

Metaverse business transformation: four companies' virtual experiences

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Abstract

Purpose – The huge curiosity and the imitation effect that the metaverse generates among companies lead towards the first experiments touching all the main processes of the organization in search of new sources of value or for improving the existing value sources. However, little is known about how to drive the business transformation brought by the metaverse consciously, and this may thus hinder the adoption of this technology. This paper aims to sustain the formulation and implementation of the metaverse business transformation by illustrating a theoretical matrix and four practical approaches. Specifically, first, the matrix allows for a better understanding of the metaverse phenomenon by discussing the two main directions (the “what” as the goal of the transformation and the “why” as the focus of the transformation) that must be considered when formulating a metaverse business transformation. Second, the four actionable approaches (the “how”) illustrate different pathways for implementing the metaverse business transformation.

Design/methodology/approach – The study adopts an inductive research approach, leveraging a multiple case study design to address the scarcity of empirical data on metaverse business transformation. The conceptual matrix guided the selection of four European companies. In this way, each company was placed in each matrix quadrant and represented a specific approach to metaverse business transformation. Data collection included secondary sources for initial case placement within the matrix, unstructured interviews to capture nuanced insights into the approaches to metaverse business transformation and case observation and interviews with experts.

Findings – The study reveals four distinct approaches to drive metaverse-driven business transformation (the “how”): the absorptive innovation approach, the desorptive transition approach, the absorptive engagement approach and the desorptive branding approach.

Practical implications – The paper provides actionable guidelines for companies leveraging immersive technologies and managing organizational change to incorporate the metaverse into their operations. In particular, the study highlights the need for core business units, rather than IT departments, to lead metaverse adoption.

Social implications – The paper suggests policymakers support the metaverse business transformation through incentives, research hubs and collaboration ecosystems while stressing that cultural transformation is crucial for fully realizing the metaverse’s long-term potential.

Originality/value – The study examines the emerging context of the metaverse by investigating how organizations can effectively approach metaverse-driven business transformation. It adapts and extends a matrix initially designed for business transformation, incorporating empirical insights from case studies of companies



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undertaking metaverse initiatives. In this way, the paper offers four distinct approaches for navigating business transformation in the metaverse.

Keywords Metaverse, Virtual experience, Business transformation, Exploration and exploitation, Absorptive and desorptive capacity

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1. Introduction

The metaverse can be defined as “a technology-mediated virtual environment characterized by varying degrees of environmental fidelity and sociability, wherein the access device shapes the user experience with different levels of immersion.” (Di Paolo *et al.*, 2025, p. 2) This definition underscores three core dimensions of the metaverse. First, it refers to a virtual environment that creates a sense of spatiality. Second, it emphasizes the diversity of virtual experiences, which may or may not involve interactions with other users, and the degree to which these experiences replicate real-world settings. Third, it highlights the importance of user immersion, which depends on the specific technology employed for accessing these environments, such as personal computers, Augmented Reality, or Virtual Reality. The metaverse market size is valued at 74.4 billion U.S. dollars in 2024 (Statista, 2024), with more than 600 million active users worldwide as of 2024 (Hryziuk, 2024) taking part in virtual workspaces, live entertainment events, and investment in crypto-assets [1]. While surveyed and interviewed business leaders expect significant changes in their organization due to the metaverse (Hatami *et al.*, 2023; Mancuso *et al.*, 2024), scholars are eager to fully understand the rationale behind the metaverse for transforming businesses (Mancuso *et al.*, 2024; Barthélemy and Ondrus, 2023).

The metaverse introduces a paradigm shift in how businesses engage with customers, manage operations, and innovate their value propositions (Mancuso *et al.*, 2023). However, unlike traditional digital transformations, the metaverse poses unique challenges, including integrating diverse technologies, developing new engagement models, and navigating uncharted regulatory, ethical, and organizational territories (Keegan *et al.*, 2023). In this regard, clear, practical guidance on the delivery of monetary value from the metaverse is missing (Keegan *et al.*, 2023; Ritala *et al.*, 2024), and this constitutes a significant hurdle to its widespread adoption from a practical point of view (Elmasry *et al.*, 2022; Kaplan and Haenlein, 2024). Furthermore, the prior literature lacks conceptual guidance on consciously approaching the metaverse from a managerial perspective (Dwivedi *et al.*, 2022; Mancuso *et al.*, 2024). Indeed, research has, so far, focused on the metaverse technical aspects while paying much less attention to how these technologies can be leveraged to transform businesses (Keegan *et al.*, 2023; Ritala *et al.*, 2024). Therefore, a research gap emerges as it is needed to understand how to properly integrate the metaverse into firms’ strategic considerations to approach a metaverse-driven business transformation (Morino, 2022; Mancuso *et al.*, 2023).

To address this gap, this paper aims to guide the formulation and implementation of a metaverse business transformation. The prior literature on business transformation primarily relies on a practice-oriented approach leveraging theoretical conceptualization and case study analysis to build new frameworks and theories (Sedera *et al.*, 2022; Chawla and Goyal, 2022; Ritala *et al.*, 2024). For example, Khuntia *et al.* (2024) recently adopted a multiple case study to illustrate how firms can practically apply their conceptually developed framework to digital business transformation. Consistently with this approach, we adapted the framework Guenzi and Habel (2020) developed, which originally explained digital sales transformations, to the unique context of metaverse business transformation. The framework by Guenzi and Habel (2020) presents a matrix that balances two key elements: the core focus of the transformation (referred to as the “what” variable) and the ultimate goal of the transformation (referred to as the “why” variable). While this framework offers a structured approach to understanding digital transformation, it primarily focuses on incremental technological advancements within digital sales. Therefore, it does not capture the metaverse’s broader potential to fundamentally

reshape entire organizations (Hatami *et al.*, 2023). To address this limitation, we adapted Guenzi and Habel's (2020) framework to the distinct characteristics of the metaverse, explicitly considering its impact on overall organizational value creation rather than just sales. In our adaptation, we defined the core focus of metaverse business transformation (the "what" variable) as encompassing both internal operational processes and customer interaction processes (Guenzi and Habel, 2020; Mancuso *et al.*, 2023). Furthermore, we categorized the ultimate goal of metaverse business transformation (the "why" variable) into two dimensions, namely creating new value sources and improving existing value sources (Massa and Tucci, 2013). This definition of the "what" and "why" variables aligns with the most recent metaverse literature (e.g. Latino *et al.*, 2024). In addition, we used 13 practical examples of companies that have undertaken the metaverse business transformation to combine both theoretical and practical insights on the metaverse business transformation. The resulting matrix, adapted from Guenzi and Habel (2020) for the metaverse context, was then employed to conduct a multiple case study. We selected four prominent international firms that successfully executed metaverse business transformations, ensuring each case represented one of the four quadrants in the matrix. The cases were studied via secondary and primary sources to outline four approaches to implementing the metaverse business transformation. Moreover, a six-month practical observation of the ongoing implementation of each of the four ventures into the metaverse was conducted, and panel sessions with experts were held to enrich and support our investigation. Our results address the "how" to navigate the metaverse business transformation from a theoretical and managerial perspective. Specifically, the four different organizational approaches have been characterized concerning the underlying organizational learning mechanism (March, 1991) – exploration/exploitation – and the firms' ability to transfer technological capacities across organizational boundaries (Lichtenthaler and Lichtenthaler, 2010) – absorptive capacity/desorptive capacity. Indeed, we found that companies typically adopt an exploratory approach when the transformation goal pertains to the creation of new value sources. In contrast, they tend to engage in exploitative behaviors to venture into the metaverse when the aim is to enhance existing value sources. Furthermore, our results reveal a propensity towards absorbing technological capacity when the transformation focus is directed at internal processes. At the same time, a desorptive approach is favored when the focus shifts toward customer interaction processes. Moving from these considerations, we introduced and described the absorptive innovation approach, the desorptive transition approach, the absorptive engagement approach, and the desorptive branding approach to the metaverse business transformation.

Theoretically, this work contributes to the evolving body of knowledge on the metaverse (Dwivedi *et al.*, 2022; Mancuso *et al.*, 2024). We provide a theoretical framework for managing decisions about how to venture into the metaverse business transformation based on the transformation's goal and focus. Simultaneously, the paper furnishes a real-world empirical illustration of how to harness the metaverse within companies based on four main approaches. While building and testing new theory in the empirical context of the metaverse, our work advances the literature on technology-driven business transformation (Venkatraman, 1994; Dehning *et al.*, 2003; Lucas *et al.*, 2013; Kaufman and Horton, 2015; Schuchmann and Seufert, 2015; Hess *et al.*, 2016).

The paper is organized as follows. Section 2 presents the conceptual matrix underpinning the study; Section 3 reports the multiple case study methodology; Section 4 outlines the main findings with four organizational approaches to the metaverse business transformation; Section 5 discusses and concludes the paper.

2. Theoretical background: a matrix for illustrating the metaverse business transformation

Defined as a digital environment where users, represented by avatars, interact, create, and consume information, content, and activities (Keegan *et al.*, 2023), the metaverse represents

one of the major phenomena shaping today's business transformations, which describe "*the fundamental changes that occur in an enterprise*" (Safrudin *et al.*, 2014, p. 25). Indeed, most of the factors characterizing the metaverse, such as the rise and intersection of emerging technologies, the uncertainty in the environmental landscape, and the modifications in consumer behaviors, are recognized as key conditions accelerating strategic changes in organizations (Warner and Wäger, 2019) and influencing business transformations (Hinings *et al.*, 2018). These conditions, in turn, favor the emergence of various innovations that affect processes, products, services, and business models (Snihur and Wiklund, 2019). However, business transformation prompted by the metaverse-related technological and social shifts may put the firm's survival at risk due to its discontinuous nature (Mouzas, 2022; Kaplan and Haenlein, 2024), which thus requires careful experimentation. Indeed, studies have shown that up to 70% of business transformations fail due to issues in developing a path for correct organizational change in the enterprise (Safrudin *et al.*, 2014). Moreover, strong organizational capabilities and a clear roadmap are needed to successfully drive the modifications brought by the metaverse into organizations (Mancuso *et al.*, 2024).

It is evident that, despite the growing interest in the metaverse in both the academic and industrial domains, scholars and practitioners still need guidance on how to leverage the metaverse for transformative business purposes (Mancuso *et al.*, 2023; Barthélemy and Ondrus, 2023). While the research has primarily focused on the technical aspects of the metaverse, there is a lack of conceptual frameworks to guide businesses in understanding how to strategically integrate the metaverse into their operations and achieve sustainable transformations (Keegan *et al.*, 2023). This gap is particularly significant as the practical application of metaverse-driven value creation remains unclear (Elmasry *et al.*, 2022), presenting a barrier to widespread adoption. Additionally, the absence of clear managerial guidance on approaching the metaverse transformation represents a notable limitation in the existing literature (Dwivedi *et al.*, 2022). As a result, the need to define a coherent approach for integrating the metaverse into firms' strategic frameworks remains pressing (Morino, 2022; Mancuso *et al.*, 2023). Accordingly, our study has been guided by the following research question:

RQ. "How can organizations frame and implement business transformations driven by the metaverse?"

To answer the research question, we present a matrix that frames the impact of the metaverse on current businesses, thereby paving the way for the definition of four approaches to implementing the metaverse business transformation.

From a theoretical standpoint, the framework utilized to conceptualize the metaverse business transformation in this study is an adaptation of the matrix proposed by Guenzi and Habel (2020) for the digital transformation of sales. This matrix, which revolves around the "why" and the "what" variables, was foundational in structuring our research and was integrated with additional theoretical elements and practical illustrative examples to fully capture the distinct dynamics and transformative potential of the metaverse business transformation. The "why" variable has been clustered in Guenzi and Habel's work around the two main goals of increasing efficiency and effectiveness in digital sales. This variable has been revised in our study to incorporate a broader value-centric perspective typical of the metaverse business transformation (Latino *et al.*, 2024). Specifically, we introduced the dichotomy between creating new value sources and enhancing existing ones, drawing on the work of Massa and Tucci (2013), which addresses how organizations can simultaneously explore new opportunities and exploit existing assets for creating value. This distinction is particularly salient in the metaverse context, where value creation is not limited to traditional operational improvements but extends to reshaping customer engagement and product offerings through immersive, interactive digital environments (Mancuso *et al.*, 2023). The "what" variable, coherently with Guenzi and Habel (2020), differentiates between internal and customer interaction processes. This variable has been adapted to the study of the metaverse business transformation in alignment with recent discussions that harness

immersive technologies’ full potential to streamline internal and customer interaction processes (Mancuso *et al.*, 2023).

To validate the theoretical extension of Guenzi and Habel’s matrix for the metaverse context, we reported the illustration of 13 leading companies that have embarked on metaverse business transformations. This allowed us to adapt the original framework, designed for digital sales transformation, to the unique challenges and opportunities presented by the metaverse. By doing so, we bridge the gap between traditional digital transformation frameworks and the innovative potential of the metaverse.

In what follows, the two variables defining our matrix (i.e. “what” and “why”) (Guenzi and Habel, 2020) are discussed with the extant literature on business transformation and the metaverse. Furthermore, the examples of 13 companies leveraging these two variables to posit in the metaverse are provided. Details related to the 13 companies (i.e. industry, size, and geographic area of operation) are provided in Appendix 1.

2.1 The “what”: the core focus of the metaverse business transformation

The “what” variable represents “the core focus of the transformation” and is particularly important as “the first decision managers need to take is to choose which processes to digitally transform” (Guenzi and Habel, 2020, p. 62). In particular, as emphasized by Guenzi and Habel (2020), business transformation can focus on customer interaction or internal processes. This distinction is relevant for approaching the metaverse business transformation. Indeed, Mancuso *et al.* (2023) recently defined the metaverse opportunities for transforming businesses as oriented towards internal and customer processes. Therefore, the “what” variable defined by Guenzi and Habel (2020) has been used in the study of the metaverse business transformation without substantial modifications, as detailed below.

2.1.1 Customer interaction processes. Metaverse business transformations addressed toward customer interaction processes attain sustainable competitive advantage through market learning and response to customer needs (Conduit *et al.*, 2014; Mancuso *et al.*, 2023). Customer interaction processes involve every practice the firm manages during the customer journey’s pre-sale, sale, and post-sale phases (Lemon and Verhoef, 2016). These processes include (1) making clients aware of the firm’s offering, (2) supporting clients in evaluating the firm’s offering, (3) allowing clients to purchase and deliver the firm’s offering, and (4) getting clients loyal after the offering purchase. Firms can leverage the metaverse to manage these customer interaction processes, especially when considering younger generations’ customers. Indeed, presently, the adoption of the metaverse is more pronounced among Gen Zs and millennials, who are more interested in using metaverse-related technologies and/or are already trying out virtual experiences for gaming, attending events, working or studying (Auxier and Arbanas, 2023). Details on how the metaverse influences each of the four processes of customer interaction are provided in Appendix 2 (see Table 1).

Table 1. Core focus of the metaverse business transformation: customer interaction processes

Customer interaction processes	Examples
Make client aware of firm’s offering (awareness phase)	Samsung: new products launch events in the metaverse
Support clients in evaluating the firm’s offering (consideration phase)	Hyundai: metaverse-based showrooms for virtual testing
Allow clients to purchase and have delivered the firm’s offering (purchase phase)	Christie’s: sale of virtual products and funnel for physical products’ sales
Get clients loyal after the offering purchase (loyalty phase)	Clinique: loyalty programs based on digital goods
Source(s): Authors’ own creation	

2.1.2 *Internal processes.* Metaverse business transformations addressed towards internal processes allow firms to create value by effectively managing the relations between employees, supervisors, and the board (Gounaris, 2006; Mancuso et al., 2023). Specifically, internal processes belong to three categories (Boukis, 2019). First, there are *operations processes*, which are a firm’s daily actions to create and deliver its offering to customers. Second, there are *innovation processes*, which are the steps a firm undergoes to ideate, develop, implement, and use new or structurally improved offerings, processes, or organizational forms. Third, there are *human resource processes*, which are *the systematic and structured procedures a firm uses to manage its human resources*, including recruitment, onboarding, and training. Appendix 3 (see Table 2) clarifies how the metaverse can be leveraged within all these three internal processes.

2.2 *The “why”: the ultimate goal of the metaverse business transformation*

The “why” variable asks managers to define the ultimate goal of the metaverse business transformation (Guenzi and Habel, 2020). In their model for digital transformation, Guenzi and Habel emphasize two primary objectives: increasing efficiency and enhancing effectiveness. The necessity to define the goal of the metaverse business transformation has also emerged within the metaverse literature, as highlighted by Mancuso et al. (2024), who underscored the importance of strong leadership capabilities for defining the goal of a metaverse-driven business. Therefore, the “why” variable is relevant for approaching the metaverse business transformation. However, when applying the definition by Guenzi and Habel (2020) on the “why” variable for digital sales transformation to the metaverse business transformation, we broaden the scope beyond the conventional distinction of operational optimization (efficiency vs. effectiveness), thus modifying the values associated with the original “why” variable. Indeed, the metaverse offers the possibility to fundamentally transform business models by introducing novel ways to create and capture value (Latino et al., 2024). Business models represent the logic through which firms create value for customers and capture a portion of the created value (Massa and Tucci, 2013). Successful business models are built upon robust and sustainable value sources: resources, capabilities, and processes that allow a company to meet customer needs, differentiate itself in the market, and maintain a competitive advantage (Massa and Tucci, 2013). Accordingly, we redefine the goals of the metaverse business transformation by framing them within a broader dichotomy, such as improving existing value sources versus creating entirely new value sources (Massa and Tucci, 2013; Garcia-Macia et al., 2019). This distinction is coherent with most of the literature on the metaverse that acknowledges its potential for influencing value sources. As synthesized in the recent literature review on the impact of the metaverse on business model innovation (Latino et al., 2024): “*metaverse-based technologies change a company’s capability to develop high-value products and services that satisfy the needs of customers*” (Latino et al., 2024, p. 13). Furthermore, as Mancuso et al. (2023) have recognized, the metaverse represents a distinctive type of business transformation, markedly different from the digital transformations scholars have studied thus far. The fundamental distinction lies in the all-encompassing nature of the metaverse, which integrates a vast array of emerging digital

Table 2. Core focus of the metaverse business transformation: internal processes

Internal processes	Examples
Operations	BMW group: operating in a metaverse plant
Innovation	Boeing: conceptualizing, designing, and producing new products in the metaverse
Human resource	Carrefour, accenture: recruiting, onboarding, and training in the metaverse
Source(s): Authors’ own creation	

technologies – such as artificial intelligence, big data, virtual reality, and blockchain – into a unified ecosystem (Ritala *et al.*, 2024). This convergence of multiple technologies enables the metaverse to transcend the scope of traditional digital transformations (Mancuso *et al.*, 2023), which typically focus on improving specific aspects of business operations, such as efficiency and effectiveness (Guenzi and Habel, 2020). In contrast, the metaverse fosters entirely new forms of interaction, collaboration, and value creation that reshape how businesses operate at their core (Kaplan and Haenlein, 2024; Latino *et al.*, 2024). Accordingly, when adapting the matrix developed by Guenzi and Habel (2020) for the metaverse business transformation, we expanded the framework to account for this broader scope and acknowledge that the metaverse transformation influences shifts the underlying business models by emphasizing, coherently with Massa and Tucci (2013) and Garcia-Macia *et al.* (2019), the two main goals of improving existing value sources and creating new value sources.

2.2.1 Improving existing value sources. Metaverse business transformations aimed at improving existing value sources work on the *optimization of existing business models* (Rachinger *et al.*, 2019; Mancuso *et al.*, 2023), where the business model (BM) is a conceptual and architectural implementation of a business strategy (Casadesus-Masanell and Ricart, 2010) explaining the logics of value creation, delivery, and capture (Massa and Tucci, 2013). The improvement of existing value sources through optimization of existing BMs mainly searches for cost reduction and excellence of existing operations (Leskovar-Spacapan and Bastic, 2007; Latino *et al.*, 2024), which in turn determine a more effective production of the offering (Björkdahl, 2020). This is possible in two main ways. The first aims to improve individual firms’ resource allocation and asset utilization (Chatterjee, 2013; Mancuso *et al.*, 2024). The second one seeks to achieve better productivity and a more efficient communication infrastructure within the entire *value chain* (Chatterjee and Matzler, 2019; Ritala *et al.*, 2024). The metaverse can be leveraged to optimize existing BMs, as Appendix 4 highlights (see Table 3).

2.2.2 Creating new value sources. Metaverse business transformations aim to create new value sources and develop a new BM through “*the transformation of the value proposition and operating model*” (Rachinger *et al.*, 2019, p. 1146). Hence, firms aim to create new value sources plan and implement a series of substantial changes in their activities, processes, and capabilities (Correani *et al.*, 2020; Mancuso *et al.*, 2024) to generate new BM elements (Massa and Tucci, 2013), (i.e. new elements pertained with value proposition and operating model). This is possible in two main ways: by acting on *what is offered* and *how it is delivered* (Jocovski, 2020). Specifically, creating new value sources by focusing on what is provided revolves around introducing a steady stream of new products and/or services (Zheng *et al.*, 2024). These new products and services can be planned as a new, standalone offering or as an additional, complementary offering. In both cases, firms create new value sources in the form of an increased variety of offerings (Chatterjee, 2013). The creation of new value sources by focusing on *how the offering is delivered* regards the introduction of separate new or additional channels (Lim *et al.*, 2024). In both cases, firms create new value sources in the form of increased customer efficiency (i.e. making customers access to products as easy as possible),

Table 3. Ultimate goal of the metaverse business transformation: improving existing value sources

Improving existing value sources	Examples
Optimization of existing BM by involving the coresets of individual firms	Meta: collaboration and process optimization via metaverse-related technologies (e.g. platforms, headsets, AI-enabled digital beings)
Optimization of existing BM by involving the whole value chain	JP Morgan: Modification of interconnection among the value chain actors via metaverse platforms
Source(s): Authors’ own creation	

increased customer effectiveness (i.e. making customers find products that truly meet their needs), and increased customer engagement (i.e. making customers live experiences that evoke emotional involvement beyond purchase) (Sorescu *et al.*, 2011; Latino *et al.*, 2024). Appendix 5 (see Table 4) suggests how the metaverse sustains the creation of new value sources.

2.3 A matrix for metaverse business transformation

According to the foregoing reasoning, managers and scholars approaching the metaverse must consider the core focus of the strategic transformation, namely customer interaction processes or internal processes, and its ultimate goal, namely improving existing value sources or creating new value sources. These considerations provide the basis for classifying four approaches to metaverse business transformations (Figure 1). Specifically, quadrant I aims to capture the creation of new value sources in internal processes; quadrant II seeks to capture the creation of new value sources in customer interaction processes; quadrant III aims to capture the improvement of existing value sources in internal processes; quadrant IV aims to capture

Table 4. Ultimate goal of the metaverse business transformation: creating new value sources

Creating new value sources	Example
Innovate “what” is delivered	Burberry, Nike: introduction of new products/services or additional products/services
Innovate “how” the offering is delivered	Wendy’s, Gucci: introduction of new channels or additional channels
Source(s): Authors’ own creation	

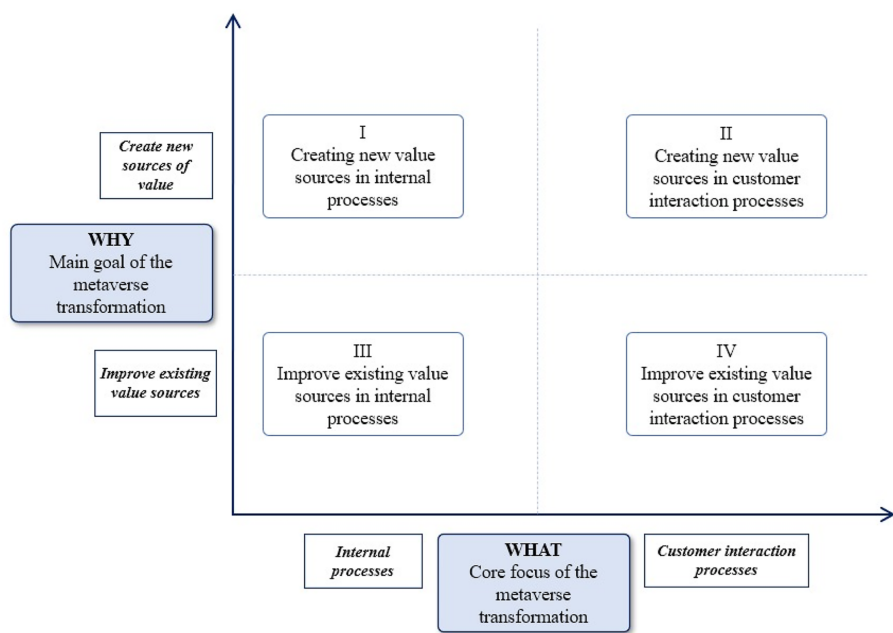


Figure 1. The matrix for metaverse business transformation. Source: Authors’ own creation

the improvement of existing value sources in customer interaction processes. Through a multiple case study, the present paper drills into the four approaches to understand “how” organizations and scholars can face the metaverse business transformation.

3. Methodology

Once the metaverse business transformation matrix has been grounded in theoretical and practical considerations, the objective is to gain insight into how firms approach and implement metaverse projects. To this end, multiple case study analyses and panel sessions with experts were conducted. The multiple case study analysis features: (1) the analysis of four companies, one for each quadrant, through interviews conducted with multiple practitioners responsible for their firm’s venture into the metaverse for each case analyzed (2) investigation of secondary sources, including company reports, social media posts and websites, which enable the triangulation of interview data (3) cross-case comparisons, which allowed to validate the emerging themes (4) a six-month practical observation of the ongoing implementation of each of the four ventures into the metaverse. The panel sessions with experts provide a robust method for refining understanding and validating findings by gathering insights from individuals with specialized knowledge and experience in the subject area. Four sessions have been conducted involving key stakeholders, including technology developers of the metaverse platforms and agencies that managed these projects. In the following, each method is detailed.

3.1 Multiple case study

3.1.1 Case studies selection. A multiple case study methodology was employed to examine the four quadrants as an appropriate method for investigating contemporary and evolving phenomena (Yin, 2014; Stake, 1995). Therefore, the matrix developed for business transformation in the metaverse served as a guiding framework for case selection, allowing the exploration of each of the four quadrants systematically. The case selection followed a theoretical sampling approach (Yin, 2014) designed to target specific cases that could provide key findings. The companies selected for this study represent diverse sectors – durable goods, fast-moving consumer goods, and services – chosen to capture the broad spectrum of metaverse applications across industries and ensure the findings are relevant to broader industry trends. This cross-sectorial approach provides a comprehensive understanding of metaverse-based case studies free from bias (Mancuso *et al.*, 2024). The theoretical sampling approach ensured that these firms had already undertaken significant ventures into the metaverse, allowing them to examine complex organizational changes and business transformations with real-world implications. Accordingly, these companies are focused on creating or improving value sources within internal or customer interaction processes. The four case studies are European-based and well-established companies that have undertaken at least one venture into the metaverse to transform their business. Despite focusing on European firms, their sectoral diversity ensures that the findings are relevant to broader industry trends, given the rapid evolution of metaverse adoption across various sectors.

3.1.2 Case studies description. As in Table 5, four European firms are selected: a conglomerate leader in telecommunications (Company A), a prominent organization in the charity industry (Company B), a company dominating the energy sector (Company C), and a leading company in the food and beverage industry (Company D). Hence, for this study, four firms are selected to obtain a comprehensive, cross-industry perspective, each representing a top-tier entity that developed a successful metaverse business transformation. The four use cases were carefully chosen to represent archetypal business transformations within each quadrant. Therefore, they illustrate strategic patterns transferable to other firms operating under similar conditions.

Table 5. Overview of the four case studies

	Company A	Company B	Company C	Company D
Business Headquarter	Telecommunication United Kingdom	Charity United Kingdom	Energy Italy	Food and beverage France
Synthesis of the metaverse business transformation	Customer service training; performing immersive customer service operations and training with AI-enabled training on the job	Branding opportunity: leveraging virtual experiences to revolutionize storytelling, creating new channels for donations (e.g. NFTs sale), and engaging prospective donors	Virtual meetings and training; replicating the office spaces in the metaverse to stimulate workforce engagement and enhanced collaboration	Product presentation: leveraging a gamified virtual experience to incentivize the selling of a specific real-world offering
Core focus of the metaverse business transformation (WHAT)	Internal processes (human resources)	Customer interaction processes (consideration phase)	Internal processes (human resources)	Customer interaction processes (awareness phase)
Main goal of the metaverse business transformation (WHY)	Create new value sources (acting on “how” the offering is delivered)	Create new value sources (acting on “how” the offering is delivered)	Improve existing value sources (optimization of existing BM by involving the coreset of individual firms)	Improve existing value sources (optimization of existing BM by involving the whole value chain)
Internal resources in charge of leading the metaverse business transformation	Customer service team with the support of young IT talents team	Marketing team, with finance department as a key stakeholder	Digital transformation department, with the collaboration of HR team	Digital transformation department, with the collaboration of the marketing and HR teams
Quadrant of the conceptual matrix	I	II	III	IV
Source(s): Authors’ own creation				

3.1.3 Data collection procedure. The data collection involved semi-structured interviews conducted via videoconferencing with multiple managers from each company directly engaged in their companies’ ventures into the metaverse (Flick, 2018). Each interview lasts around 40 min. The semi-structured interview protocol was designed to delve into various dimensions of business transformation driven by the metaverse. Questions were crafted to assess how organizations frame and implement these transformations, focusing on key aspects such as the creation of new value sources and the enhancement of existing ones (Massa and Tucci, 2013), the underlying organizational learning mechanisms, specifically exploration and exploitation (March, 1991), and the organization’s tendency in transferring technological capacities across organizational boundaries encompassing absorptive and desorptive capacities (Lichtenthaler and Lichtenthaler, 2010). Moreover, the interviews provided insights into organizations’ challenges in this context, including the risks associated with transformation efforts (Safrudin *et al.*, 2014). The discussions also addressed how organizations prioritize customer interaction and internal processes when navigating the

complexities of the metaverse, as highlighted by [Guenzi and Habel \(2020\)](#). The complete interview protocol can be found in [Appendix 6](#).

3.1.4 Data coding procedure. To guide the analysis, a qualitative coding process, informed by Gioia's method ([2021](#)), was employed to develop a grounded theory. This process entailed categorizing the interview data into first-order concepts, second-order themes, and aggregate dimensions. The coding was iterative, with constant comparison between cases to ensure consistency in theme identification ([Corbin and Strauss, 2015](#)). Interviews were conducted by two of the authors to enhance dependability. To bolster accuracy, transcripts of each interview were provided to participants for review. Following the interviews, the data underwent independent analysis by the same two authors, who identified first and second-order themes within each interview. Subsequently, these themes were systematically coded along the "what" and "why" dimensions. The two authors discussed their findings to identify commonalities and differences, eventually converging to a final consensus on interpreting the results. To corroborate the findings, the coding process was complemented by cross-case comparisons ([Yin, 2014](#)). The emerging themes have been validated through constant triangulation with secondary sources, such as company reports, social media posts, and websites ([Flick, 2018](#); [Yin, 2014](#)). Furthermore, to enrich the investigation, a six-month practical observation is conducted of the ongoing implementation of each of the four projects into the metaverse.

3.2 Panels of experts

In addition, four sessions with a panel of experts are conducted. Panels of experts provide a robust method for refining understanding and validating findings, particularly when investigating complex phenomena ([Krueger and Casey, 2015](#)) like metaverse business transformations. According to [Krueger and Casey \(2015\)](#), expert panels are beneficial for gathering insights from individuals with specialized knowledge and experience in the subject area, allowing for triangulation and enhanced credibility in the data. For this study, the panels were conducted over four sessions between March 2024 and September 2024 in the setting of an Italian University. Each panel involves interactive discussions with key stakeholders, including the technology developers responsible for designing the metaverse platforms and the agencies that helped implement and manage these projects. On average, each panel session saw the participation of five experts moderated by two researchers. Each session lasted approximately one hour and concentrated on specific elements of metaverse initiatives, including virtual environment design and content, user engagement strategies, and the challenges encountered during implementation. By including both developers and agencies, various perspectives were considered, facilitating a more nuanced understanding of the projects' business transformations.

4. Results

First-order categories such as "search," "risk-taking," "experimentation," and "discovery" reflect the creation of new value sources by uncovering novel opportunities within the metaverse. Similarly, categories like "refinement," "production," and "efficiency" highlight efforts to improve existing value sources through the optimization of organizational processes. These groups align with [March's \(1991\)](#) organizational learning theory, where exploration involves seeking new opportunities, ideas, and technologies, while exploitation focuses on refining existing knowledge or resources to enhance efficiency and performance.

Additional first-order categories, including "learning," "knowledge acquisition," and "adaptation," drive innovation and operational improvement, while categories like "technology diffusion," "knowledge dissemination," and "technology export" support customer-focused transformations by extending technological knowledge externally. These themes are further framed within the technology transfer theory ([Lichtenthaler and Lichtenthaler, 2010](#)). Precisely, absorptive capacity captures the ability to acquire and

utilize external knowledge, emphasizing inbound technology transfer. In contrast, desorptive capacity reflects the ability to transfer knowledge outward, enabling the identification and application of technological opportunities.

The expert panels enriched the findings by validating patterns observed in the interviews and offering new perspectives on technical and strategic aspects of metaverse adoption. These insights identified four approaches to metaverse business transformation, as illustrated in Figure 2.

4.1 Quadrant I: absorptive innovation

Absorptive Innovation focuses on creating new value sources within internal processes through the inbound transfer of technological competencies. Company A partnered with an external service provider to develop an immersive virtual training environment and radically changed the training procedure of customer service operators. Traditional scripted scenarios were replaced with simulated interactions in VR, where operators engaged in simulated interactions with AI-powered fictitious customers. These simulations allowed employees to practice verbalizing and solving complex inquiries in realistic scenarios, yielding significant performance improvements. As the Head of Digital and Innovation noted, the “borderless” nature of virtual training heightened its effectiveness, addressing factual problem statements rather than idealized cases. Following this success, Company A extended VR use to other key activities, such as onboarding. This approach underscores the role of absorptive capacity in fostering exploration and internal technological adoption within an organization.

4.2 Quadrant II: desorptive transition

Desorptive Transition focuses on creating new value sources through outsourcing technological knowledge to enhance customer relationships and target new segments. Company B exemplifies this approach through a gamified fundraising initiative leveraging NFTs and virtual donations. This initiative aimed to introduce a novel fundraising channel via virtual environments and engage younger audiences (e.g. Gen Z and Gen Alpha). Company B disseminated informative content on accessing the virtual experience and purchasing NFTs through social media, facilitating recipient understanding and participation. The Head of Digital and Innovation highlighted the “strong logic of engagement” enabled by the metaverse, which proved more effective than traditional channels. Moreover, Company B

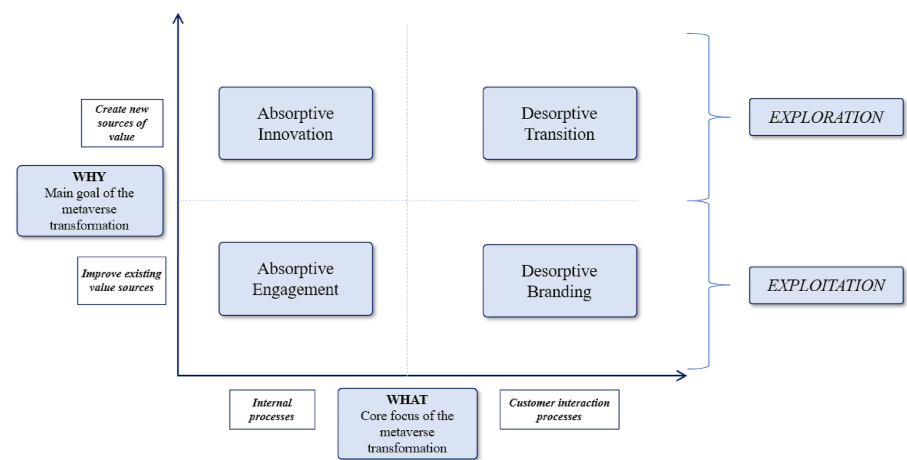


Figure 2. Four approaches to metaverse business transformation. Source: Authors’ own creation

ventured into the metaverse with a test-and-learn approach as part of a long-term omnichannel marketing strategy to expand its audience through immersive technologies. Company B successfully combined innovation in customer interaction processes with knowledge transfer, fostering broader adoption and engagement with virtual technologies among new target audiences.

4.3 Quadrant III: absorptive engagement

Absorptive Engagement focuses on achieving efficiency gains in existing internal processes through inbound technological transfer. Company C enhanced remote collaboration by simulating physical work environments in Virtual Reality. This initiative addressed declining participation and creativity in virtual meetings, leading to increased productivity and engagement. These virtual simulations fostered greater employee engagement and collaboration, resulting in improved productivity. The design and implementation phases were outsourced to an external technology provider, and the testing phase targeted a select group of employees perceived as more inclined to embrace the initiative. This strategy enabled the company to gather feedback and facilitate the absorption of technological competencies. In line with an exploitative approach, the Digital Marketing Manager emphasized this transformation's "prudent" nature, which required modest resources and targeted early adopters for feedback. Encouraged by these outcomes, the company extended its use of metaverse technologies to training activities. Findings revealed an exploitative mechanism where technological absorption improved operational efficiency and mitigated employee disengagement.

4.4 Quadrant IV: desorptive branding

Desorptive Branding involves utilizing the metaverse as an additional communication channel to enhance brand equity without altering target audiences. Company D implemented a gamified virtual experience to promote health awareness initiatives related to its brand. According to the Digital and Data Director, the metaverse's scalability allowed the company to "improve brand equity" by engaging existing customers more effectively. Hence, Company D leveraged the metaverse as an additional communication channel to amplify its branding efforts alongside traditional marketing campaigns. Company D also facilitated technology transfer by guiding users on accessing the metaverse and engaging with its content. This approach highlights the strategic use of desorptive capacity to reinforce branding initiatives, where improving existing value sources is achieved by deepening customer engagement and loyalty. The company recognized the metaverse's potential for cultivating technological competencies and assets that could pave the way for more advanced transformations in the future.

5. Discussion

The findings outline four approaches to metaverse business transformation, each underpinned by a specific approach to organizational learning and technology transfer. Absorptive Innovation illustrates how the internal adoption of immersive technologies, such as virtual reality for training purposes, facilitates the creation of new value sources by enhancing performance and reconfiguring internal processes. Desorptive Transition underscores the role of technological knowledge dissemination in engaging new audiences through the metaverse, such as gamified fundraising with NFTs, thereby establishing new channels for customer interaction. These two strategies emphasize creating new value sources and establishing innovative channels for customer and employee interaction, positioning the metaverse as a foundational element of future business strategies of the firm.

Absorptive Engagement demonstrates the efficiency gains achievable by leveraging immersive technologies to optimize existing processes, such as remote collaboration, leading

to enhanced employee productivity and engagement. Descriptive Branding exemplifies the strategic use of the metaverse as a supplementary communication channel to reinforce brand equity and deepen customer loyalty without altering the target audience. These approaches focus on achieving tangible, near-term benefits. However, their impact on long-term organizational strategy remains uncertain and less clearly defined.

From a theoretical perspective, this paper contributes to three key theoretical streams. This study advances the theoretical understanding of technology-driven business transformation by adapting and extending the framework developed by [Guenzi and Habel \(2020\)](#) to the unique characteristics of the metaverse. This theoretical contribution addresses a key gap in literature, offering managers and scholars conceptual tools to navigate metaverse opportunities. The study also enriches the knowledge of technology-driven transformation (e.g. [Venkatraman, 1994](#); [Lucas et al., 2013](#); [Hess et al., 2016](#)) by situating the metaverse as a catalyst for organizational change, lastly, by characterizing four organizational approaches to metaverse business transformation the paper bridges insights from organizational learning theory ([March, 1991](#)) and technology transfer theory ([Lichtenthaler and Lichtenthaler, 2010](#)).

From a managerial perspective, these approaches provide a framework for understanding how organizations can navigate the metaverse to create and improve value sources internally and externally. By comparing the quadrants, it becomes evident that balancing exploration and exploitation strategies is critical for achieving sustained transformation. Absorptive Innovation and Descriptive Transition emphasize creating new value sources, whereas Absorptive Engagement and Descriptive Branding focus on improving existing ones. Together, these approaches advance the understanding of how metaverse technologies can align with diverse organizational objectives.

5.1 Theoretical contributions

First, this study enriches the body of work on technology-driven transformation ([Venkatraman, 1994](#); [Lucas et al., 2013](#); [Hess et al., 2016](#)) and the business transformation literature ([Hinings et al., 2018](#); [Warner and Wäger, 2019](#); [Safrudin et al., 2014](#)) by positioning the metaverse as a transformative catalyst for organizational change. Unlike prior research on technological innovation, this study emphasizes the interplay between immersiveness and interactivity as key drivers of strategic and operational shifts. In doing so, this study introduces a matrix for approaching metaverse-driven business transformation, significantly extending the theoretical framework of [Guenzi and Habel \(2020\)](#) in the emerging empirical setting provided by the metaverse. With the distinct types of internal processes and customer interactions that can be renewed or improved, the matrix offers a practical decision-making tool for organizations to prioritize and implement transformative initiatives. By linking theoretical insights to empirical examples, this study integrates the metaverse into broader discussions on strategic innovation ([Latino et al., 2024](#)) and technological adoption ([Keegan et al., 2023](#)) and offers actionable guidance for practitioners. This study demonstrates how the metaverse introduces unique conditions for strategic organizational shifts from a knowledge and capacity management perspective.

Accordingly, this study bridges organizational learning theory ([March, 1991](#); [Venkatraman, 1994](#)) and technology transfer theory ([Lichtenthaler and Lichtenthaler, 2010](#)) by offering a theoretical integration of how firms balance exploration and exploitation with capacity transfer in their adoption of metaverse technologies. Exploratory approaches facilitate the creation of new value sources, showcasing how organizations can leverage metaverse tools to improve their processes radically. By collaborating with an external provider, Company A developed immersive virtual training environments that replaced traditional scripted scenarios with AI-driven simulations. While assessing the internal performance improvement and absorbing technological expertise from the provider, the company unlocked the potential to extend metaverse technologies to other internal processes. When firms adopt an exploratory approach toward customer interaction processes, they

engage with new audiences innovatively, transferring technological knowledge to a new target and opening up new marketing and branding opportunities. Company B's gamified NFT fundraising initiative exemplifies this approach, where the company leveraged internal knowledge to leverage the metaverse to engage younger generations in novel ways, broadening the brand's audience reach and renewing brand interaction. Exploitative approaches facilitate the optimization of existing value sources, demonstrating how organizations can leverage metaverse tools to achieve incremental improvements in their processes. Companies adopting exploitative approaches to optimize existing internal processes leverage the metaverse to enhance productivity without significant reliance on external expertise. For example, Company C improved internal processes by using Virtual Reality to simulate physical work environments, which increased employee engagement and collaboration during remote meetings without impacting core internal practices and strategic investments in the metaverse. For companies adopting exploitative approaches to customer interaction processes, the metaverse can enhance existing branding efforts and deepen customer engagement. Company D implemented a gamified virtual experience to promote health awareness initiatives, effectively reinforcing brand equity by engaging and communicating with their existing audience in new ways.

This paper contributes to the growing metaverse literature (Dwivedi *et al.*, 2022; Mancuso *et al.*, 2024) by exploring the potential of metaverse for business transformation, a topic where prior research has primarily focused on technical aspects (Keegan *et al.*, 2023; Ritala *et al.*, 2024). Building on Mancuso *et al.* (2023), it examines the metaverse's capacity to transform businesses by distinguishing between internal and customer-facing processes. By linking theoretical models with real-world cases, the study demonstrates how the metaverse drives strategic innovation and organizational transformation (Latino *et al.*, 2024). It also enriches the discourse on metaverse implementation strategies (Keegan *et al.*, 2023) by providing insights into how firms leverage metaverse technologies to achieve internal and customer-oriented goals. Furthermore, this research enhances our understanding of businesses' challenges in navigating the discontinuities inherent in metaverse-driven transformations (Kaplan and Haenlein, 2024; Mouzas, 2022). It demonstrates how firms balance the immersive potential of metaverse technologies against stakeholder-specific barriers (Conduit *et al.*, 2014). For instance, while companies like Company A adopt immersive tools to enhance internal training programs, overcoming resistance through a deep collaboration with external providers, customer-facing applications often encounter higher resistance, requiring firms to transfer knowledge and balance technological complexities to facilitate user adoption. Similarly, exploitative approaches, like Company C's use of virtual reality to enhance internal processes, face fewer challenges than customer engagement initiatives, such as Company D's gamified health awareness campaign, which must address varying user receptivity to metaverse tools.

5.2 Managerial implications

The paper provides several contributions for firms willing to transform their businesses in the metaverse.

The metaverse is not a mere technological advancement; instead, it has the potential to transform collaborative endeavors within and beyond organizational boundaries, influencing the dynamics of customer relationships, the interactions between customers and employees, and the very nature of employee interactions. Therefore, the IT department is not sufficient or adequate to sustain new ventures in the metaverse. The entire organization must be involved, mainly core functions and top management. The senior management team is responsible for disseminating information throughout the organization regarding the potential for the metaverse to enhance efficiency and effectiveness regarding internal processes and customer interactions. In the following, it is depicted the role that each organizational area may assume along the implementation of the metaverse business transformation:

- (1) Human resources: This area is key to the enhancement of internal collaboration and the improvement of employees' engagement, satisfaction, and potential retention. The metaverse has the potential to provide employees with various immersive learning platforms, virtual meetings, and training opportunities, as illustrated in the case study analysis. Furthermore, it can be a valuable tool for attracting and retaining talent.
- (2) Digital transformation: it plays a key role in driving the venture, as the metaverse has the potential to support and sustain product innovation. As evidenced by the cases of Burberry and Nike, introducing new products and additional offerings is a viable proposition. The metaverse offers novel avenues for designing, testing, and prototyping new products, as evidenced further by the Boeing case.
- (3) Operations and supply chain: they enable the integration of digital and physical ecosystems to distribute virtual and hybrid products efficiently. A key opportunity is operational efficiency, as evidenced by the BMW Group case study. In this context, digital factories can facilitate the optimization of production plants and the management of supply chain processes.
- (4) Marketing and sales: In terms of external processes involving customers, the metaverse supports customer interaction throughout the customer journey, from awareness to loyalty. Being the customer the central value source, it is evident how such relationships should be accurately devised and managed strategically. The marketing department is key to enabling and enhancing customer engagement. Collaboration with sales is essential to collect information on customer needs, expectations, and responses to new digital forms of interaction. The possibilities are countless, as highlighted in the illustrative cases, such as the organization of new product launches in the metaverse (e.g. Samsung), virtual testing (e.g. Hyundai), selling virtual products (e.g. Christie's) or delivering loyalty programs on digital goods (e.g. Clinique).
- (5) Finance: the financial department evaluates investment opportunities in the metaverse, supporting the financial risks assessment and evaluating potential returns on investments. Furthermore, it oversees the management of digital currencies and virtual transactions, facilitating the evaluation of the economic implications of investment in the metaverse.
- (6) IT: the IT department plays a pivotal role in facilitating the implementation of the metaverse infrastructure. However, the role of the IT department must be that of an enabler of the transformation rather than that of a leading function. It should concentrate on constructing the requisite technical architecture, including integrating AR/VR technologies, providing assistance in technology management, and ensuring cybersecurity. Nevertheless, the function of the IT department is to facilitate the innovative processes of other departments and ensure the fulfillment of their respective objectives.

By operating cross-departmental and cohesively, companies can leverage the metaverse not merely as a technological instrument but as a strategic business associate. Furthermore, the metaverse can create new sources of value for customers, not only through new offerings but also by opening new channels of contact (Wendy's, Gucci), which enable immersive and personalized customer experiences. Thus, allowing unavailable interactions in traditional channels and supporting branding initiatives reinforce customer engagement and loyalty. On the other hand, improving existing value sources is equally important. Here, the metaverse can foster the optimization of existing BM, refine current internal processes, and obtain efficiency gains. On the customer side, this approach involves executing marketing actions that enhance brand equity without necessitating a shift in the customers' target or positioning. In light of

this, this study can serve as a compass to devise the strategy. At the same time, the guidelines provided ensure that none of the plan's key components is overlooked when executives approach metaverse business transformation.

Finally, it is essential to balance exploratory innovation and exploitative optimization. A phased approach to metaverse transformation can facilitate the attainment of such a balance and mitigate the risk of undertaking this novel and inherently risky initiative. It is recommended that companies initially launch small-scale exploratory projects, such as opening a new virtual channel for interaction with selected customers. This enables the acquisition of knowledge and undertaking experiments without assuming excessive risks (e.g. customer dissatisfaction, misalignment in brand positioning) and the commitment of significant resources at the outset. As they expand their presence in the metaverse, companies can transition to exploitative projects, gradually integrating these activities into their core operations. Given that organizational engagement is a crucial factor, companies need to foster a culture that encourages innovation and efficiency to balance exploration and exploitation. This can be achieved by establishing objectives, allocating resources, and defining incentives. Here, ensuring that financial, human, and technological resources are allocated effectively to exploratory projects is essential. While these projects may not generate immediate profitability, they can drive long-term firm transformation. Concurrently, allocating resources to expand and enhance existing operations demonstrates the financial impact of metaverse initiatives on the bottom line.

5.3 Social implications

Alongside the implications for firms, the paper provides suggestions that policymakers can leverage to shape strategic interventions. Specifically, public stakeholders could design initiatives to foster innovation and technological adoption aligned with the four identified approaches.

Regarding Absorptive Innovation, the government can support companies with grants for adopting advanced technologies or by setting tax credits for R&D expenditures aimed at digital transformation. Furthermore, governments can establish innovation centers as knowledge-sharing hubs for advanced technologies to improve the absorption of technological competencies from outside the company. Incubation centers to nurture startups specializing in these approaches are also key.

Policymakers may also support companies in transferring technological competencies to their customers, in line with the Desorptive Transition approach, by promoting national or local campaigns to create awareness about emerging technologies and enhance consumers' digital skills. Here, dedicated policies are needed to ensure inclusivity by ensuring these opportunities are open to all interested recipients. Plus, investing in the digital infrastructure is essential, for instance, by providing access to high-speed internet in public areas.

To foster Absorptive Engagement, enabling employees to absorb and refine their technological competencies, policymakers may financially support companies, envision tax deductions, and provide grants for companies investing in employee training programs. Public-private partnerships may also work by co-financing dedicated research centers and knowledge hubs focused on metaverse technologies. Moreover, policymakers could foster ecosystems favoring absorptive engagement, encouraging collaboration between businesses and technological innovators.

To sustain Desorptive Branding strategies, public stakeholders may also be engaged in co-branding initiatives that promote local products, tourism, or specific initiatives in virtual environments. The development of such initiatives at a local or regional level could be of great interest, for instance, by developing partnerships between local authorities and companies consortiums or hubs. Furthermore, policymakers may encourage companies to sustain cause-driven branding initiatives like sustainability-focused campaigns or virtual charity events.

5.4 Limitations and future research

First, the case study approach may lack generalizability (Yin, 2014). While the findings' generalization has been attempted through the interaction with experts and top managers within several workshops, future research could be aimed at extensively analyzing the emerging metaverse use cases. These studies can focus on assessing the transformative potential of the metaverse in reshaping customer interactions for non-younger generations. Indeed, while young users mainly experience the metaverse, its influence is expected to be fully realized across a broader demographic spectrum over time (Auxier and Arbanas, 2023). Thus, future studies may approach metaverse applications addressed to broader demographics. Furthermore, incorporating quantitative methods and approaching case studies of companies operating in multifold industries and/or countries could enhance consistency and theory verification.

Second, the primary focus is on established companies and their metaverse business transformation. However, it could be interesting to study nimble startups to assess not only the business transformation but also the business design process. Furthermore, small to medium enterprises may face further difficulties embracing the metaverse business transformation due to the lack of financial resources, the reduced availability of competencies and specialized skills, or organizational burdens. Exploring how such companies face the metaverse from a strategic and implementation standpoint could add to the understanding of "how" this technological innovation could generate value in SMEs. It is indeed possible that the approaches to the metaverse venture depicted in the current work differ in smaller companies compared to large enterprises.

Third, the study is limited to European firms. Future research could expand on this by selecting firms from other geographical areas, where different market conditions, regulatory environments, and technological advancements may influence metaverse-driven business transformations. The same internal culture can be a variable affecting the success of these initiatives, as this work underlines the strong organizational cohesion and collaboration behind the metaverse implementation. Therefore, the academic and managerial realms can be advanced by replicating this study under different sampling conditions (e.g. firm size, industry, and geographic region), offering a more comprehensive perspective on metaverse adoption and transformation across diverse contexts.

Note

1. Crypto-assets are digital assets secured by blockchain technology that plays a role in virtual environments. One prominent example of crypto-asset is Non-Fungible Tokens (NFTs), which are unique crypto-assets used to represent ownership of digital items such as virtual real estate, avatars, art, and other collectibles within the metaverse (Mancuso *et al.*, 2023).

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Supplementary material

The supplementary material for this article can be found online.

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