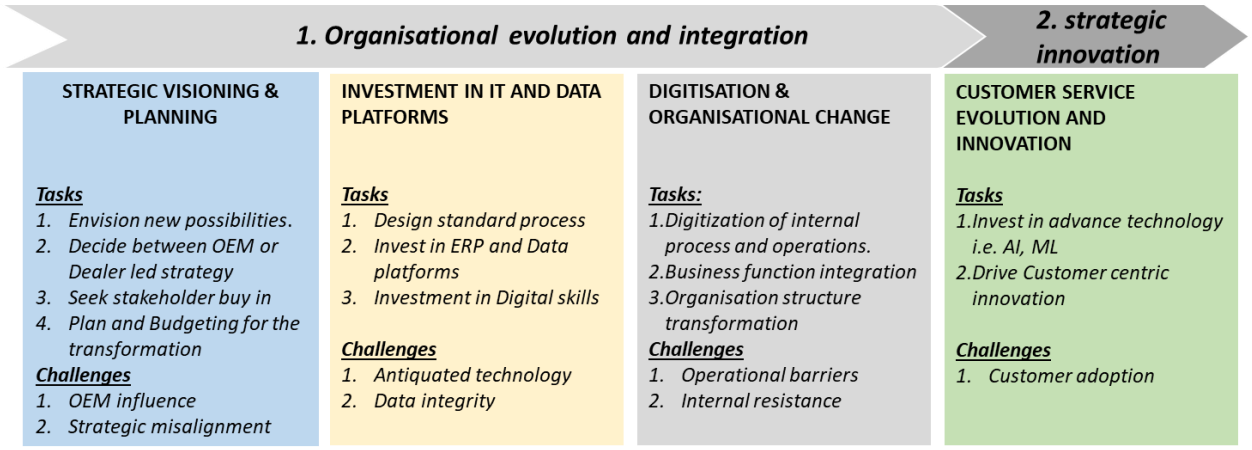


Figure 10: Stages in digital servitisation process in dealerships

5.3 Discussion pertaining to Research Question 2: The logical sequence of the transformation stages

Following the identification of the stages involved in digital servitisation transformation, the study sought to establish the logical sequence of these stages for earthmoving equipment dealers. Consistent with both servitisation (Martinez et al., 2017) and digital transformation literature (Abdallah et al., 2021), the first stage in the servitisation process, as evidenced by the findings, involves a strategic decision from leadership to embark on the digital servitisation journey. This decision is typically driven by either intrinsic (internal business goals) or extrinsic (market forces, competition) motivations. This aligns with the insights from Martinez et al. (2017) and Abdallah et al. (2021) regarding the importance of a strategic and intentional beginning to the servitisation and digital transformation process, respectively. A critical aspect of this stage involves deciding whether the transformation will be dealer-led or OEM-led, which significantly shapes the trajectory of the transformation process.

Echoing Chen et al. (2021), the next logical step identified in the findings is the development of internal capabilities and resourcing. This stage is seen as a foundational enabler for the transformation, without which the other stages cannot proceed effectively. The focus here is on building the necessary infrastructure, technological capabilities and human resource

competencies. This stage reflects the continuous aspect of digital servitisation, where existing business model elements are developed and enhanced.

Following the establishment of internal capabilities, the transformation process then moves to internal process modification and, subsequently, to transforming the customer space. This sequence supports the notion that internal readiness and capabilities are prerequisites for external service changes, aligning with Baines et al. (2019) and Lütjen et al. (2017), who emphasise the importance of internal preparation before external service expansion.

However, while the findings indicate that the servitisation process initially follows a linear sequence, they also point to each stage as having an iterative and evolutionary nature, particularly in the advanced stages of developing new services for customers. This iterative aspect resonates with the findings of Chen et al. (2021) and Martinez et al. (2017), who noted the continuous and discontinuous features in the digital servitisation process. There is evidence of these features in the findings of the current study, where both organisations were reported as revisiting earlier stages to refresh and update their strategies, foundational capabilities, internal processes and customer service approaches. This cycle of revisiting and refining is critical for advancing new services and aligns with the emergent, intuitive nature of the service journey, as highlighted by Martinez et al. (2017), Sjödin et al. (2020) and Chen et al. (2021).

In conclusion, the research findings suggest that while the initial stages of digital servitisation transformation may follow a logical, linear sequence — starting from strategic decision-making, building internal capabilities and then moving towards external service transformation — the process becomes increasingly iterative and cyclical as organisations seek to develop and introduce new services. This reflects a blend of the structured approach seen in the initial stages and the emergent, iterative nature discussed in the literature (Chen et al., 2021; Martinez et al., 2017; Sjödin et al., 2020). The research acknowledges the complexity and dynamism of the digital servitisation process, where organisations must balance the need for a structured approach with the flexibility to adapt and evolve continuously.

5.4 Discussion pertaining to Research Question 3: The challenges in digital servitisation transformation.

The research findings regarding the challenges of digital servitisation transformation among equipment dealers offer a nuanced understanding that aligns well with the existing literature in this domain. One of the key challenges identified relates to strategy (Martinez et al., 2017), particularly as equipment dealers navigate the shift towards digital services. This transition, as highlighted by the participants, often faces alignment issues, especially in integrating new services such as PSEs with the broader parts strategy. This finding resonates with Martinez et al. (2010), who emphasise the critical role of strategic alignment in digital servitisation. The alignment challenge underscores the necessity for a cohesive strategy that seamlessly integrates new digital services with the overall business objectives, echoing the broader literature's call for strategic coherence in digital transformation initiatives.

Moreover, the research findings bring to light significant hurdles in digital servitisation transformation, particularly concerning organisational adaptability and internal and external resistance. Equipment dealers report challenges with employees perceiving digitalisation as a potential threat to their job security, reflecting a deeper issue of resistance to change. This aspect of the findings aligns with Vial's (2019) insights on inertia and resistance in transformation processes. The literature suggests that overcoming these hurdles requires not only cultural changes within organisations but also transformational leadership, as highlighted by Bustinza et al. (2018) and Matt et al. (2015). Leadership that can navigate these complex dynamics is critical in ensuring a smooth transition to digital servitisation.

Another prominent challenge identified in the study relates to the legacy systems within organisations. Equipment dealers are grappling with the limitations imposed by antiquated technology and the sustainability of their legacy business models in the rapidly evolving digital landscape. These findings parallel the challenges of technological obsolescence and the inertia of established practices as discussed by Vial (2019). The literature underscores the imperative that organisations undertake a fundamental shift, both in mindset and technological infrastructure, to remain relevant and competitive in the digital era.

The research also highlights the complexities surrounding customer adoption and expectations of digital servitisation. Understanding customer motivations and aligning with them are crucial for persuading customers to adopt digital services. This challenge is in line with the digital servitisation paradox discussed by Sjödin et al. (2020), where a balancing act between providing customised services and catering to broader market demands is essential.

In summary, the research findings provide a detailed exploration of the specific challenges faced by equipment dealers in the context of digital servitisation transformation. These challenges, ranging from strategic alignment and organisational resistance to legacy system limitations, customer adoption issues and data-management complexities, echo the themes prevalent in the broader literature. This alignment underscores the multifaceted nature of digital servitisation and highlights the necessity for comprehensive strategic, technological and cultural shifts within organisations to navigate this complex transformation successfully.

5.5 Discussion pertaining to Research Question 4: The role of leaders in the transformation

The research findings on the role of leadership throughout the stages of digital servitisation transformation in the earthmoving equipment industry provide a comprehensive view that dovetails with the views of Kane et al. (2019). Leadership plays a continuous and evolving role across all four stages of transformation, each stage presenting unique challenges and opportunities for leadership to influence the trajectory of digital servitisation.

5.5.1 Stage 1: Strategic visioning and planning

In the strategic visioning phase, the findings indicate the critical need for leaders to establish a clear, unified direction for digital servitisation. The contrasting approaches of Organisations A and B reveal the consequences of fragmented versus coherent strategic visioning. Organisation B's success, underpinned by strong leadership and stakeholder commitment, highlights the importance of a cohesive vision, aligning with the literature's emphasis on the crucial role of vision communication (Kane et al., 2019; Kotter, 2007) in digital transformation (Kim & Toya, 2019; Kowalkowski et al., 2017). Leaders must craft a vision (Kane et al., 2019; Kotter, 2007) that not only motivates but also directs the organisation towards a unified goal and addresses the specific needs and challenges of the earthmoving equipment industry. This vision involves the foresight to understand market trends, technological advancements and customer expectations. In line with the vision, leadership must ensure alignment and commitment from all stakeholders (Abdallah et al., 2022; Martinez et al., 2017), including the board, management, employees and external partners such as OEMs. This involves communicating the vision effectively to secure buy-in and foster a shared understanding of the transformation objectives. Lastly, leadership must make key strategic decisions, such as choosing between an OEM-led and a dealer-led approach. This decision will significantly impact the organisation's

transformation path and needs to be made on the basis of a comprehensive understanding of both internal capabilities and market dynamics.

5.5.2 Stage 2: IT Transformation

During the foundational capability stage, leaders are required to demonstrate commitment through the allocation of resources for digital platforms and skilled personnel (Kane et al., 2019). The divergent experiences of the two organisations focused on in this study reflect the impact of timely versus delayed investments in technological infrastructure and human resources. This stage emphasises the leader's role in prioritising and driving the investment in essential digital capabilities.

5.5.3 Stage 3: Digitisation and organisational change

The findings highlight the leader's role in integrating digital processes and aligning organisational culture with digital strategies. Leadership decisions can inadvertently lead to a siloed approach, conflicting with the necessary cohesive strategy for effective digital servitisation (Bustinza et al., 2018; Favoretto et al., 2022). Successful integration requires leaders to communicate on an ongoing basis and align organisational structures and processes with the digital servitisation strategy, as demonstrated by Organisation B's leadership approach. Leaders need to foster a culture that is conducive to change and innovation. They should encourage an environment where experimentation and digital adaptation are embraced. Managing the cultural shift and addressing any resistance to change make up a critical aspect of this stage.

5.5.4 Stage 4: Customer service evolution and innovation

For the final stage, the findings revealed that leaders must prioritise customer-centric approaches over product-centric ones, aligning with the view of Tewari (2020), who stresses the need for a vision that integrates customers, products and services. The focus on enhancing customer experiences through digital tools and continuous innovation is paramount. Leaders must drive this evolution by aligning customer service strategies with digital advancements and ensuring that the organisation stays abreast of technological trends. This means that leaders should encourage an environment where experimentation and digital adaptation are embraced.

Overall, the research findings underscore the need for leaders to believe in and maintain momentum towards transformation, aligning with the views of Matusek (2022) and Foerster (2023). Effective leadership in digital servitisation is characterised by a balance of setting a clear vision, aligning organisational processes, fostering a culture of innovation and focusing

on customer-centric approaches. Leaders must not only set a strategic vision and allocate resources but also inspire belief in the transformation process and manage performance indicators to support this transformation effectively.

5.5.5 Conclusion

In conclusion, the research findings offer insights into the digital servitisation transformation process, highlighting the importance of strategic visioning, building foundational capabilities, organizational change, customer service evolution, and effective leadership. These insights contribute to a deeper understanding of the complexities and challenges inherent in digital servitisation transformation within the earthmoving equipment industry.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The aim of this study was to explore the critical stages involved in the implementation of digital servitisation transformations in the earthmoving equipment industry and to examine the role of leadership in facilitating this process. This chapter presents academically grounded conclusions in alignment with the stated research objectives to enrich the comprehension of this intricate transformation process. On the basis of these conclusions, the chapter makes recommendations for earthmoving equipment dealers to practise. The chapter then highlights the contribution made by the study and concludes by suggesting potential areas for future research.

6.2 Conclusion pertaining to Research Objective 1: Identify key stages in digital servitisation transformation

The research question linked to this research objective is *Research Question 1: What are the key stages or steps involved in the digital servitisation transformation process for earthmoving equipment dealers?*

This study highlights the importance of strategic visioning as the initial stage in digital servitisation. This research highlights the crucial role of leadership in establishing a clear, unified direction, aligning with the strategic dichotomy between OEM-led and dealer-led approaches. The findings illuminate the significance of this foundational stage, resonating with existing literature on the necessity for a coherent and comprehensive strategic vision for successful digital servitisation.

The research reveals the necessity of developing robust technological infrastructure (Abdallah et al., 2021) and skilled human resources in the early stages of digital servitisation. The comparative analysis of the organisations studied demonstrates the impact of timely versus delayed foundational investments, aligning with scholarly discussions that emphasise the critical role of early resource allocation in the transformation process.

The study illustrates the importance of effectively integrating digital processes within existing business workflows and aligning organisational culture with digital strategies. This stage is vital for ensuring the successful adoption and embracement of digital initiatives across the organisation, reflecting the literature's emphasis on the integration of digital strategies into existing business models and cultures.

Finally, the study identifies a crucial stage that combines the concepts of customer service evolution with technological advancement. This stage highlights the importance of aligning customer service strategies with ongoing technological innovations, underscoring the need for earthmoving equipment dealers to adapt their approaches to meet evolving customer expectations (Huang & Rust, 2017).

6.3 Conclusion pertaining to Research Objective 2: Identify logical sequence of transformation stages

The research question linked to this research objective is *Research Question 2: What is the logical sequence of the transformation stages?*

In examining the logical sequence of the transformation stages, this study found that the digital servitisation process in earthmoving equipment dealerships often encompasses two broad themes: internal organisational evolution and external strategic innovation and competitiveness. The process commences with a linear sequence of stages but evolves into a more iterative process over time. Initially, it begins with strategic decision-making, a stage that is crucial for setting the direction and scope of the transformation. This is followed by the transformation of internal capabilities, such as technological infrastructure, workforce skills and business processes, that are essential for supporting the upcoming changes.

Subsequently, the focus shifts towards transforming external services, aligning with new digital capabilities. However, as the transformation advances, the process diverges from a linear trajectory and adopts an iterative approach that is particularly noticeable in the development of new services. This iterative stage involves revisiting previous steps, adapting to emergent technologies, and refining strategies according to evolving market demands and customer feedback. In this way it embodies a dynamic process that oscillates between structured planning and emergent, adaptive strategies (Chen et al., 2021; Martinez et al., 2017; Sjödin et al., 2020). This complex and multifaceted nature of the process underscores the importance of flexibility and adaptability in digital servitisation strategies.

6.4 Conclusion pertaining to Research Objective 3: Examine challenges faced during transformation

The research question linked to this research objective is *Research Question 3: What are the challenges faced by equipment dealers during the digital servitisation transformation process?*

The study identified several challenges in digital servitisation transformation. The most important of these challenges concern:

1. Strategic and organisational alignment: Difficulties are encountered in aligning digital transformation initiatives with the overall business strategy and adapting organisational structures and processes to new digital models.

2. Internal and external resistance: Resistance is encountered from within the organisation, which often stems from fear of change or perceived threats to job security, as well as from outside the organisation in encouraging customers to embrace new digital services and platforms.

3. Legacy system limitations: Outdated technological systems that are not adaptable to new digital paradigms present a challenge.

Addressing these challenges requires a comprehensive approach that encompasses strategic reorientation, technological updates and cultural change. The multifaceted nature of these challenges highlights the necessity for dealerships to undertake a holistic transformation strategy that addresses all aspects of their business operations.

6.5 Conclusion pertaining to Research Objective 4: Examine the role of leadership in transformation

The research question linked to this research objective is *Research Question 4: What is the role of leadership in the digital servitisation transformation process?* The research findings culminate in several critical insights. It is evident that the leadership role in servitisation transformation is continuous, dynamic and evolving. The role involves:

1. Crafting and communicating a compelling vision for the transformation journey, ensuring that it is coherent and motivates all stakeholders towards a common goal;

2. Aligning organisational processes with the digital transformation strategy, ensuring that the company's operations can adapt to the envisaged changes;

3. Fostering a culture that encourages innovation, experimentation and digital adaptation. Leaders should create an environment that supports these values, enabling the organisation to adapt to and thrive in the digital age;

4. Pivoting the organisation towards approaches that prioritise customer needs in the digital realm, enhancing customer experiences and satisfaction; and

5. Importantly, maintaining the pace and direction of the transformation. This requires continuous investment in resources, effective communication and regular stakeholder engagement.

Additionally, leaders need to manage the delicate balance of exploiting existing competencies while exploring new opportunities (ambidexterity). This includes the challenges of integrating new digital technologies without compromising the efficiency of current operations.

In conclusion, the role of leadership in digital servitisation is multifaceted and continuous, requiring a blend of strategic vision, operational alignment, cultural adaptation, customer focus and dynamic engagement. Leaders are not just initiators of change but are central to sustaining and steering the transformation process, adapting to new challenges and opportunities that emerge along the journey. This leadership paradigm is integral to successful digital transformation in the earthmoving industry, setting a precedent for other sectors undergoing similar digital transitions.

6.7 Recommendations

Based on the research findings on digital servitisation in the earthmoving equipment industry, several recommendations emerge to guide dealerships through the transformation process.

Firstly, dealerships must develop a unified strategic vision aligning digital servitisation initiatives with overarching business objectives. This vision should be crafted in consultation with stakeholders, including OEMs, parent companies, employees, and customers, ensuring commitment and buy-in throughout the transformation journey.

Moreover, prioritizing early investments in IT infrastructure, platforms, and skilled human resources is crucial for effectively supporting digital servitisation initiatives. Prompt allocation

of resources helps dealerships avoid delays that may hinder the transformation process and impact competitiveness in the evolving market landscape.

Additionally, dealerships must actively digitalise their operations and drive organizational change to facilitate seamless adoption. Recognizing the dynamic and iterative nature of digital servitisation transformation, adopting flexible strategies that allow for continuous refinement and adaptation is essential.

Leveraging emergent technologies such as artificial intelligence and machine learning enables dealerships to drive advanced services and meet evolving customer expectations effectively by staying attuned to market feedback.

Addressing challenges related to strategic and organizational alignment, internal and external resistance, and legacy IT systems should be approached proactively.

Finally, leadership plays a pivotal role in driving digital servitisation transformation. Leaders should craft and communicate a compelling vision for the journey, foster a culture of innovation and digital adaptation, and prioritize customer needs to enhance experiences. By managing the delicate balance between exploiting existing competencies and exploring new opportunities, leaders can maintain the pace and direction of the transformation, ensuring long-term viability and competitiveness in the digital era.

6.6 Contribution of the research

This research makes noteworthy contributions to both academic scholarship and practical applications in the field. The study provides a framework that outlines the key stages in digital servitisation transformation. This framework serves as a valuable guide for dealer organisations in similar industries that are embarking on their digital transformation journey. It offers a structured approach for managing the transition from traditional business models to more digitally oriented operations, which is essential in today's technology-driven market (Porter & Heppelmann, 2014). By highlighting the pivotal role of leadership in digital servitisation, the research contributes to the understanding of how effective leadership can facilitate successful transformation. The research identifies and analyses the multifaceted challenges faced during the transformation, such as strategic alignment, organisational adaptability and legacy system

limitations. These findings contribute to the development of more robust strategies for overcoming common obstacles in digital servitisation.

6.8 Suggestions for future research

The current study focused on the digital servitisation transformation process within the earthmoving equipment dealership industry. Future research could expand on this by investigating digital servitisation across other heavy machinery sectors and examining the role of emerging technologies such as artificial intelligence AI, IoT, and blockchain in facilitating these transformations. In addition, longitudinal studies of digital servitisation transformation, and empirical studies on the impact of digital servitisation on business performance and customer satisfaction could provide deeper insights. It would also be advantageous to critically evaluate alternative digital transformation models and their relevance to the earthmoving equipment sector. Finally, examining the relationship between different leadership styles and the success of digital servitisation initiatives is proposed as a fruitful area for future research.

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8. APPENDIX A: PARTICIPANT INFORMATION FORM

Dear Sir / Madam

My name is Simon Darko. I am a Masters student in Digital Business at the University of the Witwatersrand, Johannesburg. My supervisor is Dr Manessah Alagbaoso. I am conducting a research study about Digital servitization transformation title "Dynamics of digital servitization transformation in Earthmoving equipment dealerships".
I am inviting you to take part in an interview for my study. If you decide to take part, your participation in this research study will last about one hour. The interview will take place online at a time convenient for you.

With your permission, I would like to audio record the interview. This data will be stored in a password protected computer for a maximum of 1 year and deleted afterwards. Only the researcher will have access to the data. There will be no sharing of your data unless requested by the WITS research committee. The interview will be confidential and anonymous. When I share the results of the research study, I will not include your name or anything else that could identify you.

If you decide to take part in the research study, it should be because you want to volunteer. You do not have to take part. You can stop being in the study at any time. You do not have to answer any questions if you do not want to. You will not get any direct benefits if you choose to join the research study. You will not lose any services, benefits or rights you would normally have if you decide not to join. Taking part in the research study will not cost you anything. You will not be paid for being in this research study.

The risks for this research study are no more than what happens in everyday life / some of the questions asked may make you feel sad or upset.

This research study will be written up as a research report. If you would like to receive a summary of this report, I will be happy to send it to you.

If you have any questions during or afterwards about this research study, feel free to contact me or my supervisor on the details listed below. If you have any concerns or complaints about the ethical procedures of this research study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za.

Yours sincerely,
Simon

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Supervisor:
Dr Manessah Alagbaoso, Manessah.alagbaoso@standardbank.co.za

9. APPENDIX B: PARTICIPANT AGREEMENT FORM

RESEARCH PARTICIPANT CONCENT FORM

Title of project: Dynamics of digital servitization transformation in Earthmoving equipment dealerships

Name of researcher: Simon Darko

I, ……., agree to participate in this research project.

I agree to the following:

(Please circle the relevant options below)

The research study was explained to me. I understand what this study is about.	YES	NO
I understand that I can volunteer to take part in the study.	YES	NO
I agree that the interview may be audio recorded	YES	NO
I agree that direct quotations from my interview may be used by the researcher in their research report	YES	NO
I agree that my participation will remain anonymous (my name or other identifying data will not be used by the researcher in their research report)	YES	NO
I agree that other researchers may use the information I provide in my interview (depending on their own ethics clearance being obtained) but my name and any personal information will not be used or passed on	YES	NO

Participants:

Name	Signature	Date

Researcher:

S Darko

Name	Signature	Date

10. APPENDIX C: INTERVIEW GUIDE

a) Introduction
   1. How would you describe the current state of digital servitization within the organization?
   2. Can you outline the stages or sequence of the digital servitization transformation process within your organization and describe the key milestones and activities with each stage?
   3. What motivated the organization to embark on the digital servitization transformation?

b) Transformation Process
   4. In your organization's transformation process, how significant were financial considerations as a driving factor?
   5. Can you elaborate on the structural changes that played a key role in driving the transformation?
   6. What factors influenced the selection of technology during the transformation?
   7. How did changes in value creation dimensions contribute to and drive the transformation process?
   8. How has your organization leveraged ecosystem partnerships to enable the digital servitization transformation?
   9. What were the main challenges faced during the transformation process?
   10. How have agile practices and co-creation contributed to overcoming challenges encountered during your digital servitization journey?

c) Leadership Role

   11. In your view, what role did leadership play in driving the digital servitization transformation? Can you pinpoint specific leadership actions or decisions that significantly impacted the transformation's success?
   12. From your perspective, how could leadership have better supported the digital servitization process?

d) Impact and outcomes
   13. Looking back at the digital servitization journey, what are your reflections or key lessons learned?

11. APPENDIX D: LIST OF CODES - INTERNATIONAL PARTICIPANTS

Predictive technologies
AI& ML expertise
Data integration
Product benefit communication
People-centric focus
Business and academic partnerships
Process analysis and prioritisation
Strategic planning
R&D Collaboration
Leadership involvement
Technology research and tools selection
Vision and execution
Collaborative vision creation
Business: Planning
Resource allocation
Execution teams
Continuous improvement: Competition
Market conditions
Pandemic effects
Technological innovations
Customer service excellence
Operational efficiency
Technology: Legacy systems upgrade
Technology: New technology acquisition cost
Business: Stakeholder support
Cost-benefit analysis
Financial stability
Transformation over immediate cost focus
Monetary targets
IT structure evolution
Business process responsibility
Operational focus
Product development
People focus
Business transformation
Business: Services
Customer-facing applications
Open-source technology
Python Programming
Sustainability
Technological collaboration"
IoT
Predictive modeling
Technology (2)
Technology: AI
Technology: Machine learning"
Challenging customer approach
Continuous improvement: Improvement
Continuous improvement: Resistant to change
Direct Customer Engagement
Product benefit communication
"Business: Planning
Business and academic partnerships
Strategic planning
R&D Collaboration
Technology research and tools selection
Vision and execution
Collaboration: Collaboration with the Principal
Generative AI
Innovation
Business: Customer behaviour
Organisational: Organisational change
Technology transformation
Business: Product development
Collaboration: co-creation partnerships
Feedback: Feedback-driven development
Iterative product development
Internal and external Communication
Executive board engagement
Structured progress reviews
Continuous improvement: Improvement
Continuous improvement: Top-down vision and cultural change
Effective Leadership
Feedback: Evaluation
Financial backing
Mistakes
Shareholder support
Communication
Continuous improvement: Leadership
Customer focus
People focus
Employee engagement
People-centric transformation
Collaboration: Collaborative decision making
Stakeholders' involvement
Beyond Technology focus
Business: Customer experience
Continuous improvement: Competition
Digitalisation
Customer service excellence
Operational efficiency
Continuous improvement: Process improvement
Customer Involvement
Comprehensive Digitalisation approach
Process traceability and standardisation Process standardisation – a prerequisite for future phases"
Building on digital foundations
Process management
Evolution towards generative AI
shift from reactive to proactive business
shift from red ocean to blue ocean market dynamics
shift from reactive to proactive business
shift from red ocean to blue ocean market dynamics
value creation in proactivity
customer-centric benefits
competitive edge
Customer Advantage
Collaboration: strengthened relationship
Mutual benefit
Market share growth
Reactive phase -proactive phase - interactive phase of transformation
ERP and data standardisation

Operational Efficiency for dealers
Customer cost-benefit
Data-driven insights
ERP and Data Foundation
Data and Process Integrity
Data management challenges
Data cleansing
Data accuracy and ownership changes
Customer and Equipment
Data integrity
challenges in ERP implementation
Organisational processes standardisation and adaptation
People and process priority
Data management
ERP systems
Process optimisation
Standardisation
customer-centric process redesign
Business: Change management
Business: Implementation challenges
Process optimisation
Technology adoption
Adaptability
Financial awareness
Profitability
Increased Competition
market share loss
Business: Strategic thinking
Competitive advantage
Digitalisation
Budget: Return on investment
Continuous improvement: Prioritisation matrix usage
Project value assessment
Opportunity cost awareness
Organisation efforts
strategic prioritisation
Supportive board
Proving effectiveness with small wins
ERP system overhaul
Success stories for stakeholder buy-in
Transformation of work roles
Organisational convincing challenge
Win internal battles
Organisational buy-in
Organisational structure transformation
Departure from Siloed departments
Customer segment focus
Abolishment of traditional roles
Business: Customer-centric
Collaboration: Collaboration
Process expert integration into digital teams
Leadership-driven organisational change
Comparison
Continuous improvement: Improvement
Resistance to change
Implementation
Responsibility
Matrix structure
Organisational: Organisational structure
Accountability in implementation
break up Silos
segregation of duties
Restructuring resistance
Leadership Persistence
Hiring experienced experts
Empowering technology choices
Learning from mistakes
Openness to new ideas
Technology adoption"
value mistakes as a learning opportunity
Self-awareness of expertise limits
Delegation to experts
Technology: Continuous learning
Digital team composition
Process translation roles
Business: Customer experience
Operational excellence
Pioneering
Comparison
Continuous improvement: Competition
Feedback: Acknowledgement
Openness
Benchmarking
Business-to-business (B2B)
Business-to-consumer (B2C)
benchmarking
Learning from online companies
Challenges with ERP systems
in-house development strategy
selective sourcing
Collaboration with tech companies
Design and planning
Product management
in-house development strategy
Business: Change management a key challenge
Organisational resistance to change
Persistence and determination in leadership
Winning early battles to impact change
Challenges with customer adaptation
Communication benefits to customers
Customer Involvement
customer education
Continuous improvement: Continuous improvement
Feedback: Positive Customer feedback
Satisfaction
Practical tools drive customer usage
Leadership from the top
consistency in messaging
impact of leadership attitude
regular communication and reinforcement
focus on all layers of management organisation
rotation for change
combat Comfort zone
organisation rotation for change
Learning culture
learning through role change
Satisfaction
Agility
Continuous improvement: Impatience
Digital marketing responsibility
E-commerce leadership
Building customer connections
Business: COVID-19 impact
shift from offline to online

Transition to digital"
Continuous improvement: Progress
Digital Marketing
Early stage in Digital evolution
Business: Risk-taking
Collaboration: Visionary leadership
Embracing the future of digital
Feedback: Learning from new ventures
Innovation
Futurism
Innovation
Business: Digital transformation
Continuous improvement: Competition
Future planning
Innovation
Technology advancement
Idea-driven budgeting
Budget: Budget
Business: Decision-making
Business: Management
Business: Risk-taking
Feedback: Learning
Opportunities
Sales
Testing
Belief: Belief
Challenge in changing established practises
Continuous improvement: Persuasion
Resistance to change
Uncertainty
Business: limitation of external Consultant
Business: Outsourcing
Communication
Continuous improvement: Leadership
Internal change
Organisational: Organisational culture
Volunteer leadership in transformation
internal driven transformation
dedicated technology team
Business: Decision-making
Collaboration: Collaboration with business
Technology selection
Continuous improvement: Prioritisation
Customer-centric approach
Value creation for customers
Business: Outsourcing
Collaboration: Collaboration strategic use of Partnerships+D72
Collaboration: Collaboration with the Principal
Collaboration: System Integration challenges
Customer-centric tool development
Differentiation
Budget: Resource allocation
Communication difficulties
Continuous improvement: get time with business and other internal stakeholders
Resistance to change
Risk evaluation
Communication
Continuous improvement: Leadership belief and support
Influence
Customer-centric approach
Feedback: Customer feedback
Survey
Open communication with customers
Business: Customer needs
Business: User experience
Feedback: Feedback
Understanding
Adaptability
Customer input
Business: Business strategy effective communication of strategy
Continuous improvement: Leadership supports communication of benefits influencing country partners
Adaptability
Feedback: Feedback
Perception
Realism
Collaboration: Alignment
Collaboration: Vision
Continuous improvement: Leadership
Business: Marketing
Customer focus
Digitalisation
Technology (2)
Business: Customer experience
Data management (2): Data analysis
Data management (2): Driving Business Digitally
Budget estimation
Business growth
Business: Customer acquisition
Opportunities
Operational efficiency
Transition from IT to digital first
changing perception of IT
AI tools
Business models
Business: Digital transformation
Continuous improvement: Efficiency
Data-driven decision making
IT systems
Outputs
Sales
Continuous improvement: Investment in Digital Future
Sustainability through digital
Future planning
Belief in future change
Business growth
shift from Cost centre to profit centre
Business: Future-oriented
Business: Research and development
Certification
Continuous improvement: Leadership
Financial incentives for R&D
Government support
Separation
Strategic direction by CDO
Collaboration: Assemble a dedicated team Company introduction of AI solutions
Business: Integration of Business perspective
Business: Customer engagement
Business: Shift from reactive IT to proactive digital approach
structural transformation
Technological transformation
Shift to product ownership

incorporating business into digital teams
breaking the technical and business silos: Business needs
Business: Management
Collaboration: Trust
Continuous improvement: Leadership
Collaboration: Collaboration with business
Responsibility towards sales
Business: Business adaptation
Flexibility
Organisational growth and change
Team formation and expansion
Technological advancement
Business: Cross-cultural communication
Cloud computing
Collaboration: Technology integration
Multiculturalism"
"Business process improvement
transition from analogue to digital
Data management (2): Data accuracy
Data management (2): Data analysis
Data management (2): Digitisation
Team collaboration
Utilisation
Value-added services
focus on CSR and ERP systems
Establish Data integration systems
Standardise practices across dealers
Agility
Business: Outsourcing
In-house development
Collaboration: Collaboration with principal
Collaboration: Partnership
Business: Change management
Collaboration: Collaboration
Cultural shift
Business: Business strategy
Business: Product development
Collaboration: Collaboration
Continuous improvement: Prioritisation
Feedback: Customer feedback
Business: Project management
Continuous improvement: Leadership direction and support
Empowering Departments for Innovation
Incorporating business perspective
Confidence
Growth
Optimism
Perseverance
Business: Decision-making
Continuous improvement: Initiative
Management and shareholder support
Motivation and communication
Transformation

12. APPENDIX 2: LIST OF CODES – LOCAL INTERVIEWEES

Establishing technology platforms
Establishing organisational structure
Focus on foundational capabilities
transitioning into advanced services
OEM connectivity and Integration
Digital steering committee
ERP platform implementation
Building foundational capabilities
Organisational structure
Collaboration with Principal
cross-departmental collaboration
Business: Analytics
Establishing foundational capabilities
Data management and warehousing
Efficiency: Operational efficiency
Technology platforms
embedding digital business processes
ERP system implementation
continuous platform improvement
Building and strengthening digital capabilities
Digital Integration into company DNA
Building digital capabilities
Entering advanced services phase
Digital transformation evolution
Data depository establishment and usage
Data Sharing
E-commerce
Enhanced retail experience
Near future- Personalised user experience
Technology: Artificial intelligence
Principal (OEM) push as primary driver
Fewer business motivations
Business: Customer demand evolution
Data privacy
Resource limitations: Legislative drivers
balancing convenience with personal touch
Global trends
Digitisation
geographical impact on transformation
Regional Connectivity challenges
diverse customer needs
Infrastructure limitation
Alignment: Connectivity
Data management
Infrastructure
enhance customer experience
Operational efficiency
risk of disintermediation
Affordability of technology platforms
Fit for purpose ERP solutions
Operational effectiveness
Resource limitations: Resource limitations
Values: Value
Adaptability

Efficiency (2)
Efficiency: Cost-effectiveness
Resource limitations: Resource constraints
Alignment: Cross-departmental involvement setting priorities for digital Innovation
ingraining digital in existing organisational structures
Technology: Technology integration
Alignment: Cross-departmental involvement
Change: Digital Leadership
Separation from IT-driven approach
Digital Ownership
Separation from IT function
Importance of business involvement
Training of internal customers on digital tools Feedback
Customer-driven innovation
External Partnerships
Technology (2)
Navigating OEM and customer interest
Product development
OEM-driven transformation first
Operational efficiency later
Alignment: Collaboration with customers
Leveraging Partnership
Confidence in leveraging partnerships
fear of disintermediation by partners
Do it all myself attitude
Minimal risk of OEM intermediation
Gap in leveraging OEM technology investments
Collaboration with OEM
tailored solutions for customer
Legacy ERP and technology platform challenges
Data quality issues
Alignment: Collaboration
Customer Involvement
Innovation
Organisational agility
Business empowerment
Change: Leadership
separating digital ownership from IT
biggest challenge: separating digital ownership from IT
Business pressure
Pace
Poor delivery
Resource limitations: Resource constraints
Risk aversion
transitioning from Product centric to service-oriented
Change: cultural transformation
Customer engagement
Service-oriented approach
Solution selling
Business: Customer readiness for digital
Business: cultural shift within the organisation
Business: Transitioning to subscription models
Adaptability
Leadership's role in embracing change
the threat of Market competition
Technological advancement
Transformation of organisational culture

Uncertainty
OEM influence and pace of change
Navigating dealer and OEM dynamics
Organisational mindset shift
Defining the long term Vision
Leadership capability for change
Prepare the organisation for change
Customer-centric approach
Trial and error Innovation
transforming leadership mindset
Risk-taking
Visionary leadership
Innovation
Technology (2)
Visionary leadership
Adaptability
gradual user acceptance of DS
Resistance to change
Cultural acceptance of failure in innovation
Lack of Financial backing for experimentation
low appetite for Risk-taking
challenges in envisioning a different future
clarity of strategy before structure
Cultural differences
Organisational structure
Separation from parent company for innovation success
Assessment: Needs assessment
Business: Support
Cost consideration
Implementation ease
Technology selection
Technology: Decision-making
unclear motivation for transformation
differentiated offerings for customers
Business: Customer needs
Tailor solutions for Customer Segmentation
Value creation
Business: Customer needs
Tailor solutions for Customer Segmentation
Value creation
Measuring internal transformation benefits
Customer perception of Digital value
challenges in quantifying the value of some aspects of the transformation
challenges in quantifying the value of some aspects of the transformation
focus on building foundational capabilities
acknowledge value realisation takes longer
Learn from industry peers
challenges: Disparate technology systems
Data management
focus on foundational capabilities
understand fundamental requirements before leveraging partners
Alignment of organisational strategic agenda strategic Prioritisation
Capital allocation
Leadership
Investment and commitment
Efficiency: Profitability
Foundation strengthening

Organisational readiness for change
Talent allocation
Agenda management
balancing Operational and strategic needs
Priorities
role clarity and dedicated leadership
Change: Leadership
Resource allocation and support
Responsibility
Assessment: Evaluation
Business: Reflection
Learning from mistakes
Alignment: Alignment
Alignment: Miscommunication
Business: Strategy
Business: Vision
Change: Change management
Change: Leadership
Inquiry: Lack of clarity
Resistance to change
Risk aversion
Uncertainty
Change: Leadership Education
Legacy building
Transformation leadership
solution-oriented mindset
Long-term thinking
Risk-taking
Alignment: Alignment
Change: Leadership
maintain independence of the team
Resource limitations: Resource allocation
Risk-taking
Shareholder buy-in
Fear of disintermediation
Partial Digital Service Implementation Consensus on Vision
Need for a clear Roadmap
Gap between vision and execution
Need for future planning
ERP system improvement
Develop foundation capabilities
Uncertainty about transformation approach
need to understand the business processes of the future
need to integrate business functions
Customer-centric approach
integrated business functions
Need to shift from product-centricity to services
Business: Business model
Strategic market influence
shift to value-added services
Change: Change management
Communication
Creating the need for change
Frustration
Inquiry: Lack of clarity
Lack of vision
Resistance to change

Uncertainty
Change: value focus
Motivational clarity
Uncertainty
Differentiation
Motivation
customer value add
Desire
lack of motivation
Market change
Organisational response
Response to competition
Services Transformation
Technology: Technology innovation
Business: Business strategy
Technology: Data analysis
Technology: Decision-making
basic foundational development
Basic technology services
Analysis
Inquiry: Problem-solving
Base technology services.
Capability development
Resourcing
market research
Continuous improvement
Lower ROI
Resource limitations: Lack of interest
Unclear vision
Incremental change
Resource limitations: Lack of interest
Unclear vision
Change: Change management
Decentralisation
Efficiency: Centralisation
Organisational structure
integrated business functions
resourcing
change management
Resource limitations: Lack of expertise
Uncertainty
Alignment: Alignment
Business structure
Market value
Sales focus
Internet of Things (IoT)
Technology: Data analytics
Limited value created for customers
Dependency on existing relationships
Lack of structured ecosystem strategy and approach
Strong alignment with OEM
Uncertain about OEM interest
Lack of understanding of digital
Resistance to change
change management
customer involvement
creating awareness

Lack of Bravery
Change: lack of Leadership
Lack of Motivation
Didn't bring the people along
Awareness
Financial commitment
Importance of change
Values: Courage
Alignment: Discomfort
Siloed organisation
Adaptability
Change: Change management
People-centric approach
Technology adoption
Traditional Mindset
External pressure
Fragmented approach
Lack of organisational strategy
Silos
Business: lack of unified digital strategy
lack of vision
OEM interest-driven
disjointed business processes
Lack of alignment
Siloed organisation
disjointed business processes
Awakening stage of the process
creating organisational alignment
need for reflection and self-correction
transformation is not a business imperative
OEM driven change
Shifted from proactive, pioneering to reactive
Siloed organisation
Fragmented transformation process
Lack of Customer-centric approach
Organisational challenges
Lack of business integration
OEM driven transformation
Business strategy
Planning and execution
Customer-centric approach
Differentiation to reduce risk of disintermediation
Digital investment
lack of resourcing
lack of digital expertise
lack of funding
Wrong financial KPIs being measured
Focus on opportunity cost
customer value
Business: Focus on customer needs
Business: measure customer value
lack of investment in foundational capabilities
Data management
leverage partnerships
Build internal capabilities
Alignment: Collaboration
Change: Leadership

Influence
Resource limitations: Resource allocation
Structural changes
Technology: Digital transformation
Lack of influence
Resource limitations: Lack of resources
Structural changes
Alignment: Misalignment
Business: Business strategy
Alignment: Collaboration
strategic support
Accidental technology decisions
Unintentional decision-making
Aftersales
Business: Business strategy
Efficiency: Profitability, not customer value
underutilisation of ecosystem partners
Accountability
Consolidation
Digital strategy
Business: Customer-centric approach
Shift from product-based organisational structures to solution organisation
Accountability
Alignment: Consistency
Business: Business strategy
Business: Value chain
Customer focus
Change: Change management
Resistance to change
Workforce challenges"
Lack of customer engagement
Lack of customer engagement
Business: Misaligned leadership KPIs
Silos organisation
Customer-centric approach
Product-centric approach
Accountability
Business: Strategy
Change: Leadership
Product improvement
Technology: Digital transformation
Values: Teamwork
Business: Business strategy
Customer-centric approach
Organisational structure
Low level of Digital services
Momentum loss
Slow progress
Shifted from pioneering position to OEM-led
Innovation
Values: Regret
Business: Strategy
Poor Change management
Disconnected digital offerings
Siloed Organisation
Poor at Risk-taking
Value creation

OEM driven transformation
Lack of internal motivation
Manufacturing perspective
Lower customer involvement
Process limitations
Resource limitations: Financial constraints
Challenges with substantiation ROI
Change: Change management
Influence
Organisation structure
OEM interest and influence
Independence from OEM
Power dynamics with OEM
Efficiency: Investment
Limitation
Skills gap
Technological challenges
Business: Business Value
Business: lack of Customer-centric approach
Change: Change management
Customer-centric approach
Lack of vision
Co-creation
Continuous improvement
Customer-centricity
Innovation
Co-creation
lack of Customer focus
Goals setting
Lack of Internal motivation
Operational excellence
Technology: Digital transformation
Curiosity
Influence
Business: Goals
Business: Vision
Change: Leadership
Execution
Motivation
Business: Reflection
Change: Change
Optimism
Business: Vision
Change: Leadership
Commitment
Customer focus
Innovation
Change: Leadership
Customer-centricity
Technology: Digital transformation
Business: Services
Business: Vision
Change: Leadership
Customer focus
Disconnect
Transformation
Cost-Effectiveness

Lack of responsibility
Values: Concern
Business: Dependency on OEMs
Innovation
Limitation
Business: Leadership Vision and Motivation
Change management
Customer focus
Lack of customer engagement
Lack of change management
Visionary leadership
Siloed efforts

13. APPENDIX F: ETHICS APPROVAL

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

Wits Business School

Wits Business School Ethics Committee
Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics Clearance Certificate

Ethics protocol number: WBS/DB327203/595

This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

This certificate is only valid if accompanied by formal permission from the relevant stakeholder(s).

Project title	Dynamics of digital servitization transformation in a Earthmoving Equipment dealerships
Investigator / Researcher	Mr Simon Darko
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentialty.
Issue Date of Certificate	2023-08-29
Expiry date	Date of submission of the project / research report
Chairperson	Dr Pius Oba ☎ +27 11 717 3976 +27 82 733 6587 ✉ pius.oba@wits.ac.za

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Declaration by Researcher

One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.

I fully understand the conditions under which I am authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I undertake to resubmit the protocol to the Committee.

Signature

31/08/2023
Date:

14. APPENDIX G: PERMISSION LETTERS



Barloworld
Leading brands

Barloworld UK Limited
First Floor, Aurora, Vanwall Business Park,
Vanwall Road, Maidenhead, Berkshire SL6 4UB
Tel + 44 (0)1628 592 900
www.barloworld.com
Registered Number 137393 England and Wales

11 September 2023

Mr Simon Darko
Barloworld Equipment Limited, SA
SDarko@barloworld-equipment.com

Dear Simon

RE: AUTHORISATION FOR RESEARCH AT BARLOWORLD EQUIPMENT EURASIA

I, Emmy Leeka, in my capacity as the Chief Executive Officer, BWE Eurasia hereby grant you authorisation to conduct your research as outlined in your formal request dated 2/9/2023. Your study on **digital servitization transformation** and **leadership's role** aligns with our interests, and we support your academic pursuit.

You have permission to interview our senior leaders, including myself for no longer than 1 hour each, either in person or virtually.

We expect that you will adhere to the following ethical guidelines during the research process:

1. Keep identities and organization undisclosed, safeguarding privacy and confidentiality.
2. Obtain consent from participants, explaining the research purpose and withdrawal rights.
3. Ensure data security to prevent unauthorized access.
4. Maintain ethical and professional research practices.
5. Keep research data for one year, then dispose of it in compliance with data protection rules.

We wish you success, and we anticipate your findings benefiting academia and our industry.

Yours sincerely

Emmy Leeka
Chief Executive Officer, Barloworld Equipment Eurasia

Barloworld Equipment

Barloworld Equipment southern Africa
a Division of Barloworld South Africa (Pty) Ltd
20 Industrie Road Isando 1609
PO Box 11, Isando, 1600

Tel +27 (11) 301 4000 Fax +27 (11) 301 4130
www.barloworld-equipment.com

Reg No. 1946/021661/07

Dear Simon

RE: AUTHORIZATION FOR RESEARCH AT BARLOWORLD EQUIPMENT SnA

I, Andronicca Masemola, in my capacity as the Chief Executive Officer of hereby grant you authorization to conduct your research as outlined in your formal request dated 2/9/2023. Your study on digital servitization transformation and leadership's role aligns with our interests, and we support your academic pursuit.

You have permission to interview our senior leaders, including myself for no longer than 1 hour each, either in person or virtually.
We expect that you will adhere to the following ethical guidelines during the research process:

1. Keep identities and organization undisclosed, safeguarding privacy and confidentiality.
2. Obtain consent from participants, explaining the research purpose and withdrawal rights.
3. Ensure data security to prevent unauthorized access.
4. Maintain ethical and professional research practices.
5. Keep research data for one year, then dispose of it in compliance with data protection rules.

We wish you success, and we anticipate your findings benefiting academia and our industry.

AMasemola
Yours sincerely,

Andronicca Masemola
Chief Executive Officer, Barloworld Equipment Southern Africa

[EXTERNAL] RE: Permission to conduct interviews with Borusan for research purpose

YY Yagiz YUCEL <yyucel@borusan.com>
To Simon Darko

Reply | Reply All | Forward | Wed 10/18/2023 10:24 PM

You replied to this message on 10/19/2023 3:23 AM.

From: Ozgur GUNAYDIN <ogunaydin@borusan.com>
Sent: Wednesday, October 11, 2023 8:05 AM
To: Simon Darko <SDarko@barloworld-equipment.com>
Cc: Emmy Leeka <ELeeka@bw-eq.com>; Yagiz YUCEL <yyucel@borusan.com>
Subject: [EXTERNAL] RE: Permission to conduct interviews with Borusan for research purpose

Mimecast Attachment Protection has deemed this file to be safe, but always exercise caution when opening files.

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Simon,

I trust this message finds you in good health.

Emmy is a dear friend of mine, and his requests are always valued by us.

We would be delighted to arrange interviews with you. I'm copying Yağız on this message; he serves as our Corporate Communication Leader. Yağız will be responsible for coordinating the interviews with the relevant parties.

Warm regards,