

JOURNAL OF BUSINESS MODELS

Metaverse and Society 5.0: Pivotal for Future Business Model Innovation

Abstract

The area of interest is future business model innovation in Society 5.0. This is important as the transition from Society 4.0 to Society 5.0 is happening at an exponential pace driven by the Metaverse. Thus, the research question is: how should companies think and do business model innovation in the Society 5.0 / Metaverse space? The method is conceptual, where the business model characteristics of Society 1.0 to 4.0 are empirically stated for inductive arguments for equivalent characteristics of Society 5.0. This is framed with Society 5.0 theory, Metaverse theory, and Osterwalder and Pigneur's nine business model building blocks from their iconic Business Model Canvas (BMC). The contribution is a framework cross-tabulating Society 1.0 to Society 5.0 with the nine BMC elements. Finally, a discussion is provided with findings and implications for managers regarding business model innovation, new businesses, outcome logic, ecospheres, and currencies.

Introduction

According to Taran et al. (2022), based on the work of Keeley et al. (2013), business model innovation holds promise for the most significant value creation potential. Civilisation, as we know it, is on the verge of transitioning from Society 4.0, the industrial society, to the super smart Society 5.0. In a recent report, McKinsey & Company (2022) estimates that by 2030, the Metaverse has the potential to generate up to USD 5 trillion in value. The metaverse is a megatrend and one way to encompass the digital future, in

which economic and political barriers of the current Internet could be overcome. As such, the metaverse is a candidate to become the next generation of the Internet, a possible interface or platform of Web 3.0. (Ritterbusch and Teichmann, 2023), it holds promise for catalysing future business model innovation.

The field of business model innovation has matured considerably in the last decade, and the business model discipline has undergone some distinct development stages (Zott et al., 2011; Nielsen et al.,

Keywords: Metaverse, Society 5.0, business model innovation, foresight

Please cite this paper as: Rosenstand, C.A.F., J. Brix & C. Nielsen (2023), Metaverse and Society 5.0: Pivotal for Future Business Model Innovation, Journal of Business Models, Vol. 11, No. 3, pp.62-76

2018). According to (Aagaard & Nielsen, 2021), the fifth research stage relates to the role of business models in times of increased instability in society and the uncertainties associated with these. With the intent to identify critical trajectories towards a 2030 horizon, Aagaard & Nielsen (2021) argue that business model innovation must be able to provide value for society because while technology may solve problems, value is created through its inclusion in viable and scalable business models that live up to the norms and standards expected by society. We also see new tendencies emerge around the globe where a human-centric approach is expected to be an integral part of technological innovation and business model innovation – e.g., Japan's policy on Society 5.0 (Japan Cabinet Office, 2016) and the European Commission's policy brief on Industry 5.0 (Breque et al., 2021). The logic behind this tendency to include the human-centric perspective is that the current way of working for society has created giant leaps in technological innovation and stretched the boundary for what earlier was considered almost impossible, but aspects of social innovation and focus on the societal development and aligning society to these many innovations have been down-prioritized (Gershenfeld et al., 2017).

The metaverse can significantly create a more human-centred, sustainable, and inclusive society by introducing new technologies that improve people's lives and create a better world. This article describes the relationship between the metaverse and Society 5.0 and the types of technologies and mechanisms they rely on. The research question we discuss and unfold is: *How should companies think and do business model innovation in the Society 5.0 / metaverse space?*

As part of our response to this research question, we develop a framework which can be used to develop strategies for business model innovation in the metaverse/Society 5.0 context. The remainder of this article is organised as follows: First, the metaverse is introduced, followed by an introduction to Society 5.0 that includes a depiction of different types of value creation. The fourth section introduces our framework for business model innovation in the metaverse and Society 5.0, and the conclusion

provides avenues for future research and spotting new business opportunities.

Introducing the Metaverse

In its most basic form, the Metaverse includes three features: 1) a sense of immersion, 2) real-time interactivity, and 3) user agency. Ultimately, the full version of the metaverse will include platforms and devices that work seamlessly with each other, allowing thousands of people to interact simultaneously and use cases that go well beyond gaming. To some extent, the Metaverse is already present in limited form in online video games and virtual worlds as the Web 3.0 iteration of the internet supports online 3-D virtual environments through conventional personal computing and virtual and augmented realities. Companies are already using tools and methodologies associated with the Metaverse. For example, Boeing uses the Metaverse to design and test new aircraft. Siemens uses it to create digital twins, as a virtual representation of the physical objects and systems of its factories and production lines, used to simulate, analyse, and control its counterpart. General Motors uses the metaverse to train its workers to assemble new vehicles.

The Metaverse concept was first introduced in Stephenson's novel "Snow Crash" (Stephenson, 1992), describing a 3D virtual reality populated by avatars of real people. To this end, the metaverse refers to a virtual reality existing beyond reality (Key et al., 2021). In common parlance, the Metaverse often refers to a world created by a creator, where the users must "live" under the creator's rules (Hwang & Chien, 2022). As the metaverse is an emerging technology, the concept is not consistently defined. Thus, a broader definition should be applied, including a broad range of immersive technologies such as virtual, augmented, and mixed reality (Vistisen et al., 2023), where mixed reality allows interactions between real and digital objects.

From a business perspective, Metaverse is often defined as a platform for activity. To this end, Meta, formerly known as Facebook, defines it as a place to "connect, work, play, learn, and shop" (Meta, n.d.). However, researchers tend to define the Metaverse

with platform-independent characteristics, as seen in the 28 research definitions in a structured literature review by Ritterbusch and Teichmann (2023). Their study illuminates a highly interdisciplinary interest in the phenomena, including arts and humanities, business management, accounting, computer science, engineering, environmental science, medicine, and social science (ibid.). To encompass both a platform and platform-independent perspective, they suggest “... that the metaverse will be a single three-dimensional online environment with many metaverse platforms, in which each metaverse platform is embodied in the form of virtual spaces” (ibid., p. 12375).

The Metaverse is still in its infancy but holds promise of substantial change for many industries. For example, the Metaverse can be used in manufacturing to create digital twins of factories and production lines to simulate and optimise production processes. The same could go for ships and aircraft; in logistics, the Metaverse can track the movement of goods and materials in real-time. In the retail sector, the Metaverse would lead to virtual stores where customers can browse and purchase products immersively. In education and healthcare, the Metaverse can improve accessibility and quality in training, learning, and interaction. In addition to these specific industry applications, the Metaverse will likely have a broader impact on how we work, learn, and socialise. For example, the Metaverse enables and enhances remote work as we know it today, attending virtual conferences and other events without travelling. It could also create new social networking opportunities and foster collaboration between people from different cultures.

The market size of the Metaverse is growing exponentially, doubling nearly every second year. Here, it is defined “... as the next iteration of the internet, the metaverse is where physical and digital worlds come together” (Statista, n.d.). From USD 19 billion in 2021 to an estimated 100 billion USD in 2026. Following this broad market definition from Statista, we are close to another megatrend, namely *Society 5.0*, as a concept originated from the Japan Cabinet Office. *Society 5.0* is defined as a “... human-centred society that balances economic advancement with the

resolution of social problems by a system that highly integrates cyberspace and physical space” (Japan Cabinet Office, n.d), where cyberspace is equivalent to virtual reality. The last part of the definition, “... a system that highly integrates cyberspace and physical space,” is equivalent to the market perspective on the Metaverse, where the physical and digital worlds come together. Therefore, it can be argued that the Metaverse is the very technology that constitutes the future infrastructure of *Society 5.0*. The logic is, hence, that the Metaverse and *Society 5.0* are two closely related concepts bound by the presence of technological advances such as 6G (Ahokangas, 2023), AR, XR, digital twins, web3, digital assets, NFTs (Schmück, 2023), and Generative AI (Haefner & Gassmann, 2023).

Introducing Society 5.0

Since the early ages, we have seen different archetypes of society that have emerged, mixed with a new archetype, and continued this trajectory, where what was useful was kept, what was no longer functional was abandoned, and what was new was adopted and put in use. The logic with these societal shifts is that new societal movements emerge to solve the problems created within the existing and prior societal forms (Huang et al., 2022).

Society 1.0 is often referred to as the ‘hunter-gatherer society’. This societal form was characterised as a non-productive economy, focusing on gathering food and surviving by finding food, fishing, and hunting. The transition to *Society 2.0* occurred as knowledge was created about agriculture and farming. This societal form is often referred to as ‘the agricultural society’. The logical transition from 1.0 to 2.0 occurred because the hunter-gatherer society could not provide enough food for the increasing population. Therefore, the 2.0 way of living solved the problem that the 1.0 form could not. In the agricultural society, living standards increased as the food supply became self-sufficient. Therefore, new activities came into focus, such as weaving fabrics and creating pottery like in ceramics. In this era, we saw the first industrial revolution with light industry. This development led to a barter economy between large groups of families and settlers.

In the transition towards *Society 3.0* – the ‘industrial society’ – the invention and application of machines and more advanced technology (compared to, e.g., axes, shovels, and needles) began to replace many of the hitherto manual labour processes. Here, we saw the second industrial revolution and the beginning of heavy industry and the use of, e.g., chemicals. Small factories started to sprout, and the Industrial Revolution started with machines and factories, e.g., related to the textile industry. What also occurred in *Society 3.0* was the establishment of critical infrastructure such as ports, railways, and roads and, in addition to this, electricity, water, and sanitary installations in households. Moreover, an essential aspect at this point was that people started gaining rights. At this point, we witnessed the third industrial revolution with the introduction of computers and the Internet to large companies and universities. Currently, we are in *Society 4.0*, ‘the information society’ recognised by individuals having access to their own ICT devices, the development of IoT, automated manufacturing, Machine Learning, and Augmented Reality. These technologies represent the fourth industrial revolution, which is taking place as we write this chapter.

Currently, we can instantly share information, interact, and know what happens when it happens, and it also, to some extent, is possible for us to forecast tendencies. The problems that our way of living in society 4.0 has created are, e.g., a high degree of environmental impact, mass consumption of scarce resources, and nations around the globe, where differences between living standards and quality of life have not developed the same pace as technology (i.e., Japan Cabinet Office, 2016; Gershenfeld et al., 2017; Huang et al., 2022; Breque et al., 2021). The down-prioritised focus – at least in the early stages of *Society 4.0* has led to a new emerging tendency: *Society 5.0*. In the last decade, we have been introduced to the 17 United Nations Sustainable Development Goals, and Japan and the European Commission have put human-centricity on the political agenda for solving the problems we have created ourselves.

Society 5.0 – the super smart society

We currently stand on the edge of a transition towards *Society 5.0*, which is referred to as a ‘super smart society’ (Japan Cabinet Office, 2016; Huang et al., 2022) and ‘the imagination society’ (Keidanren, 2018). *Society 5.0* is, as mentioned, defined as:

“A human-centred society that balances economic advancement with the resolution of social problems by a system that highly integrates cyberspace and physical space.” (Japan Cabinet Office, 2016).

Central to *Society 5.0* is creating a balance between economic development and solving societal issues. The outcomes and potentials associated with *Society 5.0* include improving citizens’ health and well-being, attracting and retaining talent, and ensuring long-term prosperity. The ambition is that it is now time to grab the social aspects of innovation and let both technological- and social innovation co-evolve much closer and better than we have seen until now. Hence, collaboration and co-production have become new ways of working across administrative and sectoral boundaries (Brix et al., 2020). While the *Society 5.0* movement could seem like a far-away abstraction, it is possible already to see tendencies where this ‘new way of working’ is taking place. In the region of Eindhoven in the Netherlands, a range of local companies and organisations from both public, private, and third-sector organisations have created a large-scale collaboration with a shared vision for the region, where close collaboration, common strategies, and alike have been developed to solve the problems of the region, e.g., attracting a critical mass of talents for the tech-companies. This concrete example of a movement that can be defined as a small-scale *society 5.0* is called ‘Brainport Eindhoven (n.d.) – the home of Pioneers’.

With the increasing attention towards the mix of cyberspace and physical space, we already see the Metaverse as an approach to turn data into things and things into data to create more value and better lives (Gershenfeld et al., 2017; Nielsen & Brix, 2023). One of the tendencies that are forecasted to shift

is, e.g., the movement from economies of scale and the efficiency pervasion towards focusing on value-creation in the word's broadest terms. Our evidence for this postulate can be found in the European Commission's policy brief (Breque *et al.*, 2021).

"Industry 5.01 recognises the power of industry to achieve societal goals beyond jobs and growth to become a resilient provider of prosperity by making production respect the boundaries of our planet and placing the wellbeing of the industry worker at the centre of the production process." (Breque et al., 2021, p.14)

Value creation - private value, public value, and outcome logic

While the value-creation construct is a central part of business models in general, where the notion of the value proposition towards the user of a given product/service/technology also plays a central role, and it captures the way value is delivered, captured (Osterwalder & Pigneur, 2010), and according to Nielsen (2023a) also dispersed among the stakeholders of a company. Our logic is that when we apply a Society 5.0 filter on the current understanding of value-creation about business models, we might benefit from applying the distinction between private value and public value (Moore, 1995) and introducing the perspectives of outcome logic (Funnel & Rogers, 2011). The business model innovation process can capture more societal and social nuances if the business model's value construct is further unfolded and elaborated with this inspiration from sociology and political science.

Private and Public Value

The classic distinction between private and public value is that private organisations create private value, for example, growth and new jobs. In contrast, public organisations create public value, such as service delivery to citizens, where the citizens, users of services and alike experience the service(s) to be meaningful and valuable (Moore, 1995). There is, however, more to it than what is stated in this distinction (Try and Radnor, 2007). Our point is that the

business model innovation literature is already enriched by knowledge and intellectual development in the 'private value' perspective, which we have just unfolded above. However, we can potentially find new value-related themes in the business model literature by delving into the literature on public value, co-production, and outcome logic (Durose *et al.*, 2015; Brix *et al.*, 2020). The critical aspect of public value is that organisations who (co-)produce public value, on the one hand, must focus intensely on internal efficiency and effectiveness, implying that waste, in the broadest term, must be avoided. While having this internal focus, it is also essential that the organisation's way of working and what they create live up to the expectations of users (and citizens in general), e.g., related to sustainability, the UN SDGs, and the UN Global Compact. Therefore, the same organisations, on the other hand, must ensure that the services (and the artefacts related to these) they make available are relevant and valuable to the citizens and users (Colon & Guérin-Schneider, 2015). The logic is that no one is better off with services that do not work or matter. As a third parameter, this implies that organisations must continuously evaluate if and how they live up to their strategies and what they have promised in these strategies, and also - ideally typically - to include users in this evaluation (Moore, 2019). The premise for this perspective is that if the organisation does not live up to its promise, or if the users or citizens, in general, are sceptical in this regard, value conflict or perhaps even value destruction could potentially occur (Nabatchi, 2018). This implies that organisations must unfold critical outcome logic explicitly related to the value creation expected to materialise in their business model.

Outcome logic

An outcome logic - also known as the effect logic - is an explicit account of not only the concrete output that is created because of a range of activities (e.g., a product) but also the effect that this product will have on the medium and long term on the users, on the environment, socially, etc. (Pawson & Tilley, 1997; Kringelum & Brix, 2020). Our point is that when political ambitions such as the definitions found by the European Commission stage well-being, etc., explicitly, it is also essential that organisations start including this line of thinking in their business

¹ The European Commission's policy brief does explicitly mention Society 5.0

Table 1.

Output (short term)	Outcome Short term	Outcome medium term	Outcome long term
A product is produced, e.g., a hearing aid	The hearing aid is sold/ given to a user. The user starts hearing (better), experiences to be better included in conversations, and perhaps also feels safer when walking because of warning sounds might better be heard.	The user might find it easier to socialise in general and take more active part in sports, and / or other hobbies, and hence increase the feeling of inclusion in local community.	The user's individual well-being is increased, s/he becomes physically and mentally healthier and the degree of democracy is higher since the user can engage in dialogue easier than before.

Table 1: An illustrative example of an outcome logic (Source: Authors' development)

models and reporting, perhaps as a new accountability measure. Table 1 gives an illustrative short example of an outcome logic for inspiration.

We believe that adding a public value outcome logic when revisiting existing business models or recognising opportunities for new business models is a relevant and potentially soon-required avenue.

Analysis: BM perspectives on the Metaverse and Society 5.0

We are currently leaping into a super-smart and human-centred society. An essential aspect of this definition is the focus on 'highly integrating cyberspace and physical space', where the Metaverse plays a key role cf. our perspectives above. In Society 5.0, the digital and real-world interact – this is the Metaverse. The digital and real-world interactions play a vital role in the transformation towards Society 5.0 in several ways. Regarding personalisation, the Metaverse can be used to create tailored experiences for individuals in, for example, healthcare, education, and entertainment. The Metaverse can also play a role in reducing our environmental impact through virtual meetings, conferences, or virtual experiences instead of travelling.

Regarding inclusivity, the Metaverse can be used to make our society more inclusive and accessible to everyone. For example, people with disabilities could participate in activities they would otherwise be unable to do through Metaverse technologies. Overall, the Metaverse has the potential to play a significant role in helping to create a more human-centred, sustainable, and inclusive society. The Metaverse and Society 5.0 also focus on how technology improves people's lives and creates a better world.

As argued above, the Metaverse is the future infrastructure of Society 5.0 and, thus, also a system needed to operate and communicate in Society 5.0 and its businesses. From a communication science perspective, the following accumulative progression from Society 1.0 to 5.0 can be argued regarding society format, communication activity, involved parties in communication, spatial distance, and infrastructure.

The ambition is not a media historical contribution, as this is a well-established field (e.g., Finnemann, 2005). This article investigates the framing of Society 5.0 and its infrastructure according to business models. To this end, we leverage the nine elements of Osterwalder and Pigneur's Business Model Canvas (BMC) for developing, describing, and analysing

Table 2.						
Society	Society format	Activity	Involved	Spatial	Value	Infrastructure
1.0	Hunter-gatherer	Speak	Person-to-person	Close	Prey & plants	Air
2.0	Agrarian	Write	Person-to-person	Distant	Yield	Postal
3.0	Industrial	Print	Person-to-people	Distributed	Goods	Publishers
4.0	Information	Browse	People-to-people	Digital	Service	Internet
5.0	Smart	Immerge	Als to people	Virtual	Intelligence	Metaverse

Table 2. Cross-tabulation of society-format and media history. (Source: Authors' development)

business models: Customer segments, Value Propositions, Channels, Customer Relationships, Revenue Streams, Key Resources, Key Activities, Key Partnerships, and Cost Structure (Osterwalder & Pigneur, 2010).

We argue that each of the nine BMC elements has different qualities regarding success in different society formats. The method is thus inductive, as we from business history know the accumulative qualities from Society 1.0 to 4.0, and we use this knowledge to extrapolate suggestions for accumulative business model qualities in the upcoming Society 5.0. The suggested general qualities, both from history, today, and in the future, are suggestions and, thus, to some extent, examples that can be debated. The contribution is an imaginative framework for developing business models for Society 5.0 with the Metaverse as the most important communication infrastructure. In the following, we give examples of each element from the business model canvas.

Customer segments

They identify the different groups of people or organisations a business aims to serve. The customer

segments align with the involved and spatial columns from Table 2. In the hunter-gatherer Society 1.0 with close person-to-person involvement, customer-to-customer (**C2C**) models were the norm. The agrarian Society 2.0 extended this to distant person-to-person involvement, allowing business-to-customer (**B2C**) models to be developed. Then, with the industrial Society 3.0 with distributed person-to-people (one-to-many) involvement, a market for business-to-business (**B2B**) arose. Moreover, with the information Society 4.0, online people-to-people (many-to-many) involvement is leveraged for platform economy with hybrid forms of earlier business models such as business-to-business-to-customer (**Hybrid**) models. Because AI is involved in communication in the Metaverse, we will see **AI-2-Hybrid** models emerge in the smart Society 5.0.

Value Proposition

The unique value that a business offers to its customers. Generally, this follows the primary exchanged values of different societies outlined in Table 2. In the hunter-gatherer Society 1.0, the value was natural resources in the form of prey and plants, and the value proposition for offering this was simply

survival. In the agrarian Society 2.0, the value was cultivated resources in the form of yield from, e.g., farming and mining, resulting in **quantity** as an emerging value proposition. In industrial Society 3.0, where the value was in mass-produced goods, **convenience** emerged as a value proposition. Today, in information Society 4.0, where value comes in the form of services, the value proposition is **transformative**. Taking this further into the smart Society 5.0, where the value is intelligence, whether artificial, human, or hybrid, the value proposition will be different forms of **meaning**, probably in the form of artificial or mixed minds. Another essential aspect that will become increasingly important is the dual focus on both private value and public value and the ability of (and expectations too) organisations to operationalise the outcome logics of how their supply impact business, society, and wellbeing.

Channels

The various ways a business delivers its value proposition to customers. In general, the channels align with the customer segments of the societies. In the hunter-gatherer Society 1.0 with C2C businesses, the channels were **personal**. This evolved into **markets** as a new general channel where business owners could sell directly to customers (B2C) in seasons when yield was harvested. The following industrial Society 3.0 with mass-produced goods was not season-dependent, and thus, permanent **shops** for B2C became the norm. Today's information Society 4.0 is characterised by the exponential growth of internet trade through **online** channels with hybrid business models such as platforms for sharing economy. From the definition of Metaverse with many virtual spaces primarily owned by different businesses (Teichmann, 2023), a **virtual space** will probably be the future primary channel for AI delivering value propositions to hybrid customer segments.

Customer relationships

The type of relationship a business establishes with a customer. Customer relationship is generally aligned with the channels that characterise a society. In the hunter-gatherer Society 1.0, personal channels were established as **ad hoc** customer relationships. Later, in the agrarian Society 2.0 with marketplaces, customer relationships were

established through **merchants**. In the industry Society 3.0 with shops, customer relationships are established through shops offering **standard** goods. Today, in Information Society 4.0, mass **customised** services are expected. Following this forward, channels for mass-individualised **tailor-made** offers will be expected.

Revenue streams

The way a business makes money from its customers. The revenue stream generally aligns with the society format and value from Table 2. In the hunter-gatherer Society 1.0, where prey & plants were valued, money or income, or broader speaking revenue, was generated from **barter**. Trade generated revenue in the agrarian Society 2.0, where yield was valued. Later, **delivery** generated revenue in the industrial Society 3.0, where goods were valued. In today's information Society 4.0, where services are valued, **subscription** generates revenue. Following this into the smart Society 5.0, where intelligence is valued as a commodity, revenue will be generated by artificial or hybrid **minds**.

Key resources

The critical resources required to operate the business, deliver the value proposition, maintain customer relationships, and achieve profitability. The essential resources are aligned with the source of the value from Table 2. So, in the hunter-gatherer Society 1.0, the source of prey & plants was **nature**, thus the critical resource. Later, in the agrarian Society 2.0, the source of yield was **cultivated** nature as the key resource. Then, in Industrial Society 3.0, the source of goods was the **factory** and thus the key resource. Today's information Society 4.0 is characterised by services, where the source for this is **data** as the key resource. Taking this further into the smart Society 5.0, where the value is intelligence, the source is **algorithms** generating information as the key resource.

Key activities

The essential activities or operations required to achieve the business objectives. This aligns with how key resources are leveraged to create value propositions. In the hunter-gatherer Society 1.0, the key activity **hunt & collect** created the value proposition of survival in nature. In the agrarian Society

Table 3.

Business model elements	Society 1.0 Hunter-gatherer	Society 2.0 Agrarian	Society 3.0 Industrial	Society 4.0 Information	Society 5.0 Super Smart
CUSTOMER SEGMENTS	C2C	B2C	B2B	Hybrid	AI-2-Hybrid
VALUE PROPOSITION	Survival	Status	Convenience	Transformative	Meaning
CHANNELS	Personal	Markets	Shops	Online	Virtual space
CUSTOMER RELATIONSHIPS	Ad hoc	Merchants	Standard	Customized	Tailor-made
REVENUE STREAMS	Barter	Trade	Delivery	Subscription	Minds
KEY RESOURCES	Nature	Cultivated	Factory	Data	Algorithms
KEY ACTIVITIES	Hunt & collect	Extracting	Producing	Analysing	Sensing
KEY PARTNERSHIPS	Tribes	Guilds	Value chains	Ecosystems	Ecospheres
COST STRUCTURE	Health	Workers	Material	Computing	Mental

Table 3: Summary of business model analysis of Society 5.0 (Source: Authors' development)

2.0, where the key resources were cultivated, the value proposition of status was created through the key activity of **extracting** yield from e.g., farms or mines. Then, in industrial Society 3.0, the key activity became **producing** goods from factories, hence creating scales of economy and lower costs that made it possible for more consumers to afford such goods as the value propositions. In today's information Society 4.0, where the value proposition

is transformative, the key activity is **analysing** key data resources. Projecting this into the smart Society 5.0 where the key resources are algorithms, the value proposition is meaning created by **sensing** as the key activity.

Key partnerships

The organisations, suppliers, or other entities a business collaborates with to achieve its objectives.

In general, the key partnerships are aligned with the governance behind the performance of key activities leveraging key resources. To this end, the hunter-gatherer Society 1.0 was characterised by **tribes** as the key partnerships protecting its members and a platform for organising hunt & collect from nature. Then, in the agrarian Society 2.0, key partners were organised in **guilds** developing and sharing methods of extracting from a cultivated nature. In the following industrial Society 3.0, key partnerships were organised in **value chains**. Today, in the Information Society 4.0, value chains have emerged into value systems as loosely coupled value chains, also termed **ecosystems**, where key partnerships are configured to leverage data for analysis. Extending this thinking into the smart Society 5.0 with loosely coupled ecosystems (see also Lingens 2023 and Ricart, 2023), resulting in ecosystems of ecosystems, also termed **ecospheres** (Rosenstand, 2021, 2023), where platforms for partnerships are configured to leverage algorithms.

Cost structure

The significant costs and expenses associated with operating the business. This aligns with the prerequisite for the key activities. In the hunter-gatherer Society 1.0, the prerequisite for hunt & collect was physical **health** as the cost structure. Then, the cost structure became **workers** as the prerequisite for extracting in the agrarian Society 2.0. The following industrial Society 3.0 cost structure was raw **material** as a prerequisite for producing goods. In today's information Society 4.0, digital **computing** is the prerequisite for analysing data. Taking this further into the smart Society 5.0, the prerequisite for sensing is a healthy human and artificial psyche - **mental health**.

Summary of historical ideal types of business model components throughout time

Summarising the logic and perspectives from section 4.1, the following patterns emerge in Table 3.

Discussion and Implications

The section discusses and provides implications to our article's research question, 'How should

companies think and do business model innovation in the Society 5.0 and the Metaverse space? We discuss four relevant business model innovation trajectories based on articulations of the Metaverse and Society 5.0 and our illustration of how they are connected to key business model elements.

The Metaverse as a space to create (new) business

Leaning on the above analysis, successful business model innovation in Society 5.0 will need to provide meaningful value propositions in virtual space(s). The logic is that customers are increasingly entering virtual reality where new offerings are made, e.g., it is possible to check out a rental apartment from the other side of the globe before accepting the lease. We also see that some customer segments are adopting hybrid versions of former physical products/services when offered. In the Central Region of Denmark, a theatre has started using virtual reality as part of the physical performances, where VR goggles are used by the audience to 'travel back in time' and experience past local historical events. This implies that successful value propositions must simultaneously be viable in the real world and be created to allow for integration in cyberspace or vice versa. Computational power, AI, and AR (and other new technologies) will be able to create tailored individual solutions and experiences in real time for customers in virtual spaces. Revenues, too, will be challenged. They will be algorithm-based, and factoring in technology, pay-per-use or pay-per-intensity and pay-per-calculated satisfaction will be viable revenue models.

In Society 5.0, technology plays a positive role in the planet's and citizens' wellbeing. It can create proximity in mixed spaces, ensuring access and affordability to different geographies and customer segments. In the future, the Metaverse, using these mechanisms, can also improve citizen engagement and democratic processes, which are at the core of Society 5.0.

Implications for managers

Based on these perspectives, we claim that managers must consider value propositions that are created in the virtual space or are accessible through both real and virtual channels, and they should consider

how the virtual and real access channels enrich one another rather than cannibalising each other (see also Nielsen & Lund, 2018).

Articulation of outcome logics

Pressures to document private and public value outcomes are well underway (Breque et al., 2019) and will be significant in the entrance to Society 5.0. Understanding and showcasing concrete examples of outcome logic associated with activities in business and how they form business model innovation will become strategic success parameters, especially in recognition of opportunities for new business models (Brix & Jakobsen, 2015). Outcome logic includes a focus on welfare and the health and well-being of citizens, of which the technologies that enable the Metaverse, such as 6G, AI, and digital twins, will be pivotal. Outcome logic will also be a game-changer in repurposing products and services for society and the environment.

Implications for managers

Based on these perspectives, we claim managers must consider citizen-inclusive business model innovation with a net-positive societal outcome.

From ecosystems to ecospheres

DLT and NFTs, including Blockchain technology, will create ecosystem interdependencies that can become trusted and distributed, e.g., ecospheres (Rosenstand, 2023). Lock-in effects for customers are a vital value driver in many current business model configurations (Taran et al., 2016), which will be mitigated with these new technologies. In such a situation, companies will need to create business models that are less dependent on close relationships (Peronard & Brix, 2018), or they will need to create additional interactions to mitigate the associated risks. NFTs and the Metaverse complicate the organisation and governance structure. First, platforms and ecosystems disrupted incumbent and non-digital firms concerning business model innovation. Now, we have the Metaverse and NFTs disrupting platform business models and making ecosystem management and governance difficult.

The Metaverse and NFTs can enable democracy and democratic processes by helping societies

with more accessible and more convenient access to knowledge, platforms, and business-to-business ecosystems. From an ecosystem perspective, business model innovation must focus on joint value propositions that draw the customers into the ecosystem, where several firms jointly meet the customers' jobs to be done (Christensen, 2016).

Implications for managers

For business model innovation, managers must leave behind the perspective of their firm as the central node. Also, the availability of smart technologies, instant connection, communication, and computational power will enable solutions with individual utility.

Normalising new currencies

In the virtual space, it is not given that only traditional currencies will flow as part of the revenue streams between organisations and their customers. Adopting new and safe payment methods will open new markets and transactions. NFTs provide digitally compliant trustees for monetary transactions, and blockchain offers digitally compliant trustees with data.

Implications for managers

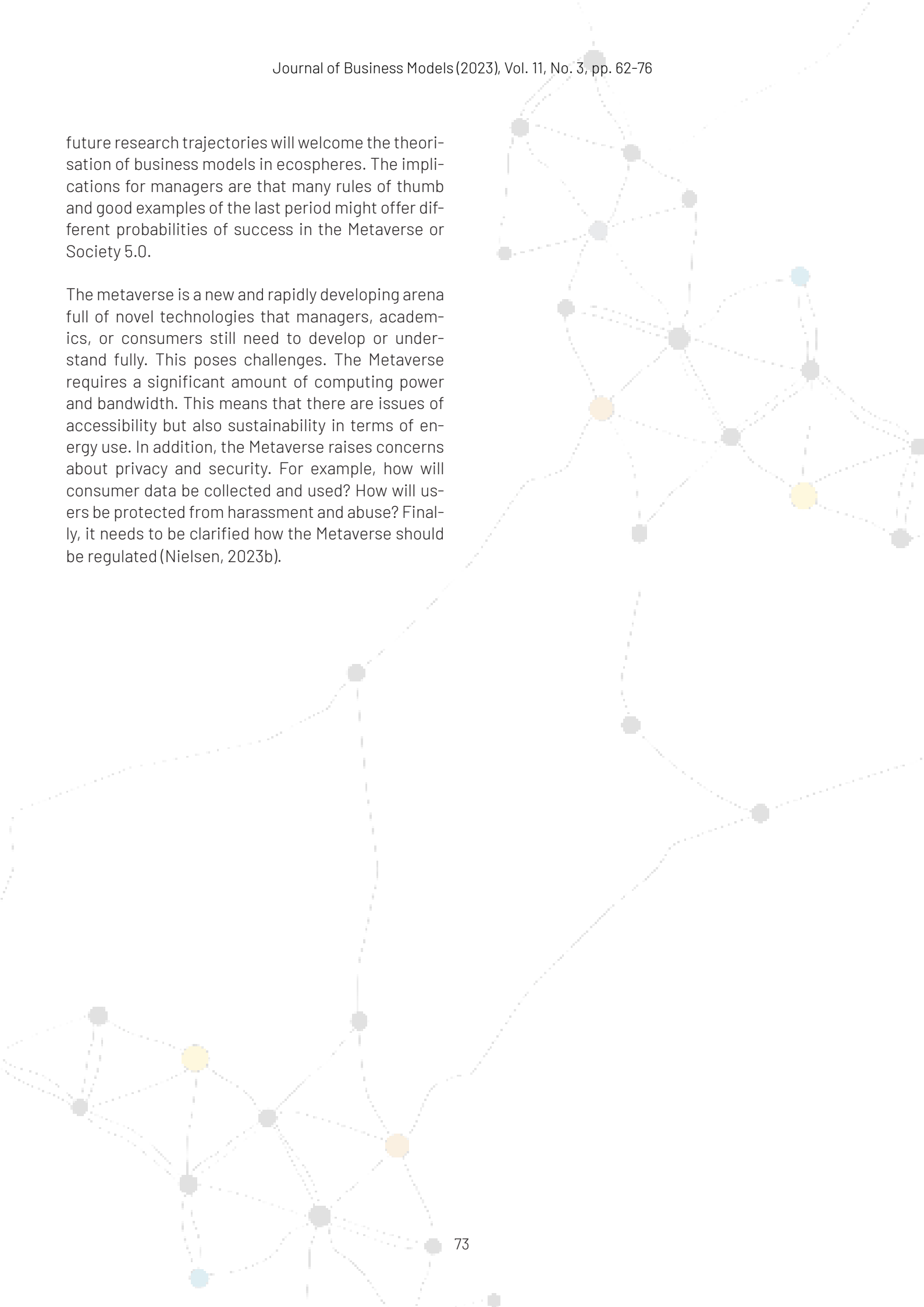
Based on these perspectives, we claim that managers must enable the creation of business models where blockchain and NFTs are standard components in linking individual consumers to value offerings from ecosphere-based, and often virtual, "producers".

Conclusion

This article articulated how companies should think and do business model innovation in Society 5.0 and the Metaverse space. The theoretical implications of our discussions point towards several aspects that need further scrutiny. Business model innovation researchers should study how value propositions in the Metaverse evolve and how they factor in the potential cannibalisation of different access channels. Also, the effects of DLT and NFTs on customer lock-in are valid for further probing because the lock-in effect has been crucial to so many successful business model innovations in the last decade. Also,

future research trajectories will welcome the theorisation of business models in ecospheres. The implications for managers are that many rules of thumb and good examples of the last period might offer different probabilities of success in the Metaverse or Society 5.0.

The metaverse is a new and rapidly developing arena full of novel technologies that managers, academics, or consumers still need to develop or understand fully. This poses challenges. The Metaverse requires a significant amount of computing power and bandwidth. This means that there are issues of accessibility but also sustainability in terms of energy use. In addition, the Metaverse raises concerns about privacy and security. For example, how will consumer data be collected and used? How will users be protected from harassment and abuse? Finally, it needs to be clarified how the Metaverse should be regulated (Nielsen, 2023b).



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