The digital continuum: the influence of ownership, access, control, and Cocreation on digital offerings

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Abstract

Digital offerings have provided new ways to experience what once were physical products. Such offerings have upended business processes by being less costly for firms to produce, store, and distribute. The ways in which consumers access them and interact with them have called into question traditional notions of ownership, access and control. This paper extends the thinking about digital offerings by proposing a Digital Continuum framework: a conceptual model anchored at one end by Digital Products and at the other by Digital Services. We discuss the benefits and costs that accrue to both consumers and firms along the Continuum that result from differences in ownership, access, control and customization/cocreation.

Keywords Digital · Digital products · Digital services · Ownership · Access · Control

Introduction and background

While the marketing literature has long addressed digital offerings, research has tended to focus on specific topics, such as technology, social media communication strategies, consumer behavior in a digital environment, and the pricing of digital offerings rather than more theoretical issues. The primary objective of this paper is to advance the marketing discipline's understanding of digital offerings by presenting a conceptual model anchored by a key feature, ownership and control of the digital file (the content), while also incorporating the relevant consumer and corporate dimensions that surround the creation, dissemination, consumption, and control of that content.

In this paper, we consider how both consumers and firms manage digital offerings. For firms, considerations

center around creating the digital content, controlling the intellectual property, distribution (and control of the distribution) and reliability of transmission. In accessing digital offerings, consumers have to be prepared to relinquish physical possession and control in favor of digital access (and sometimes, even, surrendering ownership). Both consumers and firms must learn to deal with the new ways in which resources, information and control are exchanged between them.

We present the Digital Continuum model to help explore the variations in digital offerings. We suggest that they can best be understood by considering dimensions of ownership and access, of control, and of customization/cocreation. By organizing and synthesizing the literature on these dimensions, the paper brings together ideas that to this point have not been conjoined and, in so doing, advances marketing thought in three ways:

- Develops a better understanding of digital offerings by viewing them as being located along a continuum.
- Builds on existing research into ownership, access, control, and cocreation to better understand the benefits and costs involved in becoming digital and the attendant interactions of consumers and firms along the Digital Continuum.
- Identifies research opportunities suggested by the Digital Continuum to better understand new opportunities and behaviors for both consumers and firms.

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We first address the terminology applied to digital offerings and then explain why traditional goods and services models are not adequate to address them. We close the introductory section with a rationale for a new way of thinking about digital offerings. In the second section, we present the conceptual model, the Digital Continuum, and discuss the benefits and costs that arise from the three dimensions that characterize it. We conclude with suggestions for future research.

What is a digital offering?

The “concept of product has undergone a complete transformation in the case of digital formats” (Kannan and Li 2017, p. 33). The explanation is that at their core, digital offerings are code comprised of bits (binary digits): ones and zeroes. Put another way, they are “digitized goods or services that have been rendered into a binary format” (Hui and Chau 2002). One “cannot experience a bit, however. It must be turned back into atoms for human beings to enjoy it” (Negroponte 1994, n.p.). Thus, when made useful by a tangible device such as a computer, tablet or phone screen (assisted, of course, by yet more code, often a browser), digital content is rendered as books, news, games, movies, music, pictures, productivity software, and the like. While information has always required some sort of “material container,” whether the brain, parchment paper, or a book, it is the “*digital rendering* of information” that distinguishes a digital offering (Davis and Stack 1998, p. 122) and that accounts for the “complete transformation” mentioned above.

While we know what digital offerings are made of, the terminology for referring to them has not been settled. Looking across the selected articles in Table 1, one can see the frequent use of “digital” to acknowledge the coded and intangible characteristics, but the commonality stops there. Some authors have used more than one term over time, suggesting that the search for a “correct” or well-agreed-upon terminology for digital offerings continues. The incursion of digital elements into nearly all aspects of business tends to make everything seem “digital.” But not all offerings that have digital components are digital offerings; some are “digitally augmented” (Kannan and Li 2017), such as Uber and Lyft with their ride-hailing apps. In this paper we focus on purely digital offerings, even though they may require a physical device to access them. In taking this approach we are extending the line of thought about the migration of products to the electronic marketplace proposed by Yadav and Varadarajan (2005). With more businesses such as [Salesforce.com](https://www.salesforce.com) and ServiceNow moving to cloud-based offerings, this segment is growing and therefore merits attention from the marketing discipline.

Distinguishing digital offerings from traditional goods and services

While being made of binary code does not necessarily make digital offerings completely different from more traditional physical offerings, there are important distinctions. Shapiro and Varian (1998) compared a book to an ebook with the following explanations. The up-front, or sunk costs, are quite similar: an author prepares the manuscript, a designer creates the illustrations, an editor refines the writing, and a publisher controls the IP rights. But there the similarity ends. The reproduction costs for the ebook, a CD or storing the code on a server for download, are minimal, as are inventory, packaging and shipping costs, with near-zero marginal costs for additional units sold (Anderson 2004). For physical copies of the book, however, manufacturing, marketing and distribution costs remain relatively steady with additional production and sales.

Digital offerings are not like traditional services either, though they may seem to “behave in a service-like manner” (Koiso-Kanttila 2004, p. 54). The intangibility, heterogeneity, inseparability and perishability (IHIP) services framework (Zeithaml et al. 1985) does not fit digital offerings well (Vargo and Lusch 2004; Keh and Pang 2010; Roberts and Micken 2015). For brevity we highlight four primary discrepancies in Table 2.

Since digital offerings do not fit the models that marketing has constructed for traditional goods or services, the discipline needs a new framework for “born-digital”¹ entities. The significant body of literature across disciplines about digital offerings provides three guiding themes for its development.

1. Digital offerings require physical goods for storage, retrieval, distribution, and use. Human-computer interface (HCI) research demonstrates that people tend to conflate their devices (phones, tablets, computers) with the digital files/content they contain, thereby requiring some rethinking of the “integrations of physical and digital” (Golsteijn et al. 2012, p. 9).
2. There is a move toward access rather than ownership. In recognition of that shift, Lovelock and Gummesson (2004) suggested that dividing “marketing exchanges into two broad categories – those that involve a transfer of ownership and those that do not” (p. 35) would provide clarity.
3. A continuum rather than a discrete classification scheme will better represent the variety of digital offerings. This comprehensive approach represents a distinctive contribution and is informed by the continuum frameworks of Bardhi and Eckhardt (2017) and Watkins et al. (2016). We adopt their postulate that categories and dichotomies can obscure important intermediate positions.

¹ The term “born-digital” is said to have first been used by Randel Metz who created a website with the domain name “[borndigital.com](http://www.borndigital.com)” in 1993. Though no longer in use (someone else now owns that domain name), an archived version of the website is available at <http://www.rafi Metz.com/borndigital/> (Wikipedia n.d.).

Table 1 Selected digital terminology from the marketing literature

Terminology	Definition	Examples	References
Digital Consumption Objects	Objects that possess no enduring material substance, but exist within computer-mediated electronic environments, accessed via devices	In-game assets/possessions (avatars, cars, tools); photos and videos uploaded to various platforms, music playlists, social media profiles	Molesworth et al. (2016)
Digital Content	Bit-based objects distributed through electronic channels	Books, albums, games, video, news, information, mobile applications	Koiso-Kanttila (2004) Li et al. (2019)
Digital Goods	Goods that have been digitized, transformed into files that can be transmitted without a physical object	Digital music, photographs, textbooks, souvenirs, movies	Atasoy and Morewedge (2018)
Digital Products	Any goods or services that can be digitized (converted into a binary format). Bit-based objects distributed through electronic channels	Books, insurance, movies, music, newspapers, software, subscription-based services, websites	Koiso-Kanttila (2004) Koukova et al. (2012) Kannan and Li (2017)
Digital Products and Services	None provided; the terms are used without any definitions	Books, albums, games, video, news, information, mobile applications	Li et al. (2019)
Digital Services	A digital service that augments a physical product	Uber & Lyft apps for scheduling and paying for car hiring services	Kannan and Li (2017)
Digital Virtual Goods/Possessions	Objects that cannot be used in material reality but exist and are “real” within digital virtual spaces accessed via hardware (laptops, mobile phones, game consoles)	Movies and music provided via subscription; playlists, social network profiles,	Watkins et al. (2016) Denegri-Knott et al. (2012) Watkins and Molesworth (2012)
Information Products	Content that can be rendered in different formats	Books, music, movies, language instruction services	Koukova et al. (2012)

With this background, we offer the Digital Continuum, a framework for digital offerings grounded by their defining characteristic, digital content, and expanded by the three relevant dimensions that surround the creation and consumption of that content. This approach is very much within the stream of thought presented by Vargo and Lusch (2004) that goods and services should be viewed as intertwined. It also echoes the Service-Dominant Logic position that consumers cocreate value by engaging in resource integration, often using resources they do not own but to which they have access (Haase and Kleinaltenkamp 2011).

The digital continuum framework

Over 40 years ago, Shostack's (1977) “Scale of Marketing Entities” arrayed offerings “along a continuum, according to the weight of the ‘mix’ of elements that comprise them” (p. 75) from Tangible Dominant to Intangible Dominant. In this paper, we propose a similar approach for digital offerings, the Digital Continuum² Here, the distinction between Digital Products and Digital Services is the mix of ownership, access, and control that consumers and firms share relative to the digital content/files. The Continuum also echoes Shostack in realizing that many combinations exist between the endpoints

² Wallen (2014) coined the term “Digital Continuum.” He used the phrase, however, to refer to the idea that media companies no longer needed to focus on either content creation or on distribution. In a digital environment content could be created, captured, transformed, reproduced and transmitted digitally. Much of his discussion about the impact of the “continuous digital environment” on consumers was similar to the discussion of the options at the right-hand end of the Digital Continuum.

of Digital Products and Digital Services. In this section, we present and explain the Digital Continuum model and some examples of intermediate, or hybrid, offerings. After that, we discuss the benefits and costs associated with the three dimensions that influence where a digital offering may reside along the Continuum.

The digital continuum

Digital products / digital services³

At the Digital Product anchor of the Continuum, the digital file is stored on a physical medium that the consumer owns and possesses and over which the consumer has the most

³ As illustrated in Table 1, there is no commonly agreed-upon term for digital offerings. Marketers and textbook writers continue to employ the word *product* to describe offerings that range from physical goods to intangible services, which have distinctive characteristics, and could include offerings as diverse as experiences, events, people, places, properties, organizations, information and ideas (for example, see Kotler and Keller 2016, p. 5–7). Even as our understanding of markets shifts from a producer-centric goods orientation to a consumer-focused Service Dominant Logic (SDL), the term *product* remains useful, as illustrated by its wide use in Table 1.

The originators of the SDL paradigm, Vargo and Lusch (2008), suggested that while words such as *product*, *goods*, *producer*, and *consumer* are emblematic of an underlying a goods-dominant logic paradigm, neutral alternatives are hard to find and may be imprecise. “Thus, it often becomes convenient, if not necessary, to employ a G-D (goods-dominant) logic lexicon to describe an S-D logic foundation” (Vargo and Lusch 2008, p. 2).

Thus, in this paper, we use *Digital Products* to refer to the endpoint where the consumer owns/controls the media upon which the files are written. We use *Digital Services* to refer to the other endpoint where the files are mostly under the control of the marketer who grants the consumer access to the files, often via a streaming service. This nomenclature provides a convenient heuristic for understanding not only what the Digital Continuum represents, but also for visualizing the range of digital offerings from one end to the other.

Table 2 Discrepancies between the IHIP framework and digital offerings

Services Characteristic	Digital Offering Discrepancies
Intangibility	Digital Offerings require tangible appliances for access (Vargo and Lusch 2004): computer with DVD drive and/or internet connection, phone with cellular connection
Heterogeneity	Digital Offerings are repeated executions of computer code and thus are the same regardless of who accesses them.
Inseparability	With Digital Offerings it is difficult to separate software from the devices needed to access it. Production can be separated from consumption.
Perishability	Digital Offerings can be stored indefinitely, but tangible storage and access devices can degrade and become obsolete (Pomerantz and Marchionini 2006, Kirschenbaum et al. 2009).

control – such as saved to a local drive, held on a business’ server, or recorded on an optical disk (e.g., Blu-ray). We do not suggest full ownership, as the content usually remains the intellectual property of some other entity. For example, in owning the CD box set of the complete “basement” recordings of Bob Dylan, one only legally owns the medium she has purchased. This transfer of ownership gives the consumer more-or-less full and ongoing rights to the content in terms of consumption (but not copying), gifting and trading, and even selling the medium-based Digital Product.

At the Digital Services anchor of the Continuum the consumer is only (legally) able to access the digital files under strict conditions set by the firm. The consumer neither owns the file nor has unfettered access. Nevertheless, the consumer benefits usage-wise from the prescribed access in much the same way as she does on the opposite extreme of the continuum – that is, she is able to listen to, watch, or otherwise use the files, but only as allowed by the firm. For example, within the growing category of software-as-a-service (SaaS), Microsoft and Adobe have moved away from local, hard-drive-based suites toward cloud-based, internet-access-only offerings. On this Digital Service side of the continuum the offering is subscription-based or on-demand rather than sold as boxed software or license-per-machine. Though there is no ownership of code (the ones and zeros that make up Office or Adobe Creator), the user is able to gain ongoing or temporary (depending on the agreement) access to those files.

Hybrid offerings (combinations of digital products and digital services)

In moving away from the anchor points, several hybrid options are possible, as illustrated in Fig. 1. Each is a slightly different bundle of consumer-firm interactions with differing levels of ownership, access, and control. The examples that follow are intended to be illustrative though not exhaustive.

Example 1 Downloading content to one’s hard drive. Here the consumer still owns the file (but not the intellectual property), often via a license, and still has control over when, where, and how frequently she uses it because the file is resident on one of her devices. The download is perhaps more convenient because there is no need to store a CD or DVD. On the other hand, downloading can be slow depending on internet access and compression. Also, recovery of the content after a hard drive crash is more difficult

Example 2: Downloading content to a DVR. Here the consumer has recorded a show on a hard drive connected to the television for time-shifted consumption. Because the files are stored physically on the consumer’s own equipment, this form of digital offering would tend toward the Digital Product side of the Continuum. This consumer has a high degree of control of the files and could perceive and exert some degree of ownership, as the consumer has the ability to time-shift viewing and pause or fast-forward the experience.

Example 3: Short-term rental of a physical disc or cartridge, such as from Redbox. In this type of offering, the consumer has access but not ownership, and there is some control over when and where to use the offering. Another example is the “virtual DVR” offered by cable providers, in which on-demand titles are available for viewing for a certain, firm-determined amount of time. Again, the consumption experience is similar, but there is no ownership and the ability to customize the experience is limited.

Example 4: Mixes. Certain consumers may consider different versions of the same offering as complementary rather than as substitutes and may purchase/subscribe to both (Kannan et al. 2009; Koukova et al. 2012). Indeed, “consumers are increasingly cobbling together several online media services that provide an experience that works best for their household in terms of content, viewing options, and cost” (Leichtman Research Group 2017, p. 2). As one example, displaying a box set of movies with colorful packaging may have one type of value, but

Fig. 1 The digital continuum

streaming the same movies on one's phone while traveling may have time and use value.

Thus, digital offerings come in different forms and formats as illustrated in Table 3. The examples demonstrate how the movement of offerings from Digital Products to Digital Services is made possible by advances in technology and infrastructure. But the changes are not just technological. They also occur in the realms of ownership, access, and control that, in turn, allow for differences in customization and cocreation opportunities. Some items first became available on a physical medium. Over time many transitioned to a Digital Service, as Yadav and Varadarajan (2005) predicted, consumed via access, albeit through some physical device. For these offerings a subscription replaces the one-time purchase; ownership is more ephemeral, and control moves in the direction of the provider. Other items were “born digital,” coming into being once the Internet was sufficiently advanced so that web-only offerings were viable. For these offerings, legal access has always been under corporate control and consumers have never had ownership.

Thus, both time and technological innovation are implicit dimensions of the Digital Continuum. There also is an implicit materiality/tangibility element. We do not discuss these issues because they are subsumed by the three dimensions we do identify: ownership/access, control, and customization/cocreation.

digital continuum dimensions

The focus of this section is on the three dimensions and the ways in which consumers and firms face both benefits and costs when dealing with offerings along the Digital Continuum. The three dimensions (defined in Table 4) are not orthogonal. Yet each contributes to our understanding of the ways in which consumers and firms interact with the digital offering and with each other. Sometimes the interaction is quite different and sometimes it is quite similar, as we discuss below. As the following discussions will illustrate, the relationship between a dimension and the benefits and costs that accrue to both consumers and to firms may vary depending on location of an offering along the Digital Continuum.

Ownership is one of the primary distinctions among offerings along the Continuum. At the Digital Product end, the consumer owns a physical object (a CD, a DVD, or a cartridge) that contains the digital code. At the Digital Service end, however, the consumer only has access to the digital offering. As noted earlier, Lovelock and Gummesson (2004) suggested that “marketing exchanges that do not result in a transfer of ownership from seller to buyer are fundamentally different from those that do” since the benefits of ownership are distinct from the benefits of “access or temporary possession” (p. 37). In explaining the Digital Continuum, we adopt their perspective of the differences in the value proposition but elaborate in more detail across the dimensions. We also suggest that, in the realm of digital offerings, this ownership dimension cannot be properly understood without also considering the other two: control and customization/cocreation. We expand on those positions next, discussing each dimension individually.

Ownership versus access

One would expect ownership to be a straightforward concept. A person either has a legal right to an object or she doesn't. That legal right usually includes ownership of the content as well as rights of use: lending, trading, gifting and selling. With digital offerings, however, these ownership rights have become fragmented (Watkins et al. 2016). Consumers may create content (a photograph, an avatar) but once that content is posted to a hosted site owned by another entity (an online game, a social media platform), consumers' rights to that content may be constrained by the user agreement. Even with non-consumer created content, such as buying and downloading an ebook to one's own hard drive, ownership rights are not absolute. Nevertheless, the shift away from ownership is ongoing and is not purely a digital phenomenon. It is occurring in other areas as well, as evidenced by the rise of digitally augmented offerings such as Uber, RentTheRunway and Airbnb. This changing nature of ownership leads to both benefits and costs for consumers and firms along the Digital Continuum, as summarized in Fig. 2.

The figure suggests that the benefits and costs of Digital Products and Digital Services and of offerings in the middle are about evenly distributed. A closer look at the comparisons,

Table 3 Digital Continuum Examples

Type of Offering	Owned	Digital Downloads	Physical Rental	Access Rental	Streamed	Streamed with Consumer Input
Games	Disc or cartridge	Yes	Disc or cartridge (GameFly)	Yes	Yes, come	Yes, come (world of Warcraft)
Movies	Box set	DVR/digital copy	DVD or Blu-ray (RedBox)	Digital rental	View only (Netflix, Hulu)	View with preferences (Netflix, Hulu)
Music	CD	MP3	CD	N/A	Listen only	Listen with preferences (Pandora, Spotify)
E-Books/Magazines	N/A	Saved file (Audible)	Library	Temporary (Kindle)	Website access	Website with user customized content
Personal Finance	Tax prep material on CD	Software package	N/A	Download software with yearly updates	Use website (Quicken)	Create profile and chose format/layout
Productivity software	Software on a CD	Downloaded software via access key	N/A	Download software with yearly updates (SPSS)	Cloud-based access on demand (Office 360)	Cloud-based: different packages at different prices
Online Survey Software Platforms (“born digital”)	N/A	N/A	N/A	N/A	Only form of access (SurveyMonkey)	Customization and access to respondents

as discussed next, however, reveals that not all benefits and costs are equally valued.

Consumer benefits and costs associated with consumer ownership of digital products

Five benefits accrue from ownership of a digital file on a physical medium. These benefits are balanced by four costs. Both benefits and costs cluster around the consumer’s desire for a tangible physical object that guarantees ongoing access. Physical objects have personal and cultural significance. They serve as concrete markers of self (Belk 1988; McCracken 1986) of community (Douglas and Isherwood 1979) and of brands (Levy 1959) and are more likely than digital offerings to be connected to feelings of psychological ownership (Atasoy and Morewedge 2018). When a collection (of books, records, movies) is physical, we can display it to ourselves and to others. We gain further enjoyment from acquiring (curating), grooming (possession rituals), and maintaining the collection. A visitor to our house can see and admire that collection. In a study of the media habits of teens and millennials, 36% reported purchasing DVDs because they enjoyed adding them to their movie collections. Thirty-one percent said that they liked the bonus content that was not readily accessed in any other way (Nielsen Home Entertainment 2017, p. 5, 6). A similar phenomenon has been noted in the realm of music. According to music historian Alan Cross, “by nature a lot of music fans are collectors and that means they need a physical thing to collect” (Friend 2017, n.p.). Video game players have expressed the same sentiment, “I like to be able to put it on my shelf and admire the box art and other goodies” (Christarp 2017).

The second consumer benefit of ownership is ease and permanency of access. Even in the digital age, not everyone has regular access to a fast internet connection. The report of teens and millennials cited above notes that 31% identified the ability to watch the movie without needing a fast internet connection – or any internet connection – as a reason for owning the DVD (Nielsen Home Entertainment 2017, p. 5). In the music realm, streaming services don’t always have favorite songs in their catalogs. Spotify, for example, is said to have incorporated “greatest hits” packages in its database while omitting albums from some artists’ back catalogs (Friend 2017). Thus, aficionados must search out CDs, records and download sources. Additionally, streaming services don’t always get first access to new albums. Finally, ownership assures permanent access and use, without depending on the continuation of a hosted platform or without worries about having one’s account suspended or terminated.

The third consumer benefit of Digital Products is that physical versions of digital content, such as CDs and vinyl, may be preferred for gift giving, even when the same music, but in

Table 4 Digital Continuum Dimensions and Definitions

Ownership refers to the legal right to the possession of a thing. The object of ownership can be tangible such as personal property and land or it can be intangible such as intellectual property rights over musical, literary or scientific creations of the mind. Ownership also includes rights allowing a person to use and enjoy certain property (physical or intellectual). It includes the right to convey it to others. (US Legal 2016)

Access refers to “transactions that can be market mediated but where no transfer of ownership takes place... the consumer simply gains access to use an object” which tends to be “temporary and circumstantial” (Bardhi and Eckhardt 2012, p. 881–882).

Consumer Control refers to the consumer’s ability to make decisions and take actions related to a particular marketing offering, and is positively associated with consumer satisfaction (Chan et al. 2016). We also include actual consumer control of the digital file.

Corporate Control refers to the marketer carefully defining and executing the marketing mix of a particular offering (Burkart 2014). We also include the actual firm control of the digital file.

Cocreation refers to the value created and determined by the user in the consumption and use of an offering (Lusch and Vargo 2006). Co-production, on the other hand, refers to consumers participating in the production process (Lusch and Vargo 2006, Vargo and Lusch 2016).

Customization refers to the ability of consumers to “make changes to their experiences to meet their specific needs by configuring settings, layout, content and/or functionality” (Schade 2016).

purely digital format, is personally valued (Kwon et al. 2017, referring to Brown and Sellen 2006).

The fourth consumer benefit is economic. The owner of a physical CD or DVD can sell it, trade it or lend it, thereby gaining some income from a no-longer desired asset.

Finally, the fifth benefit is ease of use. For the non-tech-savvy and for late adopters, owning and using the physical medium means neither learning something new nor purchasing new equipment, which can have its own learning curve.

Consumer costs are found first in the maintenance, upkeep and storage of collections of physical objects. Curating and maintaining a collection takes time and effort and requires

physical space. A second cost comes from damage and loss. Dogs can chew up more than just homework assignments. Fire and similar perils can wipe out an entire collection. Even if it is insured, the collection may not be fully replaceable. The third cost is related to the tangible access devices. As media formats change, and sometimes become obsolescent, consumers need to upgrade systems or purchase new equipment. Costs in this area include the learning curve as well as the time and effort involved in moving content from the old to the new device. Finally, the fourth cost is the up-front expense of buying and owning a collection can be considerable.

Consumer benefits and costs associated with consumer access to digital services

Some of the benefits of access are the flip side of the costs of ownership: no damage, breakage or loss since the offering is not physical, and access to a collection without storage or maintenance efforts or costs. As one father expressed it, “It’s also nice to not have to keep track of a disc, maintain a disc (my 4 year old has ruined a couple of games w/filthy fingers)” (JLC776 2017). Similarly, access obviates the need for storing and caring for physical items and eliminates clutter. As one commenter on a PlayStation forum put it, “I actually bought a lot of digital copies just so I could save shelf space by getting rid of the discs. With over 300 games downloaded to my PS3 alone this saves a LOT” (Jedisamurai 2017).

Access, however, offers four advantages of its own which help explain the growing shift in consumer preferences toward what Bardhi and Eckhardt (2017) refer to as the “immediacy” and “instantaneity of content”: convenience, the ability to enjoy the content when and where the consumer desires; access to content not otherwise available; instant gratification and exploring new trends; and continual updates. As to the first of these unique benefits, streaming services have changed consumption behavior, with an increase in time-shifted TV as well as consumers shifting among computers, tablets,

Fig. 2 The digital continuum: ownership dimension benefits & costs

Digital Product ←		→ Digital Service	
Consumer Ownership ←		→ Consumer Access	
Consumer Benefits	<ul style="list-style-type: none"> Collection/physical display No need to learn something new Can give, lend, trade, sell 	<ul style="list-style-type: none"> Use without commitment Security, Peace of mind On demand access without subscription 	<ul style="list-style-type: none"> Access and content not tied to one device Access to digital-only content Reduced costs/burdens of ownership Ease and low cost of trial
Consumer Costs	<ul style="list-style-type: none"> Maintenance/upkeep/storage Risk of damage/loss Device obsolescence Up-front expense 	<ul style="list-style-type: none"> Pay per use fees Late fees Risk of damage Lack of offerings 	<ul style="list-style-type: none"> Ongoing subscription cost Free trial becomes a monthly fee Overpaying for perceived value Psychic costs
Firm Benefits	<ul style="list-style-type: none"> One-time-sale pricing model Minimal involvement after the sale Traditional business model 	<ul style="list-style-type: none"> One-time sale Incremental revenue Trial & convert to purchase/subscription 	<ul style="list-style-type: none"> Subscription pricing model D2C results in lower distribution costs Revenue from inactive subscriptions New offering opportunities
Firm Costs	<ul style="list-style-type: none"> No participation in resale revenue Traditional production, inventory and distribution costs 	<ul style="list-style-type: none"> Replacing & updating inventory Location & maintenance costs 	<ul style="list-style-type: none"> Securing sufficient content Server capacity

phones and gaming devices (The Nielsen Total Audience Report Q2 2017). The benefit even has its own acronym: ATAWAD (anytime, anywhere, any device). The second unique advantage is illustrated by digital content that is only available in digital form, such as games for smartphones. Content produced by independent creators is often digital-access-only because of the lower cost to manufacture and distribute. The third unique advantage, instant gratification and exploring new trends, is made possible because subscribing to a music (Pandora) or movie (Netflix) or academic journal (DeepDyve) service provides instant access to a wide array of content. These services usually offer a limited time free trial, which makes exploring new trends and offerings as easy as a click of a button. The final unique consumer benefit comes from the ability of firms to update their offerings via tweaks to the software without consumers needing to participate. This benefit is especially evident in SaaS offerings.

Access to Digital Services instead of Ownership of Digital Products is not without its costs, of course. They can be apportioned into two subsets: economic and psychological. In terms of economic costs, the subscription model that most services use requires consumers to pay a recurring fee. A free trial that requires provision of a credit card when signing up can all too easily become a monthly cost if the consumer forgets to cancel the service (Stern 2019). For a light user of a service, who does not value broad access to content, even the small monthly cost may not be perceived as good value. The psychological costs may not be as obvious but are real. Keeping track of and maintaining subscriptions – not to mention logins and passwords – can require significant mental effort. Apps, too, must be updated regularly. Finally, for some consumers, there is the disadvantage of not having a displayable collection.

Consumer benefits and costs associated with ownership of/access to hybrid offerings

With hybrid offerings, benefits are much less, but so, too, are costs. Consumers may derive two benefits. The first is use with minimal commitments, such as renting a DVD. Consumers have neither the acquisition costs nor maintenance costs of ownership, but also have no continuing commitment from a subscription. A second benefit is security – and perhaps peace of mind, ease, and familiarity – that comes from not having to download songs or podcasts to a hard drive or a digital library or learn new approaches to content consumption. Costs, on the other hand, tend to be related to fees, both per-use and late fees as well as fees associated with damage to a rented disc or cartridge. The other cost is restricted access to content; CD and movie rental services simply do not provide the range of items that one might have acquired over time in a personal collection (Digital Products) or to the endless array of

offerings, both existing and new, that are available through Digital Services.

Firm benefits and costs associated with consumer ownership of digital products

For firms, Digital Products have a known set of benefits and costs that arises from their representing a traditional business model. Firms understand how to operate, manage and compete in that environment. The one-time-sale pricing model similarly is well established. Additionally, once the sale is made, there tends to be minimal ongoing commitment. Finally, expenditures associated with the production, inventory and distribution of physical products are similarly well understood.

Firms face two costs with Digital Products. The first is rather straightforward in that they do not participate in any revenue from the resale of Digital Products. The second and more critical is the danger of adhering to an aging business model. The firm's benefits of Digital Products are real and explain both firm preferences for offerings at this end of the Continuum and their resistance to change. The music industry's initial reaction to Napster, for example, was to squash it, instead of adapting to the shifts in consumer desires and behaviors that were facilitated by the new technology. In 2019 the newspaper industry is facing a similar situation (Hagey et al. 2019).

Firm benefits and costs associated with consumer access to digital services

The benefits of Digital Services for firms arise largely from the subscription model, or what has become known as the Subscription Economy. While competitive pressure and the desire to quickly acquire a large customer base may incline firms to set a relatively low initial monthly price, firms still benefit from a recurring revenue stream (Stern 2019). The subscription model also smooths out revenue peaks and valleys. For instance, Adobe found that its move to SaaS and subscription provided a steady income stream. Previously, revenue spiked every 18 months when new versions were released but was unpredictable in between (Moorman 2018). Additionally, once a consumer base has been established and “the value of the service has been proved, prices can go up or more expensive tiers can be added” (Stern 2019, n.p.), thus further increasing revenue. There also is some persistent revenue from no-longer-used but uncanceled subscriptions. A second benefit comes from the reduced costs associated with reduced customer turnover (Pozin 2016). Spotify estimates that while they initially lose money on a new customer, that “over their life they become profitable at a ratio of about 3 to 1” (Steele 2019). A third benefit comes from lower distribution costs inherent in the streaming direct-to-consumer

business model. Finally, a fourth benefit can be found in the SaaS model. The ongoing service provides a way for the software company to offer a new value proposition to its customers (Lassila 2006). The SaaS model also makes it easier for the firm to issue updates, patches, and modifications.

There are costs associated with Digital Services, of course. The most significant may be securing sufficient content to meet consumer demand and to meet or beat competitive offerings. The other is related to technology and transmission. While firms do not need to build or maintain the information highway, they do need sufficient compression technology, server capacity and bandwidth to meet the demand for their offerings, which may require securing agreements with internet service providers such as Cox and Time Warner (Morris 2018).

Firm benefits and costs associated with consumer ownership of/access to hybrid offerings

In the middle of the Digital Continuum, firms may continue to provide offerings because of the incremental revenue from customers that they could not attract with either the more traditional Digital Product or the newer Digital Service. Providing a rental may also represent a trial that later converts to a purchase or a subscription. Finally, the one-time-use pricing model is well understood and easily implemented. The costs of providing such hybrid offerings are generally related to replacing and updating inventory, making location decisions and maintenance costs.

Consumer control versus corporate control

Just as ownership in the digital realm can be fragmented (Watkins et al. 2016) so too is the notion of control. Possession of a digital offering “might not be the same as having full control” (Williams et al. 2008, p. 506). Many organizations purchase the right to install and use enterprise software. While they do not own the software, an employee often is designated as the “administrator.” That person has considerable control over who has access to the software, who can input data, who can generate reports, and the like. A more personal example is the mandated use of software on devices that we own. Firms that use Microsoft Exchange as their email client, for example, often require employees to download and install the Outlook and the Microsoft Authenticator apps on their phones. Thus, though employees own their phones, they do not have control over how they access their work email on them. The Open Source and Creative Commons movements provide examples of a different point along the control dimension: shared control.

Additionally, to the extent that digital offerings are prisoners of their devices (Pomerantz and Marchionini 2006) and that people often conflate their devices with the digital information they contain (Golsteijn et al. 2012), consumers

may be tempted to extend the feelings of control over their devices to feelings of control over the files. But that control is often illusory. The code that creates the digital content has been expressly written to measure and meter consumption and to collect data (Schiller 1984; Galloway 2017), often without the consumer’s knowledge or opt-in. The code also “enforces” adherence to user agreements (Davis and Stack 1998; Gillespie 2006; Watkins et al. 2016). The 2005 Sony BMG scandal, in which, unbeknownst to consumers, the code modified their Windows operating systems, is an extreme example (Free Software Foundation Europe 2017). But it does illustrate that while consumers own their devices, they do not completely control them nor are they often aware of the extent to which corporate control extends into their digital lives.

This fragmentation of control manifests itself in different sets of benefits and costs for consumers and for firms along the Digital Continuum, as summarized in Fig. 3. In response to the fragmentation, some consumers prefer the security and peace of mind that comes with controlling their digital content while other consumers are quite willing to cede control and share information in exchange for convenient access to valued content and increased customization options. Other consumers, and some firms, have found ways to share control. These perspectives are elucidated in the following discussions about consumer and firm benefits and costs across the control dimension of the Digital Continuum.

Consumer benefits and costs associated with consumer control of digital products

Perhaps the primary benefit of consumer control of digital content on a physical medium is the guarantee of performance without needing a reliable or speedy internet connection and without worrying about the provider revising content availability. Simply insert the disk or save the file to one’s hard drive and the content is presented. Continued access to the content also is guaranteed, even if a company discontinues support for a program or shuts down a game. As with consumer ownership, consumer control offers an additional benefit of being able to give, lend, trade or sell the item through lateral exchanges with other consumers (Perren and Kozinets 2018).

Consumer costs associated with control are much the same as those associated with consumer ownership. Once the physical medium is in the consumer’s control, she has the attendant responsibilities for its care, maintenance and upkeep.

Consumer benefits and costs associated with corporate control of digital services

The two primary benefits to consumers of corporate control over digital services come from the relatively “hands off” approach that consumers can take toward using such services. First, consumers benefit from the subscription model and from

cloud-based (or streaming) access. Subscriptions provide a sort of one-and-done approach. Free trials make it easy to test out a service. Such trials are technically possible with digital content on a physical medium but are more difficult to implement and enforce. The second benefit comes from receiving the Digital Service via the cloud; regular updates can occur in the background, without the consumer needing to attend to it, unless she has activated a setting that requires granting permission for each update.

Consumers also face three costs related to corporate control. The first is the flip side of the benefits of consumer ownership, in that corporate control of Digital Services is a riskier option because of the lack of guarantee of unconditional access. The second, and more fundamental cost comes in the form of information. In exchange for convenient access, consumers are sharing considerable information about their behaviors and preferences, either willingly or without conscious consideration. The commercial use of consumer data may be constrained by law, as with the European Union's implementation of General Data Protection Regulation (GDPR) legislation (EU 2018). The larger problem, however, lies with consumers themselves; few read the End Use License Agreement before downloading and installing software or other content.

As the third cost, consumers are ceding control over the content they create to some firms, especially social media platforms. Social media sites such as Facebook, YouTube, LinkedIn, and Twitter, and some crowdsourcing platforms such as Zooppa (Robertson 2017) rely almost entirely on

customer created content. When someone uploads a video or image or even a thought piece that s/he has created, the agreement with these services allows the control of that content to be shared with the service. For example, the Facebook agreement (at the time of this writing) says the following (similar agreements exist across most well-known services):

You own all of the content and information you post on Facebook, and you can control how it is shared through your privacy and application settings. In addition:

1. For content that is covered by intellectual property rights, like photos and videos (IP content), you specifically give us the following permission, subject to your privacy and application settings: you grant us a non-exclusive, transferable, sub-licensable, royalty-free, worldwide license to use any IP content that you post on or in connection with Facebook (IP License). This IP License ends when you delete your IP content or your account unless your content has been shared with others, and they have not deleted it.

Consumer willingness to exchange control for access is not universal, as with TimtheTaxMan, "I have significant reservations about this switch to digital. We are trading a huge amount of our ownership rights for convenience...." (2017). And, indeed, consumer responses to the costs of corporate control can be seen in the Open Source and Creative Commons movements (Gillespie 2007; May 2007; Lessig

Fig. 3 The digital continuum: control dimension benefits & costs

<i>Digital Product</i> ←		→ <i>Digital Service</i>	
Consumer Control ←		→ Corporate Control	
Consumer Benefits	<ul style="list-style-type: none"> • "Guarantee" of performance without relying on internet connection • Guarantee of access • Rights after purchase: same as for Ownership 	Rental/Library Model	<ul style="list-style-type: none"> • Subscription allows for trial without purchase • Subscription and cloud-based access allows for regular updating of content
Consumer Costs	<ul style="list-style-type: none"> • Same as for Ownership • Maintenance/upkeep/storage • Risk of damage/loss • Device obsolescence • Up-front expense 	Rental/Library Model	<ul style="list-style-type: none"> • Difficult to guarantee unconditional access • Relinquish some control • Information sharing in exchange for access
Firm Benefits	<ul style="list-style-type: none"> • No maintenance/update costs • Meet consumer segment needs • One-time-sale pricing model 	Rental/Library Model	<ul style="list-style-type: none"> • Subscription tied to specific user • Control over consumers' usage • Increased user information • Two-sided marketplace strategy for customer insights • Reduced piracy
Firm Costs	<ul style="list-style-type: none"> • Same as for Ownership • No control after sale • Once sold, no income from subsequent sales • Traditional production, inventory and distribution costs 	Rental/Library Model	<ul style="list-style-type: none"> • Sharing without permission can reduce profits

2008), as discussed further in the next section. A somewhat different reaction to corporate control is “ad blocker” software. Still another response has been an underground network of instructions for “jailbreaking” or hacking a phone’s software or for disabling Digital Rights Management software.

Consumer benefits and costs associated with control of hybrid offerings

In the middle of the Continuum the Control Dimension seems to have two models: a rental/library and open source. The benefits and costs of the rental/library model are both minimal. Once the consumer rents a DVD, for example, she can control when and where she uses it, but has that ability only within the constraints of the rental agreement. That agreement does offer the benefits of a time-limited guarantee of performance and access, but it also prohibits transferring the offering to another consumer.

For Hybrid Offerings in the Open Source or Creative Commons movements, however, the consumer benefits are much wider, including self-efficacy through participation, status, unfettered access, and flexibility (Pitt et al. 2006). Firefox, for example, has a strong community of contributors who fix code, add features, answer user questions and update the FAQ section. The Creative Commons website has a section for its CC Global Network Community that invites contributions and collaboration. There are costs associated with sharing control as some contributors are more expert than others. The open nature of these offerings also makes them susceptible to bad actors.

Firm benefits and costs associated with consumer control of digital products

Firm benefits and costs of consumer control of a Digital Product are not significantly different from those associated with consumer ownership of the Digital Product. The reason is that the traditional, legally-recognized association between ownership and control apply.

Firm benefits and costs associated with corporate control of digital services

Firm benefits associated with corporate control of Digital Services, however, are quite different and arise from the ways in which each subscription is tied to a specific user. The first is control over usage. Cell phone companies, for example, reduce access speed once a customer’s data usage reaches a given limit per billing period. If a consumer does not pay her monthly subscription fee, access to content is shut off.

The second benefit comes from the increased information about users, their behaviors and preferences. This information and the insights it provides can be monetized in many ways,

not the least of which is the creation of enticing offers for enhanced services at higher monthly subscription fees. (Stern 2019). A “two-sided marketplace strategy” allows firms to offer their consumer insights to content providers, thereby deriving additional revenue from already extracted data (Steele 2019). Firms also use the information in advertising networks to target relevant ads to consumers based on their digital behaviors.

A final benefit is reduced piracy, which seems to be related to consumers’ cost-value assessment. Once Adobe Systems moved from selling its software “for thousands of dollars per box ... to a monthly subscription fee,” piracy declined to the point of no longer being a major business problem (Bershidsky 2017). In the music arena, the rise in streaming subscriptions has been accompanied by a 6% decline in visits to music piracy sites in 2016 (MUSO 2017).

The primary cost to firms comes from consumers who share a service without permission, thereby reducing the firm’s revenue. Yet even here firms are offering plans designed explicitly for sharing to adapt to that behavior.

Firm benefits and costs related to shared control of hybrid offerings

The firm benefits of the rental/library model approach to Hybrid Offerings are the same as they are with Digital Products, primarily in capturing additional market segments. There is a distinct cost, however, in the potential for lost revenue due to piracy and sharing because of less corporate control over the digital file.

There are few models of firms sharing control. In what would seem to be a unique instance, the band Nine Inch Nails (NIN) offers a website (<http://ninremixes.com/>) where fans can access sound files and are encouraged to remix NIN songs. The benefit to this shared control is access to user information and preferences. Costs revolve around creating the more open offering as well as maintenance and upkeep.

Customization and Cocreation

With both services and products, a varying degree of participation is required from consumers for the cocreation of value. This idea is modeled along the Digital Continuum as the opportunity for increasing levels of customization and cocreation in moving from Digital Products towards Digital Services. However, consumers cocreate value all along the Digital Continuum, both individually and in concert with others (Cova and Pace 2006) applying their operant resources to the Digital Products and Services that firms offer in ways that are independent of ownership or possession (Vargo and Lusch 2016).

The basic user experience can be quite similar across the Digital Continuum. Listening to Drake on a CD will be comparable to listening to the same songs from a streaming

service. Different benefits and costs, however, do accrue along the Continuum, to both consumers and firms, as illustrated in Fig. 4 and discussed next. With this dimension, the opportunities for customization and for cocreation of value are more fluid, which is why Fig. 4 does not delineate a separate set of benefits and costs for Hybrid Offerings (Fig. 5).

Consumer benefits and costs associated with customization/Cocreation at the digital products end of the digital continuum

With Digital Products, consumer benefits arise from the customization possibilities inherent in curating collections, such as creating a collection of media (e.g., all movies directed by Quentin Tarantino), curating a meaningful grouping of sub-entities (e.g., all the best rock “power ballads”), or storing and filing personally created documents (tax records on a flash drive). This sort of customization can be particularly meaningful, as explained above when discussing consumer benefits of ownership. Other benefits come from simplicity. Firms have already made decisions about what content is included on a CD, a DVD, and consumers are thereby freed from the burden of too much choice and potential cognitive dissonance (Schwartz 2005).

The costs associated with customization really are the inability to customize. Many physical collections are comprised of albums which may contain songs that are less desirable. Consumers do not have the ability to pick and choose from among an artist’s catalog as they do with a streaming service.

Consumer benefits and costs associated with customization/Cocreation in moving toward the digital services end of the digital continuum

In moving toward Digital Services the opportunities for customization and cocreation are many and involve four significant benefits to consumers along with three costs. The first benefit arises directly from cocreation opportunities at this end of the Digital Continuum: purposive and automatic. In purposive cocreation, a consumer specifies not only a genre, but also an artist or specific songs that she wants to hear in a virtual queue on a service such as Spotify. “Automatic cocreation” functions in two ways. The system learns preferences, either via consumer direct input or artificial intelligence (AI), and plays content that matches the consumer’s implied criteria, without additional effort on the consumer’s part. We suggest that this process represents cocreation because consumer preferences are guiding the resource integration, even though the process has been automated. Relatedly, the recommendation algorithm analyzes a consumer’s existing preferences and suggest new, sometimes previously unknown, songs or artists, thereby expanding the consumer’s listening horizon. A study by McKinsey & Company

discovered that 55% of consumers to subscriptions services (of all types) joined the service because of a desire for variety (Chen et al. 2018).

The variety of subscription offerings provides the second benefit. They allow a consumer to select the service/pricing tier that best matches her listening/viewing/usage habits: access to more content, the amount of advertising tied to the tier, the sharing settings.

A third benefit comes from user generated content. Uploading one’s own creations to a platform such as Facebook, SoundCloud or Vimeo provides the benefit of sharing and public display. Of course, the consumer also has access to content created by others. Artists, in particular, benefit from such services. Spotify for Artists, for example, is being tested as a way for independent artists to distribute music themselves.

A final benefit involves social, shared cocreation. A group of consumers can deliberately share digital resources in the gaming environment, as with a multi-player video game (Tower and Noble 2017). These sorts of cocreation opportunities are consistent with Belk’s ideas (2013) that digital offerings on platforms such as Facebook, blogs and online forums can foster sharing and “feelings of community and aggregate sense of self, even with others we would not recognize in person” (p. 486).

Three costs are associated with these opportunities for customization and cocreation, however. The first is the time and effort required to customize a playlist or a viewing list. (This consumer cost, however, becomes a firm benefit, as discussed below.) The second is that consumers share in the blame if something goes wrong. Finally, consumers can lose control over their creations once they have been uploaded to a sharing platform.

Firm benefits and costs associated with customization/Cocreation at the digital products end of the digital continuum

From a Service Dominant Logic cocreation perspective, the role of firms with Digital Products is to provide the resources to consumers who then cocreate the meaning through their use of and care for the products. Thus, firms are not expected to supply customizable versions of Digital Products, which leads to lower costs. Additionally, there may be fewer customer service obligations.

Firm benefits and costs associated with customization/Cocreation in moving toward the digital services end of the digital continuum

In moving toward Digital Services, firms benefit from the customization and cocreation options that arise from new content and data opportunities; they also face two costs.

Fig. 4 The digital continuum: cocreation/customization dimension benefits & Costs

<i>Digital Product</i> ←		<i>Digital Service</i> →
Customization/ Cocreation Opportunities		
Consumer Benefits	<ul style="list-style-type: none"> • Simplicity • Content pre-arranged and selected • Freedom from choice 	<ul style="list-style-type: none"> • “System” learns customer preferences via AI and/or customer direct input • Pricing models that allow selection of many, some, few or no ads • Create content (i.e., Facebook) and give platform rights to use it for benefit of sharing & public display + access to content created by other users
Consumer Costs	<ul style="list-style-type: none"> • Albums may include non-desired songs 	<ul style="list-style-type: none"> • The time and effort to customize /personalize a playlist • Consumers share in the blame if something goes wrong • Some loss of control over own created content
Firm Benefits	<ul style="list-style-type: none"> • Simplicity • Less customer service 	<ul style="list-style-type: none"> • Consumers create some of the content; no IP fees • Customized playlists may make it difficult for consumers to move to a competing service • Well-analyzed customer data may allow firms to predict shifts in preferences sooner
Firm Costs	<ul style="list-style-type: none"> • Lost sales 	<ul style="list-style-type: none"> • System maintenance/algorithm updates • Ongoing cultivation of content publishers, artists

Consumer created content that is hosted on the firm’s servers represents the first benefit. As explained earlier, consumers usually share the legal rights to the content with the firm and also give the firm rights to distribute the content. When such content is desired by other consumers, the firm benefits because it has access to the content with no intellectual property fees.

The new business models (or at least new business propositions) that specifically facilitate cocreation provide the second benefit, as the following examples illustrate. The Nine Inch Nails (NIN) example, presented earlier, is one instance. In addition to remixing NIN songs, fans post them for other fans to appreciate and vote up in popularity. An extreme example of content customization is VidAngel, which overlays some movie streaming services and allows consumers to filter objectionable scenes, dialog, and even characters (Roberts and Rains 2017). The crowdsourcing model (Robertson 2017) fits as well. The Waze traffic app was developed from the start to leverage the knowledge and movement of drivers in a given geographic area. When drivers grant the app access to their driving in real-time, they have become a prosumer (Toffler 1980), because “production, consumption and ... the fluid relationship between them” (Bardhi and Eckhardt 2017, p. 591) is an inherent part of crowdsourcing.

The last two benefits arise from the customer data that firms collect. Analysis of customer data can allow a firm to predict shifts in preferences and be ready to adapt to them to maintain (or secure) competitive advantage. Finally, the creation of customized playlists, tax files stored on the provider’s server, and the like, can make it difficult for consumers to move to a competing service. Such barriers to exit create a monopolistic environment in which firms can increase monthly subscription fees without losing a significant number of subscribers (van Leth 2016).

There are, of course, costs associated with these customization opportunities, especially for firms that wish to remain the top providers. The first of these is the cultivation of content publishers and artists. This undertaking requires time and effort to build and sustain relationships, negotiate contracts, and, in some cases, nurture homegrown content creation. The second cost revolves around maintaining and updating the recommendation algorithm.

Future research

Though technology seems to be moving more offerings toward Digital Services, there remain consumer preferences,

Fig. 5 Digital continuum dimensions

and thus potential market segments, for offerings all along the Digital Continuum. The three Continuum dimensions highlight the tradeoffs that both firms and consumers make in moving from Digital Products to Digital Services. And while there is a significant base of anecdotal examples about the attendant consumer and firm benefits and costs, much remains to be systematically investigated. Here we suggest specific research opportunities in five areas: customization opportunities and satisfaction, consumer behavior, subscription strategies, retro/niche opportunities, and exploring the Digital Continuum dimensions.

1. Customization opportunities and satisfaction. Service Dominant Logic suggests that only consumers can create value. But firms can initiate the process by providing resources that facilitate opportunities for consumers to employ their operant resources to make meaning and create value (Arnould 2008; Vargo and Lusch 2004). One of the benefits of corporate control over Digital Services is the relative ease with which they can offer customized, personalized experiences. What is not yet settled is the impact of this customization on consumer satisfaction and engagement with various aspects of Digital Services.

Satisfaction from subscription choices Firms offer different levels of subscription offerings. There is anecdotal evidence that Hulu's No Commercials plan increases satisfaction with the experience, as the Reddit comment below suggests:

So worth it! There is some great stuff on Hulu, but we'd almost never watch it because the ads were so annoying. Now, we watch it all time. Even shows I recorded on the DVR, ... I'd rather wait until the next day and watch them on Hulu because then I don't even have to skip the ads (SoMuchMoreEagle 2015).

An empirical study could investigate the impact of these subscription choices on consumer satisfaction and loyalty.

Satisfaction from participation. Fedorenko and Berthon's (2017) and Kim et al.'s (2019) work suggests that bringing consumers into business model innovation processes leads to benefits for both firms and consumers. Their work provides a starting point for investigating whether consumer participation in Digital Services (indicating preferences, assembling playlists, archiving content) similarly results in consumer satisfaction.

Satisfaction from engagement. The subscription model tends to keep consumers closely tied to a particular streaming service through consumers' own customization activities. Does

this effort "lock" them into the firm's ecosystem and offer greater enjoyment and/or satisfaction? Molesworth et al. (2016) suggest that the model might indeed "ensnare" consumers, especially in the realm of games. Additional research is needed to extend the understanding to non-gaming Digital Services.

2. Consumer behavior. If firms are to take advantage of the benefits of Digital Services, they need to understand how the move to access, corporate control and increased customization is changing consumers' behaviors.

Social interactions. The work of Tower and Noble (2017) regarding the critical nature of group (and simultaneous) consumption to the creation of meaning provides a good foundation for research into the social nature of some Digital Services, such as the ones identified below. Specifically, research should focus on how firms might encourage and facilitate social interactions to enhance the consumer experience.

- Virtual book clubs. Amazon's Kindle allows consumers to share their library of ebooks and to provide cloud access to members' (linked in a group) ebook purchases.
- Collaborative productivity software. For example, Google Docs, Sheets and Slides.
- Twenty-First Century Mix Tapes. Spotify allows consumers to share music and playlist within their social media network.
- Twitch. This service provides a platform for creating and streaming content as well as watching the video broadcasts: games, artistic creation-in-progress, real time chats with viewers.

Binge watching. Another important phenomenon arising from access to certain types of content all at once is binge watching.⁴ While it was always possible to watch a box set of movies, binge watching is relatively new and takes place across a variety of platforms. Research into advertising and binge watching (Schweidel and Moe 2016) indicates that as bingers become more engaged in the shows they become less engaged in the advertising. This research provides just one example of the understanding marketers need to develop about this behavior and its implications for online video platforms. Since binge watchers constitute heavy users, research into their motivations constitutes fertile ground for research. Such knowledge can guide firms in positioning their offerings and facilitating consumer experiences.

⁴ Prior to streaming services, consumers could have purchased an entire season of a show on VHS tapes, CDs, or DVDs, but it was an expensive option. It also was an after-the-fact option. Netflix's simultaneous release of an entire season of a show in 2013 led to the wide-spread use of the term – which became the *Colliers' Dictionary Word of the Year* in 2015.

3. Subscription strategies. Subscription and SaaS models seem to predominate at the Digital Services side of the Continuum. That approach requires further attention from the marketing discipline. Here we suggest two fruitful investigations.

Sustainability of the subscription model. The Subscription Economy is much discussed in business periodicals and blogs (Columbus 2018; Naukam 2014; Pozin 2016) and books (e.g., Manu 2017, Tzuo and Weisert 2018), but not so much in academic research. Its long-term feasibility as a sustainable business model has not yet been demonstrated. Research might begin with Anderson's (2004, 2009) "zero marginal cost" and "freemium" considerations, in which the addition of one more piece of content costs relatively nothing to add to files onto a server.

Design of subscription platforms. An early focus of firms employing the subscription model has been on technological capacity. What will be the future importance of design and engagement strategies for the user interface? Most music services, for example, offer very similar content. Thus, the difference in user experience becomes the driver of competitive advantage. If firms are to retain the benefits from providing access, then designing a user-friendly, engaging, frictionless platform is critical. A study utilizing an experimental design could look into the most effective layouts, playlists and affinity attributes.

4. Retro/Niche opportunities. For all the Digital Products delivering content listed in Table 3 there is a potentially more convenient Digital Service alternative. Yet, in some areas, consumers prefer a physical product and are returning to the Digital Product end of the Continuum, often via retro brands (Brown et al. 2003). Consider the following examples:

- A renewed interest in vinyl records. Sales grew 20% for 2017 over 2016 and for 2018 they grew an additional 14.6% to 16.8 million LPs (Richter 2019). Users claim this interest is driven by a desire for the increased "warmth" of the analog offering.
- VHS tape is also making a comeback (Robb 2016). Only 50% of content on this older format has been moved to DVD and other digital platforms, leaving some to search for "back catalog" in this out-of-print format.
- Physical books persist. Amazon's 2011 ebook sales surpassed that of traditional books combined (Miller and Bosman 2011), but that trend has since reversed (Kottasova 2017). There still must be something valuable in the physical that is not yet captured by digital offerings.

- Within video gaming a retro-oriented subculture has emerged. Players seek out older tech and software, classic aesthetics (Fallan 2019) and background music (Ivănescu 2019).

The breadth of these examples suggests that it would be a mistake to ignore niche segments. Researchers might focus on the motivating factors for these purchases: a preference for the material, aesthetic considerations, avoiding the new and unfamiliar (as with later adopters). Research also is needed to understand how these niches arise, are legitimized, and are sustained. Put another way, such research will allow marketers to further understand the salient product attributes that are not captured with digitization.

Related research could investigate whether retro products represent complementary rather than cannibalizing sales. The research of Kannan et al. (2009) and Koukova et al. (2012) into complementary formats provides a good starting point.

5. Exploring the Digital Continuum Dimensions. While we believe that the three dimensions intersect to produce benefits and costs along the Continuum, one limitation is that those intersections have not yet been fully articulated and deserve further investigation. In this paper we have presented some of the ways in which consumers make tradeoffs, such as gaining convenient access to wider content in exchange for giving up control and personal information. Some consumers also seem willing to trade physical collections for virtual ones.

Conjoint analysis would be one methodology for exploring these relationships. Researchers investigating *digital offerings* would need to specify the salient attributes, many of which are provided in this paper. Researchers investigating the *three dimensions* would similarly need to identify different levels within each dimension (e.g., consumer control, shared control, corporate control). The outcomes of these studies would identify the tradeoffs that consumers make across the dimensions and along the Digital Continuum and could help guide future offerings.

Conclusion and contributions

In this paper we have taken up a challenge laid down by Yadav and Varadarajan (2005), but with an important variation. Since they published their paper suggesting a way to determine which products would successfully migrate to the electronic marketplace, many of the product characteristics they expected to facilitate the migration have become standard elements of Digital Services. In the current environment, offerings and processes can increasingly be digitized; consumers are moving toward desiring convenient access instead of ownership; the relationship between ownership and control is in flux.

Thus, instead of focusing on product-related characteristics, we advocate that ownership, access, control, and customization/cocreation are the relevant dimensions that help explain the location and movement of offerings from Digital Products to Digital Services along the Digital Continuum.

Digital Services are those that, to use Yadav and Varadarajan's language, occupy a secure position in the electronic marketplace by virtue of offering consumers the benefits of access and customization/cocreation which outweigh the costs (to consumers) of giving up ownership and control and of increased sharing of information with firms. From the firm's perspective, Digital Services have value because of recurring income from subscriptions and the additional information provided by the control and monitoring of consumers' behaviors and preferences (as well as other consumer-provided information). Ownership of the digital content has always resided with the firm, so there are minimal downsides from moving to the electronic marketplace, especially now that marketing literature is proposing business models to help guide the way. Thus, by proposing the Digital Continuum, this paper adds to the theoretical perspective within marketing thought that considers how offerings and consumer behaviors change over time and how we might conceptualize those changes to help guide strategy development.

This paper also addresses a topic that has been the subject of some speculation in the marketing literature: whether the products/services distinction is useful and where digital offerings fit. Traditional lines are blurred more than ever with new technology and new offerings. To capture the shifting trends, a more comprehensive framework is needed. The proposed Digital Continuum begins to address this gap in the literature and contributes to marketing theory in four ways.

1. Perhaps the primary contribution is the Continuum itself. The Continuum makes clear that ownership and access are not binary concepts and that control is not the sole purview of either the seller or the buyer. Rather these elements intersect to produce a variety of experiences that we are just beginning to appreciate. As technology advances and as consumer preferences shift – sometimes further to the Digital Services side of the Digital Continuum and sometimes back toward Digital Products – the Digital Continuum provides a framework for assessing the benefits and costs that accrue to both consumers and firms at different points.
2. The Digital Continuum fits within the SDL paradigm in suggesting that the real distinctions among offerings reside with the intertwined concepts of ownership, access and control. Like other service offerings, the ability to customize an experience combined with the benefits of access may shift consumption preferences.

3. The Digital Continuum emphasizes the value that consumers derive from different forms of digital offerings. Control – via curation, collecting, and time and place of access – is cited as a reason for preferring digital files on physical media. Consumers still perform many of those same functions even when they no longer own a physical medium and can only access the digital content. Yet they also gain benefits of convenience, freedom from the “burden of ownership” and enhanced options for organizing and cataloging the digital content.
4. The Digital Continuum provides a useful framework for integrating the marketing literature on Digital Products and Services. Until now, such research has added to our body of knowledge, but the relationship of one research project to another has not been clear. With the Digital Continuum, we can now fit those endeavors into a cohesive framework, for example by understanding both the preference for Digital Services that exists alongside the desire for Digital Products.

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References

- Anderson, C. (2004). The Long Tail. *Wired*, 12(10), 170–177.
- Anderson, C. (2009). *Free: the future of a radical price*. New York: Hyperion.
- Arnould, E. (2008). Service-dominant logic and resource theory. *Journal of the Academy of Marketing Science*, 36(1), 21–24.
- Atasoy, O., & Morewedge, C. (2018). Digital goods are valued less than physical goods. *Journal of Consumer Research*, 44(6), 1343–1357.
- Bardhi, F., & Eckhardt, G. M. (2012). Access-based consumption: the case of car sharing. *Journal of Consumer Research*, 39(4), 881–898.
- Bardhi, F., & Eckhardt, G. M. (2017). Liquid consumption. *Journal of Consumer Research*, 44(3), 582–597.
- Belk, R. W. (1988). Possessions and the extended self. *Journal of Consumer Research*, 15(2), 139–168.
- Belk, R. W. (2013). Extended self in a digital world. *Journal of Consumer Research*, 40(3), 477–500.
- Bershidsky, L. (2017). Why Netflix is winning the online piracy wars. *Bloomberg*. Retrieved January 6, 2018 from <https://www.bloomberg.com/view/articles/2017-05-02/why-netflix-is-winning-the-online-piracy-wars/>. Accessed 6 Jan 2018
- Brown, B., & Sellen, A. (2006). Sharing and listening to music. In K. O'Hara & B. Brown (Eds.), *Consuming music together: Social and collaborative aspects of music consumption technologies* (pp. 37–56). Dordrecht: Springer.

- Brown, S., Kozinets, R., & Sherry, J. (2003). Teaching old brands new tricks: Retro branding and the revival of brand meaning. *Journal of Marketing*, 67(3), 19–33.
- Burkart, P. (2014). Music in the Cloud and the Digital Sublime. *Popular Music and Society*, 37(4), 393–407.
- Chan, S., Barnes, B., & Fukukawa, K. (2016). Consumer control, dependency and satisfaction with online service. *Asia Pacific Journal of Marketing and Logistics*, 28(4), 594–615.
- Chen, T., Fenyo, K., Yang, S., & Zhang, J. (2018). *Thinking Inside the Subscription Box: New Research on E-Commerce Consumers*. McKinsey & Company.
- Christarp (2017, April 24). Re: We've been missing a big part of game industry's digital revolution [Comment]. Retrieved January 11, 2018 from <https://arstechnica.com/gaming/2017/04/the-us-game-industry-is-a-lot-bigger-and-less-physical-than-we-thought/>.
- Columbus, L. (2018, May 4). "The State of the Subscription Economy, 2018." *Forbes*. Retrieved April 3, 2019 from <https://www.forbes.com/sites/louiscolombus/2018/03/04/the-state-of-the-subscription-economy-2018/#3ac1873353ef/>. Accessed 3 April 2019
- Cova, B., & Pace, S. (2006). Brand community of convenience products: new forms of customer empowerment - the case of "My Nutella the Community". *European Journal of Marketing*, 40(9/10), 1087–1105.
- Davis, J., & Stack, M. (1998). The digital advantage. In J. Davis, T. Hirschl, & M. Stack (Eds.), *The cutting edge: Technology, information, capitalism, and social revolution* (pp. 121–144). New York: Verso.
- Denegri-Knott, J., Watkins, R., & Wood, J. (2012). Transforming digital virtual goods into meaningful possessions. In M. Molesworth & J. Denegri-Knott (Eds.), *Digital virtual consumption* (pp. 76–91). Oxford: Routledge.
- Douglas, M., & Isherwood, B. (1979). *The world of goods*. New York: Basic Books.
- European Union (enacted 2018). Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data. Retrieved October 24, 2018 from <https://eugdpr.org/>. Accessed 24 Oct 2018
- Fallan, K. (2019). *The object of design history: Lessons for the environment. in A companion to contemporary design since 1945* (1st ed. pp. 260–283). NY: Wiley.
- Fedorenko, I., & Berthon, P. (2017). Beyond the expected benefits: unpacking value co-creation in crowdsourcing business models. *AMS Review*, 7(3–4), 183–194.
- Free Software Foundation Europe (2017). Revisiting the Sony rootkit [Blog post]. Retrieved January 20, 2018 from <https://fsfe.org/activities/drm/sony-rootkit-fiasco.en.html/>. Accessed 20 Jan 2018
- Friend, D. (2017). "Not dead yet: Record executives fight for compact disc's future," *The Canadian Press*. Retrieved January 5, 2018 from <http://www.cbc.ca/news/entertainment/cds-future-1.4467596/>. Accessed 20 Jan 2018
- Galloway, S. (2017). *The Four: The hidden DNA of Amazon, Apple, Facebook, and Google*. New York: Portfolio/Penguin.
- Gillespie, T. (2006). Designed to 'effectively frustrate': copyright, technology, and the agency of users. *New Media & Society*, 8(4), 651–669.
- Gillespie, T. (2007). *Wired shut: Copyright and the shape of digital culture*. Cambridge: The MIT Press.
- Golsteijn, C., van den Hoven, E., Frolich, D., & Sellen, A. (2012). Towards a more cherishable digital object. In *Proceedings of the designing interactive systems conference* (pp. 655–664). ACM.
- Haase, M., & Kleinaltenkamp, M. (2011). Property rights design and market process: Implications for market theory, marketing theory, and S-D logic. *Journal of Macromarketing*, 31(2), 148–159.
- Hagey, K., Alpert, L. I., & Serkez, Y. (2019, May 4). "In News Industry, a Stark Divide Between Haves and Have-Nots," *Wall Street Journal*. Retrieved May 7, 2019 from <https://www.wsj.com/graphics/local-newspapers-stark-divide/>.
- Hui, K. L., & Chau, P. Y. K. (2002). Classifying digital products. *Communications of the ACM*, 45(6), 73–79.
- Ivănescu A. (2019). The ghosts of popular music past and video games future. In: popular music in the nostalgia video game. Palgrave studies in audio-visual culture. Basingstoke, Hampshire: Palgrave Macmillan, 1–28.
- Jedisamurai (2017). Re: Sony: PS4 owners spend about 50,000 years a week gaming [Comment]. Retrieved January 11, 2018 from <https://www.polygon.com/2017/6/5/15728406/ps4-sales-stats/>. Accessed 11 Jan 2018
- JLC776 (2017). Re: Sony: PS4 Owners spend about 50,000 years a week gaming [Comment]. Retrieved January 11, 2018 from <https://www.polygon.com/2017/6/5/15728406/ps4-sales-stats/>. Accessed 11 Jan 2018
- Kannan, P. K., & Li, H. (2017). Digital marketing: A framework, review and research agenda. *International Journal of Research in Marketing*, 34, 22–45.
- Kannan, P. K., Pope, B. K., & Jain, S. (2009). Pricing digital content product lines: A model and application for the national academies press. *Marketing Science*, 28(4), 620–636.
- Keh, H. T., & Pang, J. (2010). Customer reactions to service separation. *Journal of Marketing*, 74(March), 55–70.
- Kim, S., Bowen, M., & Wen, X. (H.) (2019). The ultimate co-creation: Leveraging customer input in business model innovation. *AMS Review*, In press.
- Kirschenbaum, M. G., Farr, E. L., Kraus, K. M., Nelson, N., Peters, C. S., Redwine, G. & Reside, D. (2009). Digital materiality: Preserving access to computers as complete environments. *Proceedings, IPRES 2009, the Sixth International Conference on the Preservation of Digital Objects*, San Francisco.
- Koiso-Kanttila, N. (2004). Digital content marketing: A literature synthesis. *Journal of Marketing Management*, 20(1–2), 45–65.
- Kotler, P., & Keller, K. (2016). *Marketing management 15e*. Boston: Pearson.
- Kottasova, I. (2017). "Real books are back. E-book sale plunge nearly 20%." *CNNMoney*. Retrieved October 25, 2017 from <http://money.cnn.com/2017/04/27/media/ebooks-sales-real-books/index.html/>. Accessed 25 Oct 2017
- Koukova, N. T., Kannan, P. K., & Kirmani, A. (2012). Multiformat digital products: How design attributes interact with usage situations to determine choice. *Journal of Marketing Research*, 49(1), 100–114.
- Kwon, H., Koleva, B., Schnädelbach, H., & Benford, S. (2017). 'It's not yet a gift': Understanding digital gifting. *Proceedings of the 2017 ACM conference on computer supported cooperative work and social computing* (pp. 2372–2384). Portland Oregon: ACM.
- Lassila, A. (2006). Offering ERP solutions as online services. *2nd international conference on web information systems and technologies*, (pp. 66–73).
- Leichtman Research Group. (2017). *Research Notes: 1Q 2017*. Leichtman Research Group, Inc.
- Lessig, L. (2008). *Remix: Making art and commerce thrive in the hybrid economy*. Penguin.
- Levy, S. (1959). Symbols for sale. *Harvard Business Review*, 37(4), 117–124.
- Li, H. (A.), Jain, S., & Kannan, P. K. (2019). Optimal design of free samples for digital products and services. *Journal of Marketing Research*, 56(3), 419–438.
- Lovelock, C., & Gummesson, E. (2004). Whither services marketing? In search of a new paradigm and fresh perspectives. *Journal of Service Research*, 7(1), 20–41.
- Lusch, R. F., & Vargo, S. L. (2006). Service-dominant logic: Reactions, reflections and refinements. *Marketing Theory*, 6(3), 281–288.
- Manu, A. (2017). *Transforming organizations for the subscription economy: Starting from scratch*. London: Routledge.
- May, C. (2007). *Digital rights management: The problem of expanding ownership rights*. Oxford: Chandos Publishing.

- McCracken, G. (1986). *Culture and consumption: New approaches to the symbolic character of consumer goods and activities*. Bloomington: Indiana University Press.
- Miller, C. C., & Bosman, J. (2011). “E-Books outsell print books at Amazon.” *New York Times*. Retrieved October 25, 2017 from <http://www.nytimes.com/2011/05/20/technology/20amazon.html/>. Accessed 25 Oct 2017
- Molesworth, M., Watkins, R., & Denegri-Knott, J. (2016). Possession work on digital consumption objects and consumer ensnarement. *Journal of the Association of Consumer Research*, 1(2), 246–261.
- Moorman, C. (2018). Adobe: How To Dominate the Subscription Economy. *Forbes* Retrieved April 17, 2019 from <https://www.forbes.com/sites/christinemoorman/2018/08/23/adobe-how-to-dominate-the-subscription-economy/#18f2a09a52e8/>. Accessed 17 April 2019
- Morris, C. (2018). “Netflix Consumes 15% of the World’s Internet Bandwidth,” *Fortune*. Retrieved April 17 from <http://fortune.com/2018/10/02/netflix-consumes-15-percent-of-global-internet-bandwidth/>.
- MUSO (2017). *2017 Global Insight Report*. Retrieved January 6, 2018 from <https://www.muso.com/magazine/muso-releases-2017-global-music-insight-report/>. Accessed 6 Jan 2018
- Naukam, D. (2014). Finance must adapt to cloud-based subscription models. *Financial Executive*, Spring, 100–101.
- Negroponte, N. (1994). Being digital - a book (p)review, *Wired*, February 1, 1995. Retrieved September 8, 2018 from <https://www.wired.com/1995/02/negroponte-27/>. Accessed 8 Sept 2018
- Nielsen Home Entertainment (2017). *Video 360° 2017 report highlights*. The Nielsen Company.
- Perren, R., & Kozinets, R. V. (2018). Lateral exchange markets: How social platforms operate in a networked economy. *Journal of Marketing*, 82(1), 20–36.
- Pitt, L. F., Watson, R. T., Berthon, P., Wynn, D., & Zinkhan, G. (2006). The penguin’s window: Corporate brands from an open-source perspective. *Journal of the Academy of Marketing Science*, 34(2), 115–127.
- Pomerantz, J., & Marchionini, G. (2006). The digital library as place. *Journal of Documentation*, 63(4), 505–533.
- Pozin, I. (2016). “Why the Subscription Economy Is the Best ... and the Worst,” *Inc*. Retrieved April 18, 2019 <https://www.inc.com/ilya-pozin/why-the-subscription-economy-is-the-best-and-the-worst.html/>. Accessed 18 April 2019
- Richter, F. (2019). The surprising comeback of vinyl records, Statista, Retrieved May 8, 2019 from <https://www.statista.com/chart/7699/lp-sales-in-the-united-states/>
- Robb, S. (2016). “There’s a VHS revival and we’re all slightly confused about it” *Metro*. Retrieved November 11, 2017 from <http://metro.co.uk/2016/08/04/theres-a-vhs-revival-and-were-all-slightly-confused-5978820/>.
- Roberts, S. D., & Micken, K. S. (2015). Marketing digital offerings is different: strategies for teaching about digital offerings in the marketing classroom. *Journal of Education for Business*, 90(2), 106–112.
- Roberts, S. D., & Rains, R. E. (2017). VidAngel: consumer choice, media law, and the future of content flexibility. *Journal of Digital Media Management*, 5(4), 386–399.
- Robertson, T. S. (2017). Business model innovation: a marketing ecosystem view. *AMS Review*, 7(3–4), 90–100.
- Schade, A. (2016). Customization vs. personalization in the user experience. NN/g Nielsen Norman Group. Retrieved October 17, 2018 from <https://www.nngroup.com/articles/customization-personalization/>.
- Schiller, H. (1984). *Information and the crisis economy*. New Jersey: Ablex Publishing Corporation.
- Schwartz, B. (2005). *The paradox of choice: Why more is less*. New York: Harper.
- Schweidel, D. A., & Moe, W. W. (2016). Binge watching and advertising. *Journal of Marketing*, 80(5), 1–19.
- Shapiro, C., & Varian, H. R. (1998). Versioning: the smart way to sell information. *Harvard Business Review*, 76(6), 106–114.
- Shostack, G. L. (1977). Breaking free from product marketing. *Journal of Marketing*, 41(2), 73–80.
- SoMuchMoreEagle (2015). Was switching to Hulu ad free version worth doing? [Online forum]. *Reddit*. Retrieved January 11, 2018 from https://www.reddit.com/r/Hulu/comments/3s5aay/was_switching_to_hulu_ad_free_version_worth_doing/.
- Steele, A. (2019, May 14). “Why spotify sees potential in podcasts,” *Wall Street Journal*. Retrieved May 14, 2019 from <https://www.wsj.com/articles/why-spotify-sees-potential-in-podcasts-11557799440/>. Accessed 14 May 2019
- Stern, J. (2019). “Stop Wasting Money on Subscription Services.” *Wall Street Journal*. Retrieved May 9, 2019 from <https://www.wsj.com/articles/stop-wasting-money-on-unnecessary-monthly-subscriptions-11557331377/>. Accessed 9 May 2019
- The Nielsen Total Audience Report Q2 2017 (2017). The Nielsen Company.
- TimtheTaxMan (2017). Re: We’ve been missing a big part of game industry’s digital revolution [Comment]. Retrieved January 11, 2018 from <https://arstechnica.com/gaming/2017/04/the-us-game-industry-is-a-lot-bigger-and-less-physical-than-we-thought/>.
- Toffler, A. (1980). *The third wave: the classic study of tomorrow*. New York: Bantam.
- Tower, A. P., & Noble, C. H. (2017). Exploring and extending a collective open business model. *AMS Review*, 7(3–4), 170–182.
- Tzuo, T., & Weisert, G. (2018). *Subscribed: Why the subscription model will be your company's future*. London: Penguin.
- US Legal, Inc. (2016) Ownership Law and Legal Definition. Retrieved September 8, 2018, from <https://definitions.uslegal.com/o/ownership/>.
- van Lethth, T.P. (2016). Typologies of subscription-based business models (Master’s thesis). Erasmus University, Rotterdam, The Netherlands. Retrieved April 5, 2018 from <https://thesis.eur.nl/pub/34384/Tim-van-Lethth-418718-Thesis.pdf>.
- Vargo, S. L., & Lusch, R. F. (2004). The four service marketing myths: remnants of a goods-based, manufacturing model. *Journal of Service Research*, 6(4), 324–335.
- Vargo, S. L., & Lusch, R. F. (2008). Service-dominant logic: continuing the evolution. *Journal of the Academy of Marketing Science*, 36(1), 1–10.
- Vargo, S. L., & Lusch, R. F. (2016). Institutions and axioms: an extension and update of service-dominant logic. *Journal of the Academy of Marketing Science*, 44(1), 5–23.
- Wallen, L. (2014). Media and the digital continuum. *Journal of Digital Media Management*, 3(2), 94–101.
- Watkins, R. D., & Molesworth, M. (2012). Attachment to digital virtual possessions in videogames. *Research in Consumer Behavior*, 14, 153–171.
- Watkins, R. D., Denegri-Knott, J., & Molesworth, M. (2016). The relationship between ownership and possession: Observations from the context of digital virtual goods. *Journal of Marketing Management*, 32(1–2), 44–70.
- Wikipedia. (n.d.) Born-digital. Retrieved November 11, 2017 from http://en.wikipedia.org/wiki/Born_Digital
- Williams, K., Chatterjee, S., & Rossi, M. (2008). Design of emerging digital services: A taxonomy. *European Journal of Information Systems*, 17, 505–517.
- Yadav, M. S., & Varadarajan, P. R. (2005). Understanding product migration to the electronic marketplace: A conceptual framework. *Journal of Retailing*, 81(2), 125–140.
- Zeithaml, V. A., Parasuraman, A., & Berry, L. L. (1985). Problems and strategies in services marketing. *Journal of Marketing*, 49(2), 33–46.