

**Clarifying digital business model innovation: a structured literature review on the
construct and implications for implementation**

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ABSTRACT

The use of digital technology to innovate business models by firms has become commonplace in today's digital economy. Central to this phenomenon is a firm's business model that gets transformed through the adoption and integration of digital technologies into a firm's value architecture. There persists a scholarship gap in terms of a distinct construct to explain this phenomenon due to a conflated state of extant literature on digital transformation related topics. To understand the phenomenon at hand more directly, this review undertakes an analysis of current literature on the use of digital technologies to digitally transform firm business models.

Specifically, the researcher has conducted a scoping review to uncover the most prominent theoretical foundations and insights, culminating in a compelling discourse introducing digital business model innovation as the construct best suited to explicating the phenomenon. In the review articles dealing directly with digitally transforming firms' business models for increased firm competitiveness were assessed and through induction construct clarity is offered along with the critical insights that could guide firm digital business model innovation implementation. Importantly the extant literature highlights the digital paradox as a unique practical problem that could be elucidated and ameliorated through this review.

In the review DBMI antecedents are synthesised, digital technology conceptualisations and their role in DBMI are elucidated, adjacent enabling constructs and concepts are explained naturally in a DBMI context, predominant theoretical underpinnings and theories in extant literature are discussed and indeed the review offers an expanded consensus definition and conceptualisation for digital business model innovation, while additionally tabling insights on key guidelines for DBMI success.

KEYWORDS

Digital Business Model Innovation, Business Model Innovation, Digital Technology, Digital Transformation, Dynamic Capabilities

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Philosophy in Evidence Based Management at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Name & Surname

Signature

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1. Chapter 1 Introduction

1.1 Background

Digital technologies such as artificial intelligence, internet-of-things, cloud computing, big data analytics and others have become commonplace in commerce and have redefined and transformed interactions between firms and customers from previous analogue exchanges to completely new, novel and innovative interactions (Ancillai et al., 2023).

Digital technologies have transformed society for both individuals and companies, for companies there are sensors, digital networks and innovative computing capabilities allowing inter-firm communication previously unimaginable, for individuals the impact is even more multifaceted and wide-ranging – from smart devices in homes to wearable technology in person linked to smart firm platforms (Sestino et al., 2020).

The advent of digital technology adoption in firm business models continues to advance and alter how firms create, capture and deliver value (Ritter & Pedersen, 2020). Accordingly, firms have had to also develop specific capabilities and digital asset portfolios, using these digital technologies, to remain competitive in the digital economy's hyper competitive markets (Warner & Wäger, 2019; Verhoef et al., 2021). Digital transformation of firm business models has consequently become a critical issue for firm strategic planning agendas (Klos et al., 2023).

The extant literature offers numerous insights into the digital technology diffusion and integration into firm business models, effectively detailing varying technology and industry-specific implementations of digital business model innovation(DBMI) (Fabian et al., 2023), however the literature is sparse on elucidations clearly delineating DBMI and separating it from the traditional business model innovation(BMI) theories (Fabian et al., 2023; (Volberda et al., 2021).

The lack of construct clarity has led to construct, concepts and theoretical conflation of digital transformation related knowledge that has inhibited the accumulation of clear theories on DBMI(Vial, 2019), for instance the extant literature often conflates digital transformation with business model innovation that leverages digital technologies while concurrently tethering digital business model innovation efforts as part of digital transformation for example in (Acciarini et al., 2023; Ammirato et al., 2022; Denicolai &

Previtali, 2020; Haaker et al., 2021; Leminen et al., 2020; Sestino et al., 2020). There is clearly a need for more precise definitions and more robust interpretative and implementation frameworks for DBMI (Fabian et al., 2023; Parida et al., 2019; Li, 2020).

1.2 Problem Statement

1.2.1. Theoretical

Despite the importance, relevance and pervasive impact of digitalisation on firm business models in the current digital economy, extant literature continues to obstinate on the traditional business model innovation to explain digital technology driven business model transformation (Ancillai et al., 2023). Digital firms and markets are essentially operating from totally different contexts that are incomparable to previous BMI contextual theorising (Nambisan et al., 2019; Volberda et al., 2021). Moreover, the extant literature offers divergent investigations of business model configurations that lead to an often perplexing and commingled corpus dealing with the *digital transformation* (Vial, 2019) of business models from diverse viewpoints such as in (Haaker et al., 2021) explicating IoT driven business model innovation or in (Burström et al., 2021) artificial intelligence perspective of BMI. Meanwhile digital transformation can occur without firm business model innovation (Fabian et al., 2023).

(Fabian et al., 2023) clearly illustrates that digital business model innovation is a distinct construct that warrants separate theorising but due to its infancy DBMI is poorly understood and has not served as an anchor for studies clearly dealing with the *digital* business model innovation albeit from divergent frames of references - specifically geographical, technological and industry slants (Parida et al., 2019; Li, 2020).

This review seeks to illustrate that digital business model innovation is a distinct construct on its own and not merely contextually deviant through digitalisation from the established theorising for business model innovation (Fabian et al., 2023; Soluk, Miroshnychenko, et al., 2021) and to further offer insights from extant literature on effective DBMI strategies.

1.2.2. Practice

Digital technologies have been billed to hold the promise of reducing costs, reshaping customer experiences, bolstering productivity amongst others (Mostaghel et al., 2022; Sjödin et al., 2021) for both customer and firm yet several authors refer to the digital paradox as a perennial problem for entrepreneurs and managers attempting business model introductions or adaptations for digital offerings respectively (Gebauer et al., 2020;

Kohtamäki, Parida, Patel, et al., 2019; Soluk, Miroshnychenko, et al., 2021; Volberda et al., 2021).

The digital paradox can simply be phrased as the inability of firms to realise expected benefits from the potential and promise of digital technology investments (Ancillai et al., 2023). Additionally, firms' inability to discern dynamic, suitable and sustainable business models for the challenges and opportunities they are confronted with all signal to a DBMI execution problem that this study seeks to illuminate (Leminen et al., 2020; Paiola et al., 2022).

1.3 Research Questions

Recently there has been a surge in studies focusing on the nexus of digital technologies and their impact on business model and/or firm processes for business model adaptations

This study's research questions aim to focus on addressing the identified gaps in literature as alluded to in the problem statement. Given conflated nature of scholarship on the use of digital technologies to innovate firm business models (Haaker et al., 2021) it is critical to first and foremost to give an expression of what digital business model innovation is from extant literature in line with scholarship gaps highlighted in the problem statement:

Main review question:

What is known about digital business model innovation from scholarship?

Sub-review questions:

What are the DBMI driven mechanisms firms can use for overcoming the digital paradox?

What are theoretical lenses used to explain the DBMI phenomenon?

What emergent themes are there for successful DBMI execution?

1.4 Contribution to literature

To address the ambiguity in the construct of digital business model innovation, by proposing a distinct and parsimonious definition and conceptualisation that will clarify digital business model innovation (Fabian et al., 2023; Soluk, Miroshnychenko, et al., 2021; Warner & Wäger, 2019) clearly separate DBMI from BMI and digital transformation and to additionally broaden construct relevance for DBMI for future theory building or propositioning (Colquitt & Zapata-Phelan, 2007).

Specifically, this review proffers a DBMI antecedents' framework by systematically categorizing identified DBMI triggers that compel firm to digitally innovate their business models, particularly strengthening understanding around the multi-faceted drivers of DBMI in digital markets (Böttcher & Weking, 2020; Warner & Wäger, 2019; Verhoef et al., 2021). The objective in this instance is to offer new unique insights into DBMI catalytic forces (Corley & Gioia, 2011; Shepherd & Suddaby, 2017).

Another contribution consolidates extant literature conceptualisation of digital technologies namely digital artifacts, digital platforms and digital infrastructure and highlights how digital technologies enable DBMI and their role in digital value creation, capture and delivery (Ancillai et al., 2023; Zhang et al., 2023).

The dynamic capabilities theory is also promoted given its utility in explaining firm integration and reconfiguration of internal and external capabilities to be able to respond to competitive pressures, through this lens DBMI studies can be evaluated to establish understanding on how DBMI contributes to firm strategic agility and responsiveness (Teece, 2018; Soluk, Miroshnychenko, et al., 2021; Ghosh et al., 2022).

Another significant contribution is the conceptual clarification of digital ecosystems, and the role digital platforms play therein, these apparatuses are essential for DBMI because they encourage and enable collaboration and innovation beyond firm organisational boundaries and foster network effects benefits while also highlighting some risks (Burström et al., 2021; Ghosh et al., 2022; Veile et al., 2022).

Finally the review denotes digital servitisation as a frontier connected construct with wide-ranging impact for future DBMI conceptualisation, digital sertivisation's grounding in the transformation momentum for firms of shifting from product-oriented business models to service-oriented business models enables by digital technologies is become the next focus of scholarship discourse (Chasin et al., 2020; Ghosh et al., 2022; Sjödin et al., 2023; Kohtamäki, Parida, Patel, et al., 2019).

In sum, all the highlighted contributions in unison ensure theoretical contribution to clear and delineated comprehension of the DBMI phenomenon with its adjacent concepts and/or constructs that should enable cumulative future scholarship that advances knowledge on digital business models innovation (Whetten, 1989).

1.5 Contribution to practice

For practitioners, the review also proposes a structured, phased approach to implementing DBMI that can potentially address the digital paradox that has plagued firm digital investments - where digital technology investments don't always yield expected benefits or revenue (Ancillai et al., 2023).

From extant literature I suggest focusing on customer-driven solutions rather than technology-driven solutions, the role of transformative leadership and new and novel organisational forms in fostering a digital culture and mindset that can deal with the demands of digitally innovating firm business models Ancillai et al.(2023). (Paiola & Gebauer, 2020; Paiola et al., 2022).

This directly contributes to the relevance of the study given this persistent practitioner problem (Henard & McFadyen, 2005).

1.6 Scope and delimitation

Scope

The study focuses on digital business model innovation and offers a consensus definition, while concurrently examining what informs the innovation of firm business models into digital business models. The study further explores, antecedents, theoretical anchors and suggests guidelines from emergent themes on DBMI execution that underpin DBMI in extant literature.

Lastly, this study highlights conceptualisations of ecosystems and digital platforms and offers some industry and technology-specific insights to illustrate the heterogeneity of DBMI scholarship and how unification can be pursued.

Delimitations

The study focuses only on undertakings involving digital forms of business model changes. While several theoretical lenses are used in scholarship in different studies this study explicates DBMI through the dynamic capability theory. The emphasis is on large incumbent firms and small and startup digital firms to a lesser extent, predominantly the papers reviewed are from western or developed economies, divergent emerging markets or specific cultural and regional differences are not explored in depth (Sengupta et al., 2021).

Finally, included papers were published between the years 2017 to 2023 with some foundational or seminal papers referenced selectively in most cases to establish theoretical background.

1.7 Organisation of the review

This study commences with an introduction that provides a background and introduction of the scholarship on DBMI. The study then advances and articulates the research problem informing the rationale for the study on DBMI, both theoretical and practitioner problem are expounded upon. Then the research problem underlying this review are presented that will anchor the discourse throughout the review. The purpose and objectives are then clarified, thereafter the author details the significance of the study – detailing the theoretical and practice contributions of the study and then key term definitions are presented. Chapter 1 concludes with this chapter that describes how the study is structured.

Chapter 2 details the methodology used detailing, with due justification, the data collection and analysis. Chapter 3 delves into the literature review based on the set of articles extracted from scholarship databases, chapter 4 then presents the findings. Finally, chapter 5 presents the conclusion and limitations, and the future research areas uncovered from the synthesis of chapters 3 and 4.

2. Chapter 2 Method and analysis

The recent surge in research focusing on the use of digital technology to innovate firm business models has resulted in highly heterogenous corpus (Vial, 2019).

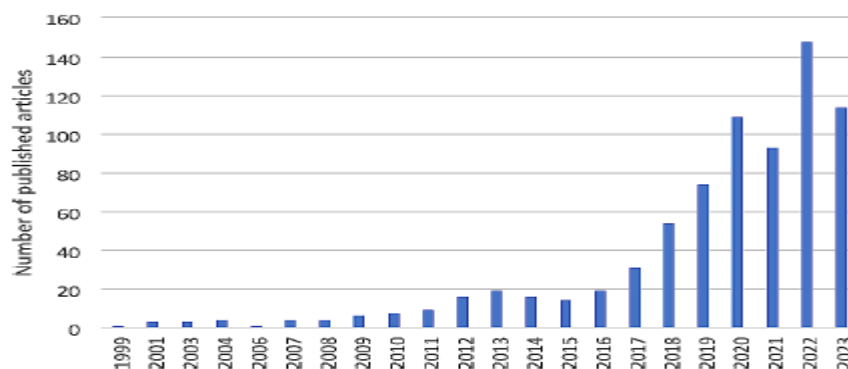


Figure 1: Publications trend on digital technologies and business model innovation from 1999-2023 (Zare & Persaud, 2024, p.9)

This study aims to review extant literature on the subset scholarship of digital business model innovation to clarify the construct and uncover emergent themes and new insights on successful firm implementation approaches. I intend to present preliminary construct and distinct theoretical conceptualisation for digital business model innovation, consequently I will conduct a scoping review.

2.1 Choice of review methodology

This study will leverage the scoping review methodology to investigate the DBMI scholarship landscape for the novel derivation of insights conceptualising DBMI scholarship for unique and new theoretical underpinnings, Scoping reviews are typically leveraged for mapping expansive areas of research to clarify concepts and identify research gaps (Arksey & O'Malley, 2005; Levac et al., 2010).

Subsequently the aim is to present an overview or mapping of the rather large and diverse literature on DBMI topic area (Ancillai et al., 2023; Fabian et al., 2023), unlike systematic reviews that collate typically smaller sets of empirical evidence focused on a particular research question summing up the best available research. Additionally, scoping reviews as evidenced from collected papers, are appropriate for dealing with literature with using varying study designs and methodologies as is the case with the inventory of articles included in the study.

This approach is therefore firmly appropriate for the ensuring a rigorous and transparent approach to mapping the rapidly changing literature on firm leverage of digital technologies to innovate business models, DBMI scholarship can henceforth be contextualised under distinct construct uniformity (Barrett et al., 2021).

To complete the review, gather and analyse relevant DBMI corpus, I incorporated (Snyder, 2019) procedures for qualitative systematic literature reviews (Creswell et al., 2007). Subsequently the aim is to present an overview of the rather large and diverse literature on DBMI (Ancillai et al., 2023). The DBMI extant literature will therefore be replicably characterised for insights, themes and patterns (Snyder, 2019).

Source identification (academic databases)

DBMI literature is a highly heterogenous body of knowledge (Vial, 2019) because of this fact initial search efforts yielded a diverse set of articles that need to be rationalised for relevance. Consequently, articles were selected for representativity rather than extensiveness (Creswell et al., 2007) in other words articles selection was aimed at multi-

dimensionality of the articles instead attempting to cover all possible articles. The search string used leveraged Ancillai et al.: the search string (“digital technology” OR “digital platform” OR “industry 4.0” OR “internet of things” OR “digital transformation” OR digitaliza-tion OR digitization OR “cyber-physical system” OR “big data” OR “virtual reality” OR “cloud computing” OR cybersecurity) AND (“busi-ness model innov*” OR “innov* business model” OR “business model chang*” OR “chang* business model” OR “business model adapt*” OR “adapt* business model” OR “business model transform*” OR “trans-form* business model” OR “new business model” OR “novel business model”).

Although construct enquiry was triggered by Fabian et al., (2023), efforts in (Ancillai et al., 2023) most recent thematic review focused on digital technologies and business model innovation inspired article extraction and selection for this study. The article document library was grouped in a similar fashion i.e. yielding articles with insights on digital technologies driven BMI archetypes, digital technologies effects on BMI, digital technologies driven BMI processes and digital servitisation – this informed the conceptual boundaries for this study’s rapidly expanding scholarship (Tranfield et al., 2003).

Group	Count
Digital servitisation	1
Digital technologies driven BMI archetypes	16
Digital technologies driven BMI processes	10
Digital technologies effects on BMI	20
Explicit digital business model innovation	6
Platforms and Ecosystems	3
Reviews	5
Grand Total	61

Figure 2: Document group analysis (Author)

2.2 Data collection

From using the search string on the Web of knowledge and Scopus databases, an initially total of 3020 articles were retrieved. Only articles published between the years 2019 to 2023 were included except for a few seminal articles, such as (Amit & Zott, 2001) representing formative conceptualisation of digital business model innovation and digital business models and addressing the related notion of value.

Table1: Search Procedure Outcomes

	Scopus	Web of Science	Total
Initial Search	2716	304	3020
2019-2023	1802	181	1983
Peer-reviewed	95	19	114
Excluded	19	8	27
Duplicates	11		
Included	76		

Figure 3: Search strategy (Author)

2.2.1. Inclusion and Exclusion Criteria

The next entailed applying inclusion criteria as recommended by Snyder (2019), only articles from peer-reviewed journals were included i.e. articles with esteemed ranking from Academic Journal Guide (AJG) and the Australian Business Deans Council (ABDC), effectively only articles ranked 3,4 and 4* in the AJG and ABDC were eligible for inclusion to ensure scientific rigor; apart from (Fabian et al., 2023) proffering a DBMI definition. Concurrent screening of the title and abstract sections for relevance was conducted initially before in-depth reading and analysis of the articles. Only articles written in the English language included.

Publications from book chapters, conference proceedings or falling outside the date range of were excluded. The exclusion criteria also included articles dealing with digital technologies purely from an ICT point view, relevance based on research question and gaps identified dictated that inclusion essentially be based on the use of digital technologies to innovate firm business models into their digital configuration. The aim was to specifically locate articles providing diverse perspectives of digital technology usage in innovation of firm business models to ensure wide-ranging insights from diverse business domains (Snyder, 2019).

Thus, by applying the transparent and rigorous exclusion criteria set out above (Tranfield et al., 2003) the review processes is therefore replicable and satisfies quality standards for qualitative research (Johnson et al., 2020). This culminated in 68 articles from esteemed publications, through citation analysis the most prominently cited articles were identified.

2.3 Data analysis approach

Thematic analysis is an effective data analysis method for employed in this study because of the fragmentation and heterogeneity of DBMI scholarship (Ancillai et al., 2023; Vial, 2019). The preliminary analysis included collating all gathered data into a literature review

database in the form of an MS Excel spreadsheet for article description purposes, highlighting titles, authors, abstracts, years of publication, etc. and more importantly concepts and themes from each article. Source journal title analysis reveals most articles are from the “Journal of Business Research and the “Technological Forecasting and Social Change” journals

Appendix A depicts the outcome of the analysis with all codes, code groups and themes discussed in subsequent sections from here on and a descriptive account of the articles in presented in Appendix B.

2.4 Coding process

Coding and thematic synthesis were conducted with Atlas.ti software to improve data organization and ensure comprehensive thematic analysis, supporting a systematic and reproducible approach to identifying patterns and gaps within the literature (Morse et al., 2002).

Without a predefined coding group, articles were inductively analysed and coded according to key concepts and contribution. An iterative process of reading and re-reading articles was followed to carefully determine appropriate coding, on numerous occasions the coding was not clear-cut for documents as several documents fell into more than one code designation and group.

While conducting the coding articles were further classified into document groups, that have served as the foundation for the formulation of the DBMI implementation framework discussed in subsequent chapters. Nevertheless, iterative article coding continued with the definition of code groups, at first a diverse and large number of codes resulted in a large code group too big to manage, the code groups were then refined into more inclusive groupings that yielded a smaller number of code groups more manageable than the initial set – these became the first-order set of sub-themes that informed the high-order themes.

Finally, the code groups were synthesised into an initial sub-theme classification that was aggregated into high-order emergent themes discussed in subsequent chapters. The coding process was inspired by (Braun & Clarke, 2006) six steps approach to thematic analysis.

2.5 Measures of quality and rigour

To ensure rigour and quality some key measures were integrated in the review processes. First transparency and consistency were achieved through a clearly defined scoping review approach (Arksey & O'Malley, 2005) so each step is traceable and replicable (Gioia et al., 2013). Methodological rigour was further enhanced through a clear data extraction process for different articles that later enabled article systematic comparison (Morse, 2015). Additionally, reflexivity was maintained through continuous assessment of the researcher's perceptions to avoid bias (Morse, 2015). This approach reinforces dependability and confirmability of findings to ensure that the review is indeed reliable and replicable (Morse et al., 2002).

2.6 Limitations of the research design and methods

This study potentially has some limitations, although the aim was to conduct a comprehensive and in-depth structured review on DBMI restricting the search strategy to the indexed databases and the English language potentially means some other articles with worthwhile insights were excluded (Arksey & O'Malley, 2005; Levac et al., 2010). Article inclusion as is typical with scoping reviews may lack rigorous assessment prior to inclusion consequently may undermine validity and consistency of each article (Levac et al., 2010). I attempted to offer some synthesis of the literature in the findings however the scoping methodology inherently limits the depth of such efforts to more descriptive literature account than synthesis (Arksey & O'Malley, 2005). The aim nonetheless was to map the the field of research on DBMI to uncover scholarship gaps and inform future cumulative research (Arksey & O'Malley, 2005).

3. Chapter 3 Literature Review

3.1 Introduction

A firm's capacity to design and implement digital business models, through introduction of digital technologies (Zhang et al., 2023) into the firm's architecture, has become an irreplaceable firm capability in today's digital economy era (Warner & Wäger, 2019).

However, firms need to be able to realise the pursued benefits from such business model change efforts and overcome the strategic and digital paradox often associated with investments in digital technologies (Volberda et al., 2021a). This entails the design of new digital business models or the reconfiguration of existing business models into a digital instance, often characterise as Digital business model innovation(DBMI).

3.2 DBMI Antecedents

Ancillai et al.(2023) in their comprehensive review of literature on business model innovation and digital technologies point out that extant literature can be classified into categories that include papers that affirm digital technologies as antecedent to digital(Business model innovation) and papers that highlight the direct impact of digital technologies on business model components. I offer a summation of antecedent conditions for DBMI next.

The advent of digital technologies and their integral role in the digital economy manifested through firm participation across many industries is in itself a grand antecedent with a pervasive and inescapable impact on how firms have had to change how they create and capture value (Verhoef et al., 2021; Vial, 2019; Volberda et al., 2021). Incumbents often must respond to unsensed or unanticipated forces coercing them to adapt business models to cope with disruptive market entrants or new competition, specifically business model adaption is spawned primary by evolving customer needs and technological advancements that result in increased competitive forces against a firm (Haaker et al., 2021).

Specifically, antecedents can be both exogeneous and endogenous both resulting digitized business model firm logics (Warner & Wäger, 2019). In other instances, change is triggered by the realisation that current strategies and business model performance falls short of meeting set firm performance expectation, therefore resulting in a recognised need to adapt a firm's business model (Sund et al., 2021a). Indeed Warner and Wäger (2019) succinctly locate triggers to digital transformation that leads to development of new firm capabilities, certainly through digital business model innovation, into *changing consumer demands, new digital technologies* and *disruptive competition*. Also worth noting are the opportunities created by digital technology advances that force firm executives to re-evaluate current business model logics and inevitably lead to business model re-engineering (Volberda et al., 2021).

Digital technologies also impact customers in effect creating digital customers, these have also been revealed in extant literature as antecedent to DBMI (Ancillai et al., 2023). Additionally, family influence on firm risk management can also be antecedent to DBMI specifically as a risk mitigation tool by family firms confronted by risk stemming from digitalisation of their markets (Soluk, Miroshnychenko, et al., 2021).

Clarity and differentiated categorisation of antecedents to DBMI is however efficiently delineated in (Böttcher et al., 2022). In this paper, antecedents are divided into two groups organisational or environmental (perhaps similar to previously demarcation into endogenous and exogenous classes in (Warner & Wäger, 2019)); for organisational antecedents this includes business model limitations, resource utilisation, financial need and for environmental antecedents these include competitive pressures, customer need and technological innovation.

Business model limitations refer to situations where firms come to the realisation that a better or refined business model is needed for targeted future growth, resource utilisation deals with scenarios where firms recognise the need to use resources differently to develop specific capabilities and exploit existing knowledge to drive DBMI, financial need simply stems from poor financial performance of a firm (Böttcher et al., 2022). In terms of environmental antecedents, competitive pressures as previously alluded to includes market entry by disruptive competitors or new competition, customer need refers to situations where a firm needs to respond to changing customer preferences, technological innovations lastly referring to the ascendance and access to new more potent and impactful technologies that necessitate the need to reinvent a firm's business model (Böttcher et al., 2022).

3.3 Digital technologies

The extant literature goes into some degree expounding significantly on clarifications of what digital technologies are and how they impact and enable digital business model innovation. Digital technologies are a key feature of the conceptualisation of digital business model innovation.

Extant literature classifies digital technologies into digital artifacts, digital platforms and digital infrastructure. Digital artifacts as the name suggests are digital modular objects or components firms develop into specific computer software components through which additional novel value or utility is delivered to a firm's customer or end users, these digital artifacts can take the form of a specific digital service or products accessible through the digital artifacts or combinations thereof (Ancillai et al., 2023; Warner & Wäger, 2019; Zhang et al., 2023).

Digital platforms on the other hand are a collective digital medium that can host several digital artifacts on a single shareable system interface, these artifacts can take the form of

common or complementary services or products used by a collective or community of end users (Ancillai et al., 2023; Warner & Wäger, 2019; Zhang et al., 2023).

Finally digital infrastructure can be denoted as a foundational network that allows stakeholders to communicate and collaborate on a single information technology network linking users with common or comparable aspirations and goals (Warner & Wäger, 2019) affording participants to collaborate in innovation processes (Ancillai et al., 2023).

These technologies have led to the reinvention of a lot of firms value architectures. The value architecture of a firm refers to the mechanism employed to create products and services for customers, the manner in which these products and services are distributed to customers, the methods used to ensure payment of those services and products by customers (Ghezzi & Cavallo, 2020).

Digital business model innovation employs all three or combinations of the aforementioned digital technologies to create digital business models (Li, 2020; Perelygina et al., 2022). Digital technology has changed the way firms operate fundamentally, from reinvention of entire industries to introduction of new products and services, to new value propositions, capture and value delivery mechanisms, through digital technologies firms are able to deploy digital business model innovation to reinvent themselves and their operating environments (Warner & Wäger, 2019).

To pivot though, Caputo et al.(2021) and Volberda et al.(2021) allows us to underscore that mere adoption of digital technologies seldom equates to superior value, the former indicates that a superior business model coupled with appropriate technology is more effective than superior technology coupled with an inadequate business model. Ultimately we can conclude that digital technology on their own do not drive value creation (Amit & Zott, 2001) what is required instead is an underlying business model is designed in the best way possible to address identified strategic objectives (Sestino et al., 2020).

To solve this problem though (Paiola et al., 2022) suggest early involvement of customers in digital business model innovation initiatives to reduce risk of adopting technology-driven business models, instead firms should adopt business model-driven technology solutions.

Extant literature predominantly contains articles with technological perspectives based on artificial intelligence, internet-of-things and big data analytics, such as in (Burström et al., 2021; Paiola & Gebauer, 2020; Sestino et al., 2020)

3.4 Digital Business model innovation defined

As cited in (Soluk et al., 2021), digital business model innovation is defined as “significantly new way of creating and capturing business value that is embodied in or enabled” through the introduction and adoption of digital technologies into parts or whole portions of a firm’s business model.

The extant literature is laden with conceptualisations and characterisations of digital business model innovation but very few intentional definitions are offered to address construct clarity (Fabian et al., 2023). Nevertheless, a rare example offered from Veit et al. is this definition ‘if changes in digital technologies trigger fundamental changes in the way business is carried out and revenues are generated’ cited in (Perelygina et al., 2022, p.48). Several conceptualisations and discussions fit with Perelygina’s definition in existing literature, all underscoring the usage of digital technologies.

To my knowledge based on extant literature, only Fabian et al. (2023) offer a comprehensive review of DBMI definitions in literature with the specific aims of developing a consensus definition and establishing construct clarity, this effort culminates into this proposed consensus definition: “purposeful, non-trivial, dynamic changes made to the key elements of the business model by transforming analogue, physical objects, processes, or content into primarily (or entirely) digital formats”; indeed several authors have pointed out that DBMI directly impacts on the components or building blocks of business models (Jafari-Sadeghi et al., 2021; Mostaghel et al., 2022; Paiola et al., 2022; Palmié et al., 2022; Ritter & Pedersen, 2020). I however have determined through this review that this definition also is incomplete and omits some key DBMI dimensions that I will discuss in subsequent sections.

3.5 Differences between digital business model innovation and business model innovation

The differences between digital business model innovation and business model innovation are not just contextual i.e. digital, the review of the extant literature reveals are few distinct differences that further reinforce digital business model innovation as a distinct construct albeit drawn from business model innovation foundations.

Firstly, DBMI is a increasingly more complex than BMI (Soluk et al., 2021; Sorescu, 2017; Nambisan et al., 2017), this complexity stems from the reprogrammable nature of digital technologies enabling them to serve evolving sets of functions and priorities for firms in dynamic markets. This implies that the specific processes and nature of business model

change is often characterised by high levels of complexity and pursuance of novelty (Amit & Zott, 2001;. Zott & Amit, 2010; Caputo et al., 2021).

Secondly non-digital BMI or traditional BMI is not geared toward enabling the levels of differentiation required for competition by digital firms employing dynamic digital technologies and operating in unpredictable and complex digital markets (Chesbrough, 2010). Chesbrough continues to critique BMI by stating that it requires following a 'dominant logic' based on firm legacy and path dependency for value creation which may constrain a firm's ability to identify unusual opportunities often unveiled by the use of digital technologies.

Third, DBMI often occurs inside digital ecosystems which in themselves present a set of firm value creation opportunities unimaginable and unrealisable under traditional BMI (Leminen et al., 2020; Klos et al., 2023). Furthermore, DBMI in these instances is data-driven, a capability rarely operable under traditional BMI (Sorescu, 2017). Finally, DBMI has more potency in empowering a firm to cope with disruptive environmental changes due to the dynamic nature of the adoption of digital technologies in business models that offer new value creation and revenue generation avenues (Mancuso et al., 2023).

Additionally, the customer role in digital business model innovation is more pronounced, customers in the digital economy can actually trigger business model change by more visibly expressing unmet needs enabled by digital interactions and actively seeking providing feedback for more innovative solutions; this then leads to co-creation of solutions by deliberate involvement of customers in the development and refinement of new value propositions and contributing to the reduction in digital business model innovation related costs through pilot participation and involvement in early adoption phases to test new business models configurations in real-world settings with reduced financial risk (Paiola et al., 2022).

In sum, DBMI is a more durable and dynamic undertaking for a firm that ensures capacity to rapidly respond to threats and opportunities (Sund et al., 2021) in operating environments, this tactic necessitates the redesign and introduction of new forms of organisations and new ways of creating value (Volberda et al., 2021).

3.6 Theoretical Anchors

Scholarly contributions to the literature on DBMI have taken varying theoretical lenses to make sense of the intricate phenomena and concepts making up the corpus. Major

theoretical lenses include the institutional theory, stakeholder theory, transaction cost theory, resource-based view theory (from foundational contributions such as (Amit & Zott, 2001)) and the dynamic capabilities theory. This review arrived at the dynamic capability theory as the anchor theory for this research effort and discussed only prominent theories used in extant literature.

3.6.1. Resource-based view Theory (RBV)

DBMI is essentially achieved through the reconfiguration of a firm's resource to build specific capabilities that lead to greater competitiveness and amplified value creation (Amit & Zott, 2001). Amit and Zott through the RBV theory essentially posits that the temporal configuration of a firm's resources and capabilities directly leads to firm value creation and competitive advantages at a given time in a market.

The original zeitgeist of the theory by Barney (1991) as referred to in numerous papers is that positive firm outcomes are reliant on the arrangement through DBMI and access to valuable, rare, inimitable and non-substitutable assets (tangible and intangible assets in the digital economy (Ciampi et al., 2021)) to realise value creation strategies, adapted from (Amit & Zott, 2001).

This view is supported by Paiola et al.(2022), a prominent publisher on DBMI and value creation strategies, Paiola et al. offer a practical process for DBMI implementation driven by internet-of-things technologies, they point out that in the first phase of the process rare and limited resources are effectuated towards initiation of DBMI and that only later on is more sophisticated resource orchestration undertaken. It is vital to note that VRIN orchestration occurs under an overarching sound strategy with its associated existing cogent business model (Teece, 2018).

I discuss next an extension of the RBV (Ciampi et al., 2021), which is the review's anchor theory, that focuses on more dynamic pursuance of firm outcomes in uncertain markets requiring more dynamic capabilities for firm survival.

3.6.2. Dynamic capability Theory

Digital economies or digital markets are characterised by rapid change and high dynamism, not only that dynamic capabilities, organisational design and digital business models are mutually interdependent aspects of strategic planning for a firm (Ghosh et al., 2022).

I adopt Teece et al (1997) definition for dynamic capabilities: "the firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments" (p.516) cited in (Ciampi et al., 2021). The theory gained prominence due to its focus on firms' dynamic capabilities and their proficient efficacy to sustain competitive advantages in the long run under turbulent or dynamic settings (Ciampi et al., 2021; Ghosh et al., 2022). Although not a guarantee against firm failure on their own (Ghosh et al., 2022; Teece, 2018), dynamic capabilities have proven to be a key enabling feature of digital business model innovation (Haftor & Climent Costa, 2023).

Business models are defined by Teece (2010) as "the design or architecture of the value creation, delivery, and capture mechanisms [a firm] employs. The essence of a business model is in defining how the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit" (p.172).

In relation to DBMI and business model crafting, the effective design and functioning of a firm's business model depends on embedded capabilities both that enable firm operations and those that entice customer to pay for products and/or services i.e. operated to achieve firm strategic and growth strategies, to conceptualise capabilities further dynamic capabilities are operated at two levels of classification, first, the operational as alluded to earlier capabilities and second the actual dynamic capabilities (Haftor & Climent Costa, 2023).

The operational refer to capabilities that enable the day-to-day running of a firm such administrative, production and basic governance processes; by contrast actual dynamic capabilities empower a firm to respond opportunities and threats in their operating environments and are themselves also divided into two sub-classes namely microfoundational and higher-order capabilities (Teece, 2018).

Microfoundational capabilities comprise re-designing or re-engineering of existing capabilities and business model components an example is the introduction of new products, whilst higher-order capabilities ensure strategic foresight is maintained and abstracted in strategic planning for crafting innovative and dynamic business models responsive to future challenges and opportunities (Teece, 2018).

Teece further infers that firm top management pursuing digital business model innovation needs to preoccupy themselves with high-order dynamic capabilities because they are

crucial to effective and suitable business model crafting based on emergent strategic operating environment opportunities and threats (Mancuso et al., 2023).

Essentially microfoundational capabilities are easier to replicate while higher-order capabilities should be difficult to replicate because these are foundational to firm competitiveness (Warner & Wäger, 2019). In sum, digital technologies enable DBMI (Moeuf et al., 2020) while the resulting development of dynamic capabilities, in particular higher-order capabilities, fosters digital business model innovation (Soluk et al., 2021) more specifically DBMI in the dynamic capabilities perspective can also be integral in the orchestration of intangible and tangible assets to maintain competitive advantages (Warner & Wäger, 2019; Verhoef et al., 2021).

3.7 Value propositions, value creation, value capture and value delivery

The value architecture of a firm, which is the apparatus through which, a firm can create, capture and deliver value in other firm capability to sense and seize value in its operating environment (Baden-Fuller & Haefliger, 2013; Li, 2020; Palmié et al., 2022).

Through digital business model innovation, the parts or whole portfolios of a firm's value architecture is digitised (Chauhan et al., 2022; Paiola et al., 2022; Sjödin et al., 2023). The three dimensions of the value architecture have been found to be highly interdependent and complementary (Burström et al., 2021) as opposed to under traditional business model innovation (Teece, 2010). One could argue that digital business model innovation is the glue that ensures these components work in unison to address sensing and seizing scenarios for a firm (Mostaghel et al., 2022; Verhoef et al., 2021).

Precisely, value propositions are what a firm offers to its customer base (Ammirato et al., 2022; Müller et al., 2018), value creation and delivery alludes to firm mechanisms that avail purported benefits of the value proposition to customers (Gebauer et al., 2020; Müller et al., 2018; Sjödin et al., 2021) and value capture signifies facilities enabling the payment by customers in exchange for the value proposition benefits, including the costs incurred to deliver the value proposition (Sestino et al., 2020; Palmié et al., 2022).

These components through the use of digital technologies can be translated into individual digital business model components transformed through digital business model innovation (Ritter & Pedersen, 2020; Soluk, Miroshnychenko, et al., 2021). Marcon et al. (2022) also point out that as is often the case in the digital economy, value co-creation happens in an

ecosystem with customers and partners and is becoming a norm and a regular circumstance under which digital business model innovation is carried out.

3.8 DBMI impacts Business model components

Digitalisation impacts all facets of a firm's business model, in that vein digital business model innovation leads to changes in the components of a firm's business model (Palmié et al., 2022).

Extant literature is overwhelmingly in agreement with the view that the use of digital technologies to realise digital business model innovation cannot be achieved without wide-ranging and nuanced impact on business model components (Ancillai et al., 2023; Paiola et al., 2022).

(Ciampi et al., 2021) describe how using digital technologies business model components are impacted, specifically big data analytics capability one of the prominent digital technologies fuelling digital business model innovation in industry. Through big data analytics value creation can be reimaged through the creation of new data-driven products, services and capabilities.

This then directly impacts the value proposition a firm offers through more in-depth data analytics capability more compelling value propositions are designed to encourage value capture. Moreover, internal firm value creation can be enhanced through Big data analytics by the enhancements afforded by data analytics using predictive analytics that can lead to more insightful metrics on internal process and operational efficiency (Sorescu, 2017). And more personalised offerings and convenience to customers and enhanced relationships and customer-to-firm engagement, DBMI also can enable omnichannel experience for customers ensure a more integrated customer experience for customers.

Ritter and Pedersen (2020) offer a business-to-business(B2B) perspective of the applications of digital business model innovation. It is important to point out that Ritter and Pedersen highlight the foundational importance of digitisation capabilities to digital business model innovation because without these capabilities DBMI becomes near impossible to realise. As in (Ciampi et al., 2021) from a value proposition point of view (Ritter & Pedersen, 2020) also concur that digital business model innovation can unlock additional scope in terms of data-driven value propositioning and that these value propositions often foster more responsive and personalised offerings to customers.

DBMI can also evolve pricing to more effective and dynamic pricing models driven by new data insights and enable new revenue models such as subscription and freemiums; more importantly value capturing can be enhanced over the lifetime of a customer with a firm a firm because DBMI enables loyalty management and incentivisation for customers all driven by new capabilities introduced through the use of new digital technologies (Gebauer et al., 2020).

Additionally, Ritter and Pedersen highlighted that elevated data-driven insights achieved through DBMI also lead to improved communication and illustration of value to customers.

3.9 Ecosystems

For a definition, Burström et al.(2021) cite's (Moore 1993, p.76): "in a business ecosystem, companies co-evolve capabilities around a new innovation: they work cooperatively and competitively to support new products, satisfy customer needs, and eventually incorporate the next round of innovations".

A digital ecosystem is very similar in character to the offered definition because they facilitate new forms of interactions between sellers and buyers leading to cooperation and collaboration even co-opetition (Gebauer et al., 2020). To clarify, co-opetition occurs when competitors find themselves in synergistic arrangements that lead to unavoidable knowledge sharing (Caputo et al., 2021).

That being said, it is the active participation in digital business model innovation and digital innovation by incumbent firms that leads to highly dynamic and complex operating environments that require non-traditional operating routines for firm survival (Volberda et al., 2021) this change in operating modes leads to necessary and unavoidable collaboration and cooperation between rivals in digital ecosystems.

For example, internet-of-things driven business models require ecosystem collaboration within common and adjacent industries because of the nature of internet-of-things technology, often no single ecosystem participant is able to offer all features required by customers on their own, therefore embracing participation in a digital ecosystem whilst pursuing digital business model innovation is vital (Ghosh et al., 2022).

It has now become commonplace for firms to establish joint ventures with firms in same or adjacent industries, forcing firms to move away from demand-driven innovation processes to ecosystem-based processes that increasingly more dynamic and offer even more

dynamic value propositions for customer (Chasin et al., 2020; Warner & Wäger, 2019). Digital ecosystems are in this vein improving business models and fostering digital business model innovation (Mancuso et al., 2023; Marcon et al., 2022).

Clearly firms organisational structures and boundaries are shifting and operating routines are changing, because of this seismic changes firms have to leverage digital business model innovation and other digital transformation activities to continually re-invent themselves. The inter-firm relationship occurring with digital ecosystems has become a focal point in digital markets (Palmié et al., 2022).

Relatedly an emergent concept impacting digital business model innovation in literature is that of a meta-ecosystems, Palmié et al. (2022, p.3) defines a meta-ecosystem as “a community of hierarchically independent, yet interdependent heterogeneous participants that stem from two or more distinct, mainly non-competing ecosystems and that collectively generate a value offering targeted at a defined audience” consequently we may denote that meta-ecosystems are made up of groups of firms comprising of different sub-ecosystems that see firms collaborate and cooperate in contribution toward addressing a common consumer need, this may occur on a single digital platform.

Specifically, meta-ecosystems are catalytic to digital businesses model innovation because they represent the initial steps towards value proposition formulation and value creation happening primarily because of network effects stemming from partnerships the meta-ecosystem facilitates (Veile et al., 2022).

In deduction, nested digital ecosystems(nestled with digital platform discussed next) are paramount to digital transformation activities such as digital business model innovation and lead to ecosystems and strategic partnerships with rivals as necessary conduits for deploying digital business models (Ghosh et al., 2022) because they facilitate interactions and engagement between distinct consumer groups and cooperating digital firms with mutual needs (Mancuso et al., 2023; Verhoef et al., 2021).

3.10 Digital platforms

The presented definition of digital platforms is given from a technology perspective in order to comprehensively understand platforms a more pervasive conceptualisation is required from the literature because digital platforms play an enabling role for digital business model innovation (Veile et al., 2022).

These platforms are reshaping industry by facilitating interconnections both vertical and horizontal between firms and industries leading to reformed value creation and infact becoming critical and irreplaceable for the formation of ecosystems and/or meta-ecosystems (Veile et al., 2022).De Reuver et al.,(2017) further declare that digital platforms are revolutionising traditional businesses, with radical shifts and distortions of how value creation is pursued through digital business model innovation.

(Veile et al., 2022, p.387) outlines an instance of this revolution by noting the impact of digital platforms of marketing activities, stating that digital platforms result in “non-linear, multi-directional approach to marketing and value creation processes, engaging customers in terms of communication, interaction, and participation”.

(Mancuso et al., 2023) also advances noting from their findings recent investments by Walmart in a digitized omnichannel service that could unlock numerous spill-over e-commerce opportunities for applying digital business model innovation more pervasively thereby transforming value propositions, value creation and value capture for customers.

However, what are digital platforms exactly? Extant literature offers divergent definitions of digital platforms or platforms for that matter, albeit with some definitions showing inter-overlaps and common features. Veile et al.(2022)offer a comprehensive description of digital platforms in extant literature to the best of my knowledge and characterize digital platforms as made up of essentially a digital technology core with its peripheral components that regulates how relationships and interactions between collaborating participant actors in an ecosystem are governed.

Veil et al. further decomposes roles played within such an ecosystem on a digital platform, first they discover that there are ecosystem leaders or platform owners or provider, they establish the platform and define organisation rules and ensure effective management of relationships amongst participants or actors. Second are dominators who have significant power and influence in the ecosystem over other participants effectively control large magnitude of the platform or network and therefore able to influence developmental direction of the digital platform.

Gatekeepers on the other hand as the term suggest control interactions amongst actors giving them leverage over the digital platform’s access points and strategic relationships.

Users or end-users effectively are the consumers of the services or products provided by the digital platform through ecosystem partnerships. And lastly complementors are additional participants or actors that augment or supplement existing offerings on the digital platform in that way expanding value propositioning and value creation on the digital platform.

Implication for digital businesses model innovation include transforming business model from traditional to digital business model with the advent of digital platforms therefore necessitating DBMI application. Digital platforms also foster DBMI through the transformation of linear business management to more triangular settings between provider, complementor and end-user with more dynamic feedback loops, therefore underscoring the importance of network effects (Veile et al., 2022).

Because of the openness, affordability and ease of access of digital platforms, digital business model innovation is increasing rapid for wide variety of firms in varying industries levelling playing fields, consequently this benefits firms by allowing for fast decision making which is essential in the digital economy and shifting from product to platform approach with greater network and transaction effects, more agile corporate and digital strategies enabled by digital business model innovation once more reinforcing the importance of openness and collaboration (Broekhuizen et al., 2019; Su et al., 2023; Zhang et al., 2023).

3.11 Leadership in DBMI

At the least (Chesbrough, 2010) was one of the first to articulate the importance of leadership in driving innovation towards the reconfiguration of business models. Other authors in later years have expanded upon this notion. Leaders therefore determine the locus of digital business models innovation (Klos et al., 2023).

Transformational leadership is a critical capability required by digital firms or firms undergoing digital transformation (Warner & Wäger, 2019). Warner and Wäger highlight that transformational leaders need to set clear and compelling strategic visions that are abstracted through digital business model innovation, as previously indicated digital business model innovation is strategic and tied to the overall strategic vision of a firm and does not occur in isolation or ought to not occur in isolation for effective implementation, leaders need to also foster a culture of innovation by changing mindsets and introducing digital maturity to their firms innovation processes, leading for digital businesses model

innovation further requires orchestrating resources and firm endogenous and exogenous structures for optimal responsiveness to competitive pressures, digital leaders need to also overcome cognitive inhibitions of their own in order to lead by example and embrace digital technologies which has been pointed out as a barrier by some authors such as (Gebauer et al., 2020) to digital business model innovation efforts.

(Volberda et al., 2021) further emphasize that digital transformation or digital business model innovation efforts for leaders requires overcoming cognitive barriers by encouraging teams to embrace experimentation and unlearn and relearn of new digital skills, reconfiguring routines to reestablish internal processes and routines that align to the development of digital business models, spearheading the introduction of new or novel organizational forms to realise both strategic and digital agility, support effort for more collaborative work regimes and lead efforts to interact more with customers to achieve customer centricity a crucial element of digital business models.

Additionally, Hiteva and Foxon (2021) delves deeper and exposes the rather critical importance of transformational leadership to resolve emergent conflicts important for collaborative and collective mindset and action-orientation. High operational presence by leaders may also increase proximity to digital business model innovation thereby leading to more effective resource balancing that is crucial for the effective adoption of digital technologies (Moeuf et al., 2020).

Therefore, transformational leadership is crucial to effective digital business model innovation because transformational leaders can set clear and compelling firm strategies, create a conducive digital mindset in a firm that pursues experimentation, risk-taking and innovation, lead the reconfiguration of processes and mindsets, and importantly facilitate a firms journey to overcoming cognitive and operational barriers (Şimşek et al., 2022).

3.12 Organisational adaptability in DBMI

As alluded to in the discussion on leadership in DBMI, several barriers are evident in literature and inhibit the realisation of digital business model innovation benefits. Organisational inertia is common theme (Sestino et al., 2020). Managers have been found to be reluctant to explore new business model archetypes (Warner & Wäger, 2019), often due to legitimate concerns about threatening profitability gained with existing business models built over extended periods but also due to cognitive barriers and concerns over job securities (Gebauer et al., 2020; Sestino et al., 2020), the consequences of this lack of

willingness to adopt digital technologies and embrace digital business model innovation is often adverse leading to *sensing and seizing* failures that can threaten the success of a firm (Gebauer et al., 2020).

(Volberda et al., 2021) illustrate how managerial cognition can be a barrier to organisational change efforts towards to digital business model innovation, deeply ingrained mental models stemming from past successes and even industry norms can hinder an organisation's ability and capacity to adapt to its changing environment. Volberda et al. pointed out that confirmation bias can lead to failures detecting weakening competitiveness signals with managers only interested in signals that affirm the status quo other cognition issues identified by Volberda et al. are framing effects that highlight negative framing of digital signals unduly as threats rather than opportunities.

Another restraint on organisational adaptability under DBMI has to do with resource orchestration a critical input capability for successful DBMI, once more managers have been shown to struggle to allocate resources accordingly to DBMI initiatives that challenge the status quo, to overcome this barrier management needs to make clear and unbiased decisions about resources to achieve DBMI (Sund et al., 2021).

(Gebauer et al., 2020) suggest a possible solution to the discovered resource problem, they suggest adopting ambidextrous balance between new opportunity exploration and exploitation of existing resources. This duality is essential for enabling firm to adapt their digital business models to include digital offerings. This make the form of decentralising capabilities and forming subsidiary units that have latitude and freedom to pursue new opportunities and creating programmes that are deliberately dedicated to the exploration of new opportunities (Gebauer et al., 2020).

The internal organisational form of a firm may also be prohibitive to effective DBMI, many firms have been found to still be operating using old hierarchical structures that tend to limit collaboration and discourage innovation thereby inhibiting the development of digital business models (Volberda et al., 2021).

Another barrier to organisational adaptation, is the lack of dedicate capabilities and skills needed for digital transformation and/or digital business model innovation, for example artificial intelligence value creation requires proficiency with the technology, employee competency is therefore crucial in DBMI implementation (Burström et al., 2021).

Accordingly if a firm operates within a digital meta-ecosystem the competency and skills complexity is compounded (Müller et al., 2018).

For incumbent firms to successfully pursue digital business model innovation, they need to deal with and resolve resource conflicts and trade-offs between status quos and new ways of operating (Warner & Wäger, 2019).

3.13 Digital servitisation

An important emergent theme in the body of knowledge on digital business models and digital business model innovation that is a direct consequence of DBMI is digital servitisation. Sjödin et al.(2020) offer this definition for digital servitisation: “the transformation in processes, capabilities, offerings, and business models in industrial firms and their associated ecosystems to progressively create, deliver, and capture increased service value arising from a broad range of enabling digital technologies (such as AI)” (p.575).

This definition suggests digitalisation as integral to servitisation realisation, still other authors argue that digitalisation is embedded in servitisation or through servitisation into digital business models (Paiola et al., 2022) while other authors argue that digitalisation infact enables servitisation (Kohtamäki, Parida, Oghazi, et al., 2019; Kohtamäki, Parida, Patel, et al., 2019). This is a contradictory conceptualization in extant literature akin to the chicken and egg problem. I would argue servitisation is impossible without the introduction of digital technologies and/or DBMI and therefore digitalization is catalytic to servitisation, this is important to clarify in order to ascertain or centrally locate the role of digitalization and DBMI efforts in servitisation business models that have been noted to allow firms to overcome the digital paradox (Paiola et al., 2022).

Furthermore, conceptualisation reveals, service-based business models spawn new revenue models (Chasin et al., 2020) demonstrating further the impact of DBMI on business model components (Ritter & Pedersen, 2020).

Moreover, the literature reveals increased publications highlighting high application of digital servitisation in manufacturing and industrial industries particularly in business-to-business (B2B) settings than in business-to-consumer (B2C) settings and by large enterprise than small-and-medium enterprises (SMEs) (Müller et al., 2018); large enterprises may have comparative more resources to deploy for digital servitisation but SMEs may have closer relationships with customer although with less resources and

perhaps able to implement leaner more relevant customer solutions than large enterprises through servitisation of their business models through DBMI (Marcon et al., 2022).

3.14 Conclusion of literature review

The review highlights the critical importance of DBMI for operating in the digital economy, DBMI's central role in navigating firm competitiveness challenges is decomposed and elucidated. This review underscores DBMI's leverage of digital technologies to transform traditional firm business models for enhanced value propositioning, capturing and delivery through more agile and responsive organisational forms. The antecedents to DBMI are also explored, specifically exogenous and endogenous exposing the complex set of triggers for firm engagement in DBMI.

A clarification of DBMI construct is undertaken, while also highlighting distinguishing aspects between the traditional business model innovation and digital business model innovation. To note DBMI is a more complex and dynamic undertaking due to its reliance on dynamic and reprogrammable digital technologies which unlocks firm capabilities to pursue otherwise inaccessible actions(sensing and seizing) through traditional business model innovation. Specifically, DBMI is better able to respond to disruptive changes commonly occurring in digital markets.

The review also details main theoretical anchors found in extant literature, namely transaction cost theory, resource-based view theory(RBV) and dynamic capabilities theory(DC), pointing out DC better fit for DBMI theorising because DBMI entails leveraging digital technologies to create dynamic capabilities in digital business models. Attention is also directed at the critical importance of transformation leadership and its enabling role in creating new novel organisational forms suited for DBMI implementation.

In sum, the extant literature suggests that successful DBMI implementation requires disciplined, structure and phased approach that is dynamic enough to ensure iterative and rapid response to disruptive market changes. What is critical ultimately is implementing DBMI based on market needs and aligning technology adoption accordingly to maximise value extraction from digital investments.

4. Chapter 4 Findings

4.1 Endogenous and exogenous antecedents leading to DBMI

Extant literature reveals that DBMI is inextricably linked to digital transformation, in fact DBMI is seen as part of digital transformation undertaking because of the persistent business model change central to digital transformation, the literature further classifies digital transformation antecedents into endogenous and exogenous groups (Warner & Wäger, 2019) (Bhatti et al., 2021) (Li et al., 2023). Furthermore, literature dealing directly with DBMI aligns with Warner and Wäger's antecedent descriptions as evidenced for instance in (Sund et al., 2021).

However, the language used in some papers blur the understanding of what constitutes an antecedent., for instance papers such as (Bhatti et al., 2021 and Li et al., 2023) list antecedents such as top management team's digital orientation, digital infrastructure and other conditions for DBMI engagement, these are rather critical success factors for DBMI not antecedents, antecedents by conceptualisation have to have some causal relationship to phenomena (Böttcher & Weking, 2020) that is it's occurrence then leads to the observed phenomena which is not the case in Bhatti et al. and Li et al. antecedent listings.

Nonetheless, an important question to ask is whether these groupings are universal? Several papers confirm universality to a degree (Gebauer et al., 2020; Ghosh et al., 2022; Haaker et al., 2021; Mancuso et al., 2023; Paiola et al., 2022; Palmié et al., 2022; Sestino et al., 2020; Verhoef et al., 2021; Zhang et al., 2023).

Conversely, insufficient antecedent differentiation is evident, the literature predominantly focuses on large enterprises and only marginally on SMEs or startups while SMEs contribute significantly to the digital economy (Müller et al., 2018; Paiola et al., 2022) it is therefore not entirely improbable that SMEs and startup firm antecedents for DBMI maybe different given SMEs tendency for short-term strategic planning (Moeuf et al., 2020).

Moreover, antecedents may be different under business-to-business(B2B) and consumer-to-business(C2B) circumstances extant literature disproportionally focuses on B2C while neglecting B2B firm settings (Paiola et al., 2022). The understanding of DBMI antecedents can be enhanced and more comprehensive through inclusion of these additional contexts, this may aid additionally in elucidating the interplay between the antecedent groups because these triggers may very well befall a firm concurrently and the agility required in

organisational form for an SME maybe easier to achieve than for a large incumbent enterprise (Marcon et al., 2022).

Lastly, customer involvement and co-creation of value is also specifically highlighted as another antecedent in digital markets (Marcon et al., 2022; Mostaghel et al., 2022; Sjödin et al., 2021), DBMI has resulted in changing roles for customer (Verhoef et al., 2021), firms and competitors, customer's feedback loops underscore the importance of human-centred digital technology adoption and may signal DBMI initiation (Mancuso et al., 2023; Palmié et al., 2022) once more dimensionality can lead to a more robust DBMI antecedent conceptualisation.

Impact of Digital Technologies on Business Models

Several authors agree that digital technologies impact business model or business model components for that matter (Burström et al., 2021; Haaker et al., 2021; Li, 2020; Warner & Wäger, 2019; Soluk et al., 2021; Volberda et al., 2021).

Although extant literature absconds from a consensus conceptualisation of digital technologies mostly due to the reprogrammability and persistent evolution of these technologies, (Ancillai et al., 2023) synthesis of definitions and decomposition of digital technologies provides adequate foundation and anchor of the digital technologies construct in the context of DBMI, effectively categorising digital technologies into digital artifacts, digital platforms and digital infrastructure; with digital artifacts critical for value creation and digital platforms and infrastructure further enabling ecosystem based value creation.

Examples of digital technologies driving DBMI include mobile-related technologies, cloud, artificial intelligence, big data and internet of things (Ammirato et al., 2022; Ancillai et al., 2023; Caputo et al., 2021; Ritter & Pedersen, 2020; Schilling & Seuring, 2023) worth noting are numerous other papers dealing with DBMI from an industry 4.0, specifically manufacturing and industrial contexts such as (Kiel et al., 2017; Marcon et al., 2022; Müller et al., 2018; Veile et al., 2022; Toth-Peter et al., 2023; Frank et al., 2019; Moschko & Blažević, 2023).

Importantly, digital technology impact on firm business model is however not just about the technology but is further catalytic for fundamental changes in how firm value is created,

captured and delivered (Şimşek et al., 2022). Often though the changes are incremental rather than radical (Ghosh et al., 2022; Klos et al., 2023; Leminen et al., 2020).

An example, the internet of things(IoT) for SMEs is highlighted as a key enabler for digital servitisation business models, although also following an incremental approach (Paiola et al., 2022a). An important nuance to note highlighted by Paiola et al. is that DBMI inevitably involves operating dual business models, the existing one and the target digital business model being pursued or incrementally being improved through DBMI. This requires considered and measured resource orchestration through requisites management and leadership cognition that engenders new and novel organisational forms and customer centricity regardless of the technology used (Caputo et al., 2021).

4.2 Ecosystems

DBMI predominantly occurs in digital ecosystems (Ghosh et al., 2022; Klos et al., 2023; Müller et al., 2018). (Burström et al., 2021) emphasises the interconnectedness of firms operating in ecosystems and resultantly business model component changes are radically influenced by interaction between firms in these ecosystems. At the centre of DBMI within ecosystems is increases inter-firm relationships, collaboration, co-evolution and even strategic alignment amongst firms leading to coopetition (Burström et al., 2021; Ghosh et al., 2022; Mancuso et al., 2023; Palmié et al., 2022; Şimşek et al., 2022).

Firms may realise several benefits from operating within digital ecosystems, these include access to other capabilities and resources, accelerated innovation, reduced risk and investment due to partnering with other stakeholders and enhanced value creation for customers that may otherwise be difficult to offer without ecosystem participation (Ghosh et al., 2022) (Chasin et al., 2020) (Palmié et al., 2022) (Veile et al., 2022) (Volberda et al., 2021a). (Warner & Wäger, 2019)

Extant literature appears to overemphasise the benefits of operating in digital ecosystems while neglecting drawbacks. (Veile et al., 2022) focuses on digital platforms a critical component of digital ecosystems they also highlighting firm benefits for ecosystems participation and go further to table some drawbacks, specifically that over-dependence on ecosystem partners carries an inherent risk in case these ecosystems dissolve or a specific partner's participation ceases, they also point out that an unintended consequence may entail heightened competition due to the openness of digital ecosystems, significant digital investments and resourcing may be required for digital ecosystem participation and

lastly although extrapolated from their focus on digital platforms they point out that digital ecosystems may lead to data security and trust issue due to possible data misuse and as a consequence this might inhibit value creation. Reference to these drawbacks in other papers is rather implicit such as in (Ghosh et al., 2022a) (Mancuso et al., 2023).

Further from a nuance DBMI perspective (Burström et al., 2021) points to tensions from ecosystem participation between value creation and value capture, whilst ecosystem participation allows firms to leverage enhanced value creation from collaboration with ecosystem partners, value capturing might be undermined particularly if a firm is not a dominant player in the ecosystem meaning share of value or even revenue generated from the ecosystem may be smaller; Burström et al. further critique complexity of processes and relationships in digital ecosystems that may make firm role difficult to discern moreover although novel and new organisational forms are encouraged for DBMI (Volberda et al., 2021) blurring organisational boundaries may introduce organisational complexities that complicate firm responsibilities (Burström et al., 2021).

4.3 Digital platforms

As alluded to in the literature review section a more comprehensive understanding of digital platforms is required that goes beyond a technological perspective to include business, economic and user-centered perspectives. Veile et al.(2022) conceptualisation encompasses the intermediary role of digital platforms between actors in ecosystems and for transaction and interaction execution, enabler for augmented value creation, the integral role played by the digital infrastructure and digital platforms inescapable reality as business model innovation driver. A nuanced difference observed by (Şimşek et al., 2022) differentiates between a business model that is in itself a platform and specific multi-sided digital platforms, for example Uber(and Lyft) and eBay.

Digital platforms continue to reshape industries and the benefits for firm investment and engagement in digital platforms (particularly in digital ecosystems) are evident in literature, these include enhanced value creation, leveraging network effects, increased customer centricity, improved data analytics and insights and access to new and novel revenue streams and business model capabilities (Ammirato et al., 2022) (Şimşek et al., 2022) (Veile et al., 2022).

While the extant literature, similar to discussions on ecosystems, offering a lopsided focus on how digital platforms may democratise innovation, cost structures, data sharing and

policies, etc. resource limitations and industry-specificity may impact the equitability of DBMI processes and their benefits.

For instance as extrapolated from extent literature, firm dependence on network effects if critical mass proves difficult to reach on a platform, value creation may be limited instead of enhanced, platform and ecosystem dynamic may lead to hyper competition for dominance leading to diverse interest and motivation from participants all of which compromises DBMI outcomes and compliance to regulatory and legal regimes especially for digital firms operating in international markets may complicate DBMI efforts (Veile et al., 2022), in particular large firms with legacy systems may find it more difficult than a startup or SMEs would to adapt back-end systems to varying legal and regulatory requirements (Şimşek et al., 2022).

For startups and SMEs, the intense resource requirements and lengthy implementation times for digital platform implementations may be prohibitive for quick success in hyper competitive environments (Şimşek et al., 2022). Sund et al.(2021) on the other hand indicate that large established firms may face peculiarities for digital platform engagement such as organisational rigidities, legacy systems and process hurdles and that existing market power may be inhibitive to pursuing digital opportunities on digital platforms.

In sum, digital platform development and/or participation depends on how firms deal with legacy systems that may lead to persistent inertia in large firms as opposed to smaller firms (Gebauer et al., 2020), larger firms may need more radical structural and cultural systems changes geared toward being more digital to successfully engage in DBMI for digital platforms, and dependence may also be based on firm investment capacity and risk tolerance with larger firms being more risk-averse than smaller firms (Şimşek et al., 2022; Sund et al., 2021).

4.4 Digital servitisation

Extant literature characterises digital servitisation as a DBMI organisational transformative undertaking geared towards business model innovation using digital technologies, in general servitisation is described as the shifting of a firm's value architecture i.e. business model dimensions of value proposition, value creation and value capture from a product-oriented logic to services-oriented logic (Sjödin et al., 2021) (Sjödin et al., 2023). (Müller et al., 2018) on the other hand while not necessarily going into a detailed conceptualisation succinctly captures digital servitisation as a kind of business model innovation focused on

the value proposition because servitisation directly deals with customer offerings, in this case enhanced through digital technologies.

Service-orientation is aptly nuanced by (Chasin et al., 2020) whom point to service bundling, outcome-based offerings instead product selling and building of long-term relationships with customers particularly in the energy sector. Related to the previous discussion (Şimşek et al., 2022) provides some insight into value propositions shifting noting that if executed appropriately via DBMI servitisation should result in enhance customer offerings, new and recurring revenue streams and more meaningful customer relationships.

(Ghosh et al., 2022) reinforces offers an industry Chasin et al findings by also highlighting other business model archetypes geared towards outcome-based offerings instead product sales and an emerging archetype often referred to as pay-per-use which transitions offerings from customer product ownership to customer service usage similarly underscoring the importance of customer relationships and new revenue streams realisable from servitisation. A synthesis of the previously discussed digital platform also provides insights or perspectives on servitisation realised through digital platform from (Veile et al., 2022); Veile et al. emphasise what they term as the service-dominant firm logic afforded through digital platforms in an Industry 4.0 context.

(Paiola et al., 2022) advance the discourse by clarifying that servitisation is not a once-off event or project a firm undertakes but rather a journey a firm undertakes with its customers, whilst also emphasising shifts in from logics towards services oriented offerings they deepen the conversation by decomposing a staged approach to servitisation that initially focuses on value-add customer solutions offerings to progressing customer solution co-creation and personalisation through IoT digital technologies geared towards DBMI outcomes, this view is also supported by (Gebauer et al., 2020).

(Haaker et al., 2021) further nuances servitisation into smoothing services that enhance existing product experience, adapting services that respond to market changes to modify and adjust service offerings and substituting entailing services that undertake radical substitution of existing services.

Another critical synthesis relates to data and the critical role it plays in digital servitisation (Ritter & Pedersen, 2020) the mentioned transformation required for servitisation are seemingly enabled by the heavy reliance on data in other words service oriented offerings

are primarily enable through data-driven customer insights (Sestino et al., 2020). Accordingly, Sestino et al. also focus on the critical role real-time data plays in IoT servitisation efforts, specifically they explain that DBMI is empowered through access to customer service usage patterns data and product performance data enabling the development of new service offerings.

In sum, servitisation is effectively the next frontier and a critical driver for more impactful DBMI that actually resolves digital paradox concerns (Paiola et al., 2022). Prominently papers on digital servitisation focus on artificial intelligence, IoT and Industry 4.0 conceptualisations while also positioning the importance of digital ecosystems and platforms in digital servitisation business models, servitisation is therefore a gradual undertaking and multi-dimensional with direct consequences for digital business model innovation.

4.5 Differences between digital business model innovation and business model innovation

In contrast to (Fabian et al., 2023), several other authors elucidate additional dimensions of DBMI omitted by Fabian warranting inclusion in a consensus definition, in particular DBMI is strategically driven, that is DBMI is therefore a strategic imperative for digital firms aiming to remain competitive (Klos et al., 2023; Marcon et al., 2022; Mancuso et al., 2023; Şimşek et al., 2022). Additionally, DBMI is also described as nuanced, idiosyncratic and non-linear (Denicolai & Previtali, 2020; Hiteva & Foxon, 2021; Sengupta et al., 2021; Sestino et al., 2020; Volberda et al., 2021).

I therefore I propose an extension or rephrasing of Fabian's definition to include these critical dimensions, Digital business model innovation ***is a set of intentional, non-linear , complex and strategic transformational activities impacting interdependent business model components of a firm, intended to create a set of dynamic, nuanced and idiosyncratic capabilities through the usage of digital technologies aimed at the fostering and strengthening strategic firm competitiveness.*** The definition has been carefully constructed following definition development requirements in (Suddaby, 2010).

4.5.1. DBMI is intentional

DBMI does not occur in isolation as a stand-alone firm undertaking, antecedent conditions trigger business model changes (Soluk, Miroshnychenko, et al., 2021), through careful consideration firms leverage specific digital technologies that can best facilitate a response to competitive pressures or disruptive market changes (Hiteva & Foxon, 2021). Moreover

business models in themselves are socio-technical configurations of a firm's value architecture purposefully crafted to address specific strategic objectives (Mostaghel et al., 2022).

4.5.2. DBMI is non-linear and complex

DBMI as a part of a digital transformation journey (Volberda et al., 2021) is accordingly non-linear, the process followed is not sequential but rather dynamic and iterative (Paiola et al., 2022) for both SMEs and large enterprises. Likewise, business model changes may encompass balancing new and existing business model portfolio especially in large incumbent firms (Warner & Wäger, 2019). The reprogrammability and combinability of digital technologies renders DBMI a complex undertaking because of the past pace evolution of these technologies (Soluk, Miroshnychenko, et al., 2021).

4.5.3. DBMI is a strategic imperative

Digital business model innovation processes occur within the confines of a well-defined corporate and digital strategy (Marcon et al., 2022); complex and dynamic business model configurations require calculated and interdependent strategic decisions therefore successful DBMI execution requires intimate strategic connections (Burström et al., 2021).

4.5.4. DBMI is transformational

Although both concepts presuppose the leveraging of digital technologies for catalysis it is important to clarify the difference between DBMI and digital transformation, the latter is a more pervasive undertaking within a firm affecting an entire company (Verhoef et al., 2021) not limited to business model changes although digital transformation invariably leads firms to seek digital business model innovation which deals directly with changes to the value architecture of a firm leading to entirely new and novel business model configurations. Therefore, although seeming in extant literature the two construct are interchangeable and reinforcing each other, DBMI is a purposeful schema or framework focused on deliberate and direct business model changes leveraging digital technologies (Fabian et al., 2023; Warner & Wäger, 2019;. Sund et al., 2021).

4.5.5. DBMI impacts firm business model components

As in the case for Walmart and Carrefour in (Mancuso et al., 2023) using digital technology to change to enhance their value creation and capture mechanisms through a phased approach deliberately focusing on enhancing customer experience, expanding customer base and improving customer loyalty and ecosystem participation. DBMI involves itself with the direct reengineering of a firm's business model (Paiola et al., 2022)

4.5.6. DBMI is idiosyncratic

Firm business model configurations through DBMI are distinctive to a firm's strategic needs in other words business model configuration requires a tailor-made approach for a firm (Paiola et al., 2022) because no single firm's strategic map addresses the same needs or follows addresses the same variables for strategy formulation and business model adoption (Warner & Wäger, 2019) invariably these actions lead to the development of a set of unique firm dynamic capabilities to address internal and external competitive pressures (Caputo et al., 2021). Accordingly, firms need to develop incongruous digital routines suited to their operations and unique structures to effectively execute on DBMI (Volberda et al., 2021).

4.5.7. DBMI fosters competitiveness

Through the leveraging of core capabilities and digital technologies, DBMI fosters firm competitiveness by developing new capabilities geared towards responding to emerging competitive pressures or disruptive competition (Verhoef et al., 2021). Extant literature indicates that firms may offer similar propositions to customers but perform differently in the market often because of business model enabled advantages stemming from DBMI (Haftor & Climent Costa, 2023).

4.6 Addressing the digital paradox

The perennial problem with digital technology investment highlighted as early as in (Amit & Zott, 2001) later referred to as the digital paradox (Ancillai et al., 2023), highlighting the persistent difficulties firms experience in realising expected benefits from investing in digital technologies continues to receive the attention of researchers in extant literature.

Essentially firms invest in digital offerings essentially engaging digital business model innovation without realisable or sufficient revenue improvements (Gebauer et al., 2020). Gebauer continues to offer clues as to reasons to the digital paradox namely that firms are unable to effectively and efficiently navigate DBMI dynamics and process intended to modify their business models for optimal value capture. They allude to issues such as all pointing to basically the absence of a how-to framework for DBMI execution.

In the reviewed extant literature very few studies actually table a structure and dynamic process template for DBMI execution, except for (Gebauer et al., 2020; Soluk, Miroshnychenko, et al., 2021) who offer a structured template for DBMI implementation and (Mancuso et al., 2023) who critically offer a structured template under crisis

circumstances such as the COVID-19 pandemic that accelerated digital technology adoption for numerous firms across varying industries (Ammirato et al., 2022; Mostaghel et al., 2022; Palmié et al., 2022)

To address the digital paradox a few themes were collated from extant literature.

4.6.1. Technology-driven solutions versus customer-driven solutions

Foremost and of fundamental importance in DBMI implementation is to differentiate between technology-driven customer solutions and customer-driven solutions (Mancuso et al., 2023; Paiola et al., 2022), mere adoption of digital technology does not in itself lead to value creation (Soluk, Miroshnychenko, et al., 2021) it is the adoption of digital technology that leads to business model changes while recognising the socio-technical nature of business models that leads to value creation and consequently sufficient value capture. Early firm-customer engagement in DBMI execution is critical. Therefore, deeper customer engagement is crucial for solving the digital paradox problem as it ensures implementation of solutions aligned to identified customer needs (Marcon et al., 2022). Moreover, DBMI does not translate to customer non-contact on the contrary digital technology adoption in the context of DBMI should be geared towards enhancing physical contact with customers (Palmié et al., 2022). More personalised services for customers, i.e. servitisation, inherently increases the capacity to overcome the digital paradox (Paiola et al., 2022).

4.6.2. Role of Leadership and Organizational Change

Transformational leadership and organizational change are vital for strategic business model renewal (Warner & Wäger, 2019). This type of leadership fosters and bolsters a firm's absorptive capacity leading to unlearning and relearning of new skills and competencies while creating a culture based on a digital mindset (Marcon et al., 2022; Şimşek et al., 2022; Zhang et al., 2023) suitable for effective execution of newly adopted digital routines (Volberda et al., 2021).

Leadership in the digital era needs to also be innovative and inclined to dynamic problem-solving and bold decision-making (Hiteva & Foxon, 2021). Hiteva and Foxon further emphasise that shifting and reshaping organisational cultures and structures as required by DBMI requires conflict resolution skills and decisiveness from management teams.

The leadership profile required for DBMI is therefore different to traditional leadership roles, it mandates that leadership be in perpetual flux for curiosity and learning,

conscientious and possess decent digital skills themselves to be able to comprehend and effectively communicate when implementing digital business models (Moeuf et al., 2020). In fact, the role of a Chief Digital Officer is mentioned in extant literature as irreplaceable for digital business model innovation (Ghosh et al., 2022).

The discussion on leadership would be incomplete without a synthesis of management or leadership cognition and its central role for leadership effectiveness in DBMI implementation, cognition meaning: “how executives look at the world, frame their decisions, and share this framing with relevant key actors” (Volberda et al., 2021, p.3). Clearly cognition has a direct bearing on management attitudes towards being digital and how they practice leadership when pursuing DBMI, practically executive teams need to overcome this barrier in order to effectively understand digital business models and effectively lead their implementation efforts (Sund et al., 2021).

Another critical element in overcoming the digital paradox is the deliberate redesign of a firm’s internal structure, which is perhaps more difficult for large incumbent firms than it is for SMEs and may be more easily achievable under B2C circumstances than B2B (Burström et al., 2021; Haaker et al., 2021; Warner & Wäger, 2019; Sund et al., 2021; Volberda et al., 2021).

4.7 DBMI implementation framework

A prominent research and practitioner problem addressed by several papers directly or indirectly is that of how digital businesses model innovation is implemented or indirectly what are the aspects firms need to get right to successfully implement digital business model innovation (Burström et al., 2021; Chen et al., 2021; Gebauer et al., 2020; Warner & Wäger, 2019; Volberda et al., 2021; Soluk, Miroshnychenko, et al., 2021) – this often leads to the digital paradox often experienced by digital firms (Ancillai et al., 2023; Klos et al., 2023; Paiola et al., 2022).

In (Gebauer et al., 2020) dealing with equipment manufacturers, three phases are proposed for digital business model innovation, I will use this paper to anchor a consolidated phased approach to DBMI implementation. Gebauer et al. suggest starting with **product augmentation** that is the incremental exploitation of digital technologies to enhance products and services for more optimal value creation while simultaneously exploring customer needs closely, second after gaining more intimate customer knowledge the suggest firms **define a portfolio of distinct digital business models** catering for

each identified value proposition, thirdly firms may **integrate the portfolio** of value logics i.e. Digital business models defined in the second phase onto a platform with the objective of exploiting synergies and revenue maximisation, underscoring the higher degree of complexity for DBMI than BMI highlighted in other studies (Soluk, Miroshnychenko, et al., 2021).

(Klos et al., 2023) on the other hand present a slightly different rendition albeit dealing with the same issues, in their step one they propose firms **performing a due diligence** of sorts to understand the **potential disruptive potential** of the digital technology in their operating environment – SWOT analysis of sorts to understand the competitive landscape an aspect overlooked in (Soluk, Miroshnychenko, et al., 2021). Step two aligns with (Soluk, Miroshnychenko, et al., 2021) recommendations in essence suggesting **experimentation with digital business models to enhance value proposition, creation and capture**; step three finally from Klos et al. encompasses the nature of DBMI in that to focus on **continuous and iterative business model adaptation** based on market signals, (Veile et al., 2022) highlights similar findings focusing on an inter-independent impact on all three business model dimensions.

While other authors are not directly proffering prescriptive implementation frameworks for DBMI, their findings are worth discussion because they also offer perhaps guiding principles for DBMI implementation. (Perelygina et al., 2022) focusing on the travel industry offer the following perceptions, similar to both (Klos et al., 2023) and (Soluk, Miroshnychenko, et al., 2021) Perelygina et al. emphasise the importance of understanding a firms evolving competitive landscape to sense emerging technological trends together with the sensing they include deliberate efforts to also learn from extant business models in a firms operating environment and to highlight the importance of focusing on the customer(value proposition) by offering personalisation and omnichannel experiences.

(Ammirato et al., 2022) with a focus on the cultural tourism industry also offers supplementary insights from the industry, indicating similarly to (Klos et al., 2023; Perelygina et al., 2022; Soluk, Miroshnychenko, et al., 2021)that firms in this industry need to also understand their competitive landscape and leverage digital technologies to enhance customer experiences (value proposition and creation) and to pursue novel revenue models (value capture).

Other contributions offer dedicated digital technologies perspectives, (Burström et al., 2021) focuses on leveraging artificial intelligence(AI) technologies in the manufacturing industry to innovate business models and their findings recommend similar approaches to other highlighted authors, involving in the initial stages using AI to enhance value propositions for customers, second using maturing AI capabilities to develop enhanced value capture mechanisms and in the final stages through advanced AI learning the augmentation of value creation with minimal human intervention.

(Paiola et al., 2022) advances the account for DBMI implementation strategies by focusing on how DBMI is driven through internet of things(IoT) technology in a manufacturing industry, Paiola et al. distinguish between three phases, firstly the inception phase entailing strategic endorsement for DBMI and decision-making to leverage IoT for value propositions augmentation by top management team. The second phase, experimentation involving enhancement of extant service offerings through IoT capabilities. The final phase, replication, seeks to pervasively commercialise developed IoT service models through iterative learning and collaboration with the goal of reinventing revenue models for the firm, evidently Paiola et al. aligns with approaches articulate others in particular (Gebauer et al., 2020).

Additionally other related highlights in extant literature, emphasize the importance of other concepts such as the inescapable reality that most of the strategies occur in digital ecosystems (Brock et al., 2019; Burström et al., 2021; Denicolai & Previtali, 2020) ; the importance of stakeholder needs management particularly when DBMI is attempted under low-resource settings (Sengupta et al., 2021); the critical importance of effectively orchestrating resources to competitiveness pressures (Caputo et al., 2021) and the multidisciplinary nature of DBMI requiring both digital asset development and digital capabilities suited to responding to market changes and operating within ecosystems (Verhoef et al., 2021).

4.8 Conclusion

Critically the findings discussion closes with a consolidation of a DBMI implementation framework that directly seeks to answer both the research and practice problem encounter in extant literature i.e. how can firms best implement digital business models to ultimately overcome the digital paradox. A condensed phased approach is articulated that suggests firms need to first identify relevant strategic reasons for augmenting their value propositions, then based on the identified value propositions develop strict complementary

dynamic capabilities within their business models and finally to consider integration of these capabilities into platforms and ecosystems to maximise value creation, capture and delivery. For a definition, Burström et al.(2021) cite's (Moore 1993, p.76): "in a business ecosystem, companies co-evolve capabilities around a new innovation: they work cooperatively and competitively to support new products, satisfy customer needs, and eventually incorporate the next round of innovations".

The structure phased approach may assist firms to develop business model driven customer solutions instead of technology driven solutions, these solutions driven by clear strategic intent incorporating customer involvement to reduce DBMI failure risk and ensure the digital paradox is overcome.

(Moeuf et al., 2020) importantly highlight an overlooked aspect of DBMI implementation strategies i.e. risks, particularly short-termism in strategic outlooks specific by SMEs; the prominence of co-evolutionary innovation of digital business models alongside AI maturation using dynamic feedback loops to enhance AI capabilities while concurrently improving digital business models (Sjodin et al., 2021); another highlighted critical success factor is given by (Haftor & Climent Costa, 2023 and Veile et al., 2022) highlighting the need to simultaneously adapt different dimensions of a business model rather than focusing on a single dimension.

(Matarazzo et al., 2021) and (Sjodin et al., 2023) refocuses our attention on dynamic capabilities as central to DBMI specifically for the purposes of augmenting and automating digital business models through AI, they highlight that AI can lead to value discovery (digital sensing), realisation (digital seizing) and optimisation(continuous reconfiguration of digital business models similar to (Paiola et al., 2022a)) to support DBMI outcomes.

Finally, (Volberda et al., 2021) focuses on three pillars of strategizing in the digital economy that directly impact DBMI, managerial cognitive inform management orientation towards digitisation, digitalisation and digital transformation efforts because as previously discussed without embracing a digital mindset and culture internal firm inertia and path dependencies becomes a barrier to DBMI efforts (Haftor & Climent Costa, 2023). Volberda et al. further stresses the second pillar includes introduction of digital routines as opposed to traditional or extant firm routines to refocus internal firm processes to respond to digital market changes through.

The third pillar stresses the need for new novel organisational forms to realise DBMI benefits because as extant literature has pointed out traditional organisational forms are not suited to DBMI given their rigidity (Volberda et al., 2021; Zhang et al., 2023)

5. Chapter 5 Future Research

5.1 Introduction

Digital business model innovation (DBMI) has emerged as a critical area of study in the context of rapidly evolving technologies and changing market dynamic in the digital economy (Caputo et al., 2021). As firms increasingly adopt digital strategies, understanding the implications of digital technology adoption in firm innovation of business models has become essential for both researchers and practitioners. This document outlines several areas for future research based on current literature review highlighting future research areas.

5.2 Applicability of Existing Models

Although having proposed an implementation framework for DBMI, this guideline may not be universal for all firms in terms their DBMI implementation activities Therefore although several articles highlight DBMI implementations with specific technology or industry perspectives for example in (Ammirato et al., 2022; Chasin et al., 2020; Mancuso et al., 2023; Paiola et al., 2021; Sjödin et al., 2023).

A significant challenge in DBMI research is the universal applicability of presented digital business models or DBMI typology. As one study notes, "It is unclear if our model is applicable to a broader population of firms in fast-changing or moderately dynamic environments." (Warner & Wäger, 2019, p.346).This highlights the need for research that operationalizes existing frameworks across diverse industries or digital technology settings. Future studies should consider the unique characteristics of different sectors and the environmental contexts in which firms operate (Ciampi et al., 2021; Haaker et al., 2021; Leminen et al., 2020; Soluk, Miroshnychenko, et al., 2021).

Similarly, studies may focus on uncovering common industry or technology-specific patterns of digital business models (Ancillai et al., 2023; Caputo et al., 2021) .

To advance this area of research, survey methodologies could be utilized to gather quantitative data on the long-term effects of DBMI on organizational survival, growth, and

performance metrics in different contexts. Such empirical insights would enhance our understanding of how DBMI can be effectively leveraged under varying settings.

Furthermore, the role of emerging digital technologies in shaping business models is another vital research area deserving deeper research. It has been suggested that "future research could explore how ordinary capabilities interact with dynamic capabilities for digital transformation over time." (Warner & Wäger, 2019, p.346) in this case temporal dynamics of DBMI implementation and success becomes an important dimension. Understanding the interaction between these capabilities under different firm environmental contexts is crucial, as firms must leverage their existing competencies while developing new ones to implement DBMI.

Relatedly, further studies are needed to assess startup firm dynamic capability development that could inform insights into new venture launch while employing DBMI (Ghezzi & Cavallo, 2020; (Li et al., 2018). This exploration would contribute to the ongoing debate regarding the role and intended purpose of dynamic capabilities in fostering innovation and adaptability in rapidly changing environments.

5.3 DBMI in platforms and ecosystems

Value propositioning, creation and delivery happens differently under the context of expanded firm organisational boundaries (Autio et al., 2018; Volberda et al., 2021; Palmié et al., 2022). DBMI under these circumstances is distinctly more complex (Paiola & Gebauer, 2020; Soluk, Miroshnychenko, et al., 2021). Future research in this regard could explore the more deeply the contextual dynamics that lead to successful DBMI implementation in digital ecosystems.

5.4 DBMI in Emerging Markets and Economies

Very few articles, except for (Sengupta et al., 2021) offer DBMI perspectives from firms operating under emerging markets or resource constrained market dynamics. Research in this area would expand theorising on DBMI beyond the current predominant western context of the extant literature.

Emerging markets are often characterised by institutional voids and a lack of resources (Barnard et al., 2017; (Barnard & Mamabolo, 2022). Therefore, this particular focus would uncover insights under very different firm and operating market dynamics and socio-economic circumstances that should result in different or more nuanced understanding of DBMI (Ancillai et al., 2023; Paiola et al., 2022).

Relatedly, (Ritter & Pedersen, 2020) point out that research in the areas of the impact digitalisation has on business relationships is in its infancy, and accordingly call for more investigations on how digitalisation for example in the context of platforms and ecosystems impacts on business relationships or inter-firm relations.

Finally meta-ecosystems are also an emerging area of research that finds many digital firms operating or implementing DBMI in meta-ecosystems contexts, future research could focus on DBMI nuances related to meta-ecosystems firm environment (Palmié et al., 2022).

5.5 DBMI leading to Digital servitisation

Research on digital servitisation is nascent but beginning to increase (Ancillai et al., 2023) however most of the current literature is based on a large incumbent firm perspective, future research could widen the perspectives by including SMEs to discover mechanisms and execution pathways, specific resources and capabilities that are most suitable for digital servitisation through DBMI processes in SMEs (Ancillai et al., 2023; Kohtamäki, Parida, Patel, et al., 2019).

5.6 DBMI and Management cognition

Extant literature indicates that one of the major barriers to DBMI implementation or indeed adoption of a digital mindset is managerial or leadership cognition (Gebauer et al., 2020) referring to cognitive hurdles management teams collectively or at an individual level may harbour that lead to inhibitions about the use of digital technologies or redesign of business models (Volberda et al., 2021).

Research in this area could focus on uncovering ways to overcome cognitive hurdles by management teams with a specific focus on new mental model adoption by individual in management teams navigating the digital landscape faced by their firms.

This is however not limited to management teams, individual employee acquisition of digital skills is also crucial for DBMI, and the smooth adoption and execution of new digital routines and processes aligned to DBMI outcomes (Volberda et al., 2021).

5.7 Conclusion

Scholarship adoption of DBMI as a distinct construct is vital for future cumulative theorising with clear conceptual boundaries (Fabian et al., 2023) within the conflated digital transformation domain literature which has inhibited focused and nuanced research in

specific topic areas (Verhoef et al., 2021; Vial, 2019). For the most part DBMI research presents several technology or industry specific perspectives at a firm level, I would argue DBMI itself or digital business models created through these varying contexts needs to be unified at the very least at an industry or digital technology level because the current corpus has high degrees of fragmentation that often leads to conflation and construct and/or conceptual intersections (Vial, 2019).

Additionally extant literature is overly centralised to developed world insights, pursuing insights from emerging markets will certainly enhance theory building on DBMI (Sengupta et al., 2021). Finally transformational leadership and employee engagement, essential for DBMI or digital transformation undertakings (Volberda et al., 2021) cannot effectively be exercised without a leadership and employee capability free of cognition hurdles, research on DBMI must investigate management and subordinate strategies for overcoming digital mindset barriers and increasing digital orientation for more beneficial DBMI execution.

6. References

- Acciarini, C., Cappa, F., Boccardelli, P., & Oriani, R. (2023). How can organizations leverage big data to innovate their business models? A systematic literature review. *Technovation*, 123. <https://doi.org/10.1016/j.technovation.2023.102713>
- Amit, R., & Zott, C. (2001). Value creation in e-business. *Strategic Management Journal*, 22(6–7), 493–520. <https://doi.org/10.1002/smj.187>
- Ammirato, S., Felicetti, A. M., Linzalone, R., & Carlucci, D. (2022). Digital business models in cultural tourism. *International Journal of Entrepreneurial Behaviour and Research*, 28(8), 1940–1961. <https://doi.org/10.1108/IJEER-01-2021-0070>
- Ancillai, C., Sabatini, A., Gatti, M., & Perna, A. (2023). Digital technology and business model innovation: A systematic literature review and future research agenda. *Technological Forecasting and Social Change*, 188. <https://doi.org/10.1016/j.techfore.2022.122307>
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology: Theory and Practice*, 8(1), 19–32. <https://doi.org/10.1080/1364557032000119616>
- Autio, E., Nambisan, S., Thomas, L. D. W., & Wright, M. (2018). Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal*, 12(1), 72–95. <https://doi.org/10.1002/sej.1266>
- Baden-Fuller, C., & Haefliger, S. (2013). Business Models and Technological Innovation. *Long Range Planning*, 46(6), 419–426. <https://doi.org/10.1016/j.lrp.2013.08.023>
- Barnard, H., Cuervo-Cazurra, A., & Manning, S. (2017). Africa Business Research as a Laboratory for Theory-Building: Extreme Conditions, New Phenomena, and Alternative Paradigms of Social Relationships. *Management and Organization Review*, 13(3), 467–495. <https://doi.org/10.1017/mor.2017.34>
- Barnard, H., & Mamabolo, A. (2022). On religion as an institution in international business: Executives' lived experience in four African countries. *Journal of World Business*, 57, 1090–1095. <https://doi.org/10.1016/j.jwb.2021.101262>
- Barrett, C. B., Ghezzi-Kopel, K., Hoddinott, J., Homami, N., Tennant, E., Upton, J., & Wu, T. (2021). A scoping review of the development resilience literature: Theory, methods and evidence. *World Development*, 146. <https://doi.org/10.1016/j.worlddev.2021.105612>
- Bhatti, S. H., Santoro, G., Khan, J., & Rizzato, F. (2021a). Antecedents and consequences of business model innovation in the IT industry. *Journal of Business Research*, 123, 389–400. <https://doi.org/10.1016/j.jbusres.2020.10.003>
- Bhatti, S. H., Santoro, G., Khan, J., & Rizzato, F. (2021b). Antecedents and consequences of business model innovation in the IT industry. *Journal of Business Research*, 123, 389–400. <https://doi.org/10.1016/j.jbusres.2020.10.003>

- Böttcher, T. P., & Weking, J. (2020). IDENTIFYING ANTECEDENTS AND OUTCOMES OF DIGITAL BUSINESS MODEL INNOVATION. *ECIS*.
- Böttcher, T. P., Weking, J., Hein, A., Böhm, M., & Krcmar, H. (2022). Pathways to digital business models: The connection of sensing and seizing in business model innovation. *Journal of Strategic Information Systems*, 31(4).
<https://doi.org/10.1016/j.jsis.2022.101742>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Brock, K., den Ouden, E., van der Klauw, K., Podoyntsyna, K., & Langerak, F. (2019). Light the way for smart cities: Lessons from Philips Lighting. *Technological Forecasting and Social Change*, 142, 194–209.
<https://doi.org/10.1016/j.techfore.2018.07.021>
- Broekhuizen, T. L. J., Emrich, O., Gijsenberg, M. J., Broekhuis, M., Donkers, B., & Sloot, L. M. (2019). *Digital platform openness: Drivers, dimensions and outcomes*.
<https://doi.org/10.1016/j.jbusres.2019.07.001>
- Burström, T., Parida, V., Lahti, T., & Wincent, J. (2021). AI-enabled business-model innovation and transformation in industrial ecosystems: A framework, model and outline for further research. *Journal of Business Research*, 127, 85–95.
<https://doi.org/10.1016/j.jbusres.2021.01.016>
- Caputo, A., Pizzi, S., Pellegrini, M. M., & Dabićdabić, M. (2021). Digitalization and business models: Where are we going? A science map of the field. *Journal of Business Research*, 123, 148–2963. <https://doi.org/10.1016/j.jbusres.2020.09.053>
- Chasin, F., Paukstadt, U., Gollhardt, T., & Becker, J. (2020). Smart energy driven business model innovation: An analysis of existing business models and implications for business model change in the energy sector. *Journal of Cleaner Production*, 269.
<https://doi.org/10.1016/j.jclepro.2020.122083>
- Chauhan, C., Parida, V., & Dhir, A. (2022). Linking circular economy and digitalisation technologies: A systematic literature review of past achievements and future promises. *Technological Forecasting and Social Change*, 177.
<https://doi.org/10.1016/j.techfore.2022.121508>
- Chen, Y., Visnjic, I., Parida, V., Zhang, Z., Rabetino, R., Kohtam, M., Kowalkowski, C., Baines, T. S., & Sousa Yihua Chen, R. (2021). On the road to digital servitization-The (dis)continuous interplay between business model and digital technology of Operations & Production Management editorial team and Servitization 2.0 Special Issue Editors. *International Journal of Operations & Production Management*, 41(5), 144–3577. <https://doi.org/10.1108/IJOPM-08-2020-0544>
- Chesbrough, H. (2010). Business Model Innovation: Opportunities and Barriers. *Long Range Planning*, 43(2–3), 354–363. <https://doi.org/10.1016/j.lrp.2009.07.010>
- Ciampi, F., Demi, S., Magrini, A., Marzi, G., & Papa, A. (2021a). Exploring the impact of big data analytics capabilities on business model innovation: The mediating role of

- entrepreneurial orientation. *Journal of Business Research*, 123, 1–13.
<https://doi.org/10.1016/j.jbusres.2020.09.023>
- Ciampi, F., Demi, S., Magrini, A., Marzi, G., & Papa, A. (2021b). Exploring the impact of big data analytics capabilities on business model innovation: The mediating role of entrepreneurial orientation. *Journal of Business Research*, 123.
<https://doi.org/10.1016/j.jbusres.2020.09.023>
- Colquitt, J. A., & Zapata-Phelan, C. P. (2007). TRENDS IN THEORY BUILDING AND THEORY TESTING: A FIVE-DECADE STUDY OF THE ACADEMY OF MANAGEMENT JOURNAL. *Academy of Management Journal*, 50(6), 1281–1303.
<https://doi.org/10.5465/AMJ.2007.28165855>
- Corley, K. G. , & Gioia, D. A. (2011). Building theory about theory building: What constitutes a theoretical contribution? *Academy of Management Review*, 16(1), 12–32. <https://doi.org/10.5465/amr.2009.0486>
- Creswell, J. W., Hanson, W. E., Clark Plano, V. L., & Morales, A. (2007). Qualitative Research Designs: Selection and Implementation. *The Counseling Psychologist*, 35(2), 236–264. <https://doi.org/10.1177/0011000006287390>
- De Reuver, M., Sørensen, C., & Basole, R. C. (2017). *The digital platform: a research agenda*. <https://doi.org/10.1057/s41265>
- Denicolai, S., & Previtali, P. (2020). Precision Medicine: Implications for value chains and business models in life sciences. *Technological Forecasting and Social Change*, 151.
<https://doi.org/10.1016/j.techfore.2019.119767>
- Fabian, M., Trischler, G., & Li-Ying, J. (2023). Digital business model innovation: toward construct clarity and future research directions. *Review of Managerial Science*, 17, 3–32. <https://doi.org/10.1007/s11846-021-00508-2>
- Frank, A. G., Mendes, G. H. S., Ayala, N. F., & Ghezzi, A. (2019). Servitization and Industry 4.0 convergence in the digital transformation of product firms: A business model innovation perspective. *Technological Forecasting and Social Change*, 141, 341–351.
<https://doi.org/10.1016/j.techfore.2019.01.014>
- Gebauer, H., Arzt, A., Kohtamäki, M., Lamprecht, C., Parida, V., Witell, L., & Wortmann, F. (2020). How to convert digital offerings into revenue enhancement-Conceptualizing business model dynamics through explorative case studies. *Industrial Marketing Management*, 91, 429–441. <https://doi.org/10.1016/j.indmarman.2020.10.006>
- Ghezzi, A., & Cavallo, A. (2020). Agile Business Model Innovation in Digital Entrepreneurship: Lean Startup Approaches. *Journal of Business Research*, 110, 519–537. <https://doi.org/10.1016/j.jbusres.2018.06.013>
- Ghosh, S., Hughes, M., Hodgkinson, I., & Hughes, P. (2022a). Digital transformation of industrial businesses: A dynamic capability approach. *Technovation*, 113.
<https://doi.org/10.1016/j.technovation.2021.102414>

- Ghosh, S., Hughes, M., Hodgkinson, I., & Hughes, P. (2022b). Digital transformation of industrial businesses: A dynamic capability approach. *Technovation*, 113. <https://doi.org/10.1016/j.technovation.2021.102414>
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology. *Organizational Research Methods*, 16(1), 15–31. <https://doi.org/10.1177/1094428112452151>
- Haaker, T., Ly, P. T. M., Nguyen-Thanh, N., & Nguyen, H. T. H. (2021a). Business model innovation through the application of the Internet-of-Things: A comparative analysis. *Journal of Business Research*, 126, 126–136. <https://doi.org/10.1016/j.jbusres.2020.12.034>
- Haaker, T., Ly, P. T. M., Nguyen-Thanh, N., & Nguyen, H. T. H. (2021b). Business model innovation through the application of the Internet-of-Things: A comparative analysis. *Journal of Business Research*, 126, 126–136. <https://doi.org/10.1016/j.jbusres.2020.12.034>
- Haftor, D. M., & Climent Costa, R. (2023). Five dimensions of business model innovation: A multi-case exploration of industrial incumbent firm's business model transformations. *Journal of Business Research*, 154. <https://doi.org/10.1016/j.jbusres.2022.113352>
- Henard, D. H., & McFadyen, M. A. (2005). The complementary roles of applied and basic research: A knowledge-based perspective. *Journal of Product Innovation Management*, 22(6), 503–514. <https://doi.org/10.1111/j.1540-5885.2005.00146.x>
- Hiteva, R., & Foxon, T. J. (2021). Beware the value gap: Creating value for users and for the system through innovation in digital energy services business models. *Technological Forecasting and Social Change*, 166. <https://doi.org/10.1016/j.techfore.2020.120525>
- Jafari-Sadeghi, V., Garcia-Perez, A., Candelo, E., & Couturier, J. (2021). Exploring the impact of digital transformation on technology entrepreneurship and technological market expansion: The role of technology readiness, exploration and exploitation. *Journal of Business Research*, 124, 100–111. <https://doi.org/10.1016/j.jbusres.2020.11.020>
- Johnson, J. L., Adkins, D., & Chauvin, S. (2020). A review of the quality indicators of rigor in qualitative research. *American Journal of Pharmaceutical Education*, 84(1), 138–146. <https://doi.org/10.5688/ajpe7120>
- Kiel, D., Arnold, C., & Voigt, K.-I. (2017). The influence of the Industrial Internet of Things on business models of established manufacturing companies-A business level perspective Business model Business model innovation Expert interviews Multiple case study Manufacturing. *Technovation*, 68, 4–19. <https://doi.org/10.1016/j.technovation.2017.09.003>
- Klos, C., Spieth, P., Clauss, T., & Klusmann, C. (2023). Digital Transformation of Incumbent Firms: A Business Model Innovation Perspective. *IEEE Transactions on*

- Engineering Management*, 70(6), 2017–2033.
<https://doi.org/10.1109/TEM.2021.3075502>
- Kohtamäki, M., Parida, V., Oghazi, P., Gebauer, H., & Baines, T. (2019). Digital servitization business models in ecosystems: A theory of the firm. *Journal of Business Research*, 104, 380–392. <https://doi.org/10.1016/j.jbusres.2019.06.027>
- Kohtamäki, M., Parida, V., Patel, P. C., & Gebauer, H. (2019). *The relationship between digitalization and servitization: The role of servitization in capturing the financial potential of digitalization*. <https://doi.org/10.1016/j.techfore.2019.119804>
- Leminen, S., Rajahonka, M., Wendelin, R., & Westerlund, M. (2020). Industrial internet of things business models in the machine-to-machine context. *Industrial Marketing Management*, 84, 298–311. <https://doi.org/10.1016/j.indmarman.2019.08.008>
- Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). *Scoping studies: advancing the methodology*. <http://www.cihr-irsc.ca>
- Li, F. (2020a). The digital transformation of business models in the creative industries: A holistic framework and emerging trends. *Technovation*, 92–93. <https://doi.org/10.1016/j.technovation.2017.12.004>
- Li, F. (2020b). The digital transformation of business models in the creative industries: A holistic framework and emerging trends. *Technovation*, 92–93. <https://doi.org/10.1016/j.technovation.2017.12.004>
- Li, L., Su, F., Zhang, W., & Mao, J. Y. (2018). Digital transformation by SME entrepreneurs: A capability perspective. *Information Systems Journal*, 28(6), 1129–1157. <https://doi.org/10.1111/isj.12153>
- Li, Z., Xie, W., Wang, Z., Wang, Y., & Huang, D. (2023a). Antecedent configurations and performance of business models of intelligent manufacturing enterprises. *Technological Forecasting and Social Change*, 193. <https://doi.org/10.1016/j.techfore.2023.122550>
- Li, Z., Xie, W., Wang, Z., Wang, Y., & Huang, D. (2023b). Antecedent configurations and performance of business models of intelligent manufacturing enterprises. *Technological Forecasting and Social Change*, 193. <https://doi.org/10.1016/j.techfore.2023.122550>
- Mancuso, I., Messeni Petruzzelli, A., & Panniello, U. (2023). Innovating agri-food business models after the Covid-19 pandemic: The impact of digital technologies on the value creation and value capture mechanisms. *Technological Forecasting and Social Change*, 190. <https://doi.org/10.1016/j.techfore.2023.122404>
- Marcon, É., Le Dain, M. A., & Frank, A. G. (2022). Designing business models for Industry 4.0 technologies provision: Changes in business dimensions through digital transformation. *Technological Forecasting and Social Change*, 185. <https://doi.org/10.1016/j.techfore.2022.122078>
- Matarazzo, M., Penco, L., Profumo, G., & Quaglia, R. (2021). Digital transformation and customer value creation in Made in Italy SMEs: A dynamic capabilities perspective.

- Journal of Business Research*, 123, 642–656.
<https://doi.org/10.1016/j.jbusres.2020.10.033>
- Moeuf, A., Lamouri, S., Pellerin, R., Tamayo-Giraldo, S., Tobon-Valencia, E., & Eburdy, R. (2020). Identification of critical success factors, risks and opportunities of Industry 4.0 in SMEs. *International Journal of Production Research*, 58(5), 1384–1400.
<https://doi.org/10.1080/00207543.2019.1636323>
- Morse, J. M. (2015). Critical Analysis of Strategies for Determining Rigor in Qualitative Inquiry. *Qualitative Health Research*, 25(9), 1212–1222.
<https://doi.org/10.1177/1049732315588501>
- Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification Strategies for Establishing Reliability and Validity in Qualitative Research. *International Journal of Qualitative Methods*, 1(2), 13–22. <https://doi.org/10.1177/160940690200100202>
- Moschko, L., & Blažević, V. (2023). Managing digitization of industrial incumbents through innovation-oriented leadership. *Industrial Marketing Management*, 113, 232–242.
<https://doi.org/10.1016/j.indmarman.2023.06.009>
- Mostaghel, R., Oghazi, P., Parida, V., & Sohrabpour, V. (2022). Digitalization driven retail business model innovation: Evaluation of past and avenues for future research trends. *Journal of Business Research*, 146, 134–145.
<https://doi.org/10.1016/j.jbusres.2022.03.072>
- Müller, J. M., Buliga, O., & Voigt, K. I. (2018). Fortune favors the prepared: How SMEs approach business model innovations in Industry 4.0. *Technological Forecasting and Social Change*, 132, 2–17. <https://doi.org/10.1016/j.techfore.2017.12.019>
- Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital Innovation Management DIGITAL INNOVATION MANAGEMENT: REINVENTING INNOVATION MANAGEMENT RESEARCH IN A DIGITAL WORLD. *Source: MIS Quarterly*, 41(1), 223–238. <https://doi.org/10.2307/26629644>
- Nambisan, S., Wright, M., & Feldman, M. (2019). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. *Research Policy*, 48(8).
<https://doi.org/10.1016/j.respol.2019.03.018>
- Paiola, M., Agostini, L., Grandinetti, R., & Nosella, A. (2022a). The process of business model innovation driven by IoT: Exploring the case of incumbent SMEs. *Industrial Marketing Management*, 103, 30–46.
<https://doi.org/10.1016/j.indmarman.2022.03.006>
- Paiola, M., Agostini, L., Grandinetti, R., & Nosella, A. (2022b). The process of business model innovation driven by IoT: Exploring the case of incumbent SMEs. *Industrial Marketing Management*, 103, 30–46.
<https://doi.org/10.1016/j.indmarman.2022.03.006>
- Paiola, M., & Gebauer, H. (2020a). Internet of things technologies, digital servitization and business model innovation in BtoB manufacturing firms. *Industrial Marketing Management*, 89, 245–264. <https://doi.org/10.1016/j.indmarman.2020.03.009>

- Paiola, M., & Gebauer, H. (2020b). Internet of things technologies, digital servitization and business model innovation in BtoB manufacturing firms. *Industrial Marketing Management*, 89, 245–264. <https://doi.org/10.1016/j.indmarman.2020.03.009>
- Paiola, M., & Gebauer, H. (2020c). Internet of things technologies, digital servitization and business model innovation in BtoB manufacturing firms. *Industrial Marketing Management*, 89, 245–264. <https://doi.org/10.1016/j.indmarman.2020.03.009>
- Paiola, M., Schiavone, F., Grandinetti, R., & Chen, J. (2021). Digital servitization and sustainability through networking: Some evidences from IoT-based business models. *Journal of Business Research*, 132, 507–516. <https://doi.org/10.1016/j.jbusres.2021.04.047>
- Palmié, M., Miehé, L., Oghazi, P., Parida, V., & Wincent, J. (2022). The evolution of the digital service ecosystem and digital business model innovation in retail: The emergence of meta-ecosystems and the value of physical interactions. *Technological Forecasting & Social Change*, 177, 121496. <https://doi.org/10.1016/j.techfore.2022.121496>
- Parida, V., Sjödin, D., & Reim, W. (2019). Reviewing literature on digitalization, business model innovation, and sustainable industry: Past achievements and future promises. In *Sustainability (Switzerland)* (Vol. 11, Issue 2). MDPI. <https://doi.org/10.3390/su11020391>
- Perelygina, M., Kucukusta, D., & Law, R. (2022). Digital business model configurations in the travel industry. *Tourism Management*, 88. <https://doi.org/10.1016/j.tourman.2021.104408>
- Ritter, T., & Pedersen, C. L. (2020). Digitization capability and the digitalization of business models in business-to-business firms: Past, present, and future. *Industrial Marketing Management*, 86, 180–190. <https://doi.org/10.1016/j.indmarman.2019.11.019>
- Schilling, L., & Seuring, S. (2023). Mobile financial service-enabled micro-businesses driving sustainable value creation in emerging markets. *Technological Forecasting and Social Change*, 192. <https://doi.org/10.1016/j.techfore.2023.122596>
- Sengupta, T., Narayanamurthy, G., Hota, P. K., Sarker, T., & Dey, S. (2021). Conditional acceptance of digitized business model innovation at the BoP: A stakeholder analysis of eKutir in India. *Technological Forecasting and Social Change*, 170. <https://doi.org/10.1016/j.techfore.2021.120857>
- Sestino, A., Prete, M. I., Piper, L., & Guido, G. (2020a). Internet of Things and Big Data as enablers for business digitalization strategies. In *Technovation* (Vol. 98). Elsevier Ltd. <https://doi.org/10.1016/j.technovation.2020.102173>
- Sestino, A., Prete, M. I., Piper, L., & Guido, G. (2020b). Internet of Things and Big Data as enablers for business digitalization strategies. In *Technovation* (Vol. 98). Elsevier Ltd. <https://doi.org/10.1016/j.technovation.2020.102173>
- Shepherd, D. A., & Suddaby, R. (2017). Theory Building: A Review and Integration. *Journal of Management*, 43(1), 59–86. <https://doi.org/10.1177/0149206316647102>

- Şimşek, T., Öner, M. A., Kunday, Ö., & Olcay, G. A. (2022). A journey towards a digital platform business model: A case study in a global tech-company. *Technological Forecasting and Social Change*, 175. <https://doi.org/10.1016/j.techfore.2021.121372>
- Sjödin, D., Parida, V., Jovanovic, M., & Visnjic, I. (2020). Value Creation and Value Capture Alignment in Business Model Innovation: A Process View on Outcome-Based Business Models. *Journal of Product Innovation Management*, 37(2), 158–183. <https://doi.org/10.1111/JPIM.12516>
- Sjödin, D., Parida, V., & Kohtamäki, M. (2023). Artificial intelligence enabling circular business model innovation in digital servitization: Conceptualizing dynamic capabilities, AI capacities, business models and effects. *Technological Forecasting and Social Change*, 197. <https://doi.org/10.1016/j.techfore.2023.122903>
- Sjödin, D., Parida, V., Palmié, M., & Wincent, J. (2021). How AI capabilities enable business model innovation: Scaling AI through co-evolutionary processes and feedback loops. *Journal of Business Research*, 134, 574–587. <https://doi.org/10.1016/j.jbusres.2021.05.009>
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Soluk, J., Miroshnychenko, I., Kammerlander, N., & De Massis, A. (2021a). Family Influence and Digital Business Model Innovation: The Enabling Role of Dynamic Capabilities. In *Entrepreneurship Theory and Practice* (Vol. 45, Issue 4).
- Soluk, J., Miroshnychenko, I., Kammerlander, N., & De Massis, A. (2021b). Family Influence and Digital Business Model Innovation: The Enabling Role of Dynamic Capabilities. In *Entrepreneurship Theory and Practice* (Vol. 45, Issue 4).
- Sorescu, A. (2017a). Data-Driven Business Model Innovation. *Journal of Product Innovation Management*, 34(5), 691–696. <https://doi.org/10.1111/JPIM.12398>
- Sorescu, A. (2017b). Perspective Data-Driven Business Model Innovation. *Journal of Product Innovation Management*, 34(5), 691–696. <https://doi.org/10.1111/jpim.12398>
- Su, Z., Wei, J., & Liu, Y. (2023). Digital industrial platform development: A peripheral actor's perspective. *Technological Forecasting and Social Change*, 194. <https://doi.org/10.1016/j.techfore.2023.122683>
- Suddaby, R. (2010). Editor's comments: Construct clarity in theories of management and organization. *Academy of Management Review*, 35(3), 346–357. <https://doi.org/10.5465/amr.35.3.zok346>
- Sund, K. J., Bogers, M. L. A. M., & Sahramaa, M. (2021a). Managing business model exploration in incumbent firms: A case study of innovation labs in European banks. *Journal of Business Research*, 128. <https://doi.org/10.1016/j.jbusres.2021.01.059>
- Sund, K. J., Bogers, M. L. A. M., & Sahramaa, M. (2021b). Managing business model exploration in incumbent firms: A case study of innovation labs in European banks.

- Journal of Business Research*, 128, 11–19.
<https://doi.org/10.1016/j.jbusres.2021.01.059>
- Teece, D. J. (2010). Business Models, Business Strategy and Innovation. *Long Range Planning*, 43, 172–194. <https://doi.org/10.1016/j.lrp.2009.07.003>
- Teece, D. J. (2018). Business models and dynamic capabilities. *Long Range Planning*, 51(1), 40–49. <https://doi.org/10.1016/j.lrp.2017.06.007>
- Toth-Peter, A., Torres De Oliveira, R., Mathews, S., Barner, L., & Figueira, S. (2023). Industry 4.0 as an enabler in transitioning to circular business models: A systematic literature review. *Journal of Cleaner Production*, 393, 136284. <https://doi.org/10.1016/j.jclepro.2023.136284>
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review. In *British Journal of Management* (Vol. 14, Issue 3, pp. 207–222). <https://doi.org/10.1111/1467-8551.00375>
- Veile, J. W., Schmidt, M. C., & Voigt, K. I. (2022a). Toward a new era of cooperation: How industrial digital platforms transform business models in Industry 4.0. *Journal of Business Research*, 143, 387–405. <https://doi.org/10.1016/j.jbusres.2021.11.062>
- Veile, J. W., Schmidt, M. C., & Voigt, K. I. (2022b). Toward a new era of cooperation: How industrial digital platforms transform business models in Industry 4.0. *Journal of Business Research*, 143, 387–405. <https://doi.org/10.1016/j.jbusres.2021.11.062>
- Veile, J. W., Schmidt, M. C., & Voigt, K. I. (2022c). Toward a new era of cooperation: How industrial digital platforms transform business models in Industry 4.0. *Journal of Business Research*, 143, 387–405. <https://doi.org/10.1016/j.jbusres.2021.11.062>
- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda ☆. *Journal of Business Research*, 122, 889–901. <https://doi.org/10.1016/j.jbusres.2019.09.022>
- Vial, G. (2019). *Understanding digital transformation: A review and a research agenda*. <https://doi.org/10.1016/j.jsis.2019.01.003>
- Volberda, H. W., Khanagha, S., Baden-Fuller, C., Mihalache, O. R., & Birkinshaw, J. (2021a). Strategizing in a digital world: Overcoming cognitive barriers, reconfiguring routines and introducing new organizational forms. *Long Range Planning*, 54(5). <https://doi.org/10.1016/j.lrp.2021.102110>
- Volberda, H. W., Khanagha, S., Baden-Fuller, C., Mihalache, O. R., & Birkinshaw, J. (2021b). Strategizing in a digital world: Overcoming cognitive barriers, reconfiguring routines and introducing new organizational forms. *Long Range Planning*, 54, 102110. <https://doi.org/10.1016/j.lrp.2021.102110>
- Volberda, H. W., Khanagha, S., Baden-Fuller, C., Mihalache, O. R., & Birkinshaw, J. (2021c). Strategizing in a digital world: Overcoming cognitive barriers, reconfiguring

routines and introducing new organizational forms. *Long Range Planning*, 54(5).
<https://doi.org/10.1016/j.lrp.2021.102110>

Warner, K. S. R., & Wäger, M. (2019a). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning*, 52, 326–349. <https://doi.org/10.1016/j.lrp.2018.12.001>

Warner, K. S. R., & Wäger, M. (2019b). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning*, 52(3), 326–349. <https://doi.org/10.1016/j.lrp.2018.12.001>

Whetten, D. A. (1989). What Constitutes a Theoretical Contribution? *Academy of Management Review*, 14(4), 490–495.
<https://doi.org/https://doi.org/10.5465/amr.1989.4308371>

Zhang, F., Yang, B., & Zhu, L. (2023). Digital technology usage, strategic flexibility, and business model innovation in traditional manufacturing firms: The moderating role of the institutional environment. *Technological Forecasting and Social Change*, 194. <https://doi.org/10.1016/j.techfore.2023.122726>

Zott, C., & Amit, R. (2010). Business Model Design: An Activity System Perspective. *Long Range Planning*, 43, 216–226. <https://doi.org/10.1016/j.lrp.2009.07.004>

7. Appendices

7.1 Appendix A : Codes, Code Groups and Themes

First-Order Codes	Code Groups	Themes
Agility	Strategic and Operational Agility	Organisational Adaptability
Artificial Intelligence	Digital Technologies	Digital technologies
Big Data Analytics		
BM components	BMI conceptualisation	Differences between DBMI and BMI
BMI conceptualisation		
BMI conceptualisation	DBMI defined	DBMI defined
BMI dimensions	BMI conceptualisation	Differences between DBMI and BMI
Business Model Type	Digital Business Model Archetypes	
Business Model Type	Digital business models	
Chief Digital Officer	Organisational team forms	Organisational Adaptability
Cognition	Cognition	Management and Team cognition
Cognition	Management and Team cognition	
Competitive advantage through DBMI	Competitive advantage through DBMI	Competitiveness through DBMI
Competitive environment		
Competitive pressures		

First-Order Codes	Code Groups	Themes	
Covid-19 as a DBMI accelerant	DBMI under crisis situation	Differences between DBMI and BMI	
Customer knowledge and engagement	Customer centricity	Customer centricity	
DBMI @ BoP	DBMI conceptualisation	Differences between DBMI and BMI	
DBMI antecedents	DBMI antecedents	DBMI antecedents	
DBMI approach	DBMI approach	DBMI implementation	
DBMI barriers	DBMI barriers	Organisational Adaptability	
DBMI BM impact	DBMI BM component impact	DBMI BM component impact	
DBMI conceptualisation	DBMI conceptualisation	Differences between DBMI and BMI	
DBMI conceptualisation	DBMI Business Model Archetypes		
DBMI conceptualisation	DBMI defined	DBMI defined	
DBMI idiosyncracies	DBMI idiosyncracies	Differences between DBMI and BMI	
DBMI idiosyncracies	DBMI is idiosyncratic		
DBMI is complex	DBMI is complex		
DBMI is iterative	DBMI is non-linear and complex		
DBMI is non-linear	DBMI is non-linear		
DBMI is transformative	DBMI is transformative		
DBMI linked to Org Strategy	BMI conceptualisation		
DBMI linked to Org Strategy	DBMI linked to Org Strategy		
DBMI short-term v long-term impact under crisis	DBMI under crisis situation		
DBMI study location context	DBMI location context		
DBMI typology/taxonomy	DBMI conceptualisation		
DBMI typology/taxonomy	DBMI typology/taxonomy		
Digital Assets	Digital Assets		
Digital Business Model Archetypes	Digital Business Models		
Digital Business Models	DBMI defined		DBMI defined
Digital Business Models	Digital Business Model Archetypes		Differences between DBMI and BMI
Digital Business Models	Hybrid Business Models		
Digital Ecosystems	Digital Ecosystems and Platforms		Digital Ecosystems and Platforms
Digital Mindset	Digital Mindset		Management and Team cognition
Digital Mindset	Management and Team cognition		
Digital Mindset	Organisational Culture	Organisational Adaptability	

First-Order Codes	Code Groups	Themes
Digital paradox	Digital paradox	Digital paradox
Digital paradox	Strategic and Digital Paradox	
Digital Platforms	DBMI in Digital Ecosystems and Platforms	Digital Ecosystems and Platforms
Digital Platforms	Digital Platforms	
Digital Routines	Digital Routines	Organisational Adaptability
Digital Routines	Digital Technologies	Digital Technologies
Digital Servitisation	Digital Servitisation	Digital Servitisation
Digital Skills	Digital Skills	Management and Team cognition and competency
Digital Skills	Management and Team competency	
Digital Technologies	Digital Technologies	Digital Technologies
Digital Technology adoption benefits		
Digital Technology impact on DBMI		
Digital Technology impact t DTs	Digital Technology BM component impact	Digital Technologies BM component impact
Digital Technology ubuquity	Digital Technologies	Digital Technologies
Digital Transformation	Digital Transformation	Differences between DBMI and BMI
Digital Transformation	Digital Technologies	Digital Technologies
Dual business models	Hybrid Business Models	Differences between DBMI and BMI
Firm performance	Competitive advantage through DBMI	Competitiveness through DBMI
Firm Size	Firm type and size	Differences between DBMI and BMI
Hybrid Business Models	Hybrid Business Models	
Industry 4.0	Digital Technologies	Digital Technologies
Industry perspective	Industry perspectives	Industry perspectives
Institutional Environment	DBMI operational environment	Differences between DBMI and BMI
Internet-of-things	Internet-of-things	Digital Technologies
Novel Organisational Forms	Novel Organisational Forms	Organisational Adaptability
Organisational Boundaries	Organisational Forms	
Organisational Culture	Organisational adaptability	
Organisational Culture	Organisational Culture	
Organisational inertia	DBMI barriers	
Organisational internal changes	Organisational internal structure redesign	
Organisational internal changes	Organisational internal changes	

First-Order Codes	Code Groups	Themes
Resource based-view	Resource based-view	Resource based-view
Seizing Capabilities	Dynamic Capabilities	Dynamic Capabilities
Sensing and Seizing Capabilities		
Sensing Capabilities		
Servitisation	Digital Servitisation	Digital Servitisation
Traditional Business models	Traditional Business models	Differences between DBMI and BMI
Transactional Leadership	Leadership	Leadership in DBMI
Transformational Leadership	Transformational Leadership	
Value propositions, creation and delivery	Value architecture in DBMI	Value architecture in DBMI

7.2 Appendix B: Articles Reviewed

Publisher	Totals
ECIS	1
Entrepreneurship: Theory and Practice	1
IEEE Transactions on Engineering Management	1
Industrial Marketing Management	6
Information Systems Journal	1
International Journal of Entrepreneurial Behaviour and Research	1
International Journal of Production Research	1
Journal of Business Research	17
Journal of Cleaner Production	2
Journal of Information Technology	1
Journal of Product Innovation Management	1
Journal of Strategic Information Systems	1
Long Range Planning	4
Management Review Quarterly	1
MIS Quarterly	1
Research Policy	1
Review of Managerial Science	1
Strategic Entrepreneurship Journal	1
Sustainability	1
Technological Forecasting and Social Change	19
Technovation	4
Tourism Management	1
Grand Total	68