



Metaverse meets digital entrepreneurship: A practitioner-based qualitative synthesis

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Abstract

Purpose – Considering the pervasiveness of technology, this article offers an understanding of how the metaverse can impact digital entrepreneurship. The objective will be to gather professional evidence on how the revival of this new technology can bring entrepreneurial development.

Design/methodology/approach - Through a qualitative study approach based on applying the metaverse in digital business contexts and analysing 533 practitioner sources from the NexisUni database, it will be possible to identify the concepts and application techniques of this emerging technology. The research adopts a qualitative methodology based on a mixed thematic and content review using tools such as ATLAS.ti and Leximancer.

Findings – Our study finds three relevant macro-topics for metaverse and digital entrepreneurship (Technology, Immersive and Design) and eight concepts (Private Solutions, Digital Twins, Gamification, Public Solutions, New Business Worlds, Co-design, Collaborative Spaces and Stakeholders' participation). The uncovered elements demonstrate professionals' interest in a new mode of digital entrepreneurship using the metaverse. This interest highlights the commitment of companies and entrepreneurs toward discovering new services delivered in virtual and parallel worlds that find the creation of digital twins as their essence. Therefore, the study explores ongoing relationships for developing increasingly technically complex metaverse platforms and customer service offerings.

Research limitations/implications – The study has some limitations as the selection of the database and the way the cases are focused on, which may be a stimulus for future studies. The analysis has innumerable theoretical and practical implications. In the first case, our research will shed light on an empirical case concerning the conceptual difference between innovation or greater transformation of business models through the metaverse. This work will directly contribute to the global discussion by identifying a model for applying emerging technology to digital entrepreneurs. Finally, from a practical point of view, we will provide new insights to digital entrepreneurs by showing them applications, best practices, and platforms they can use for their businesses.

Practical implications - On a practical level, we show practical opportunities coming from the metaverse for digital entrepreneurs. This study may inspire CEOs, managers, and future

entrepreneurs to use the metaverse to expand their businesses by diversifying their services into numerous sectors.

Originality/value - To the best of our knowledge, this study represents one of the first efforts to study the metaverse by framing it from theoretical and practical perspectives of digital entrepreneurship. Additionally, future research implications may guide researchers in this brilliant research field.

Keywords: *Metaverse, digital entrepreneurship, co-design- digital twins, public value, qualitative study*

1. Introduction

In recent years, we have witnessed the spread of new digital technologies as drivers for novel business ideas (Kraus et al., 2019a). A large part of the world's entrepreneurship progress depends on technological changes. Numerous studies stress the role of technology as an entrepreneurial enabler. For instance, according to Schiuma et al. (2021), entrepreneurs have increasingly employed new technological ways to promote competitiveness. Moreover, Troise et al. (2022) confirm that new technical environments enable entrepreneurs to navigate turbulent and uncertain environments. Therefore, numerous scholars indicate that cutting-edge technologies can promote winning entrepreneurial opportunities (Dong, 2019; Nambisan, 2017; Upadhyay et al., 2021). While one stream of the literature invokes positivist and constructivist ideas, other authors question the business issues such changes might promote. For instance, according to Oyemomi et al. (2016), adopting emerging technologies only sometimes represents light and successful choices from a business perspective.

Nonetheless, as most often recalled, it is first necessary to study and evaluate the theoretical significance of technology adoption and provide practical implications for entrepreneurs (Garousi Mokhtarzadeh et al., 2020). The need to rely on external knowledge and evaluate application capabilities is emerging, especially regarding dynamic platforms (Biancone et al., 2021), such as the advent of the metaverse. Despite considerable interest in professionals from leading international consulting firms (Accenture, 2022; KPMG, 2022; Ward, 2022) and other sectors such as marketing, supply chain, gaming, and health (Cross, 2022; Marr, 2022), science is currently questioning technology's impacts. The metaverse refers to a virtual reality shared through the Internet, where each human being is represented in three dimensions through an avatar (Neal Stephenson, 1992; Sparkes, 2021). **The term metaverse was first used by Neal**

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3 Stephenson in 1992, and it is described as a virtual environment that originates in a computer
4 and is based on various concepts (Alvarez-Risco *et al.*, 2022). What seemed futuristic a short
5 time ago opens the door to new forms of digital entrepreneurship today (Gursoy *et al.*, 2022).
6
7 The metaverse offers an immersive experience based on augmented reality technology, creates
8 a mirror image of the real world based on digital twin technology and builds an economic
9 system based on blockchain technology (Ning, Wang, Lin, Wang *et al.*, 2021). For instance,
10 Kraus *et al.* (2022) provide an entrepreneurial and rebranding perspective through the
11 metaverse, denoting a radical change in the Facebook business model. Other research
12 experiences are ongoing in conferences and book chapters (Inder, 2023; Sarkar & Kedas,
13 2022), highlighting the literature's shortcomings. Therefore, there is a need to glimpse a
14 contribution that offers state-of-the-art attempts by companies and entrepreneurs to foster their
15 businesses through the metaverse.
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25 That said, the contribution of this research seeks to address two primary objectives. First, this
26 paper strives to provide the concepts, theoretical tools, and advanced techniques related to the
27 metaverse. Second, we aim to link theory to empirical practice by showing how the metaverse
28 can be an enabling technology for entrepreneurship. As the literature shows, several studies
29 need to understand how the metaverse can enable digital entrepreneurship tools and techniques
30 (Dong, 2019; Kraus *et al.*, 2019a; Oyemomi *et al.*, 2016). Hence, this paper is set to address
31 the following research question:
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38 *RQ1: How can the metaverse enable digital entrepreneurship tools and techniques?*

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40 This study highlights three relevant macro-topics (Technology, Immersive and Design) and
41 eight concepts (Private Solutions, Digital Twins, Gamification, Public Solutions, New
42 Business Worlds, Co-design, Collaborative Spaces and Stakeholders' participation).
43 Furthermore, the data will demonstrate how it can increase management efficiency and extend
44 the entrepreneurial business model using frontier technologies. Therefore, this research will
45 also provide a theoretical framework for all digital entrepreneurs looking at new and emerging
46 technologies. As such, the study's findings will provide several theoretical and practical
47 implications. Regarding the theoretical contributions, this research builds on the study of Kraus
48 *et al.* (2022). It sheds light on an empirical case concerning the conceptual difference between
49 innovation and the increased transformation of business models through the metaverse. This
50 work will directly contribute to the global discussion by identifying a model for applying
51 emerging technology to digital entrepreneurs. In particular, the metaverse enables the
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3 implementation of theoretical concepts such as gamification, co-design and digital twins. On
4 the other hand, the practical implications of this paper provide new insights for digital
5 entrepreneurs. Starting from the selected best practices, the objective will be to extract and
6 contribute knowledge applicable to countless contexts and share practical entrepreneurial
7 ideas. Some concrete cases explored within the study include LGGDDPP World, Siemens and
8 Intel Corporation. These practical cases can inspire other managers and future entrepreneurs to
9 use the metaverse to expand their activities and services.
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16 Our reminder of the paper is organised as follows. The next section identifies the theoretical
17 background focusing on digital entrepreneurship theories and experiences and analyses
18 metaverse opportunities in theory. Then, section three will discuss the methodological flow
19 employed to address the asserted research question. This is followed by discussing the results
20 and considering the literature flow. Finally, the last section concludes the paper by addressing
21 theoretical and practical implications, limitations, and future research avenues.
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27 2. Literature review

28 2.1. Digital entrepreneurship

29
30 The pervasiveness of digitisation has paved the way for countless entrepreneurial opportunities
31 and a timely research line (Mir *et al.*, 2022). As indicated in the literature (Kraus *et al.*, 2019b),
32 studying digital entrepreneurship means identifying new digital business models,
33 understanding new processes, implementing new platform strategies, creating, and facilitating
34 new digital ecosystems, providing entrepreneurship education, and facilitating digital social
35 entrepreneurship (Table 1). Creating new digital businesses means designing, launching, and
36 managing new companies as much as possible in the digital world (Hsieh & Wu, 2019a). These
37 characteristics then clash with the reality of businesses and entrepreneurs. While digital
38 pervasiveness is highest in large companies, this is more limited for small-to-medium-sized
39 companies or single-entrepreneurship entities. For example, Jiao *et al.* (2022) highlight how
40 digital entrepreneurship is more difficult in single-entrepreneurship cases and is positively
41 influenced by exposure to digital networks and innovative culture, even according to the gender
42 of the entrepreneur himself. Other studies point out that being a digital entrepreneur depends
43 on variables such as business innovativeness, intentionality, convenience, culture, flexible
44 design, entrepreneurship orientation, generality, openness, network, and technology orientation
45 (Dutot & van Horne, 2015; Upadhyay *et al.*, 2022). Therefore, while exposure to the digital
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environment can play an essential role for entrepreneurs, the presence of digital skills enables the start of new initiatives to understand new technologies (Mir *et al.*, 2022).

Back in 2007, it was predicted that leading technology companies would have the opportunity to mix the scenarios of augmented reality, lifelogging, virtual worlds, and mirror worlds by creating a world beyond the real one, the metaverse (Kim, 2021). As Biancone, Secinaro, Iannaci, et al. (2021) and Jafari-Sadeghi et al. (2021) suggested, digital transformation and new technologies can create value in the company through new expenditures in research and development as well as the registration of brands or patents. This increase in value is happening thanks to technologies that were previously not considered and are now revealing their potential such as the metaverse and the massive investments of large entrepreneurs like Mark Zuckerberg for Meta (Kraus *et al.*, 2022). It is already witnessing the formation of an ecosystem of meta-verses composed of several actors helping each other to create a second world simulating the real one (Kim, 2021).

However, when using new technologies, people, companies, and organisations leave traced digital footprints that can detect information such as identity, location, and strategies adopted (Falchuk *et al.*, 2018).

In addition, privacy infringement is also a problem that needs to be considered in the metaverse, where various information not generated in real-world interactions is collected and processed in real-time (Kye *et al.*, 2021). At the same time, the metaverse's severe privacy invasions and security breaches (inherited from underlying technologies or emerged in the new digital ecology) can impede its wide deployment (Wang *et al.*, 2023).

-----Please insert **Table 1** here-----

Entrepreneurship through the metaMetaverse is a virtual world that empowers users to interact socially, using digital avatars, to generate value and co-create experiences (Buhalis *et al.*, 2023; Hirsch, 2022). Advances in new computing powers, hardware-software blending, and efficient Internet speeds enable the creation of dedicated applications in virtual worlds (Arpaci *et al.*, 2022). Metaverse integrates the most advanced technologies, such as cloud computing, blockchain, artificial intelligence, 5G, and computer vision, and has applications in numerous fields, such as video games, business and art (Ning, Wang, Lin, Wang Wenxi, *et al.*, 2021). Advancements are progressively leading people to use virtual, interactive, collaborative, and immersive environments (Dwivedi *et al.*, 2022). Therefore, the metaverse

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3 now turns out to be a parallel virtual world where people can perform, play, socialise, discover
4 new realities, and act themselves (Duan *et al.*, 2021). In recent years, the metaverse has
5 attracted enormous attention worldwide. It seems that no day goes by without a company or
6 celebrity announcing that they are building a presence in a virtual universe (Vidal-Tomás,
7 2023).

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13 Movement (albeit virtual) into new digital worlds creates unique individual needs,
14 progressively stimulating entrepreneurs to provide new products and services that match real
15 needs. In other cases, the metaverse is seen as an opportunity for entrepreneurs to offer new
16 activities to individuals and manually bring them into a virtual and digital world. This is the
17 case for vehicle manufacturers creating sales spaces for new electric vehicles (Glenday, 2022;
18 Stellantis, 2022), for social media creating a range of dedicated services for consumers to test
19 and try products digitally (Kraus *et al.*, 2022; Meta, 2023) or for transforming the concept of
20 telemedicine and raising the level of doctor-patient interaction (Biancone, Secinaro, Marseglia,
21 *et al.*, 2021; Walcott, 2022). Opportunities for entrepreneurs arise from the fast evolution and
22 increase in the use of VR/AR headsets, Augmented Reality (AR), Extended Reality (XR),
23 and haptic gloves, which allow users to experience high levels of interaction and immersive
24 experience fully (Dwivedi *et al.*, 2022). Although being explored, the metaverse represents
25 both a risk and an excellent opportunity for entrepreneurs (Kang, 2021) who will be able to use
26 digital services as a lever for development. Indeed, organisations are beginning to evaluate the
27 potential of the metaverse and how it can be integrated into their existing business model
28 (Dwivedi *et al.*, 2022). For instance, hospitality and tourism organisations need to use the
29 metaverse strategically to customise and co-create hybrid virtual and physical experiences,
30 allowing consumers to engage with them and other customers before, during and after their
31 visit (Buhalis *et al.*, 2023).

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34 Making our own the inherent riskiness of a constantly updating research topic, the continuation
35 of the article will aim to shed light on best practices and case studies of digital entrepreneurs
36 and companies that see the metaverse as a future source of development.

3. Methodology

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39 The following sub-sections will illustrate the research methodology adopted. The first section
40 will investigate the qualitative reasons and opportunities, the research context, and the data
41 selection process. The second section will explore the data analysis and the tools used.

3.1. Motivations, research contexts, and data selection

The research adopts a qualitative methodology based on a hybrid thematic and content survey. Numerous authors confirm this research approach through countless scientific publications. For example, in their theoretical contribution, Massaro et al. (2019) state that this approach allows researchers to discover new variables and complex processes within a social and corporate context. In addition, for Gummesson (2006), qualitative research in managerial fields allows researchers to capture countless intangible factors that create value for the literature. Furthermore, the opportunity to bring in practical evidence and success stories allows, in retrospect, to make cross-comparisons between different realities, answering research questions that question the “How” and “Why” of a phenomenon (Yin, 2017). Therefore, considering that the metaverse is progressively introducing new ways of doing business and entrepreneurial opportunities potentially changing social contexts, the qualitative methodology is suitable for investigating application modes and challenges (Dal Mas *et al.*, 2020).

In addition, as stated by Scott et al. (2013), the qualitative methodology may include the analysis of multiple sources and the comprehensive development of ‘leading case studies, i.e., best practices that can advance insufficient practical knowledge in each field. Again, the practical explanation of the metaverse as an enabler of digital entrepreneurship leads us to assert that the multiple case study methodology will be able to provide more knowledge in this ongoing field. The present research is grounded in the theory of digital entrepreneurship and aims to discover how the metaverse can be a positive enabler of entrepreneurship experiences. Therefore, from these premises, the first step taken by the researchers was to research and subsequently select all the current and available sources.

As suggested by Massaro et al. (2019), rhetoric and insufficient transparency in qualitative sources and case studies are two of the most evident problems in the literature. Additionally, recent research topics may require more work to find relevant academic sources. As indicated by Romme et al. (2015) and explored by Secinaro et al. (2021), practitioners’ sources can help find results where one is in growing research topics with nascent debate. It could be even more interesting in entrepreneurship (Jack & Anderson, 1999). Therefore, researchers use the NexisUni database to select and map entrepreneurship experiences in the metaverse. This database is widely used to conduct literature reviews and extract practical sources such as business opportunities, web articles, blogs, news releases, and case studies (Biancone *et al.*, 2022; Boudlaie *et al.*, 2022; Calandra *et al.*, 2022). Considering the research question, the filter

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3 “Business Opportunities” seems adequate for looking forward to new entrepreneurial
4 opportunities using the metaverse (Nandi *et al.*, 2022; Weiss & Nemecek, 2021).
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8 As for the selection criteria, we limited the search to the last two years (i.e., the period of most
9 excellent momentum to select sources that adopt the metaverse as a possible development for
10 their business) and English sources. After an initial selection of reports and news items, we
11 validate the sample by triangulating the information available through web pages, press
12 interviews, and audio/video interviews where possible to verify the existence of sources
13 (Secinaro *et al.*, 2020; Yin, 2017). Furthermore, to refine the technique of company selection,
14 the researchers used the technique of snowball sampling, as indicated by allowing access to
15 information through direct contacts and field interviews (Noy, 2008). Numerous studies in the
16 literature have used this snowball sampling technique within qualitative studies (Khurana *et*
17 *al.*, 2022). Therefore, the technique was used to gather new entrepreneurship experiences
18 through the metaverse.
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27 3.2. Data analysis and tools

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29 Using the search criteria, 533 articles for business opportunity sources were selected. Data
30 analysis thus began by sorting through all sources and downloading the PDF of each article.
31 Then, all data were analysed by researchers using two software programs, ATLAS.ti and
32 Leximancer. The former is a data analysis tool that can classify and create nodes between topics
33 covered in documents (Hwang, 2008). The software allowed researchers to develop a holistic
34 analysis environment by including codes for sectors and countries first investing in
35 entrepreneurial opportunities in the metaverse. Adopting different algorithms can extract co-
36 occurrence, semantic, and relational information from qualitative sources (Smith &
37 Humphreys, 2006). Mainly, Leximancer extracts Thesaurus-based concepts from text data
38 using automated content analysis. As confirmed by Massaro *et al.* (2021), it can enhance data
39 analysis by avoiding biases by manual procedures. The methodological flow is summarised in
40 Figure 1.
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52 4. Results

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54 The following sub-sections explain the link between the metaverse and entrepreneurship as a
55 research stream giving the content and thematic analysis.
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4.1. Descriptive elements and content analysis

To give context to the extracted data, Table 2 shows the trend of publication countries. The total number of results is obtained by checking the extracted articles and indicating the countries of news launches as countries. This check allowed the authors to avoid overlaps, especially in the case of corporate groups and with locations in multiple countries. This study will enable us to understand which countries and companies are investing in metaverse technology while incentivising entrepreneurial initiatives (Secundo *et al.*, 2021). As visible, the top countries in terms of the number of publications were the United States (136), Korean Republic (97), United Arab Emirates (78), China (38), and India (28).

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Finally, Table 3 below allows us to link the publications extracted from NexisUni and the sectors to which they refer. This link indirectly allows us to verify in which direction public and private investments are oriented in the study context (Machado *et al.*, 2021). As visible, among the most dynamic sectors, we discover Electronics (96), Computing & Information Technology (86), and Media & Telecommunication (80). The first three are directly connected to the creation of advanced virtual spaces. In addition, we also discover that the manufacturing, energy, and public administration sectors are initiating projects in the metaverse creating favourable environments for companies and entrepreneurs.

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4.2. Thematic analysis

As shown in Figure 2, the subject of metaverse feeds practitioners' debates creating connections with different concepts such as "technology", "digital", "platform", "business", "immersive", "developers", "design", and "solutions". The first research topic considers practical elements of emerging technologies used by companies. Then, the content analysis directly links new businesses and spin-offs. Finally, design and solutions conclude by providing a new matter of expert collaboration.

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The first topic practitioners address concerns the opportunities that the metaverse as an emerging technology offers traditional businesses and entrepreneurs (Table 4). For example, through a virtual world, it is possible to increase the number of services and solutions offered to consumers in countless areas. Through a virtual world, it is possible to increase the number of customers, which positively impacts margins and LGevenue (LGG, 2022a). This is the case

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3 with companies offering control services for e-mobility and virtual health care. Another
4 application by LGG denotes how: *“The Metaverse will bring greater capabilities that will*
5 *change how we engage across the digital space in the future. LGG is looking to broaden its*
6 *role and explore new services and applications for enterprises that leverage the capabilities of*
7 *the metaverse. iQ3 Connect provides immersive 3D workspace technology to enable*
8 *distributed teams to cost-effectively work, collaborate and train from anywhere, on any*
9 *Augmented Reality, Virtual Reality, LGr 2D device”* LGG, 2022b). In addition, the same is
10 happening for Siemens with the launch of the industrial metaverse that can democratise the use
11 of virtual worlds for manufacturing and production service employing the digital twins’
12 concept (Dubai Future Foundation, 2022; Siemens, 2022). Also, along the same lines is DPP
13 World, which has launched simulations of warehouse and terminal operations for the logistics
14 sector, following the logic of the digital twin, i.e., 3D virtual versions of physical assets and
15 inspections of containers and ships (Dubai Future Foundation, 2022). Therefore, such
16 applications make it possible to extend corporate businesses, bring more and more consumers
17 closer and diversify the activities of entrepreneurs.

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19 In addition, as demonstrated by Metascale (i.e., a startup active in corporate communications),
20 the metaverse enables new forms of financial and non-financial communication. At the same
21 time, thanks to interactivity, it is possible to convey messages of various kinds according to
22 business needs. It induces dynamic behaviour on the part of customers (e.g., using avatars)
23 (Metascale, 2022).

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25 The technology also opens up questions about the role of governments. For example, findings
26 show that public companies consider the metaverse significantly. Such is the case with the
27 United Arab Emirates, which clarifies through Minister of Health Al Olama: *“Metaverse*
28 *technology addresses customers’ needs in the three-dimensional digital spaces easily while*
29 *enjoying a digital and interactive sensory experience. He explained that the ministry intends*
30 *to expand the range of services it provides through the virtual environment offered by this*
31 *innovative technology to continue its pioneering journey towards improving the community’s*
32 *quality of life”* (Khaleej Times, 2022). Alternatively, France considers investment in the sector
33 so strategic that it adopted and launched a dedicated tax credit on the European continent.
34 Finally, still in the context of public utility contexts, the role of multi-service companies also
35 emerges (France 2030, 2022). The Dubai Electricity and Water Authority (DEWA) sees the
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3 metaverse as a source of advanced innovation by launching an entirely dedicated hackathon
4 (Dubai Electricity & Water Authority, 2022).
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7 Practitioners' consideration of the potential of the metaverse continues beyond there. Digital
8 reality enables the creation of virtual worlds and enables the creation of immersive businesses.
9 The challenge is well understood by Intel, which has begun production of next-generation
10 hardware capable of expanding the boundaries of current data connections (e.g., 5G) by
11 enabling companies and entrepreneurs to create new services and business models (Koduri,
12 2021). These include the opportunity to create online art exhibitions. For example, Forkast
13 (2022) has launched a new business that allows people to arrange a viewing of up to 52 works
14 of art by offering a sense of scale and immersion. In addition, exhibitions can also be enjoyed
15 offline (e.g., this is the case in areas lacking data connections). Finally, Walmart (2022), the
16 world's leading sizeable retail retailer, has unveiled one of the largest metaverse platforms to
17 offer its customers immersive experiences that include games and additional services compared
18 to physical stores.
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29 The third and final macro-theme that emerges from the thematic analysis is designed.
30 Launching immersive experiences requires personalised, immersive features with high-profile
31 interactive 3D content. For Adobe (2022), a leader in software for creative marketing and
32 document management solutions, the metaverse will require the co-design and design of even
33 more sophisticated marketing and e-commerce products and resources. It will also require new
34 collaboration spaces that will allow designers, engineers, entrepreneurs and business figures to
35 work together to scale new businesses and accelerate research and development of solutions in
36 the metaverse (Microsoft, 2022; NVIDIA, 2022).
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46 Discussion **RQ**tarting with the *RQQ* *How can the metaverse enable digital*
47 *entrepreneurship tools and techniques?*" the analysis of 533 results allowed researchers to
48 highlight some new implications for theory and practice. The results of this study bring out
49 three relevant macro-topics (Technology, Immersive and Design) and eight concepts (Private
50 Solutions, Digital Twins, Gamification, Public Solutions, New Business Worlds, Co-design,
51 Collaborative Spaces and Stakeholders' participation). The uncovered elements demonstrate
52 professionals' interest in a new mode of digital entrepreneurship using the metaverse. This
53 interest highlights the commitment of companies and entrepreneurs toward discovering new
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3 services delivered in virtual and parallel worlds that find the creation of digital twins as their
4 essence. Therefore, the study explores ongoing relationships for developing increasingly
5 technically complex metaverse platforms and customer service offerings.
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9 In this study, the authors argue that the metaverse represents an opportunity for numerous
10 business and entrepreneurial stakeholders and the entire supply chain, including the need to
11 upgrade Internet networks and data infrastructure. Furthermore, we denote how adopting a new
12 technology to explore new virtual worlds capable of increasing customers requires several vital
13 elements. First, as Jafari-Sadeghi et al. (2021) indicated, technological value creation needs
14 favourable conditions such as investment and knowledge translation regarding brands and
15 patents. This was observed in our results in the case of Adobe or NVIDIA through the market
16 launch of new enabling platforms towards entrepreneurs. Second, for the metaverse to be
17 explored by more and more entrepreneurs, it is necessary to create collaborative, flexible
18 environments aimed at the market launch of new services (Upadhyay *et al.*, 2022). Third,
19 although the difficulty for individual entrepreneurs to implement significant investments (Jiao
20 *et al.*, 2022), we discover how even in the case of the metaverse, support from public companies
21 (e.g., central governments) can be vital, for example, through tax credits (France 2030, 2022)
22 and finalised participation in hackathons (Dubai Electricity & Water Authority, 2022; Koduri,
23 2021).
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36 Moreover, any decision to act at the level of digital entrepreneurship can be explored through
37 the framework of Kraus et al. (2019b). Table 5 and the following subsections connect the
38 results with some theoretical implications, allowing a better understanding of the topic and
39 opening opportunities for future research.
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46 47 4.3. *Digital business model*

48 According to Kraus et al. (2019b) and Toniolo et al. (2020), a digital business model concerns
49 shifting business activities to fully digital environments. This shift coincides with the
50 emergence of new businesses arising from digitisation and offering products and services for
51 the digital world. Digitisation aligns with the metaverse, even more so than other technologies,
52 which aim to shift from the real to the virtual environment (Dwivedi *et al.*, 2022). We discover
53 how LGG is increasingly increasing its digital strategy through source observation.
54 Alternatively, Island Gallery is gradually diversifying its business by offering virtual art
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exhibitions using the metaverse. Finally, unlike physical stores, Walmart offers new virtual worlds for customers to experience different games and services. Therefore, the analysis of practical results confirms what is present in theory, although we are at an early stage of exploration by entrepreneurs.

4.4. *Digital entrepreneurship model*

Digital entrepreneurship models differ from traditional ones in the greater need for networking (Dutot & van Horne, 2015). The revival of the metaverse as a tool for entrepreneurship demonstrates this claim. The resurgence of the metaverse as a tool for entrepreneurship demonstrates this claim. Entrepreneurship has been observed mainly from the Metascale case, which enables different technology-based communication tools and focuses on the participation of potential customers through gamification (Rodrigues *et al.*, 2019). Moreover, such elements are also present in the Walmart case. Improving entrepreneurship models use the metaverse to centre the customer through avatars, enabling virtual games and simulating virtual shopping experiences that are matched in the real world (Figures 3 and 4).

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-----Please insert **Figure 4** here-----

4.5. *Platform strategies*

Early entrepreneurial ventures in the metaverse use digital platforms and, through avatars, allow users immersive experiences in virtual worlds. Our results, in line with Hsieh and Wu (2019b) and Kraus *et al.* (2019b), show that digital platforms can be used in three ways. First, through pure innovation initiatives that aspire to share new digital tools and develop entrepreneurial ventures, such as for Adobe, Intel Corporation, NVIDIA, and Microsoft. Second, through transaction platforms for business promotion by leveraging third-party technology to create additional lines of business and services (e.g., Ifland, DPalmart, Metascale and DPP World). Finally, integration platforms where entrepreneurs can develop new consumer projects (e.g., Siemens).

4.6. *Digital ecosystem*

As recalled, digital entrepreneurship is based on an ecosystem, i.e., a complex mechanism of interactions between different entities and with multiple utilities (Kraus *et al.*, 2019b; Mir *et al.*, 2022). Our results are in line with this view by extending its validity. The selected sources demonstrate elements of governance innovativeness by companies and public institutions. For

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3 example, the digital ecosystem is promoted by the Dubai Electricity and Water Authority
4 (DEWA) through forms of collaboration with schools and universities. Alternatively,
5 considering immersive experiences require solid digital skills and investments, tools such as
6 tax credits can facilitate the ecosystem of stakeholders interested in developing business in the
7 metaverse (e.g., Minister of Economy, Finance, and Industrial and Digital Sovereignty -
8 France).

13 14 15 4.7. *Entrepreneurship education*

16 Being a digital entrepreneur also means having the tools and notions that can make people
17 create innovative business ideas. The theoretical evidence of Kraus et al. (2019b) has been both
18 a light and a confirmation for us. The observation also confirms and extends the concepts for
19 the case of the metaverse as a living laboratory for digital applications (le Dinh *et al.*, 2018).
20 Education initiatives are put in place by Adobe and Walmart towards developers and their
21 customers to co-create novel business solutions. However, this assumption is also confirmed
22 through hackathons that inherently have prominent educational connotations.

23 24 25 4.8. *Social digital entrepreneurship*

26 Being digital also invokes social elements. As defined by Smith et al. (2017), new digital
27 business models require studies, among others, on the benefits of using digital profiles on social
28 capital. In addition, Sussan and Acs (2017) further extend the vision by specifying how some
29 digital activities could be equally traditional, creating an inevitable intertwining with routines
30 (Sussan & Acs, 2017). In the metaverse, the “social” need of entrepreneurs and then customers
31 mean using avatars to simulate digital worlds while maintaining the characteristics that best
32 suit the individual. Being social, therefore, is innate in entrepreneurs and is reflected in the
33 theoretical concept of digital twins repeatedly referred to Siemens and DPP World.

34 35 36 37 38 39 40 41 42 43 44 45 46 **5. Conclusions, limitations, and further research opportunities**

47 To conclude our study, starting from the premises that inspired it is necessary. Our research
48 explored the concepts, theoretical tools, and advanced techniques that digital entrepreneurs can
49 apply to the metaverse. Since this is a burgeoning area of research, we adopted a qualitative
50 research methodology using only professional sources. Therefore, our research focused on
51 available sources by identifying real case studies that can serve academics and entrepreneurs
52 to strengthen business ideas using the metaverse. Analysing 533 sources, we discovered three
53 relevant macro-topics (Technology, Immersive and Design) and eight concepts (Private
54 Solutions, Digital Twins, Gamification, Public Solutions, New Business Worlds, Co-design,
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3 Collaborative Spaces and Stakeholders' participation). In addition, we confirmed and extended
4 the theoretical implications of digital entrepreneurship by applying it to real metaverse cases.
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6 Finally, our study reiterates how digitisation can distribute value and diversify business
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8 activities.
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11 As reported in the discussion, the research allowed us to outline some implications of both a
12 theoretical and practical nature. Theoretically, we extend the debate on digital entrepreneurship
13 using the lens of Kraus et al. 2019b. In particular, the metaverse fosters new entrepreneurial
14 ventures based on theoretical concepts such as gamification, co-design and digital twins. At
15 the same time, developing new business models through technology can also enable new
16 opportunities for entrepreneurship. On a practical level, we have demonstrated with established
17 cases the opportunities that the metaverse can provide digital entrepreneurs by reaffirming the
18 value of technology as a lever for creating new business models. In addition, the cases
19 recounted here can inspire CEOs, managers, and future entrepreneurs to use the metaverse to
20 expand their businesses by diversifying their services into numerous sectors. The metaverse
21 can enable digital entrepreneurs to move into sectors other than their core business by
22 exploiting new opportunities. Finally, this study represents one of the first attempts to study
23 the metaverse by framing it from theoretical and practical perspectives.
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34 As is the case with all research, the study has some limitations. First, using a single database
35 and selecting some of the most globally cited cases may have limited our research. This will
36 prompt new frontier studies by integrating more databases as time and knowledge of the topic
37 progress. Second, not using scholarly sources from traditional databases such as Scopus or
38 Web of Science stems from the timeliness of our study and a constantly evolving stream of
39 knowledge. This limitation can stimulate future researchers to conduct holistic literature
40 reviews that encapsulate academics' thinking on the metaverse and its implications for
41 entrepreneurship. Third, the desire to explore the metaverse generically may have caused
42 researchers to miss some typical case study elements and concepts. Therefore, in the future,
43 colleagues may adopt multiple methodologies to explore one or more case studies in this area.
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Figure 1. Methodological flow in brief
Source: Authors' elaboration

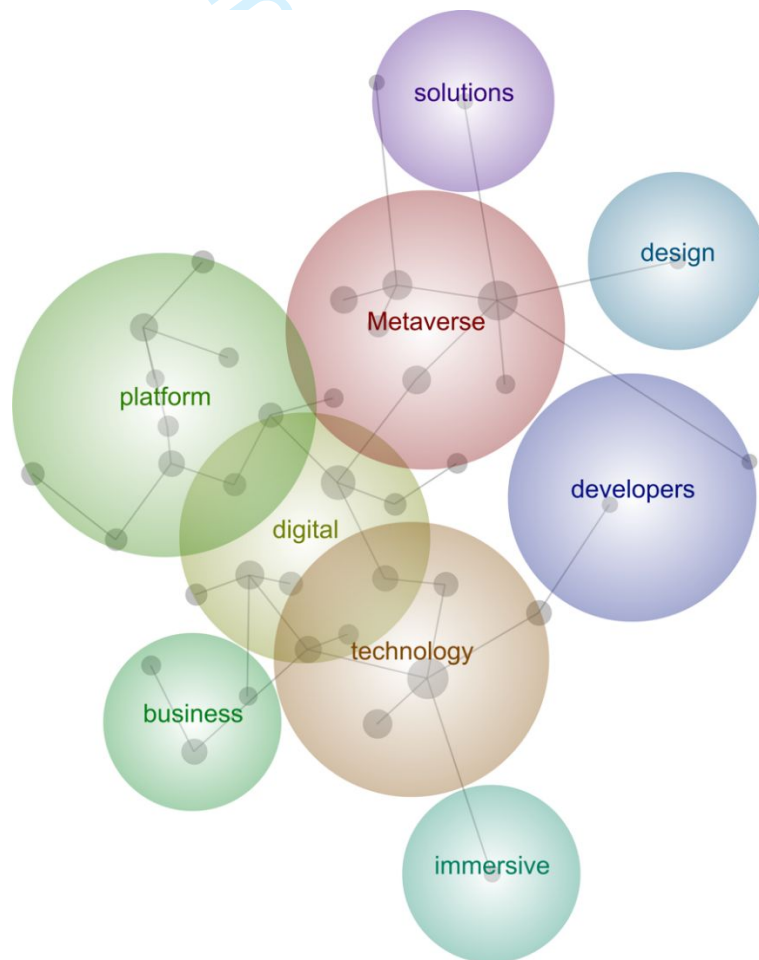


Figure 2. The metaverse and entrepreneurial opportunities
Source: Authors' elaboration



Figure 3. Walmart Land and Walmart’s Universe of Play
Source: (Walmart, 2022)



Figure 4. How Walmart envisions shopping in the metaverse
Source: (Walmart, 2022)

Table 1. Digital entrepreneurship: theoretical framework

Theoretical framework
Digital business model
Digital entrepreneurship process
Platform strategies
Digital ecosystem
Entrepreneurship education
Social digital entrepreneurship

Source: (Kraus *et al.*, 2019b)

Table 2. Countries' analysis

Countries	Number of results
United States	136
Korean Republic	97
United Arab Emirates	78
China	38
India	28
United Kingdom	20
Japan	11
Singapore	11
France	9
Brazil	9
Australia	8
Germany	6
Turkey	6
Switzerland	5
Canada	5
Sweden	5
Indonesia	4
Finland	4
Thailand	4
Malaysia	4
Russia	4
Andorra	3
Philippines	3
Slovenia	3
Uruguay	3
Spain	3
Italy	3
Israel	2
Netherlands	2
Peru	2
Hong Kong	2
Nigeria	2
Saudi Arabia	2
Malta	1
Poland	1
Austria	1
Cote D'Ivoire	1
Azerbaijan	1
Pakistan	1
Argentina	1
Portugal	1
Qatar	1
New Zealand	1
Egypt	1
Total	533

Source: Authors' elaboration

Table 3. Sectors' analysis

Sectors	Number of results
Electronics	96
Computing & Information Technology	86
Media & Telecommunications	80
Other	66
Manufacturing	57
Energy & Utilities	31
Banking & Finance	30
Environmental Industry	27
Public administrations	24
Health	16
Arts	13
Fashion	7
Total	533

Source: Authors' elaboration

Table 4. Metaverse opportunities within the entrepreneurship field

Macro-Topics	Concepts	Case study (if applicable)	Original quotes
Technology	Private solutions and new environments	LG Electronics North American Innovation Center	LG NOVA will build new businesses in Digital Health, Electric Mobility, and the Metaverse and pursue multiple paths to deliver new services and solutions that will help us move forward faster into the future (LG, 2022a).
	Digital Twins	DP World	The Metaverse will bring greater capabilities that will change how we engage across the digital space in the future. LG is looking to broaden its role and explore new services and applications for enterprises that leverage the capabilities of the Metaverse. iQ3 Connect provides immersive 3D workspace technology to enable distributed teams to cost-effectively work, collaborate and train from anywhere, on any AR, VR, or 2D device (LG, 2022b).
	Network and gamification	Siemens	DP World will explore metaverse applications for its services, including simulations of warehousing and terminal operations, in so-called digital twin's 3D virtual versions of physical assets, and container and vessel inspections. From Digital Twins to the industrial Metaverse The interoperability and openness of Siemens Xcelerator with its curated portfolio, where everything works seamlessly with each other in the future, is the perfect basis for the Industrial Metaverse, where players meet to democratize technology by making immersive experiences accessible to everyone. The digital twin is the critical technology for this digital transformation in this decade (Siemens, 2022).
	Metascale	Metascale is preparing a new type of metaverse service, intending to introduce the concept of Metaverse early next year. This three-dimensional virtual world enables story-based communication. It plans to provide a unique experience to users worldwide by utilizing Gamification, a device that enhances human-to-human interaction, which has recently been attracting attention (Metascale, 2022).	

Immersive

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3	Public solutions	Ministry of Health –	Al Olama pointed out that the field of customer service, which the ministry is reinventing
4		United Arab Emirates	within a sustainable virtual environment, is the best convenient and safe model for receiving
5			customers in the ministry and completing their transactions in a decentralized digital
6			platform.
7			He added: "Arab Health 2022 is a platform for innovations in the health field, and we are
8			pleased to announce the launch of the world's first virtual health licensing service center
9			through this global event. "Metaverse" technology easily addresses customers' needs in the
10			three-dimensional digital spaces while enjoying a digital and interactive sensory
11			experience." Al Olama explained that the ministry intends to expand its services through
12			the virtual environment offered by this innovative technology to continue its pioneering
13			journey towards improving the community's quality of life (Khaleej Times, 2022).
14			
15		Minister of Economy,	In France, we are fortunate to benefit from one of the richest video game ecosystems in the
16		Finance, and Industrial	world. Adjusting the tax credit dedicated to it will allow us to support innovative projects
17		and Digital	better and maintain our lead in this area. At a time when new technologies such as the
18		Sovereignty - France	metaverse and virtual reality are developing, this tax credit is one of the pledges of French
19			digital sovereignty. says Bruno Le Maire, Minister of Economy, Finance and Industrial and
20			Digital Sovereignty (France 2030, 2022).
21		Dubai Electricity and	Dubai Electricity and Water Authority (DEWA) has organized a Metaverse and Digital
22		Water Authority	Twin Hackathon, collaborating with the Higher Colleges of Technology in Dubai and
23		(DEWA)	Sharjah. This is in line with its continuous efforts to strengthen Dubai's position as an
24			incubator for creativity and a beacon of innovation; to ensure Dubai remains at the forefront
25			of cities that anticipate and shape the future. Twenty-four students participated in the
26			Hackathon. The Hackathon included workshops on DEWA and Metaverse and DEWA and
27			Digital Twin to motivate and inspire participants to create advanced technology solutions
28			through designs and prototypes (Dubai Electricity & Water Authority, 2022).
29			
30	New business	Intel Corporation	This technology that enables immersive virtual worlds to augment the real world opens up
31	worlds		many possibilities and keeps me excited to work every day. We believe that the dream of
32			providing a petaflop of computing power and a petabyte of data within a millisecond of
33			every human on the planet is within our reach (Koduri, 2021).
34			Regarding boundary expansion, 5G-Advanced has expanded from the current industrial
35			digitization trend to more new services and business models. For example, XR's immersive
36			experiences allow the users to reach out to the metaverse; the internet of vehicles makes the
37			automotive industry smarter; with the integration of communication and perception, 5G can
38			superimpose a perception of "radar" on communication functions (Koduri, 2021).
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Design	Co-Design	Ifland Gallery	<p>You can appreciate 52 works Various offline-scale metaverse exhibitions are held Ifland Gallery Land can display up to 52 works of art and provides a sense of scale and immersion at the level of offline exhibitions.</p> <p>In addition, various events, such as artist invitation lectures, can be operated through the main lobby screen (Forkast, 2022).</p>
		Walmart	<p>Were showing up in a big way, creating community, content, entertainment, and games through the launch of Walmart Land and Walmarts Universe of Play, said William White, chief marketing officer, Walmart U.S. Roblox is one of the fastest growing and largest platforms in the metaverse. We know our customers are spending loads of time there. So, were focusing on creating new and innovative experiences that excite them, something were already doing in the communities where they live and now, the virtual worlds where they play (Walmart, 2022).</p>
	Collaborative spaces	Adobe	<p>The metaverse and other immersive experiences will only succeed if they are feature-rich, personalized, engaging, and have interactive content, said Scott Belsky, chief product officer and executive vice president of Adobe Creative Cloud. To lead in the metaverse, brands should start creating 3D and immersive content now it will not only prepare them for the future but make their product design and creation of marketing and e-commerce assets better, faster and cheaper (Adobe, 2022).</p>
		NVIDIA	<p>The new NVIDIA Ada Lovelace architecture will enable designers and engineers to continue pushing the boundaries of engineering simulations, said Dipankar Choudhury, Ansys Fellow and HPC Center of Excellence lead.</p> <p>The RTX 6000 GPUs larger L2 cache, a significant increase in the number and performance of next-gen cores, and increased memory bandwidth will result in impressive performance gains for the broad Ansys application portfolio (NVIDIA, 2022).</p>
Stakeholders' participation	Microsoft	<p>Building for the Beyond is how the partnership will anticipate and develop for the future's needs, accelerate the innovation process, and create more significant degrees of participation for various stakeholders.</p> <p>This may include joint creation and design opportunities in the metaverse or accelerating research and development through quantum computing (Microsoft, 2022).</p>	

Source: Authors' elaboration

Table 5. Digital entrepreneurship meets Metaverse

Theoretical framework	Theoretical implications	Examples
Digital business model	Solutions and new environments	LG, Ifland Gallery and Walmart
Digital entrepreneurship process	Network and gamification	Metascale and Walmart
Platform strategies	Collaborative spaces and stakeholders' participation	NVIDIA and Microsoft
Digital ecosystem	Immersive	Dubai Electricity and Water Authority (DEWA), Minister of Economy, Finance, and Industrial and Digital Sovereignty – France, Intel Corporation
Entrepreneurship education	Co-design	Adobe, Walmart
Social digital entrepreneurship	Digital twins	Siemens and DP World

Source: Authors' elaboration

Metaverse meets digital entrepreneurship: A practitioner-based qualitative synthesis

Dear guest editors

We are grateful for the opportunity to resubmit our manuscript after this first phase of major revision. We thank the reviewers for their positive and constructive comments on our study. Thanks to their feedback, we could present the new version of the study. Below are the detailed responses to each comment made by reviewers.

All changes made compared to the previous version are highlighted in yellow in the manuscript.

Below is a point-to-point response to the reviewers' comments and requests.

Yours Sincerely,

The Research Team

Reviewer 1	
<p>Even though the metaverse is a relatively new concept, there are already a number of research articles published that should be included in the paper.</p> <p>Here are some suggestions:</p> <p>Kim, J. (2021). Advertising in the metaverse: Research agenda. <i>Journal of Interactive Advertising</i>, 21(3), 141-144.</p> <p>Ning, H., Wang, H., Lin, Y., Wang, W., Dhelim, S., Farha, F., ... & Daneshmand, M. (2021). A Survey on Metaverse: the State-of-the-art, Technologies, Applications, and Challenges. arXiv preprint arXiv:2111.09673.</p> <p>Dwivedi, Y. K., Hughes, L., Baabdullah, A. M., Ribeiro-Navarrete, S., Giannakis, M., Al-Debei, M. M., ... & Wamba, S. F. (2022). Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. <i>International Journal of Information Management</i>, 66, 102542.</p> <p>Buhalis, D., Lin, M.S. and Leung, D. (2023), "Metaverse as a driver for customer experience and value co-creation: implications for hospitality and tourism management and marketing", <i>International Journal of Contemporary Hospitality Management</i>, Vol. 35 No. 2, pp. 701-716. https://doi.org/10.1108/IJCHM-05-2022-0631</p> <p>Alvarez-Risco, A., Del-Aguila-Arcentales, S., Rosen, M. A., & Yáñez, J. A. (2022). Social Cognitive Theory to Assess the Intention to participate in the Facebook Metaverse by citizens in Peru during the COVID-19 pandemic. <i>Journal of Open Innovation: Technology, Market, and Complexity</i>, 8(3), 142.</p> <p>Vidal-Tomás, D. (2023). The illusion of the metaverse and meta-economy. <i>International Review of Financial Analysis</i>, 102560.</p>	<p>Dear Reviewer 1,</p> <p>Thank you for your suggestions and extremely constructive review report. We are grateful to read your appreciation for our research paper. We also thank you for suggesting this research to support the metaverse concept.</p> <p>Considering the suggestions made there, we consider and add each in the introduction and literature review section.</p> <p>Reading and citing them, we are able to construct a more inspirational paper.</p>
<p>It is expected that the research question(s) derives from the literature review</p>	<p>Thank you for your suggestions.</p>

	<p>We will emphasise that the research question used is derived from studies in the literature also linking better in the text.</p> <p>You may find this paragraph in the introduction:</p> <p>That said, the contribution of this research seeks to address two primary objectives. First, this paper strives to provide the concepts, theoretical tools, and advanced techniques related to the metaverse. Second, we aim to link theory to empirical practice by showing how the metaverse can be an enabling technology for entrepreneurship. As the literature shows, several studies need to understand how the metaverse can enable digital entrepreneurship tools and techniques (Dong, 2019; Kraus <i>et al.</i>, 2019a; Oyemomi <i>et al.</i>, 2016). Hence, this paper is set to address the following research question: <i>RQ1: How can the metaverse enable digital entrepreneurship tools and techniques?</i></p>
<p>I would put the definition of metaverse at the beginning of the introduction to help readers who are not already familiar with that new concept.</p>	<p>Thank you for your suggestion. We add the metaverse definition in the introduction. You may find these changes at this point at page 3:</p> <p><i>The term metaverse was first used by Neal Stephenson in 1992, and it is described as a virtual environment that originates in a computer and is based on various concepts (Alvarez-Risco et al., 2022). What seemed futuristic a short time ago opens the door to new forms of digital entrepreneurship today (Gursoy et al., 2022). The metaverse offers an immersive experience based on augmented reality technology, creates a mirror image of the real world based on digital twin technology and builds an economic system based on blockchain technology (Ning, Wang, Lin, Wang, et al., 2021).</i></p>
<p>My next suggestion is to add the main results to the introduction part.</p>	<p>Thank you for your suggestion. We have added some of the main results to the introduction part. It is an interesting suggestion to evoke more interest in the reader from the very beginning of this study. You may find these changes at this point:</p> <p><i>This work will directly contribute to the global discussion by identifying a model for applying emerging technology to digital entrepreneurs. In particular, the metaverse enables the implementation of theoretical concepts such as gamification, co-design and digital twins. On the other hand, the practical implications of this paper provide new insights for digital entrepreneurs. Starting from the selected best practices, the objective will be to extract and contribute knowledge applicable to countless contexts and share practical entrepreneurial ideas. Some concrete cases explored within the study include LG, DP World, Siemens and</i></p>

	<i>Intel Corporation. These practical cases can inspire other managers and future entrepreneurs to use the metaverse to expand their activities and services.</i>
I would eliminate the subsections' descriptions Methodology and Results.	Thank you for your suggestion. As you suggested, we have removed the method subsection within the introduction.
Originality: Does the paper contain new and significant information adequate to justify publication?: Yes, as the authors point out their paper is the first study of metaverse connecting theoretical and practical perspectives of digital entrepreneurship.	Thank you for your positive feedback.
Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored?: I would suggest putting more effort and elaborating on a comprehensive literature review regarding research on the metaverse.	Thank you for suggesting us relevant and updated literature. Adding them, it is possible to develop a comprehensive literature review on the topic of the metaverse. In addition, other relevant studies about the metaverse have been included to allow further explanation and insight into the topic.
Methodology: Is the paper's argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?: The methodology is appropriate and also very well described. The only thing missing is an explanation of the search criteria.	Thank you for your suggestion. We explicit the selection criteria in the methodology section at the end of sub-section 3.1. In addition, through Figure 1, it is possible to summarise the search criteria used for data selection.
Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper?: Yes, well done.	Thank you for your positive feedback on our paper.
Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and conclusions of the paper?: Yes, well done.	Thank you for your feedback on our paper
Quality of Communication: Does the paper clearly express its case, measured against the technical language of the field and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc. Does the title of the paper adequately reflect the key concepts/ideas/topics addressed?: Additional proofreading will improve the quality of communication.	Thank you for your suggestion. In order to improve the quality of communication, an additional correction was made in all parts of the study.
Reviewer 2	
Dear authors,	Dear Reviewer 2,

<p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16</p> <p>Thanks for the possibility of assessing this work. I hope that my suggestions will help you to strengthen your article.</p>	<p>Thank you for your suggestions and extremely constructive review report. We are grateful to read your appreciation for our research paper.</p>
<p>17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32</p> <p>Originality: Does the paper contain new and significant information adequate to justify publication?: The present study has a good level of originality, with a limited number of articles and studies on the following topic in the literature to date. In addition, the research questions used for the following study are considered central and interesting to the following research topic. Therefore, originality is for sure a strength of this study.</p>	<p>Thank you for your positive feedback.</p>
<p>33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60</p> <p>Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored?: In this section of the study, it is suggested that the authors expand on some aspects and insights regarding digital entrepreneurship and the metaverse. In particular, it might be interesting to expand on some security and privacy aspects inherent in the metaverse. Some studies that can be taken as examples are:</p> <ul style="list-style-type: none"> • 10.1109/MTS.2018.2826060 • 10.3352/jeehp.2021.18.32 • 10.1109/COMST.2022.3202047 <p>Even a few paragraphs could satisfy this suggestion.</p>	<p>Thank you for your suggestion. Thanks to your comments, we have deepened some aspects of both research topics. In particular, we would like to thank you for your suggestion to look more closely at the security and privacy aspects of the metaverse, as they are very relevant. Additionally, we add also other updated studies as suggested by reviewer 1. Your suggestions give a more inspirational style on our research paper. In particular, these three references are added in our literature section (pages 6 and 7).</p>
<p>The lack of literature represents a challenge for the authors to borrow studies conducted in other topics to be somehow adapted.</p>	<p>Thank you for your suggestion. Due to this suggestion, we decided to implement further the literature taken as a reference to conduct the following study.</p>
<p>Methodology: Is the paper's argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?: The method is well structured. However, regarding the sampling methodology, it is suggested that the authors do more to justify the method used. Citing additional studies that have used a similar methodology is mandatory to support the authors' choice.</p>	<p>Thank you for your suggestion. We add more elements in supporting the reasons data sampling. In particular, we have cited studies that used the same methodology. You may find these changes at this point:</p> <p><i>As for the selection criteria, we limited the search to the last two years (i.e., the period of greatest momentum to select sources that adopt the metaverse as a possible development for their business) and to English sources. After an initial selection of reports and news items, we validate the sample by triangulating the information available through web pages, press interviews, and audio/video interviews where possible to verify the existence of sources (Secinaro et al., 2020; Yin, 2017). Furthermore, to refine the technique of company selection, the researchers used the technique of snowball sampling, as indicated by allowing access to information through direct contacts and field interviews (Noy, 2008). Numerous studies in the literature have used this snowball sampling technique within qualitative studies (Khurana et al., 2022). Therefore, the technique was</i></p>

	<i>used to gather new entrepreneurship experiences through the metaverse.</i>
<p>Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper?: Thanks to the many supporting tables and figures in this section, the authors could clearly and thoroughly express the results.</p> <p>The discussion part developed by the authors is clear and easy to understand. However, Table 5 could be reformulated by improving its interpretation. For example, I recommend inserting rows to divide the table.</p> <p>The authors use some images from third parties, for example from Walmart.</p>	Thank you for your suggestion. While some figures, images and tables allow the results to be expressed clearly and comprehensively, the same is not the case for Table 5. In particular, we added borders to the table and centred the text on increasing its clarity and readability.
I would recommend checking the sharing policy of such images.	Thank you for the suggestion. We have updated the citation and will contact the owners to confirm that the images were free and taken from YouTube. We hope to use them to increase the impact of the paper.
<p>Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and conclusions of the paper?: In the last section of the study, it is suggested that the authors expand more and use greater detail for practical and theoretical implications. In this way, it would be possible to enhance the value of the study conducted in both academic and practical areas.</p>	<p>Thank you for your suggestion. Thanks to your suggestion, we decided to deepen and broaden this study's theoretical and practical implications and increase its value.</p> <p><i>As reported in the discussion, the research allowed us to outline some implications of both a theoretical and practical nature. Theoretically, we extend the debate on digital entrepreneurship using the lens of Kraus et al. 2019b. In particular, the metaverse fosters new entrepreneurial ventures based on theoretical concepts such as gamification, co-design and digital twins. At the same time, developing of new business models through technology can also enable new opportunities for entrepreneurship. On a practical level, we have demonstrated with established cases the opportunities that the metaverse can provide digital entrepreneurs by reaffirming the value of technology as a lever for creating new business models. In addition, the cases recounted here can inspire CEOs, managers, and future entrepreneurs to use the metaverse to expand their businesses by diversifying their services into numerous sectors. The metaverse can enable digital entrepreneurs to move into sectors other than their core business by exploiting new opportunities. Finally, to our knowledge, this study represents one of the first attempts to study the metaverse by framing it from theoretical and practical perspectives.</i></p>
Quality of Communication: Does the paper clearly express its case, measured against the technical language of the field and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc. Does	Thank you for your positive feedback.

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the title of the paper adequately reflect the key concepts/ideas/topics addressed?: Yes	
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