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The Role of Business Model Innovation in the IT Services Sector: a Comprehensive Mapping Review

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Purpose: The study analyzes the evolution of Business Model Innovation (BMI) in the IT sector, which is mentioned in many available scientific publications. The major output of this paper is concrete customer requirements that invite business model innovations to managed IT services and challenges to establish corresponding business model innovations.

Design/Method/Approach: The study identified more than 200 journal articles and conference articles with BMI and IT service providers, and it conducted a mapping review of current research to identify relevant academic theories, implementation strategies, and BMI in the managed IT service sector while highlighting gaps in empirical research.

Findings: Most applied are BMI and the framework of dynamic capabilities in business models of IT services. Early movers, who develop a comprehensive platform strategy, can achieve an invulnerable moat and establish a leading market position.

Practical Implications: The insights of this study could be applied by large companies, small- and medium-sized companies and start-ups, researchers, etc. They can use the insights to innovate their current business models and improve tailored client solutions.

Originality/Value: The study concludes that business model innovations and IT service providers develop areas for future success.

Research Limitations/Future Research: The design of the study is based on a systematic literature review and limited to the areas of BMI research in the IT service sector. For further research projects, individual articles can be chosen to perform in-depth analysis. Our trend analysis shows the focus on main technologies. However, this can be compared with the technologies mentioned in the Gartner Hype Cycle. Further research could be conducted to overcome limitations and cover the uncertain content of this research.

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Роль інноваційних бізнес-моделей у секторі ІТ-послуг: комплексний картографічний огляд

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Мета роботи: У дослідженні проаналізовано еволюцію інноваційних бізнес-моделей (ІБМ) в ІТ-секторі, яка згадується в багатьох доступних наукових публікаціях. Основним результатом цієї роботи є конкретні вимоги клієнтів, які впроваджують інноваційні бізнес-моделі до керованих ІТ-послуг, а також виклики для створення відповідних інновацій бізнес-моделі.

Дизайн / Метод / Підхід дослідження: В ході дослідження було виявлено понад 200 журнальних статей та статей на конференціях, присвячених ІБМ та постачальникам ІТ-послуг, а також проведено картографічний огляд поточних досліджень для визначення відповідних академічних теорій, стратегій впровадження та ІБМ у секторі керованих ІТ-послуг, а також висвітлено прогалини в емпіричних дослідженнях.

Результати дослідження: Найбільш прикладними є ІБМ та концепція динамічних можливостей у бізнес-моделях ІТ-послуг. Ті, хто першими розробляють комплексну стратегію платформи, можуть досягти недосяжної відстані і зайняти лідируючу позицію на ринку.

Практична цінність дослідження: Висновки цього дослідження можуть бути застосовані великими компаніями, малими та середніми компаніями, стартапами, дослідниками тощо. Вони можуть використати висновки для інновацій своїх поточних бізнес-моделей та покращення індивідуальних рішень для клієнтів.

Оригінальність / Цінність дослідження: Дослідження дійшло висновку, що інновації бізнес-моделей та постачальники ІТ-послуг розвивають напрямки для майбутнього успіху.

Обмеження дослідження / Майбутні дослідження: Дизайн дослідження базується на систематичному огляді літератури і обмежується сферами дослідження ІБМ в секторі ІТ-послуг. Для подальших дослідницьких проектів можуть бути обрані окремі статті для проведення поглибленого аналізу. Наш аналіз тенденцій показує, що основна увага приділяється основним технологіям. Однак це можна порівняти з технологіями, згаданими в циклі хайпу Gartner. Подальші дослідження можуть бути проведені для подолання обмежень і висвітлення невизначеного змісту цього дослідження.

Тип статті: Концептуальний

Ключові слова: постачальник ІТ-послуг, інноваційні бізнес-моделі, цифровізація, цифрова трансформація.

1. Introduction

The information technology (IT) sector has long been characterized by intense competition, and the challenges have only intensified with the advent of the Covid-19 pandemic. The years 2020 and 2021 witnessed an unprecedented surge in demand for IT services as businesses hurriedly embraced remote communication and digitalization of their processes. However, the post-pandemic landscape in 2022 presented managed service providers with a new reality (Schiuma et al., 2021) – a consolidation of demand and a customer base that had successfully upgraded their digital foundations and formed partnerships with trusted managed providers (Putch, 2020). As a result, the barriers to entry into the managed services sector have grown, while customers have become discerning, expecting exceptional technical performance from their partners (Alkhatib & Valeri, 2022).

Managed IT Services encompass a range of IT activities performed by service providers for customers, spanning from basic support to complex problem-solving services stated by Focaccia et al. (2013). With new technological trends unfolding, the managed services segment is presented with abundant opportunities for innovation (Van Kuiken, 2022). The explosion of data volumes in clouds, projected to reach an annual 180 zettabytes by 2025 (Taylor, 2022), and the advent of 5G technologies that have revolutionized wireless transmission frequencies, coupled with the anticipated surge in artificial intelligence (AI) usage, all open doors for managed IT service providers to integrate these technologies into radically innovative business models (Kok et al., 2009). By embracing these opportunities, providers can gain a competitive edge or even revolutionize the entire IT services sector.

The objective of this article is to make significant contributions to the existing body of knowledge on business model innovation in the context of IT managed services. Through a comprehensive literature review conducted over the past six years, this study seeks to map out the landscape of academic research on “business model innovation” and “IT managed services”. By analyzing and classifying existing literature, this review establishes an academic framework for understanding and categorizing business model innovation within the managed services sector. Additionally, this article aims to identify research gaps that require further exploration to advance insights in the field of business model innovation in managed services. By bridging the gap between theory and practice, this study will provide valuable guidance for practitioners in the development of novel and groundbreaking business models.

The key research questions that this article seeks to address are:

- Which theories, methods and data is empirical academic research in business model innovation in managed IT services based on and how can they be classified?
- Which research gaps should future academic research work on to advance insights into business model innovation in managed services?

2. Material and Methods

The study uses a mapping review methodology as suggested by Arksey and O'Malley (2005), which classifies the research aim of this study among a literature review method (Xiao & Watson, 2019): systematic reviews (e.g. Webster & Watson, 2002) are adequate when the exact research field has already been mapped and more detailed information on a specific issue is required. Meta-analyses (Glass, 1976; Sandelowski et al., 2007) covering a broader range of studies usually using quantitative methods are adequate when a very large number of similarly designed studies are meant to be compared. Neither systematic nor meta-analytical reviews, however, are adequate to work on the above-mentioned research questions. The range of theories underlying business model innovation (BMI) research is very broad, so that study methods, design and outcomes are not directly comparable. Business model innovation in the IT services sector

covers a broad range of fields from data storage to blockchain, and approaches and outcomes are hard to compare based on classical coding.

A mapping review is a comparatively recent approach to provide a non-quantitative overview of a scattered study field and has been gaining in importance with the expansion of research volumes and ranges in the age of the Internet. It is classified in the field of scoping studies (Mays et al., 2001, p. 194), which generally aim at rapidly probing into innovative areas of research. Additionally, they are often applied to prepare more specific systematic research in a part of domain. A key intention of mapping reviews is outlining the research gaps for further empirical analysis (Arksey & O'Malley, 2005). Following the stage of defining the research questions, which has been accomplished in section 1, relevant studies in the research field of BMI in the managed services sector have to be identified, selected, charted and reported in a systematic form. To focus on academic and validated research, five academic databases – WISO, Ebscohost, Science Direct, Taylor Francis, Web of Knowledge/ Web of science, IEEE conference database and Scholar Google are searched applying a uniform and comprehensive keyword string: “IT service provider” OR “managed service provider”, AND “B2B”, AND “business model innovation” OR “innovation” AND “empirical”.

The research is initially limited to publications in English and as to publication time, which comprises the years from 2017 to 2023, to ensure topicality of results given the highly dynamic environment of the IT service sector, which has undergone significant changes with the emergence of industry 4.0, AI, data clouds and blockchain technologies (Mu & Wang, 2020; Shrivastava et al., 2021; Hardjanto, 2022). The mapping of novel technological development in the managed services sector is a special concern of this study. A PRISMA protocol (Ritchie et al., 1994) is drafted to further deselect redundant, unfounded, and non-concise studies and to systematize the results as shown in Fig 1.

Applying the research string, 261 studies are identified in the above-mentioned data bases. Since detailed analysis of the study contents is required, studies which are not available in full text are discarded (n= 133). Furthermore, non-academic publications outside of peer-reviewed academic journals or conferences are not considered (n= 73). Double records in several databases are also eliminated (n= 13). Overall, 42 studies remain for further screening based on the titles and abstracts.

Studies are deselected after reading through the abstract if they obviously do not fit in content (5 studies), have not got an empirical background (2 studies) or do not focus on the managed IT services sector (4 studies). The remaining 31 studies are evaluated based on the full texts. Again, studies not referring to business model innovation (n= 5) or not founded in content (n= 3) are discarded. 23 studies remain for final analysis and show a range between the publication years of 2017 and 2023, which is illustrated in Fig 2.

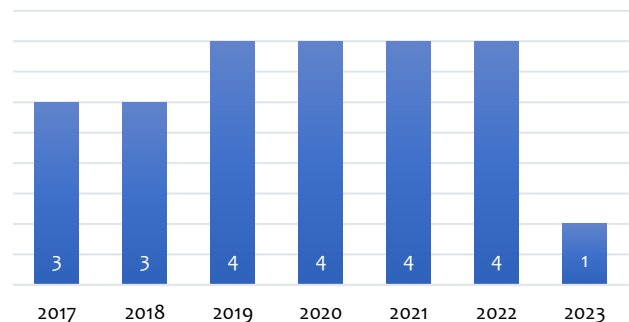


Figure 2: Number of studies by year

Source: Research Results, 2023

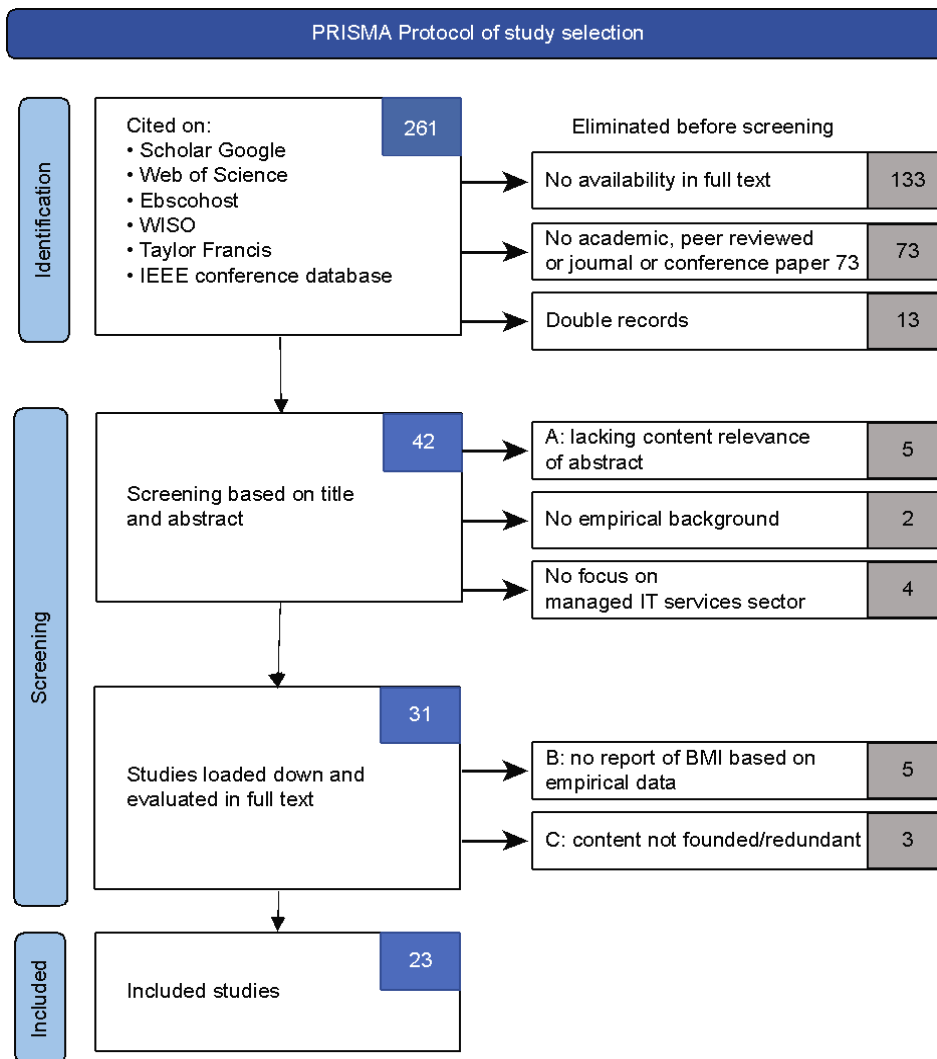


Figure 1: PRISMA Protocol of study selection

Source: Research Results, 2023

This preselection process grants that only high-quality research in business model innovation in the managed service provider sector is considered. The selected studies are mapped in a graphical chart.

The mapping process is based on the principles of Grounded Theory, which suggests systematically evaluating qualitative data in an inductive bottom-up way to stick as tightly to original reports as possible, develop an emerging theory directly from the data and thus, possibly, avoid researchers' biases (Glaser & Strauss, 1967; Glaser & Strauss, 1998; Schmidt et al., 2015). Following this methodological framework, the study contents are charted based on the research questions. In addition to that, applied theories and reported innovative business models are classified and, in the coding process itself, further codes are developed. This approach ensures that no prior framing is applied to the structure of the research field. Structuring principles result from the studies themselves and thus are a-priori validated.

The map emerging from this innovative coding approach is shown in Fig. 3. The major coded categories comprise major applied theories and methods, BMI concepts and strategies of MSPs (Research Question 1).

3. Literature Review

The literature review addresses Research Question 1 "Which theories, methods and data is empirical academic research in business model innovation in managed IT services based on?". In addition, this section evaluates academic literature and theories, which are available research for managed service providers' business

model innovation. Theories and research methods are shown in the left-hand sectors of the review overview (Fig. 3).

In correspondence with the research aim, 20 of 23 selected studies have got an empirical focus: nine are based on case studies usually involving one or few in-depth business analyses. Six conduct interviews with involved founders or managers of managed service providers. Two studies are based on a quantitative survey or on financial data analysis, two apply a mixed methodology of interviews and quantitative survey.

Two major theory-fields are identified in the mapping process: business model innovation theory and the theory of dynamic capabilities.

3.1. Business Model Innovation Theory

According to Spieth et al. (2014, p. 238), the concept of "Business model innovation" suffers from "fuzziness and low consistency in the conceptual framework". The term "business model innovation" was coined by Amit and Zott (2010, 2012) and comprises the terms "innovation" and "business model", suggesting that an innovative business model is meant to be developed. Innovations are new inventions endowed with a marketable concept. For example, they apt to meet particular customer needs in a novel way (Hauschildt et al., 2016). Business models generally describe the way in which businesses create value, addressing the resources they use, the processes, strategies and equipment they apply, the products and services they deliver and the customer fields they address (Venkatesh & Singhal, 2017).

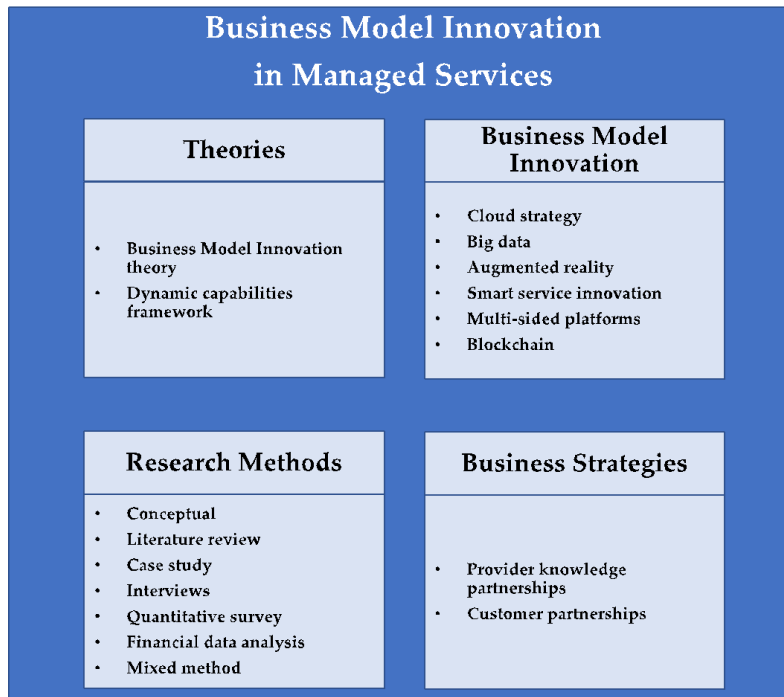


Figure 3: Systematic literature review results overview

Source: Research Results, 2023

Business model innovations accordingly are innovative business schemes and correspondingly represent innovative approaches to doing business due to novelty in products or services, organizational processes, structures or relationships, which are capable of creating entrepreneurial value, e.g.:

- competitive advantage and growth (Amit & Zott, 2012),
- behavioral or strategic change (Markides, 2013),
- utilization of novel competencies and marketing strategies for value creation (Amit & Zott, 2012),
- commercialization of new products including value add for customers and shareholders (Farida et al., 2022),
- managing resources strategically and entrepreneurially (Farida et al., 2022).

Product innovations frequently are the origins of BMIs. In a digital world, product innovations such as 3D printing, big data and augmented reality offer multiple opportunities for BMI projects: entrepreneurs could target the development or marketing of innovative products (Clohessy et al., 2017). They can use established or new products or a combination of these to submit innovative offers of value creation to customers in the service sector (Isaiás et al., 2020). The key enabler is digital transformation, which drives innovation in companies (Fombella et al., 2020).

Disruptive innovations find particular attention in academic research and business practice due to their potential to fully overwhelm, substitute established technologies and initiate a new era of thinking as well as doing business (Christensen et al., 2018). Disruption enables smaller companies or start-ups to destroy the established market-leadership of larger companies, e.g. in the case of Tesla's electric mobility strategy. Disruptive innovations are a smart source of business model innovation. In dynamically evolving sectors, like managed services, disruptive innovations enable start-ups to rapidly gather customers and grow from scratch (Fombella et al., 2020).

Schneider et al. (2017) illustrate how disruptive innovations change the industrial value creation chain and penetrate the system at all levels changing it from a consecutive classical structure to a horizontally linked value network. Managed services have particular potential to orchestrate that process due to their relevance for interconnecting organizational departments and inter-organizational business networks (Levy et al., 2022).

3.2. Framework of Dynamic Capabilities

The framework of dynamic capabilities has its origin in Penrose's Resource-based View of the firm, which emphasizes that businesses prosper due to extraordinary resources or - more frequently - by bundling a specific set of general resources to make a new value proposition (Penrose, 1959; Wernerfelt, 1984). While Penrose's original research referred to material and immaterial resources equally, the follow up knowledge-based perspective has worked out that in an age, dominated by informational advancement, idiosyncratic knowledge resources are a central foundation for business success and business model innovation (Thomas & Pollock, 1999).

The term "dynamic capabilities" was coined by Teece et al. in 1997 and refers to a set of mainly immaterial competencies that enable businesses to flexibly adjust to a rapidly evolving market environment (Teece et al., 1997). Dynamic capabilities are difficult to develop and transfer and in combination with complementary assets, such as capital and subject knowledge, they enable companies to advance in highly innovative environments (Devi et al., 2022). Dynamic capabilities are mental competencies endowing firms with strength and perseverance to survive in rapidly changing markets due to high adaptiveness, mental flexibility of their leaders and the virtue of quickly adopting emerging technological fields and utilizing them for BMI. Additionally, dynamic capabilities indirectly influence the firm's performance and resource bundles, which are two theory units (Gremme & Wohlgemuth, 2017). Levy et al. (2022) trace dynamic capabilities of openness, transformational competences and trust in innovative business models of MSPs. In the development of service innovations, dynamic capabilities have proven to be particularly relevant. Due to the necessity of directly appealing to customers in the process of service delivery, continuous creative innovations that are adaptive to changing customer requirements are a recipe for business success (Ghoshal et al., 2018). In managed services, customer requirements and MSP offers merge in a process of co-creation and co-value destruction, which is characteristic of radically innovative development (Pathak et al., 2020).

BMI theory and the framework of dynamic capabilities prove to be complementary approaches to revealing the strategies and success

conditions underlying business model innovation in the IT sector for MSPs.

3.3. Process Innovation

The interaction between process innovation and business model innovation is a critical area of research in the field of management. Process innovation focuses on improving internal operations and enhancing efficiency, while business model innovation pertains to the creation of new value propositions and revenue streams. Understanding the relationship between these two forms of innovation is vital for organizations seeking to gain a competitive advantage in dynamic markets.

Process innovations are new elements that are introduced to a company's manufacturing or service operation to produce a product or develop a new service (Damanpour, 2010). In 2018, Köhne & Sawyer showed the most important requirements and opportunities for process innovation in the research field. Overall, 4 concepts were used. The first concept focuses on key requirements, and the second one deals with opportunities for process innovation. The next concept covers the methodology, and the last concept is based on the technology of process innovation.

One important factor is the willingness to implement process innovation. However, it influences relationships in the organizational structure of a company. Overall, the development of process innovation has a strong correlation with a competitive advantage, which relates also to the aim of business model innovation. Process innovation refers to the development and implementation of new approaches and methods to enhance organizational processes and achieve strategic goals. However, several challenges and considerations must be addressed to ensure successful process innovation. Communication barriers, both internal and external, can hinder the flow of information and collaboration necessary for effective innovation. Additionally, understanding the patterns within an external ecosystem is crucial to identifying opportunities and aligning with market trends. Friction between the old and new world of knowledge can arise when traditional practices clash with innovative approaches.

Overcoming this friction requires balanced integration of existing knowledge and the adoption of new digital technologies, such as Blockchain, Artificial Intelligence and Robotic Process Automation. These technologies have the potential to revolutionize processes by automating tasks, improving data transparency, and enhancing decision-making. Investment in technology and capabilities is essential for process innovation (Köhne & Sawyer, 2018). Organizations must allocate resources to acquire and implement necessary tools and systems. Furthermore, training programs should be developed to upskill employees and equip them with the knowledge and skills required to leverage new technologies effectively (Snihur & Wiklund, 2019). This investment should be viewed as a long-term commitment as process innovation is an ongoing journey rather than a one-time effort. The requirements for process innovation encompass various objectives, including increasing production yield, reducing production costs, achieving operational flexibility, improving service and product quality, and accelerating time to market launch. These objectives, as highlighted by Milewski et al. (2015), serve as guiding principles for organizations seeking to drive process innovation.

Information technology (IT) plays a pivotal role in enabling organizations to achieve these objectives. By leveraging IT, companies can enhance their services, improve product quality, increase operational speed, and reduce costs. Developing IT competencies is crucial to improving process innovation activities and ultimately enhancing overall company performance. By aligning IT strategies with process innovation goals, organizations can unlock new opportunities and gain a competitive edge in the market (Köhne & Sawyer, 2018).

4. Results

The results section addresses Research Question 1, and corresponding sources are printed in the right-hand sectors of the review map in Fig. 2.

In 2017, Venkatesh & Singhal conducted a comprehensive literature review of BMI in the managed services sector, which comprises publications from 2008 to 2016. They found “more generic than focusing” information on business models” since “there is not much written” in the field (Venkatesh & Singhal, 2017, p. 2). The major output of the paper is customer requirements for BMIs and main challenges to establish them in the managed IT services sector.

Since that publication a range of novel IT technologies, namely, Cloud Storage (Clohessy et al., 2017; Levy et al., 2022), Big Data (Khalife & Dunay, 2019; Mortati et al., 2023), augmented/ virtual reality (Mattila et al., 2018), Blockchain (Kloekner et al., 2021) and virtual platform technologies (Schneider et al., 2017; Oettl et al., 2018; Pousttchi & Gleiss, 2019; Schaffer et al., 2021; Poeppelbuss et al., 2022) have emerged and have motivated managed services business models to use them.

Data clouds provide further potential for managed service business model innovations (Levy et al., 2022). Cloud computing means a fundamental change in data storage and provision in virtual networks. Clouds are centralized storage and processing units that are accessible remotely from computers around the world (Khajeh-Hosseini et al., 2010). Clouds can store huge amounts of data safely and allow entities located in different locations to operate on data located in the cloud simultaneously and interchange information on-time. Clouds provide computing power for routines beyond the capacity of local computers. Managed service providers offer clouds as a service and rely on a network of large data centers located in countries where space and energy for cooling and operation are available at low costs (Clohessy et al., 2017). Cloud operators bill their customers for services on the basis of data or processing volumes or on a monthly fixed fee. Cloud computing thus represents a fundamentally new business model by combining innovation in the service of technical, organizational, and financial domain (Bouwman et al., 2008).

The term **Big Data** is used as a catchword for technologies operating on huge masses of data to collect or extract statistically reliable information (Sagiroglu & Sinanc, 2013). Data streams available on the Internet are used commercially to extract information on competitive activities and customer behavior. Due to high storage and processing capacities required to collect and analyze data, businesses benefit by sourcing the tasks of big data retrieval and evaluation out to managed service providers.

Big data analytics has proven as an enabler of innovation for managed service providers. By offering technologies for enhanced and more profound data collection and evaluation, managed service providers offer companies a competitive advantage (Khalife & Dunay, 2019). Artificial intelligence can support big data analysis by searching for innovations, new customer needs and changes in competitive markets and it enables businesses to unfold dynamic capabilities early (Nambisan et al., 2019). Big data support business “design thinking” strategies, e.g. the classification of information in a broader context to associatively identify new creative problem solutions and identify underlying problem structures (Micheli et al., 2019). Khalife and Dunay (2019) report on the inclusion of text analytical software, text mining tools and neurolinguistic programming in big data management applications as a business model innovation of managed service providers. Big data evaluation usually relies on cloud architectures and businesses can trust in comprehensive data storage and extraction solutions offered as a package at transparent pricing (Mortati et al., 2023).

Three studies use the key word “**smart service innovation**” to describe the innovative business models of managed IT service providers integrating the shop-floor and administration level.

Services generally involve activities dealing with knowledge and skills mainly and are provided by an actor to benefit a customer directly (Vargo & Lusch, 2004). Service innovation redefines established patterns of delivering services by using new resources and new knowledge so that an innovative service outcome is perceived by customers or new customer segments are created (Anke et al., 2020). Anke et al. (2020) and Poeppelbuss et al. (2022) refer to smart service systems as services in digital technologies relying on smart products respectively “physical objects with embedded digital systems”, for example, sensors and computers that are capable of integrating individuals and organizations to co-create value. Smart services use digital systems particularly big data, artificial intelligence and cloud computing to radically alter conventional into “smart” service systems (Poeppelbuss et al., 2022). Smart service systems and smart managed services are thus umbrella terms for innovative business models using one of the above cited innovative digital technologies.

Mattila et al. (2018) identify **virtual and augmented reality** as a further promising innovative business field for managed IT service providers. Virtual reality is a technology employing pose tracking and 3D near eye displays to endow users with a real-life impression of virtual images and videos (Anthes et al., 2016). Augmented reality employs virtual reality techniques to mediate an enhanced understanding of the real world. For example, it integrates virtual three-dimensional interior images and videos to enable a more detailed understanding of real objects visible from the outside only (Chen et al., 2019).

Virtual and augmented reality features are increasingly useful and employed in the B2B context to visualize research, development and production tasks and come to a common understanding of technological development aims and tasks (Demir et al., 2020). Businesses also use augmented reality features in product marketing to involve customers more intensely and mediate a three- or four- dimensional feeling of the end product, particularly when the latter is made to order, for example, not available at the moment of buying (Chylinski et al., 2020). Since the professional application of virtual and augmented reality technologies is still complex and requires high computation power, expert managed service providers support businesses effectively (Mattila et al., 2018).

By integrating several innovative technologies, such as cloud, big data management, smart service innovation and virtual or augmented reality techniques, managed service innovation gradually extends to **managed multi-sided platforms and value networks** (Pousttchi & Gleiss, 2019). These involve various levels in the “service ecosystem” such as networks of actors and/ or addresses and networks of customers (Anke et al., 2020). Ghoshal (2018) supposes that the involvement of a series of actors and the co-integration of customers in the value creation process is a typical characteristic of business model innovation in managed IT services, since the involved novel technologies are all aiming at multi-dimensionality, e.g. integrating actors, businesses and whole business fields in a comprehensive informational grid (Schneider et al., 2017).

Managed service providers thus overcome the challenge of system compatibility in entrepreneurial networks and provide all partners with a comprehensive IT architecture for data interchange, storage and communication (Poeppelbuss et al., 2022). They integrate partners of different organizational forms and of different IT core structures via a comprehensive centralized interchange system (Schaffer et al., 2021). Managed service providers manage the development task of system integration and bill their customers for their service at a transparent monthly fee. Managed service providers thus contribute to technological perfection and cost transparency of supply chain interchange and communication platforms (Schneider et al., 2017). As Schaffer et al. (2021) detail within the framework of a single case study, comprehensive IT platform management emerges from Software as Service projects and gradually advances to comprise the whole entrepreneurial


ecosystem to finally deliver a comprehensive platform to all workflows, departments, systems and processes.

Ghoshal et al. (2018) address **ERP release strategies** for such a comprehensive business model innovation. Managed service providers here assist the roll-out of novel ERP systems in supply chain grids. Supply chain partners are dependent on the standardization of their ERP platforms to coordinate development and production cycles. The implementation of new ERP roll-outs by specialized service partners grants the swift adoption and runnability of the system in all companies of the supply chain and thus saves transaction costs. ERP roll-out assistance requires specific and comprehensive ERP-programming and application competencies that can be integrated by specialized managed service agents more effectively than by distributing tasks across IT teams in several involved manufacturing companies.

Kloeckner et al. (2021) spot **blockchain technology** as a disruptive emerging business model accomplishing the comprehensive platform strategy of managed service providers: A block is a digital data set located on the Internet. The blockchain is based on distributed ledger technology and represents an extendable series of interconnected blocks which are sort of a digital account book (Krishnapriya & Sarath, 2020). Other than data in data clouds, the blockchain stores data and fragments on participating computers. To provide privacy, data are encrypted before adding them to the blockchain (Reuse et al., 2019). Since all encrypted blocks are interconnected, changes to the data are no more possible after a comprehensive block has been mined and several consecutive blocks have been added (Barbieri & Gassen, 2017). The decentralized fragmented storage technology further prevents data manipulation by unauthorized entities since data would have to be changed on all participating computers (Schuette et al., 2017). Due to its inalterability and democratic verification, the blockchain offers itself as a medium for value transaction and contract validation.

Managed service providers are prospective important actors in the blockchain sector. Blockchains as Service models offer blockchain services as a platform for cloud solutions and comprehensive B2B platforms. Managed IT services include safe and easy access, data encryption, data safety warranties and auxiliary services. The Blockchain as a Service improves the ease of use and transparency of the blockchain technology for companies (Lu et al., 2019). In the B2B context, the Blockchain as a Service could offer businesses contracts and interchange formats for transactions, e.g. supply chain contracts, product tracing and financial transactions. A unified transaction format as offered by blockchain-as-a-Service - providers could save coordination efforts and transaction costs for participating companies (Song et al., 2022). Based on the analysis of stock price data, Kloeckner et al. (2021) show that the involvement of a managed service provider in blockchain projects contributes to enhanced market reactions to blockchain project announcements of fintech companies.

5. Discussions

 **Research Question 2** discusses insights comprehensively and identifies unexplored research fields that should guide future academic research work in business model innovation in managed services.

The review, in sum, provides the insight into the ample territory of business model innovation in managed services, which starts from stand-alone solutions to data storage and interchange (clouds), data collection and analysis (big data technologies) and virtual or augmented reality and advances to gradually permeate the whole entrepreneurial value chain, for example, by delivering smart services interconnecting shop-floor and administration. By integrating these services in multi-sided platforms, managed service providers penetrate whole business networks and supply chains, which could become fully self-reliant by blockchain technology in future.

The development path of managed service providers towards

maximizing competitiveness, reach and profitability in a process of business model innovation thus seems clear from the studies. By integrating individual services into a comprehensive value proposition, a multi-actor interorganizational setting is created which involves a multitude of networking companies. Managed service providers thus expand their customer-base together with their service offer and become indispensable partners across the comprehensive supply chain process of value creation. As soon as a network of businesses relies on the offer of a single provider, the transaction costs of switching a provider increase exponentially, which endows managed IT services businesses with high pricing power and influence in all business fields (Levy et al., 2022).

Returning to the concept of business model innovation as a strategy to radically change the existing market by disruptive innovations, the approach of integrating a series of high-end technologies into a comprehensive IT platform in the B2B sector can, in fact, endow the first moving service providers with a moat enabling exponential growth and singular competitive positioning. As soon as a single company has managed to establish itself as a market leader in the multi-platform managed services sector, imitators and followers will find it hard to advance to a similar competitive position. Managed service companies require an effective and rapid strategy to establish their early bird market access.

Unfortunately, the retrieved empirical studies provide only limited information on how managed service providers can advance to prominent market positioning and leave competitors behind. There are two major strategies:

1. Knowledge Partnerships on the supply side
2. Consultative selling partnerships with business customers

For knowledge partnerships IT service providers have to rely on a series of innovative technologies to build up a comprehensive inter-business networking platform that attracts business customers effectively due to technological superiority and excellence. Hardly any emerging company disposes of knowledge in all required fields, e.g. in cloud management, big data collection and analysis, virtual & augmented reality and smart sensor shop floor technologies. Levy et al. (2022) suggest that service providers watch out for creative staff at universities and develop knowledge by university partnerships targeting at knowledge transfer. The success of this approach depends on the availability of practicable innovative business models in the academic environment. Academic knowledge, however, is freely accessible to competitors and not protected by patents, which can prevent that adopters advance to unique market positioning by university partnerships alone.

Anke et al. (2020) suggest professional multi-actor partnerships to develop the required knowledge of a multi-platform agent. This strategy presupposes the early allocation of strategic competencies and responsibilities among the partners to avoid one-sided benefit and ensure permanent cooperation (Hohmeister & Rückel, 2021). Organizational alignment strategies enable business partnerships in the managed services sector to strategically address market gaps and recognize and tackle novel development requirements early (Devi et al., 2022). Clear strategic advice on how competition and individual advantage-taking in multi-agent partnerships in the managed services sector can be avoided, however, is outstanding.

The focus on consultative selling is needed to establish unique market positioning for IT service providers and they should not neglect their customer-relationships (Pathak et al., 2020). Several studies address the key word of customer-provider co-creation from an early development stage onwards: IT services are customer specific. To enable effective application at the customer level, the development according to a customer's requirements from an early development stage onwards is essential (Poepelbuss et al., 2022). Managed service providers use agile strategies to integrate customers from a very early stage into the development process. Tailor-made systems reduce customer switching behavior at an advanced project stage since the implementation of established routines by a novel provider would

be costly or effortful (Schaffer et al., 2021). Service providers should thus attempt to cooperate with customers from project initiation onwards and continuously adjust their service offers to changing customer needs (Oettl et al., 2018).

Consultative selling has proven as a strategy to establish and continuously cultivate close customer connections in the managed services sector: Consultative selling focuses on customer issues in the selling process. Customer requirements are assessed proactively and solutions are targeted at customers' specific problems (Isaías et al., 2020). Provided service offers are solution-oriented rather than product- or function-centered. If customers require innovative solutions, these are developed in close interaction with the customer. Selling processes are solution-oriented and are based on knowledge interchange between a customer and a provider at an eye level (Mattila et al., 2018). Consultative selling has proven as an effective strategy in customer relationship management and is targeted at extending customer relationships form the development process to the phase of utilizing the service. Service providers thus advance from pushing towards attraction marketing (Levy et al., 2022). Customers proactively address service providers, when novel solutions or adaptations are required and providers adapt their products to changing customer demands. Consultative selling is effective to build long-lasting customer relationships in the managed services sector.

Managed IT services are undergoing significant transformation, driven by technological advancements and changing customer demands. Business model innovation and process innovation have emerged as key strategies for companies operating in this sector. Business model innovation involves reimagining the value proposition, revenue streams, and customer relationships, while process innovation focuses on optimizing internal operations and service delivery (Amit & Zott, 2012).

Comparing business model innovation and process innovation, several commonalities and differences arise. Both forms of innovation share a foundation built on the integration of new technologies such as blockchain and AI, which facilitate the creation of an ecosystem and add value to organizational operations. Additionally, both business model innovation and process innovation require a long-term perspective, recognizing the need to meet the requirements of process innovation, such as increasing production yield, reducing costs, improving service and product quality, and accelerating time to market launch (Snihur & Wiklund, 2019).

However, notable differences exist between business model innovation and process innovation. Process innovation places greater emphasis on internal processes and optimization of operational efficiency. This involves implementing trainings and developing IT competencies to improve process innovation activities within organizations (Köhne & Sawyer, 2018). On the other hand, business model innovation extends beyond internal operations to reshape value propositions, revenue streams, and customer relationships (Farida et al., 2022). Utilizing IT to enhance service, quality, speed, and cost reduction is a shared goal for both business model innovation and process innovation. By leveraging IT competencies, organizations can improve their process innovation activities, leading to enhanced overall company performance. However, communication barriers may present a unique challenge in process innovation, as effective collaboration and information flow are crucial to successful implementation (Köhne & Sawyer, 2018).

Understanding these similarities and differences between business model innovation and process innovation provides valuable insights for practitioners and researchers seeking to harness innovation for organizational success. By recognizing distinct focal points and shared goals, organizations can develop comprehensive strategies that leverage the strengths of both types of innovation to drive performance and meet evolving market demands.

Available research at the intersection of business model innovation and customer orientation in the managed services sector,

however, is sparse. Most studies are focused on service and product innovations, but neglect that these solutions have to be integrated to meet market demand and address the requirements of business customers concretely. Technological leadership promises first mover advantages. To build and keep the attained market position when technology advances, however, continued customer orientation is essential in the managed services sector.

6. Conclusion

Based on a mapping review, this study has provided an overview of current research on business model innovation in the managed services sector.

As for *Research Question 1*, two major theories guiding academic research have been identified: business model innovation theory and the framework of dynamic capabilities. Both research approaches are complementary: Business model innovation in the managed services sector builds on providers' dynamic capabilities such as the ability to adapt to changing market conditions and customer requirements flexibly and proactively. Available studies usually rely on one or the other approach. Further research should integrate both theories to advance research at the intersection of business model innovation and customer orientation in the managed IT services sector.

Additionally, as for *Research Question 1*, the review has found a series of innovative technologies enabling business model innovation in managed services due to their novelty, high technological sophistication and required knowledge base for development and professional operation such as cloud storage and processing services, big data collection and analysis services, virtual and augmented reality services, smart service innovation. To establish a unique market position and moat, however, providers should attempt to advance to platform providers integrating a possibly broad range of IT services.

While the majority of retrieved studies discuss technologies enabling business model innovation in managed services to an extent, strategies with the help of which managed service providers can implement product innovations in the market have not been the focus of empirical research so far. A synthesis of available discussions suggests that the combination of knowledge partnerships on the development and provision side and customer partnerships on the demand side is a sustainable approach to establishing a unique position in a dynamically evolving market.

Further academic research should be directed at implementing strategies for innovative business models in the managed services sector more systematically. Qualitative empirical ground work to explore the strategic resources managed service providers use to build and stabilize their customer relationships is desirable to understand business model innovation processes in a business sector depending on co-creation of suppliers and customers to innovate.

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The authors declare that they have no competing interests.

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