



Ownership in the Digital Age: A Critical Review of Personal Property, Consumer Rights, and Digital Control

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ABSTRACT

This article critically examines *The End of Ownership: Personal Property in the Digital Economy* and its relevance to the changing nature of ownership in an increasingly digital society. Digital technologies have transformed the way individuals acquire, access, and control goods and services. Products that were traditionally purchased and owned are now frequently governed by licensing arrangements, subscription models, digital rights management systems, and contractual restrictions. As a result, consumers may pay for access to digital content without receiving the full rights traditionally associated with personal ownership.

The growing reliance on cloud-based platforms, streaming services, and connected technologies has accelerated the transition from permanent possession toward temporary and conditional access. This transformation has become even more significant with the expansion of the Internet of Things, where software, remote connectivity, and automated controls increasingly determine how physical devices can be used, repaired, modified, or transferred. Consequently, the boundary between owning a product and merely being authorized to use it has become progressively uncertain.

The article explores the factors contributing to this shift, traces its development within the digital economy, and considers its consequences for consumer rights, personal property, and individual autonomy. It also evaluates possible legal and policy responses to the growing imbalance between technological control exercised by rights holders and the freedoms available to users. The discussion demonstrates that the digital transformation of ownership extends beyond property law, influencing how people relate to material objects, digital systems, and one another. Preserving meaningful autonomy in this environment therefore requires not only stronger legal protections but also greater public awareness of how digital technologies shape everyday choices and control.

KEYWORDS: Digital Ownership; Personal Property; Consumer Autonomy; Digital Rights Management; Licensing; Consumer Rights; Internet of Things.

INTRODUCTION

The idea of an “end of ownership” can appear unsettling because ownership has traditionally provided individuals with a sense of permanence, security, and personal control over the things they acquire. However, the expansion of digital technologies has increasingly challenged this traditional understanding. In *The End of Ownership: Personal Property in the Digital Economy*, Aaron Perzanowski and Jason Schultz draw attention to the growing conflict between technological innovation, intellectual property protection, and the rights traditionally associated with personal property. Their discussion is particularly relevant in a period in which digital platforms and connected technologies play an increasingly important role in everyday consumption [1].

The development of the internet and digital markets has given intellectual property owners new mechanisms

for controlling how products are accessed and used. Technologies such as digital rights management, software restrictions, online authentication, and end-user licensing agreements can limit activities that consumers would ordinarily associate with ownership. Even after purchasing a digital product—or, in some cases, a physical product dependent on software—users may face restrictions on copying, modifying, repairing, transferring, or continuing to use it. Consequently, the relationship between payment and ownership is becoming less straightforward than it was in traditional markets [2].

This transformation raises important concerns regarding the weakening of consumer control over both digital content and technology-dependent physical goods. The conventional assumption that purchasing an item gives the buyer broad authority to possess and use it is increasingly being replaced

by models based on conditional access and continuing control by manufacturers or rights holders. Digital technology, therefore, does more than create new forms of products and services; it also changes the legal and practical meaning of possession, control, and personal property [3,4].

The central concern explored by Perzanowski and Schultz is whether meaningful personal ownership can be preserved in the digital economy. The debate requires careful consideration of how consumer property rights can be protected while recognizing legitimate interests in intellectual property and technological innovation. It also raises a broader question about the appropriate balance between private technological control and individual autonomy. Examining these issues is essential for understanding how ownership is being reshaped and for identifying legal and social approaches that can protect consumers' rights in an increasingly connected digital environment [1,2].

LITERACY REVIEW

Whose Ownership Has Ended?

A central question raised by the transformation of property in the digital economy is not simply whether ownership is disappearing, but whose ownership is actually being diminished. The discussion developed in *The End of Ownership* begins with copyright because digital reproduction has fundamentally altered the balance on which the traditional copyright system was built. For copyright owners, the ability to control copying has historically been essential. During the age of print, reproducing a book or other creative work required physical materials, specialized equipment, substantial space, and considerable human effort. These practical barriers naturally limited unauthorized reproduction. Digital technology removed many of these constraints. A digital file can be copied quickly, repeatedly, and at minimal cost, allowing reproduction to occur on a scale that is difficult for copyright owners to observe or control [5,6].

The initial response was to place technological barriers directly around the act of copying. Software companies were among the earliest industries to use licensing systems to regulate installation and use on particular devices. Over time, software licenses became more than a mechanism for distributing programs; they increasingly defined the legal relationship between producers and users. Instead of treating software as a product that consumers fully owned after purchase, companies could characterize access and use as privileges granted under specified conditions. Similar approaches subsequently expanded into electronic books, digital music, films, and other forms of digital content [7,8].

Digital rights management (DRM) further strengthened this model of control. DRM systems can limit not only the number of copies made by users but also the devices on which content

may be accessed and the ways in which it can be transferred or used. By linking content to particular accounts, devices, or technological ecosystems, companies have been able to combine copyright protection with broader commercial strategies. Software and digital content may thus become closely tied to specific hardware platforms, encouraging consumers to remain within a particular technological environment. Earlier examples of such restrictions included Sony's attempts to control the use of game-related media through technological measures and Apple's former DRM restrictions on iTunes content, which limited use to a defined number of authorized devices [9,10].

These measures, however, created significant difficulties for consumers. When digital content is designed to function only within particular systems, incompatibility between platforms can divide the market into separate technological environments. A consumer may lawfully acquire content but still encounter restrictions when attempting to move it between devices or continue using it after changing platforms. Such limitations contributed to widespread dissatisfaction with DRM and licensing practices. Technological restrictions were also repeatedly challenged by attempts to circumvent them, producing an ongoing contest between increasingly sophisticated protection systems and methods developed to bypass those systems. This cycle demonstrated an important limitation of relying exclusively on technology to maintain complete control over copying: stronger restrictions often increased both the incentive and the effort devoted to overcoming them [11-15].

As controlling every digital copy became increasingly difficult, a different commercial approach emerged. Rather than focusing entirely on preventing copies, digital businesses increasingly reduced the importance of consumer possession itself. Cloud computing, streaming platforms, and subscription-based services shifted access away from locally stored files and toward content delivered from remote servers. Under this model, consumers often do not receive a permanent copy of a work in the traditional sense. Instead, they obtain continuing access to a service, subject to contractual terms and the availability of the provider's platform [16].

This development represents a major movement from ownership toward licensed access. Streaming services, for example, offer convenience, extensive selection, and relatively low entry costs. Users can listen to music, watch films, read digital materials, or use software without managing large collections of files on their own devices. Yet this convenience may obscure an important legal distinction. What appears to be the purchase of a digital product may, in practice, be an agreement for limited access. The user may lose access if a subscription ends, an account is terminated, a platform changes its policies, or the provider withdraws

particular content. Thus, the digital economy increasingly replaces the transfer of property with continuing contractual relationships between service providers and consumers [17-20].

The expansion of the Internet of Things (IoT) has taken this transformation beyond purely digital content. Modern connected products frequently combine physical hardware with embedded software, sensors, network connections, cloud-based functions, and remote updates. These features can determine how a device operates throughout its lifespan. Manufacturers may retain the ability to modify software, activate or deactivate functions, collect information, or impose restrictions after the consumer has purchased the physical object. As a result, possessing a device does not necessarily provide the same degree of control that traditionally accompanied ownership of a tangible product [18].

The connected nature of IoT products also allows companies to view physical goods as continuing platforms rather than as items involved in a single completed transaction. A device can become a channel for software updates, subscriptions, additional services, and data collection. Consumer information may consequently acquire considerable commercial value alongside the original product itself. At the same time, the close integration of proprietary software and hardware can create highly controlled product ecosystems. Repair, modification, interoperability, and independent reuse may become difficult when essential functions depend on software or remote services controlled by the manufacturer [1,8,9].

Taken together, these developments show how control over intellectual property has gradually extended into the consumer's experience of using physical and digital goods. Copyright law, restrictive contractual terms, licensing arrangements, DRM, and technological design can operate simultaneously to limit activities that consumers have traditionally associated with ownership. The ability to copy, transfer, modify, repair, resell, or use a purchased item without continuing approval from its producer may therefore be substantially reduced [19].

Nevertheless, the ownership does not mean that intellectual property owners themselves have lost control. In many respects, their legal and technological power has expanded considerably. Digital systems enable rights holders and manufacturers to maintain forms of control that would have been difficult to exercise after a conventional sale. The greater concern is that the ownership rights of end users and consumers are progressively being narrowed. Consumers may pay for products while receiving only limited, conditional, and revocable rights to use them [20].

For this reason, the question of whose ownership has ended has a broader significance. The immediate answer may

be that consumers are experiencing the greatest loss of practical control. Yet intellectual property holders are also consumers in other areas of their lives. They, too, rely on software, digital platforms, connected devices, and services governed by terms they may not control. The erosion of meaningful ownership can therefore extend beyond a simple conflict between producers and users. Ultimately, it raises a collective concern about whether individuals can retain genuine autonomy over the products and technologies that increasingly shape everyday life. In this sense, the end of ownership may appear to affect consumers first, but its wider implications point toward a transformation in the position of nearly everyone within the digital economy [21,22].

HOW DID OWNERSHIP END?

The decline of traditional ownership in the digital economy did not occur because of a single technological invention or legal decision. Rather, it developed through the combined influence of the distinctive characteristics of digital goods, advances in technology, changes in legal frameworks, judicial interpretation, and evolving consumer preferences. Intellectual creations are fundamentally different from ordinary physical objects because they can often be used by many people simultaneously and reproduced without depriving the original user of access. Digital technology has dramatically intensified these characteristics by making the production, transmission, and duplication of information faster, cheaper, and easier than ever before. As a result, intellectual property owners gradually moved away from business models based primarily on transferring copies and increasingly adopted systems based on controlled access and continuing services [23].

Technology is frequently described as neutral because it does not possess independent intentions or moral preferences. From this perspective, a technological tool simply performs the functions for which it has been designed. Nevertheless, the social consequences of technology are rarely neutral. Throughout history, major technological changes have redistributed power, altered economic relationships, and changed the respective rights and responsibilities of different groups. Every significant technological transformation has produced benefits, but those benefits have not necessarily been distributed equally. Technology can extend human capabilities and improve the ability to manage property, protect information, and organize daily activities. At the same time, it can also provide new mechanisms through which one group exercises control over another [24].

Historical technological development illustrates this dual role. During the Industrial Revolution, factories and mechanized production reorganized the relationship between owners and workers. Production became concentrated in centralized workplaces, allowing factory owners to supervise labor, regulate working conditions, and

exercise greater control over the production process. In the digital era, control has increasingly moved beyond visible physical spaces. Intellectual property owners can now use software, online authentication, connected platforms, and remote technologies to influence how consumers access and use products. Restrictions can be imposed without direct physical supervision, often through invisible technological systems operating in the background [25].

This form of control is particularly significant because it may extend beyond the intellectual work itself. A software-controlled device, for example, can remain dependent on the manufacturer even after it has been purchased. Remote updates, account requirements, authentication systems, and technical restrictions may determine which features remain available and how the product can be used. Digital technology therefore enables a continuing relationship between the producer and the consumer rather than ending the producer's practical influence at the point of sale. In this sense, the digital economy has inherited the power-shifting effects associated with earlier technological revolutions while making many forms of control less visible and more deeply embedded within everyday products [26].

Law has played an equally important role in this transformation. Legal systems do not merely respond mechanically to technological developments. Through legislation, governments recognize particular interests, establish legal boundaries, and determine which claims will receive formal protection. The process is inherently shaped by the ability of different groups to organize and advocate for their interests. Intellectual property owners and industry organizations often possess substantial resources, long-term commercial incentives, and institutional stability. Individual consumers, in contrast, may experience the consequences of legal change separately and may have fewer opportunities to influence policy. This difference can affect the development of legislation, particularly when the immediate beneficiaries of new legal protections are highly organized groups while the long-term costs to consumers are dispersed and less immediately visible [27].

The Digital Millennium Copyright Act (DMCA) provides an important illustration of the interaction between technology and law. The Act introduced significant legal protection for technological measures used to control access to copyrighted works and, in certain circumstances, restricted the circumvention of those measures. Consequently, technological restrictions were supported not only by software and hardware design but also by legal sanctions. Although the law contains exemptions and review mechanisms intended to address particular legitimate uses, the broader effect was to strengthen the legal position of copyright owners in controlling access to protected digital works [28].

The importance of this development lies in the relationship between technical restrictions and traditional consumer expectations. A technological measure may prevent a person from accessing, copying, modifying, or transferring a product, while legal rules can reinforce that restriction by limiting attempts to circumvent it. The combination of technological design and legal protection can therefore reduce the practical control that consumers would otherwise expect to exercise over an item they have acquired. The issue is not simply whether consumers have physical possession of an object, but whether possession continues to carry meaningful authority over its use [29,30].

Courts have also contributed to defining the changing boundaries of ownership. The judiciary must address disputes arising from new technologies even when legislation does not provide a complete answer. At the same time, when new statutory provisions exist, courts must determine how broadly or narrowly those provisions should be interpreted. In cases involving software licenses, resale restrictions, and the exhaustion of intellectual property rights, judicial decisions have not always followed a single approach. Courts may differ in deciding whether a transaction represents an actual sale, whether a contractual restriction remains enforceable after transfer, or whether the rights holder can continue to control the disposition of a product after it enters the market [31].

Such disagreements reveal the role of legal interpretation and underlying policy choices. Decisions concerning new technologies often require courts to balance competing values, including the protection of creative investment, consumer freedom, market competition, and the traditional rights associated with personal property. Copyright law has long been justified not merely as a mechanism for maximizing private returns but also as a means of encouraging the creation and broad dissemination of knowledge and culture. As the United States Supreme Court has emphasized, the protection and reward of creative work ultimately serve a broader public purpose by promoting the availability of literature, music, and other forms of expression [32].

However, the widespread availability of digital content does not automatically resolve concerns about ownership. Streaming platforms can provide unprecedented access to films, music, books, and other creative works. From the perspective of cultural distribution, this development can be highly beneficial because consumers can reach a vast amount of content quickly and conveniently. Yet access and ownership are not identical. A person may have immediate access to an extensive collection of works while possessing no permanent right to retain, transfer, resell, or independently control them. The conflict between the objectives of intellectual property law and the expectations traditionally connected with ownership therefore becomes particularly visible in the streaming environment [33].

The transformation of ownership cannot, however, be attributed entirely to intellectual property owners, technology companies, or lawmakers. Consumers have also participated in shaping the market that produced the current access-based economy. Consumer demand influences which technologies and business models succeed. Although users have often resisted restrictive licenses and inconvenient DRM systems, they have generally responded positively to services that provide low-cost, rapid, and flexible access to large quantities of digital content. Subscription platforms and cloud-based services reduce the need to purchase, store, organize, and maintain individual copies. For many users, these advantages outweigh the value of permanent possession [34].

This development raises an important question: did streaming become dominant because consumers actively demanded it, or did technological progress make such a model possible and subsequently create a new pattern of consumer preference? The answer is likely to involve both factors. Digital infrastructure enabled large-scale streaming, while consumers increasingly embraced the convenience it offered. For music, films, and electronic books, many users are primarily interested in the experience of listening, watching, or reading rather than in possessing a permanent copy. Once immediate access became easy and affordable, the practical importance of maintaining individual copies declined for a substantial part of the market [35].

This does not mean that consumers never experience the disadvantages of access-based services. Content may disappear from a platform, licensing arrangements may change, accounts can be restricted, and previously available material may become inaccessible. Nevertheless, consumers can often locate alternative content quickly, and the overall convenience of digital services continues to encourage their widespread adoption. In a fast-moving society, immediate availability and efficiency frequently carry greater value than the slower and more expensive process of acquiring and maintaining a permanent collection. The success of the streaming model therefore reflects not only corporate strategies of control but also changing expectations about what consumers consider sufficient for satisfying their needs (Figure 1) [36].

The ownership ended gradually because several forces moved in the same direction. Digital technology made copies less scarce and easier to control through new systems; legal rules increasingly supported technological protection; courts were required to redefine traditional concepts in new commercial settings; and consumers embraced convenient alternatives to permanent possession. The result has been a shift from a property-based model, centered on acquiring and controlling individual copies, toward an access-based model built around services, licenses, subscriptions, and continuing relationships with providers [37].



Figure 1: Conceptual framework illustrating the transition from traditional ownership to digitally controlled access and its implications for consumer autonomy.

When the copy itself loses much of its practical importance, the role of conventional ownership inevitably changes. Ownership does not disappear entirely, nor does every digital transaction become merely a temporary service. Instead, its position within the broader system of property rights is being reorganized. The digital economy has made access increasingly valuable, while permanent possession has become less central in many forms of consumption. Understanding how this shift occurred is essential because the future of ownership will depend on whether technological convenience can coexist with meaningful consumer autonomy and whether the law can preserve important elements of personal control in an economy increasingly organized around access rather than possession [39].

WHAT HAS THE END OF OWNERSHIP CHANGED?

The use of interactive video in university classrooms has developed through both teaching practice and educational research. Its application has shown potential for increasing student participation and providing greater flexibility in the learning process. At the same time, the introduction of an emerging digital teaching approach brings practical difficulties that cannot be addressed through technology alone. In the Chinese higher education context, the effectiveness of interactive video is closely related to curriculum organization, assessment practices, technical conditions, and the way teaching activities are managed [31].

Curriculum Organization and Assessment Practices

Interactive video provides a connection between teachers, students, and the learning resources used during instruction. Teachers organize and guide the use of these resources, while student's access, interpret, and apply them according to their learning needs. The educational value of the resources depends largely on how they are incorporated into the curriculum.

A curriculum designed for interactive learning needs to identify clear learning objectives and determine how video activities contribute to achieving them. Students may be asked to respond to questions during a video, examine a case, complete a task, or revisit concepts after receiving feedback. These activities need to have a clear relationship with the content and assessment requirements of the course. When interactive video is added without corresponding changes to curriculum planning, students may continue to treat it as supplementary material rather than as part of the learning process [40].

Assessment presents a similar issue. Traditional examinations may measure knowledge acquired through instruction, but they may not fully reflect students' participation in inquiry, discussion, problem solving, and independent learning. Formative assessment can be incorporated into interactive video activities to provide information about students' progress while the course is still in progress. Teachers can use students' responses and learning records to identify difficulties and provide additional instruction. A closer connection between curriculum objectives, interactive activities, and assessment can make the use of video more meaningful within university teaching [33].

Software, Hardware, and Technical Conditions

Interactive video teaching requires a technological environment that can support both the delivery of video content and the activities connected with it. Universities need appropriate devices, software platforms, network services, data storage, and technical support. These requirements can place additional demands on institutions that are still relying on infrastructure designed primarily for conventional classroom teaching [34].

The quality of the learning experience can be affected when equipment is outdated, network access is unstable, or the available platform cannot support interactive functions effectively. Teachers may also face difficulties when they have limited technical knowledge or when different systems are not compatible with one another. Such problems can interrupt classroom activities and reduce students' willingness to use digital learning resources.

Infrastructure development therefore needs to be accompanied by regular maintenance and technical assistance. Universities can assess the requirements of different courses before introducing interactive video on a wider scale and provide teachers with appropriate training in the use of the relevant platforms. Technical support is particularly important when educators are expected to create their own interactive materials rather than simply use existing videos. A reliable combination of hardware, software, network access, and user support provides the basic conditions for continued use of interactive video in university education [35].

Supervision of Teaching and Learning

The movement toward interactive and student-centred learning has changed the traditional boundaries of university teaching. Students can now watch instructional videos, complete learning activities, communicate with teachers, and review course materials outside the physical classroom. Learning may take place on campus, at home, or through other online environments. This flexibility provides greater freedom for students but also creates new requirements for the supervision of teaching and learning [33].

Teachers need to monitor student participation and identify whether learners are progressing through the required activities. Digital platforms can provide useful information about video access, responses to questions, completion of activities, and other aspects of learning behaviour. These records can support teachers in identifying students who require additional guidance. At the same time, supervision should not be reduced to monitoring whether students have logged into a platform. The quality of learning depends on the nature of students' participation and the extent to which instructional activities encourage meaningful engagement [36].

The involvement of universities is also important when learning extends beyond the campus. Institutions need clear arrangements concerning online teaching responsibilities, communication between teachers and students, assessment practices, and appropriate use of digital learning platforms. In situations where students participate in learning from home, cooperation among teachers, universities, and families may also help maintain suitable learning conditions.

The continued development of interactive video teaching calls for corresponding development in educational management. Clear institutional procedures, appropriate teacher guidance, reliable learning platforms, and reasonable supervision can help create conditions in which students have greater independence without losing the academic support provided by the university [37] (Table 1).

RECLAIMING OWNERSHIP: LEGAL AND TECHNOLOGICAL RESPONSES IN THE DIGITAL AGE

The transformation of ownership in the digital economy raises an important question: how can meaningful consumer control be protected when access to property increasingly depends on software, platforms, and remote service providers? Addressing this question requires more than preserving the traditional language of ownership. Legal systems must consider whether individuals retain practical authority over the products and digital spaces for which they have paid. The objective should be to restore an appropriate balance between the legitimate interests of intellectual property holders and the autonomy, privacy, and property interests of consumers [1,2].

Table 1: Transformation of Consumer Ownership in the Digital Economy.

Traditional Ownership Model	Digital/Access-Based Model	Effect on Consumers	Applicable Section
Consumer purchases and possesses a physical copy	Consumer receives licensed or subscription-based access	Reduced permanence of possession	Section 2: Whose Ownership Has Ended?
Owner can generally use the product independently	Use may depend on software, authentication, or online services	Increased dependence on providers	Section 3: How Did Ownership End?
Property can often be resold, transferred, or lent	EULAs and DRM may restrict transfer or resale	Limited disposal rights	Section 4: What Has the End of Ownership Changed?
Owner can repair or modify a purchased item	Embedded software and technological controls may restrict repair or modification	Reduced practical control	Section 4: What Has the End of Ownership Changed?
Purchased content remains available while the owner retains it	Streaming content may disappear because of licensing or platform decisions	Uncertain long-term access	Section 4: What Has the End of Ownership Changed?
Reading and consumption can occur with limited third-party monitoring	Digital platforms may collect usage and behavioural data	Greater privacy concerns	Section 4: What Has the End of Ownership Changed?
Libraries acquire and manage physical collections	Libraries increasingly depend on digital licenses and suppliers	Reduced institutional control and preservation capacity	Section 4: What Has the End of Ownership Changed?

This issue extends even to streaming services. A consumer's personal library, playlist, watchlist, reading collection, or other curated digital space is not merely a technical feature. Such collections often reflect individual preferences, decisions, memories, and patterns of cultural engagement. Over time, they may acquire personal and practical significance. Consumers should therefore have a reasonable degree of protection against arbitrary interference with these spaces. Providers should not be able to alter, erase, or terminate access to personally organized content without appropriate justification, transparency, and safeguards. Contractual terms that provide excessively broad powers to interfere with consumer content or abruptly discontinue services require closer legal scrutiny [1,2,5].

A further priority is limiting unnecessary technological restrictions on legitimately acquired property. Digital rights management may serve valid purposes, particularly in protecting copyrighted works from unauthorized exploitation. However, technological control becomes more difficult to justify when it prevents consumers from carrying out ordinary and legitimate activities involving products they have purchased. The problem is especially serious when DRM restricts the repair, maintenance, modification, interoperability, or continued use of tangible goods. In such circumstances, software-based restrictions may undermine the practical value of personal property by allowing a rights holder to exercise continuing control over an object already in the consumer's possession [1,3,14].

For this reason, anti-circumvention rules should not operate without meaningful limitations. Legal protection for technological measures must be balanced against legitimate

consumer interests and socially beneficial activities. Circumvention for purposes such as repair, security research, preservation, interoperability, accessibility, or other lawful uses should not automatically be treated in the same manner as copyright infringement. A legal system that protects every technological barrier regardless of its purpose may allow private technical design to override important property rights and public interests [7,8,14].

The principle of rights exhaustion offers another possible mechanism for strengthening consumer control. Traditionally, once a lawful copy of a protected work has been sold with the authorization of the rights holder, the owner's control over the subsequent distribution of that particular copy is limited. This principle supports activities such as resale, lending, and other forms of transfer. Applying comparable principles to digital transactions, however, remains difficult because digital transfer may involve the creation of additional copies and because many transactions are structured as licenses rather than sales [1,9,15].

Nevertheless, the debate surrounding digital exhaustion remains important. A stronger recognition of post-transfer consumer rights could reduce the ability of intellectual property owners to maintain unlimited control after receiving payment for a product. It would also encourage reconsideration of whether the traditional concept of reproduction can continue to operate unchanged in an environment where copying is technically unavoidable during ordinary digital processes. The goal need not be the complete removal of copyright protection. Rather, copyright law may need to distinguish more carefully between unauthorized commercial exploitation and the technical

reproductions associated with legitimate consumer use [2,15].

The development of streaming services itself demonstrates that market adaptation can sometimes provide alternatives to direct technological control. The digital environment made perfect prevention of copying increasingly difficult and expensive. Streaming and cloud-based access created a different approach: instead of relying entirely on preventing consumers from obtaining copies, providers developed services capable of satisfying many users' needs without requiring permanent local possession. These services have significantly expanded access to music, films, books, software, and other creative works. Their success suggests that convenient, reasonably priced, and accessible services can sometimes reduce incentives for unauthorized copying more effectively than increasingly restrictive technological barriers [1,6].

At the same time, the success of access-based services should not be used as a reason to eliminate all consumer rights. Convenience does not necessarily replace the value of autonomy. Consumers may willingly choose streaming for everyday use while still requiring protection against arbitrary deletion, loss of purchased access, or the disappearance of essential services. A sustainable digital economy should therefore distinguish between voluntary participation in service-based models and the involuntary surrender of all meaningful control over one's purchases and digital activities [1,2,6].

Emerging technologies such as blockchain have also been proposed as possible methods for establishing records of ownership and authenticity for digital assets. In theory, blockchain-based systems can create persistent records associated with particular digital items and transactions. However, recording a token or transaction on a distributed ledger does not automatically resolve the broader legal and practical questions surrounding digital ownership. The decline and volatility experienced in parts of the NFT market have demonstrated that technological claims of uniqueness do not necessarily guarantee lasting economic, cultural, or property value [16,17].

The concept of uniqueness in digital environments also differs substantially from scarcity in the physical world. A physical collectible is ordinarily limited by its material existence; an equivalent digital file can often be reproduced with little difficulty. A blockchain record may establish a history or claim associated with a particular token, but it does not necessarily prevent identical or substantially similar digital content from existing elsewhere. Consequently, technological systems for certifying digital assets should not be treated as complete solutions to the problems created by the decline of traditional ownership. Their legal significance and long-term social value remain subjects requiring continued examination [16,17].

Digital technology has exposed a widening gap between existing legal assumptions and contemporary patterns of production and consumption. Traditional property law developed largely around identifiable physical objects, while intellectual property law was constructed around concepts of authorship, copying, and limited exclusive rights. Digital technologies combine these areas in ways that challenge established categories. A physical device may depend on copyrighted software; access to a creative work may depend on a service contract; and a consumer may possess hardware while another party retains remote control over essential functions. These developments make it increasingly difficult to rely exclusively on conventional legal distinctions [1,2,3].

The governance of digital affairs cannot be left entirely to private market arrangements. Market innovation can create substantial benefits, but unrestricted contractual and technological self-regulation may magnify differences in bargaining power. Large technology companies and intellectual property owners often possess greater information, technical knowledge, and negotiating capacity than individual consumers. If the boundaries of digital rights are determined solely through standard-form contracts and technological restrictions, consumers may have little meaningful opportunity to influence the conditions governing their own use of products [5,6,7].

Law consequently has an essential balancing function. It must protect innovation and legitimate creative investment while preventing technological power from producing excessive inequality or unfair restrictions. Legal regulation should establish minimum standards of fairness, transparency, consumer protection, privacy, and personal autonomy. Within those boundaries, businesses and consumers can continue to negotiate and innovate. The purpose is not to prevent technological development but to ensure that technological efficiency does not become a justification for the unrestricted concentration of control [2,7,10].

A persistent challenge is that technology usually develops faster than the law. New products, platforms, and business models often emerge before legislatures and courts have fully understood their consequences. Regulation therefore tends to be reactive: legal institutions identify problems after technologies have entered widespread use and then attempt to adapt existing rules or create new ones. This delay can leave consumers exposed during the period in which a technology becomes commercially established but appropriate legal safeguards have not yet been developed [3,7].

The solution should not consist solely of correcting problems after they occur. Ethical and legal considerations should increasingly be incorporated during the design and development of digital technologies. Concepts such as privacy by design, security by design, interoperability, accessibility,

and consumer autonomy can encourage developers to consider the social consequences of technological choices before those choices become embedded in products and infrastructures. Technology should not be regarded merely as a neutral object whose consequences become relevant only after deployment; design decisions can determine who retains control and who becomes dependent [8,10,18].

Previous scientific and technological developments demonstrate the importance of ethical reflection. The birth of Dolly the sheep in 1996 generated extensive international debate concerning cloning, human dignity, and the limits of scientific intervention. These discussions eventually contributed to international political and ethical efforts addressing forms of human cloning considered incompatible with human dignity [19]. Digital technology presents a different and, in some respects, more complex challenge. Its ethical consequences are often gradual rather than immediately visible. A new application, platform, or technical restriction may appear convenient in isolation, while its broader effects on privacy, autonomy, equality, and property become apparent only after widespread adoption.

Because of this gradual transformation, legal intervention in the digital sphere is rarely simple or absolute. Policymakers must balance innovation against protection, individual freedom against collective interests, and commercial incentives against social fairness. Some regulatory decisions will inevitably be imperfect, and certain groups may bear greater costs during periods of technological transition. Yet the existence of such difficulties does not justify ignoring those who experience the negative consequences of technological change. Particular attention should be given to consumers and other individuals whose interests are dispersed, less visible, and more difficult to defend against highly organized commercial power [2,7,18].

Ultimately, the response to the end of ownership should focus on preserving meaningful human control within increasingly digital systems. Consumers should not be treated merely as passive users whose rights can be defined entirely by software code or non-negotiable contractual terms. Protecting lawful repair, transfer, privacy, access, and reasonable control over acquired products can help prevent the complete separation of ownership from autonomy. The future legal framework must recognize that technology can deliver remarkable convenience while simultaneously redistributing power. The central task is therefore to ensure that digital progress remains connected to fairness, dignity, and individual independence, including the interests of those whose losses may be less visible today but may ultimately affect everyone [1,2,7].

CONCLUSION

The digital economy has fundamentally reshaped the meaning and practice of ownership. As this review

demonstrates, technological restrictions, licensing models, digital rights management, cloud services, streaming platforms, and connected devices have progressively shifted consumers from owning products to accessing them under conditions established by providers. This transformation has strengthened the practical control of intellectual property holders while reducing consumer autonomy over purchased digital and technology-dependent goods. The consequences extend beyond property rights to privacy, contractual fairness, library access, cultural preservation, and individual freedom. Although access-based services provide substantial convenience and affordability, efficiency should not require consumers to surrender all meaningful control. Future legal frameworks must therefore balance innovation and intellectual property protection with rights relating to repair, transfer, privacy, interoperability, and continued use. Preserving meaningful ownership in the digital age requires legal reform that recognizes technological realities while ensuring that human autonomy and consumer interests remain central to the evolving relationship between people, property, and digital systems.

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