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# Safeguarding consumers in Web3-driven digital marketing: legal, governance, and financial policy challenges in the metaverse economy

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The rapid rise of Web3 technologies, representing the third phase of the internet, is creating a decentralized ecosystem that grants users ownership and control. Concurrently, metaverse platforms supported by virtual and augmented reality technologies signify the emergence of persistent, shared digital universes where users interact through digital avatars. These developments necessitate significant changes in consumer rights and protections within digital marketing processes. While decentralized structures and blockchain-based systems enhance user data sovereignty, they also require the development of novel governance and financial frameworks. In this context, existing legal instruments—particularly the European Union's Digital Services Act, the U.S. Federal Trade Commission guidelines, and the OECD Principles on Digital Economy—are insufficient to address the technological complexities and dynamic evolution of Web3 and metaverse ecosystems. Notable regulatory gaps persist in key areas, including data security, informed user consent, algorithmic transparency, and digital identity governance. Moreover, the marketing of blockchain-based financial instruments such as Decentralized Autonomous Organizations and Non-Fungible Tokens introduces new vectors of consumer risk and legal ambiguity, exacerbating market volatility. The opacity of algorithm-driven marketing and the potential for covert manipulation in AI-powered personalization further erode consumer trust and undermine market integrity. To ensure robust consumer protection in the digital marketing landscape, legal and regulatory frameworks must align with ongoing technological innovation. This includes mandatory implementation of algorithmic explainability standards, establishment of transparent and accountable governance mechanisms for DAOs, and development of enforceable contractual norms and minimum information disclosure requirements in NFT transactions. Furthermore, comprehensive digital literacy initiatives and consumer awareness programs are essential to mitigate emerging risks while optimizing the inclusive potential of Web3 technologies. These policy measures are crucial to safeguarding consumer rights and fostering sustainable trust within the evolving digital marketing ecosystem through 2025 and beyond.

KEYWORDS
consumer protection, digital marketing, legal and governance policies, metaverse, Web3

# 1 Introduction

The financial sector is a vital component of the global economy, encompassing a diverse range of businesses that manage money, including credit unions, banks, credit card companies, insurance firms, accounting firms, consumer finance companies, stock brokerage firms, mutual funds, and others. The industry's primary role is to channel funds from savers to borrowers while acting as intermediaries that manage risk, provide liquidity, and facilitate both domestic and international trade. In this capacity, the financial sector connects individuals, businesses, and governments with capital to those who require it (Aksoy and Yılmaz, 2024).

As digital technologies continue to transform various industries, understanding their impact is essential for academics, industry professionals, and policymakers alike. This study aims to provide a comprehensive overview of these trends, particularly within the financial sector, which is profoundly affected by digitalization processes (Uzel, 2024).

Businesses must be highly interactive to keep pace with the rapid advancements of the modern era. In particular, they need to respond to competition and address competitive challenges with optimal costs. In recent years, competition has become more intense in virtual markets compared to physical markets. As of 2021, brands leading technological developments dominate the market (Kurtoğlu and Kahraman, 2023). An examination of the 2021 "Best Global Brands" report reveals that technology-based companies are at the forefront. The research indicates that digitalization is a prevailing trend and highlights that consumer preferences are shifting toward cloud-based technologies and artificial intelligence-driven services across brands such as Apple, Amazon, Microsoft, Google, and Samsung. The fact that these leading brands are rooted in technology and informatics further supports the notion that market leaders are technology-based. The global shift toward virtual markets not only reflects changing consumer trends but also underscores the growing importance of digitalization. Consequently, businesses are developing new strategies for virtual markets. Dominating these markets requires abandoning traditional methods and adapting to new approaches. One of the greatest challenges in this transition is overcoming consumers' trust issues. Businesses must tailor their product and service offerings to align with consumer purchasing behavior. In this context, companies must first recognize the significance of digitalization and then innovate their business models accordingly (Er and Yücel, 2023).

# 2 The rise of web3: decentralized, user-centric digital ecosystems

In addition to the advantages of Web3 applications, such as decentralized and autonomous operation, we face challenges like managing identity information and the absence of an intermediary in situations such as reversing accidental transactions. A review of the literature and business studies on Web3—which is still emerging and evolving—reveals that the concept is often misunderstood, leading to the proposal of incorrect models and solutions for addressing these needs (Saka, 2025).

Web3 represents the next phase of the internet, driven by the promise of granting individuals greater control over their data and the content they create. This transformation is primarily powered by blockchain technology. Blockchain is a publicly accessible, decentralized database that serves as the foundation for Web3 applications (Krause D., 2024).

This system, also known as open blockchain technology or distributed ledger technology, enables data to be securely recorded across a network of computers. This ensures the data is transparent, immutable, and traceable. Unlike the centralized approach of Web 2.0, Web3 addresses these issues by being decentralized. Blockchain records are stored on multiple computers rather than a single server. This decentralized structure guarantees data accuracy and integrity through consensus among all network participants. Therefore, there is no need for a central authority, such as a company, to validate the data (Bahçeci, 2024).

# 3 The birth of the metaverse: persistent virtual and augmented reality universes

With the integration of new technologies and internet applications, the way people communicate is constantly evolving. Advances in communication technologies have enabled instant access to individuals across the globe and made possible many things that were once considered impossible. Perhaps the most significant of these developments today is Metaverse technology. The metaverse is a digital universe that extends beyond the internet as we know it. This universe offers a three-dimensional virtual world where people can explore and engage in various activities. The metaverse can be defined as a hybrid digital-physical environment that facilitates rich user interaction. Accordingly, the primary hybrid feature of the metaverse is the two-way connection between the virtual and physical worlds (Biswal and Kulkarni, 2025).

The Metaverse is a convergence of various technologies, including virtual reality, augmented reality, and more, that internet users will experience in a digital world in the near future. It is expected to drive innovation in the virtual realm and enhance digital games, educational tools, commodity trading, artificial intelligence, blockchain, and other industries (Nasirov, 2024).

Although the metaverse is still in its infancy, it holds significant transformative potential for the world. Currently, many companies are developing hardware and software to facilitate widespread virtual interactions. As the concept of the metaverse—where people can work in virtual environments and communicate with others—gains traction, researchers are increasingly investigating how it may impact daily life (Kazaz, 2022).

# 4 Transformation in consumer rights: new protection mechanisms in web3 and the metaverse

Consumer behavior is influenced by numerous factors, with digitalization being a significant one. Digitalization has initiated a

profound transformation in consumer behavior. Through this process, the internet has shifted consumers from passive buyers to active participants. Additionally, mobile technologies and artificial intelligence applications have become integral to consumers' lives, further enhancing their engagement (Biswal and Kulkarni, 2025). The metaverse, an evolving paradigm of the next-generation internet, aims to create a virtual shared space where people can play, work, and socialize. Fueled by recent advancements in emerging technologies such as extended reality, artificial intelligence, and blockchain, the metaverse is transitioning from science fiction to an imminent reality (Türkmen and Sürmeli, 2024).

For companies operating in the physical world, the concept of the Metaverse primarily represents a vast laboratory offering direct access to target audiences, especially younger demographics. It would be shortsighted to view the Metaverse as merely a gaming platform. Instead, the Metaverse has the potential to exert a comprehensive impact. It is predicted that, in the future, it will revolutionize nearly every industry and the core value functions of companies—from healthcare to consumer products, and from entertainment to business-to-business technical solutions and payments. Furthermore, entirely new industries, markets, and resources will emerge, alongside new types of skills, professions, and certifications necessary to support this future (Özkan and Yetgin, 2025).

In addition to these applications, the Metaverse significantly impacts virtual meetings by enabling remote office facilities. Furthermore, it opens new horizons for digital tourism and digital exhibitions. The advancement of digital twin and interactive technologies allows users to overcome limitations of time, space, and other constraints, enabling them to freely visit scenic spots worldwide and enjoy an immersive experience. The development of the Metaverse also supports education by providing immersive simulations of realistic scenes, enhancing comprehension of learning content. By breaking the boundaries of time and space, the Metaverse eliminates distance between people, allowing communication anytime and anywhere. Consequently, the Metaverse facilitates various forms of social interaction (Boztaş and Türkmen, 2024).

## 5 Data sovereignty and regulation: financial and governance requirements in decentralized systems

In the realm of digital transformation, the financial sector stands at a significant crossroads. It faces increasing regulatory pressures alongside a series of challenging conditions, including rapidly evolving customer expectations, growing competition from fintech startups, and an ongoing need to reduce operational costs. Traditionally, the financial industry has been resistant to change, primarily due to regulatory constraints and the high risks involved. However, the rise of fintech companies and innovative technological solutions is now challenging the *status quo* (Temür, 2024).

In the face of the digital wave, the need for transformation in the financial sector is driven by both external factors, such as customer expectations and regulatory requirements, and internal factors, including operational efficiency and cost reduction. In this era of rapid digitalization, customers demand seamless, intuitive, and personalized experiences. Banks and other financial institutions are expected to keep pace with innovative consumer technologies. At the same time, stringent regulatory requirements call for greater transparency and improved risk management, compelling institutions to adopt technologies that support these objectives. Efforts to enhance operational efficiency and reduce costs further underscore the industry's ongoing digital transformation journey. In conclusion, the current state of the financial sector necessitates an active pursuit of digital transformation to address emerging challenges and capitalize on new opportunities. In this constantly evolving and challenging landscape, digital transformation plays a crucial role in the finance industry (Karahasan, 2022).

Digital transformation requires the integration of digital technology into all areas of business, fundamentally changing the way organizations operate and deliver value to their customers. It is estimated that this comprehensive process will affect everything from internal operations to customer interactions and business models. Financial institutions worldwide are increasingly aware of this trend, investing in digital infrastructure not only to remain competitive but also to future-proof their operations (Mete, 2023).

Digital transformation in the financial sector is not merely about implementing new technologies; it also entails a significant cultural shift that encourages continuous experimentation and embraces potential failures as part of the innovation process. The initiative aims to promote automation, resulting in faster, more efficient operations and freeing human resources for more complex tasks and problem-solving. Additionally, digital transformation plays a crucial role in enhancing regulatory compliance. With the support of technologies such as artificial intelligence and machine learning, financial institutions can better navigate the complexities of the regulatory landscape, ensuring compliance and minimizing risk (Arner et al., 2017).

## 6 Legal regulatory gaps: the limits of digital services and economics principles

With the rapid spread of digital services around the world and the increase in data production, collection, and use, online platforms have also become an important part of information society services. This important role of online platforms also brings up their responsibilities such as protecting user data, controlling content and providing various services. In particular, the increase in cyber threats and data breaches; reveals that online platforms should take serious measures to ensure the security and privacy of users (Karahasan, 2022).

The rapid advancements in digital technologies and the evolution of the internet have led to significant changes in online activities. Today, intermediary service providers have tended to take on a more proactive role over time. For example, online platforms often have a hosting function, indicating their passive intermediary role. However, online platforms have some features that distinguish them from other types of intermediary services and make them more "active" (Boztaş and Türkmen, 2024).

## 7 Digital regulatory gaps: data protection, user consent, and identity management issues

In today's digital world, the volume of data is increasing at an extraordinary and continuous pace. While data is collected constantly, it is also analyzed instantly. As a result, actionable knowledge is generated and applied across various fields such as health, economics, politics, international relations, and financial markets. Global companies, governments, and other organizations that work with data not only collect it to personalize services, predict future trends, and develop appropriate strategies but are also actively engaged in advancing existing technologies and analytical methods (Kazaz, 2022).

Blockchain technology stands out as an emerging innovation in the management of potentially high-risk personal data. It is recognized as the most well-known and widely used distributed ledger technology for transmitting critical information. Blockchain enables the processing, distribution, and control of data with decentralized, verifiable, transparent, secure, data-driven, and identity management features (Met et al., 2022).

Although blockchain technology appears to be a relatively new approach to minimizing data breaches, there is extensive research on the subject in the literature. Beyond technical and administrative requirements, "compatibility with technology, which is a key focus of legal regulations, has sparked considerable discussion regarding blockchain applications. Given the sensitivity of personal data, many studies propose various architectures designed to comply with the GDPR. Since it is generally understood that data deletion is not feasible on blockchain, partial measures are attempted by deleting the hash (trace) values associated with the data. The proposed architectures aim to uphold fundamental legal obligations under the GDPR, such as data regulation, deletion, and the right to be forgotten. Another important consideration is the suitability of blockchain for storing personal data. Blockchain is primarily designed to record small, linear transaction data. In other words, users are mainly concerned with whether the current transaction can be traced back to the original "agreement" (Boztaş and Türkmen, 2024).

It remains unclear whether blockchain is an optimal solution—or an escape route—for storing personal data. Primary rights such as in personal data management are not well-suited to the inherent structure of blockchain technology, as demonstrated in both academic and applied research. It is believed that resolving these incompatibilities lies within the technology itself; however, potential updates to blockchain technology aimed at regulatory compliance may conflict with the technology's fundamental principles and undermine its defining features. Therefore, it is recommended to implement minor modifications that do not affect the core structure, such as private key destruction, off-chain storage, or trace value deletion. In this context, one of the most significant challenges that may arise in the future is whether there will be a need to ensure legal and technological compliance (Biswal and Kulkarni, 2025).

## 8 Blockchain financial instruments: consumer risks in DAO and NFTs

The decentralized nature of blockchain technology has captured the attention of senior executives due to its advantages, including data immutability, decentralization, permanence, anonymity, auditability, and cryptographic security. Various use cases are being explored across different industries, and the disruptive potential of this technology is becoming increasingly evident. The financial sector, in particular, was among the first to benefit from blockchain technology, which is now becoming a new standard in financial services. Additionally, companies in sectors beyond finance—such as telecommunications, cybersecurity, supply chain management, forecasting, insurance, private transportation and car sharing, cloud storage, crowdfunding, voting, governance, energy management, retail, and real estate—are identifying potential applications or implementing pilot projects that could positively transform traditional business models through blockchain. The digital age has driven significant changes across all areas of life, especially in the financial sector. One of the most notable transformations is the emergence and widespread adoption of blockchain technology (Temür, 2024).

Thanks to its decentralized structure, blockchain technology makes it difficult to manipulate financial data, providing a significant advantage in maintaining the integrity of the financial system. Additionally, its distributed architecture enhances system resilience and offers protection against potential cyberattacks. This is a major benefit, especially given the increasing security threats associated with the digitalization of financial systems. However, the future role of blockchain technology in the financial sector remains uncertain. Challenges such as current regulatory gaps, scalability issues, and high energy consumption hinder the widespread adoption of blockchain-based applications. Nevertheless, considering the innovations and possibilities blockchain technology offers, it seems inevitable that financial systems will become increasingly digitalized, and new business models based on this technology will emerge. Therefore, the finance sector holds significant potential as a pioneer in the rapid adoption and implementation of new technologies. In this context, blockchain is expected to have a transformative impact on the financial world and adapt to emerging trends (Özkan and Yetgin, 2025).

## 9 Algorithmic and governance standards: DAO governance and NFT contractual norms

The importance of digital transformation in the financial sector is multifaceted. To move beyond basic digitization—simply converting paper documents into digital formats—and to meet evolving customer expectations, comprehensive conversion services must be implemented. Today's digitally savvy customers demand 24/7 access to financial services, personalized experiences, and seamless omnichannel interactions. To satisfy these demands, financial institutions must invest in advanced digital solutions such as artificial intelligence, data analytics, and cloud computing, which are essential for delivering personalized, on-demand services (Nasirov, 2024).

Digital transformation is essential for financial institutions to keep pace with fintech innovations. Organizations that adopt digitalization early will be recognized for their agility and customer-centric solutions. Therefore, traditional banks and financial institutions must embrace digital transformation to remain competitive. Additionally, digital transformation enhances cost efficiency. Automating routine tasks results in significant cost savings, while integrating advanced technologies such as blockchain can further reduce expenses by minimizing fraud and operational risks. Consequently, the role and significance of digital transformation in the financial industry are profound, heralding a paradigm shift in service delivery (Temür, 2024).

Digital assistants provide financial institutions with a means to deliver instant, personalized services to their customers. From answering queries about financial products and services to facilitating seamless transactions, digital assistants significantly enhance customer engagement and satisfaction. For example, they can analyze customers' spending habits and offer insights and recommendations tailored to individual financial goals. Additionally, they can remind customers of due dates, encouraging timely payments and promoting better financial management. Beyond customer interactions, digital assistants support internal operations by automating routine tasks, collecting and analyzing data for decision-making, and helping maintain regulatory compliance. These functions underscore the growing importance of digital assistants in the financial industry (Biswal and Kulkarni, 2025).

## 10 Digital literacy and awareness: strategies for inclusivity and risk mitigation in web3

With the rise of the information and communication technology era, new competencies have become essential. One of the most critical among these is digital literacy. The use of information and communication technology and the ability to navigate the internet have emerged as a new form of literacy—digital literacy. In fact, those who lack this vital skill may find themselves as disadvantaged as the illiterate were at the beginning of the 19th century. The appropriate use of information and communication technologies and the internet in education and training helps us address new challenges by offering opportunities for enhanced quality, convenience, diversity, and effectiveness. Digital literacy is rapidly becoming a prerequisite for creativity, innovation, and entrepreneurship. Without it, citizens cannot fully participate in society or acquire the knowledge and skills necessary to thrive in the 21st century (Özkan and Yetgin, 2025).

According to *Strategies for Inclusivity and Risk Mitigation in Web3*, the absence of a standardized definition of digital literacy is a fundamental concern. The current concept of digital literacy has been criticized for being vague, poorly defined, and susceptible to misinterpretation. Digital literacy is characterized by its evolving nature, closely tied to technological advancements (Nasirov, 2024).

## 11 Sustainable digital marketing: strengthening consumer rights and trust

Digital transformation is the process of adopting new business methods and mindsets that add value to customers by leveraging digital, social, mobile, and emerging technologies. It enhances business processes and enables companies to strengthen their competencies. Digital marketing, in particular, evolves at a much faster pace and in a different manner compared to the rate of change experienced by customers, companies, industries, and value chains. This transformation is reflected in companies' business models, strategies, products and services, decision-making processes, customer experiences, organizational structures, and collaborations. Thanks to rapidly advancing technology, today's digital world offers unprecedented access to information, products, and services through multiple channels at a much faster rate than before. In an era where smartphones and tablets play a significant role in people's lives, the integration of these devices with applications such as social media, mobile apps, and advanced analytical capabilities empowers consumers to access unlimited information that they can utilize when making purchasing and ordering decisions (Özkan and Yetgin, 2025).

Digital marketing primarily focuses on internet marketing but also utilizes other channels that do not require internet access. It leverages technological tools such as landline telephony, mobile phones, MMS and SMS, banner advertisements, and digital open spaces, while encouraging consumers' direct participation in products and services (Nasirov, 2024).

Traditional marketing has begun to lose its effectiveness today. Advancements in technology have transformed people's living standards as well as their purchasing and consumption habits. Consequently, it has become increasingly difficult for businesses to differentiate themselves and capture attention. Companies that recognize this shift have increasingly turned to digital channels to reach their target audiences more quickly, reallocating a significant portion of their advertising budgets to this area. In some cases, it is more effective to identify and engage the right target audience rather than addressing broad, general audiences. Because digital marketing offers greater measurability than traditional marketing, companies have started to prioritize digital marketing activities. Digital marketing provides two key advantages: it allows targeting of specific audiences, and it enables the measurement of actions and goal achievement. Due to these benefits, the importance of digital marketing is growing daily for companies (Özkan and Yetgin, 2025).

## 12 Discussion and conclusion

Web3-driven digital marketing and the metaverse economy represent a dynamic and continuously evolving ecosystem that is transforming consumer behavior. In this context, protecting consumer rights is critically important not only for safeguarding individual interests but also for ensuring the sustainability and trustworthiness of digital marketing.

The primary issue highlighted in the discussion section is that existing legal frameworks are outdated and insufficient to address the decentralized structures enabled by Web3 technologies. Current legal systems are designed to regulate business activities that predominantly operate through centralized intermediaries. However, smart contracts, DAOs, and the virtual asset economy obscure traditional mechanisms of accountability and oversight. This situation calls for the development of new norms and standards at both national and international levels to better protect consumer rights.

Another important area of debate is the ambiguity surrounding governance models. Metaverse platforms are often managed by private companies or community-based organizations. However, there is a lack of standardization in transparency, accountability, and user engagement. This deficiency can undermine consumers' trust and limit the long-term effectiveness of digital marketing strategies. Therefore, governance mechanisms must be built on inclusive and participatory principles that prioritize consumer rights.

## 13 Suggestions

In the financial policy dimension, the volatility of digital assets and the lack of regulation are prominent concerns. The use of crypto assets as a means of payment exposes consumers to price fluctuations and risks of cyber fraud. Additionally, the fragmented regulatory approaches across different countries hinder the development of a comprehensive global consumer protection strategy. Therefore, it is essential to develop policies grounded in international cooperation that support financial stability and safeguard consumer rights.

It is evident that Web3 and metaverse-based digital marketing present both risks and opportunities. Addressing legal, governance, and financial policy challenges to protect consumers is essential for the sustainability of the digital marketing ecosystem.

## Author contributions

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