Game Changer:

Unveiling a Stakeholder-Based Theory of Disruptive Innovation

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The theory of disruptive innovation, popularized by Clayton Christensen, has shaped the thinking of generations of managers. Unfortunately, despite its significant influence, it is much more a theory of why firms fail than a theory of why innovations disrupt existing structures. Consequently, many innovations that would conventionally be considered disruptive, such as ride-sharing, smartphones, and video games, are not seen as such within this framework. Our article presents a new theory of disruptive innovation based on the change the innovation triggers among industry stakeholders, namely consumers, producers, suppliers and retailers, and producers in adjacent sectors. We propose a mechanism that drives disruption via a peripheral consumption experience that evolves and integrates into the core consumption experience. This shift in the core consumption experience, in turn, shifts the behavior of other stakeholders in the industry, eventually supplanting the incumbent technology. We provide a scale that allows measuring the degree of disruption an innovation represents and show that our concept better reflects the common understanding of disruptive innovations in the marketplace. We illustrate our theory using the video game ecosystem – an environment that has seen substantial innovations over the past two decades, none of which would be considered disruptive in the traditional sense.

Increasingly often, our habits are challenged through the introduction of transformative innovation, and our lives are simply no longer as they used to be. You might know (or imagine) a time before mobile phones (introduced in the 1980s), online shopping (Amazon was founded in 1994), social media (Facebook launched in 2004), or the Xbox One video game console (released in 2013) – and you remember how your days looked like before those innovations existed and after they became mainstream. New technologies disrupt not only our lives but also the day-to-day operations of producers, incumbents, suppliers, retailers, and producers in adjacent sectors. It is, therefore, not surprising that the study of disruptive innovations has been a topic of interest for academics and managers for many decades.

One of the most popular theories in this space is Christensen's theory of disruptive innovation[1], which aims to explain why some firms fail and others don't. According to Christensen, one possible explanation for firm failure is that successful firms focus their resources on their most profitable customers and adapt their products or services to fit those customers' needs. However, in doing so, they neglect that these most valuable and profitable customers might not be a good source of general marketplace information. This is especially the case since innovative services that might disrupt an industry often come from the low end of the product/service/technology – a place where these high-end customers have neither interest nor expertise. This "low-end attack," which initially does not attract much attention, might grow to be a high-quality service threatening the incumbent's survival.

Over the last decade, some criticism of Christensen's theory has emerged[2]. Scholars have pointed out flaws in the empirical foundation or suggested conceptualizing disruption from the perspective of innovation characteristics rather than market characteristics and relaxing some assumptions from the original theory to help account for inconsistencies in its application. These

criticisms correctly identify the strong emphasis on the firm and its products as a flaw in Christensen's original theory. However, Christensen's original theory and subsequent adaptations miss one of the main points of disruption: Disruptive innovations almost always change the behavior of consumers and other stakeholders, and because of these profound behavioral changes, firms that can adapt to new stakeholder expectations prosper while others fail. Concentrating on failing firms, failing innovations, or whether a disruption successfully challenges established firms all miss the main point: Disruption begins with the consumption experience and subsequent adaptations from relevant stakeholders. Changes in the behavior of focal firms that serve them only come later. In the end, firms adapting to new product/service expectations will succeed, and others will fail in time. However, no matter the outcome from a firm perspective, the disruption has already occurred and will continue to shift consumers' experiences in the long run.

Consider the case of the iPhone – undoubtedly a major innovation that has considerably disrupted the behavior of consumers and, therefore, firms in the mobile phone industry and adjacent sectors. In response to the substantial change in consumer behavior, Samsung prospered, and Nokia failed. As intriguing as it might be to analyze why two previously successful firms reacted so differently to the underlying change in consumer behavior, this question is separate from the issue of whether the iPhone has been a disruptive innovation (or not). Suppose Nokia had taken the risk and investment required to switch from dumbphones to smartphones and would have succeeded as Samsung did. In such an alternate reality, we would now see three successful firms fighting for their share in the smartphone market. According to Christensen's theory, no disruption would have occurred in this case since no major firm failed. But even a naïve observer would see that the disruption smartphones introduced would still be in full force. It's not the case that the failure of firms is unimportant – it is. Yet firm failure cannot be used as a determinant of a

disruption. Consumer expectations were radically changed due to the introduction of the iPhone, and this change is just as important as the failure of Nokia and the success of Apple in response to this change. Although recent criticisms have made useful adjustments to Christensen's theory, none of these variations adequately considers consumer and stakeholder responses as a component of disruption. To demonstrate the importance of stakeholders to the issue of disruption, we continue with the smartphone example by listing the stakeholders that were deeply affected by the introduction of smartphones[3]:

- ***Consumers***: The introduction of smartphones resulted in profound behavioral changes. Consumers began extensively using apps, engaging with social networks, consuming music, and utilizing navigation tools. Such profound shifts had cascading effects on the entire industry, affecting competitors, suppliers, retailers, and adjacent sectors.
- ***Producers in the focal industry***: The outcomes were largely positive. Apple's revenue soared more than tenfold in the decade after the iPhone's debut. Following their entry into the market, companies like Samsung, Huawei, and Xiaomi experienced substantial growth. In contrast, both Nokia and Microsoft failed spectacularly.
- ***Industry suppliers***: An entire industry of smartphone displays emerged to supply this new market, sized at $60 billion in 2023, and so did a whole new sector of smartphone accessories, from screen protectors to smartwatches. Lastly, an entire new vibrant sector of app publishers emerged, estimated at $0.5 trillion in revenues in 2022.
- ***Industry retailers***: Telecommunication giants, particularly AT&T and Verizon, incurred significant debts, each nearing $130 billion over a decade, in attempts to secure wireless spectrum bids and enhance their networks. Consequently, they saw minimal growth in market capitalization, with some even experiencing declines.
- ***Producers in adjacent sectors***: Many faced adverse impacts. Products like stand-alone navigation systems, digital cameras, and console video games witnessed plummeting sales. For instance, U.S. sales for navigation systems and digital cameras dropped from highs of 16 million and 36 million units, respectively, to lows of 4 million and 5 million in under a decade.

Thus, we need a new definition of disruptive innovation that incorporates the disruption of the behavior of consumers and, therefore, of firms and other stakeholders that helps to decouple the unwarranted alliance between disruption and failure of firms. Following this logic, we offer a new definition of disruption that extends beyond the firm and into all stakeholders, specifically the consumers involved with the innovation:

> ***Stakeholder-Based Disruption:*** We consider an innovation as disruptive to a given industry if it significantly changes the behavior and composition of consumers, producers in the focal industry, suppliers, retailers, and producers in adjacent sectors and, as a result, supplants the incumbent technology used within the industry.

We use Figure 1 to illustrate this new concept. In our theory, disruption emerges from a change in the consumption experience (we will outline this in detail below) and then ripples out to different stakeholders over time. Failing producers, the key focus of Christensen's theory, are just one player among many and lie in an outer circle, not in the center of the disruption. The failure or success of producers is one consequence of disruption among many, not the origin of the event. Note that in addition to any behavioral change on the individual level of each customer, an innovation can also be disruptive if it changes the composition of the consumer base, which implies adding or subtracting major new segments. Likewise, the composition of the firms might very well change: new entrants might be created as well as brand new actors. We will discuss such a change below when we talk about the video game industry and the emergence of a new segment of customers called spectators. A change in the composition of stakeholders naturally implies a change in the identity of the major players in the respective industries.

In the following, we will first discuss the original claims of Christensen's theory of disruption and other works and criticisms that have extended this theory. From here, we provide a framework to explain the role of the consumption experience in understanding disruptive

innovations and use the consumption experience to explain the stakeholders' role in the disruption process. We then propose a mechanism that drives disruption via a peripheral consumption experience that evolves and integrates into the core consumption experience. This shift in the core consumption experience, in turn, shifts the behavior of other stakeholders in the industry, eventually supplanting the incumbent technology. We then propose a five-item scale built from the framework to capture the degree of disruptiveness new technologies have on relevant industry stakeholders. Finally, we illustrate our theory using the video game industry. This industry, which has seen major disruption in the past decade, would not be considered disruptive using Christensen's theory or subsequent extensions. We conclude the paper with the managerial implications of this study.

Prior Conceptualizations of Disruptive Innovations

Christensen first proposed his theory of disruption in 1997, focused on two central tenets: Established firms typically focus on their current customers, often improving product characteristics past the capability of the average consumer – called sustaining innovation. As a result, most disruptive innovations, or innovations that disrupt the trajectory of performance improvement in established markets, originate at the low end of the market, typically competing at a lower price and/or quality point. Christensen's theory helped to explain what many in the business world had been struggling to understand and received significant popularity. Much like any new theory, criticisms came in the following years, primarily aimed at the empirical foundation of Christensen's work.

In 2005, Sood and Tellis praised Christensen's theory for explaining low-end disruptions. Still, they criticized it for lacking precise definitions of key concepts and empirical support of the

basic claim. In 2014, Lepore similarly criticized the validity of the conceptualization of disruption by addressing the case studies Christensen chose, arguing that many of the conclusions made from those industries were incorrect and biased (Lepore's work was also acclaimed by Krugman, a Nobel laureate economist in 2014). This echoed a criticism raised concerning disk drives, another example of Christensen, in a 2000 book by McKendrick et al. Following this, in 2015, King and Baatartogtokh stated that Christensen's cases provided little evidence to support the conceptualization of disruption. These criticisms gathered sufficient attention, and Christensen and others published an article in 2018 to address some of these concerns by making marginal adaptations in theory and setting forth a call for further research.

Many tried to adapt the theory to help address some of these concerns. In 2016, Gans stated that Christensen's conceptualization explained a demand-side theory and suggested that adding a supply-side theory could help cover some gaps. By adding this other perspective, Gans proposed that disruptive innovations challenge the architecture of a product and not just its components, which helps to explain why firms with competencies outside of the new architecture have difficulty adapting to the new competitive environment. In the same year, Nagy and colleagues took a more targeted approach, arguing that since the purpose of the theory should be to predict new disruptive innovations, the components of the theory should be focused on innovation characteristics rather than marketplace responses. More recently, in 2021, Rinata and colleagues suggested that the core of Christensen's theory was adequate but that it imposed unnecessary restrictions. They suggested focusing only on the outcome of disruption and relaxing assumptions around the disruption's source (regarding low-end attacks) and the process of how the disruption works.

While each of these works has addressed some of the shortcomings of Christensen's original theory, none adequately answer the following two questions: What role do changes in

consumer and stakeholder behavior play in identifying disruptive innovations? And what level of impact must an innovation have concerning changes in stakeholders' behaviors (i.e., producers in the industry, suppliers/retailers, producers in adjacent sectors) to be classified as disruptive?

The Role of the Consumption Experience: The Core and the Periphery

Stakeholder-based Disruption Theory is based on the idea that disruptions are not defined at the firm or the innovation level but at the stakeholder level. This extended focus avoids counterintuitive results when applying Christensen's original theory. Look at the ride-hailing giant Uber as an example. According to Christensen's Theory, Uber is not considered a disruptive innovation[4] since, from a firm perspective, the core service of getting a person from point A to B has remained unchanged, and the new service did not originate at the low end of the spectrum. While some of the adaptations to the theory would classify Uber as disruptive, they mainly do so by removing understanding of the disruption process from the classification (either by shifting focus to innovation characteristics or removing the criteria fully). This assessment provides an interesting contrast to the hospitality company Airbnb, which fulfills the criteria of being a disruptive innovation by Christensen and all major adaptations. However, arguably, the core service and process provided by Airbnb compared to traditional hotel companies has equally not changed.

These examples show that Christensen's theory can lead to outcomes that sometimes appear unintuitive. Analyzing Uber under the SDT paradigm provides a different answer. Uber's true innovation was not a structural change in getting people from point A to B but a change in the customer experience and how riders obtain transportation. Instead of the customer having to flag down a taxi, riders can now use a mobile app to plan their trip. They can get an estimate of when

their car arrives, follow the vehicle in real-time when it approaches, see the ratings of their specific driver, and follow the trip on a map. At the end of their journey, they can pay automatically without ever exchanging cash or credit card information. This new customer experience occasionally comes with the bonus of lower cost due to increases in efficiency. However, even if Uber no longer exists tomorrow and the price advantage disappears (as it has in many major cities), customer behavior has changed substantially to where they now expect this new customer experience. In this sense, Uber and the technology platform it is based on substantially disrupted the taxi industry. Indication for this can be found in the fact that taxi companies worldwide are launching apps similar in functionality to what Uber offers. It also impacted suppliers in the automotive and adjacent sectors: the convenience of ride-sharing has made the benefits of owning a personal vehicle less apparent, reducing car ownership and the demand for car rental services.

We propose that breaking the consumption experience into two elements, the core consumption experience, and the peripheral consumption experience, allows firms to understand better the origin of innovation and how to be at the forefront of innovation in their industries. We define the core consumption experience as the primary reason customers seek a particular product or service and the peripheral consumption experience as actions and decision points that customers must engage with to access the benefits of the core experience. We propose that the main reason for an innovation to be disruptive is that it causes a peripheral consumption experience to be integrated into the core consumption experience.

To illustrate this, let’s go back to the Uber example. In the transportation procurement industry (pre-Uber), the core consumption experience was transportation from point A to point B. However, many peripheral consumption experiences come within this simple service, such as how a consumer procures a ride or assesses the ride's safety. As Uber entered this industry, it initially

appeared that its main disruption was on the supply side by outsourcing the cost of capital for vehicles and evading overcomplicated taxi licensing, reducing the transportation service costs. However, we argue that the true disruption occurred in the peripheral consumption experience by structurally changing how consumers obtained transportation and obtained information on drivers. Today, the ease of procurement is such a necessary part of the consumption experience for many customers that the once peripheral experience has become part of the core experience. Even as Uber's cost advantages are beginning to dwindle due to unionized workforces and increased governmental regulation, they are still a dominant player in the industry due to having the technical expertise to take advantage of the shifted core consumption experience.

Stage 1: Core Experience Maximization

When an industry is in a steady state of technology utilization, firms typically engage in core experience maximization. In this stage, firms focus on making small innovations in the core consumption experience to gain a competitive advantage. Two problems can occur when following such a strategy: First, since the core experience is typically well established, it is not easy to adapt it profitably, making innovations in the core experience comparatively expensive. The possible rise in cost for delivering the core experience from such innovation can result in losing some share of the customer base. Second, as firms focus on the core experience, they pay less attention to possible changes in the peripheral consumption experience. However, disruptive innovations often occur when an innovation on a peripheral consumption experience is so successful that it causes stakeholders to shift their behavior to integrate that peripheral experience into the core consumption experience. The pressure exerted on the industry from incremental innovations within the core consumption experience drives a non-negligible group of consumers out of the

market because their core needs cannot be met profitably or their peripheral needs are not met. Over time, this focus on the core experience causes certain market segments to be underrepresented.

Stage 2: Peripheral Experience Innovation

Once the industry has ignored a sufficiently large market segment, the room opens for disruptive innovations. This phenomenon is the underlying reason for Christensen's observation that innovations almost always come from the low end of quality and price. While the firms with the most resources compete on dimensions surrounding the core consumption experience, firms with fewer resources recognize there are ignored market segments gathering around specific peripheral consumption experiences and develop product innovations to address these unserved needs. While these firms may only provide the bare minimum regarding the core consumption experience, they address the need for a peripheral experience in such a way that shifts the expectations of the customers in the industry. The resulting disruptive innovation or "low-end attack" results from the shift in consumer expectations triggered by disruptive innovation.

In this stage, we observe that innovation changes the dynamics within the industry. Certain aspects of the peripheral consumption experience begin to exert pressure on the core consumption experience to the point that many customers are shifting their expectations of the core consumption experience. As this shift in consumer experience continues, only firms that can adequately address these peripheral consumption experiences can take over increased market share. Typically, the firms that caused the shift in stakeholder behaviors have an advantage over others because they already have the internal systems and technologies to leverage the new aspects of the consumption experience.

Stage 3: Adaptation of Consumption Experience

As stakeholder behaviors continue to shift, the industry begins to see a diffusion of peripheral consumption experiences into the core consumption experience. This shift does not occur with every customer group simultaneously but through a diffusion process by which the consumption experience adapts over time. As peripheral experiences integrate into the core experience, many elements once perceived as central to the core experience may now find themselves as peripheral experiences. On top of this, pushback within groups of stakeholders may prevent certain aspects of the innovation on peripheral experiences from taking over the core consumption experience. This adaptation leads to a stage of uncertainty for industries. Many different strategies can be pursued at this point, such as investing resources into the predicted new core consumption experience or betting that the disruptive innovation will not lead to long-term shifts in behavior. Eventually, given enough time, the consumption experience stabilizes, and the process can begin again from Stage 1.

How to Measure the Scale of Disruption?

Like Tolstoy's unhappy families, each disruptive innovation is disruptive in its own way: Some tear their industry to pieces with consumers abruptly changing behavior, firms failing spectacularly, and new major opportunities appearing in adjacent sectors. Such disruptions include smartphones like the iPhone and video game streaming services like Twitch. Others lead to a gradual change in consumer behavior and cause incremental changes in the practices of the participating firms. Look at the switch from LP records and record players to CDs and CD players. This technological substitution increased the quality of listening (arguably), increased the durability of the medium (definitely), and caused consumers to upgrade their collection of LPs to

CDs (occasionally). Yet most producers merely switched production from vinyl to plastic, and more importantly, the artists remained with the "album" as their main artistic output. At the same time, consumers continued to accept this constrained album setup as their main listening format. Calling all three examples – smartphones, video game streaming, and CDs – "disruption" debases the term and renders it less useful to describe the underlying business phenomenon.

We thus propose a scale that allows measuring the scale of disruption. Based on our definition, we consider a new technology disruptive to a given industry if it supplants the incumbent technology and significantly changes the behavior and composition of consumers, producers, suppliers, retailers, and producers in adjacent sectors. In the same way that relying on a single measure of firm failure is insufficient, supplanting the incumbent technology is insufficient to signal disruption[5]. As the CD example shows, it cannot be the only signal to be considered. This leads to the following five criteria for the extent of the disruption:

1. It causes significant changes to the behavior and composition of consumers who use the product/service.

2. It causes significant changes to the practices and composition of the main producers in the industry.

3. It causes significant changes to the practices and composition of suppliers and retailers in the industry.

4. It causes significant changes to the practices and composition of the main producers in adjacent sectors.

5. It supplants the incumbent tech in the industry.

Rating each aspect on a scale from 0 (none), through 1 (moderately), to 2 (strongly), and summing them up gives a value of the degree of disruption ranging from 0 (no disruption at all) to 10 (the ultimate disruption). To keep the term disruption meaningful, we propose that the smaller scale values, such as the abovementioned LP to CD substitution, will be called just what they are –

technological substitution – and not disruptive innovation. Table 1 illustrates six recent major disruptions ranging from 4 to 10 on the disruption scale.

We believe that our scale has academic value by allowing us to objectively classify innovations on a spectrum from mere technological substitutions to disruptive innovations and managerial benefits. Since disruptive innovation emerges from a process where the consumption experience slowly changes, it is unlikely to occur simultaneously for all stakeholders. Different entities can, therefore, use our scale to see if disruptive innovation has either already occurred or is in the process of occurring in their industry or the ones relevant to them. This allows firms to be better prepared and to define appropriate responses. While a mere technological substitution may require only minor changes in a firm's functioning, a truly disruptive innovation (or one likely to be disruptive) would require more profound strategic and operational changes.

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The Curious Case of the Video Game Industry: Disruption or not Disruption, that is the Question

A timely example that shows the benefits of the stakeholder-based disruption paradigm as a model for understanding disruptive innovation compared to Christensen's theory and its adaptations can be found in the video game industry[6]. When analyzing only the firm-product level, this industry has not seen any significant disruption since the 1980s. The same firm that produced Super Mario Brothers and Tetris over four decades ago (Nintendo) is still responsible for over half of the Top 50 best-selling video games of all time and remains one of the titans in the video game industry. Game development today is roughly as expensive as it used to be before today's players were even born (it cost $130m to produce Pac-Man at the time). Even though the technical capabilities of

video games are much more advanced, the average development time for high-end games is roughly the same as in the early 1990s. For example, the original Super Mario Bros. took over three years to complete. Modern games (e.g., Fortnite and Call of Duty series) range from one to two development windows to up to five years for the most complicated and expansive games (e.g., Legend of Zelda: Tears of the Kingdom). The prices of the primary game consoles are more or less unchanged – the original Nintendo Entertainment System was sold at $99 ($280 in today's money) compared to $300 for the most recent Nintendo Switch. Even Nintendo's margin percentage (gross profit over revenue) barely moved. It was 42% on average between 2005 and 2010 and the same value between 2015 and 2020. The same is true for the other major game publishers. There is, therefore, no indication that the industry experienced any major shift if we only focus on the firm perspective[7].

Even looking at video games from some of the popular criticisms would not indicate that a disruption has occurred. For example, using Gans' framework, the architecture of the products hasn't drastically shifted as much as they have just been improved. Even using the simplified framework presented by Ritala and colleagues, identifying a disruption in this industry would be difficult as many of the core practices established are still integral to success. Only Nagy and colleagues, focusing on innovation characteristics, would potentially consider the video game industry significantly disrupted due to shifts in consumer expectations. Still, even this approach struggles to account for new consumer segments that have emerged or explain how consumer expectations shifted.

However, these assessments go against everything we know about this industry and seem highly counterintuitive to anybody familiar with the industry's ins and outs. Video games evolved from a niche activity relevant to teenage boys to a worldwide phenomenon that appeals to virtually

all ages and genders. While early games were often limited to gaming arcades, today, 3.2 billion people play video games worldwide from their homes, and 90% of Internet users under 34 years consider themselves video game players. More importantly, an entirely new customer base has emerged over the past decade: the spectator. Instead of actively engaging in gameplay, these users watch other players on streaming services such as Twitch or in arenas filled with tens of thousands of people. This has created an esports industry worth $1.3 billion and a video game streaming industry worth $59.6 billion today while creating multiple new career paths and consumer consumption patterns. Thus, the industry's significant transformation becomes apparent only when taking a broader view and looking at the consumers and other stakeholders. To further explore this, we apply the stakeholder-based disruption paradigm to the emergence of Twitch and other video game streaming platforms in the video game industry to understand what has changed in the video game industry, even though no new major firms have entered the industry of video game creation.

From Periphery to Core: The Emergence of Video Game Streaming Platforms

In 2014, Amazon acquired a relatively unknown digital video streaming site called Twitch for $970m, over 60 times its annual revenue of only $16 million[8]. This decision surprised many, not only because of the perceived over-valuation by Amazon but also because Twitch was targeted at a niche segment: video game players. Since then, Twitch has become one of the largest social media sites, with a current market evaluation exceeding $15 billion – over 15 times Amazon's initial purchase price[9]. More importantly, Twitch disrupted the video game industry to the point where playing a video game is no longer the sole core consumption experience for many consumers. Today, nearly a third of all video game players in the U.S. frequently use video game

streaming platforms to consume over ten hours of content a week, with nearly half consuming over 20 hours a week.

To understand how this disruption occurred, one must first understand the innovation process in the video game industry at the time. When Twitch first launched in late 2011, the three major industry players (i.e., Sony, Microsoft, and Nintendo) were releasing their next generation of consoles (the PlayStation 4, Xbox One, and Wii U). However, almost all innovation was focused on core experience maximization (Stage 1) and specifically maximizing video game design. Unlike the previous generation of consoles (the PlayStation 3, Xbox 360, and Wii), which radically redefined what was possible in video gaming, this new generation only provided minor graphics and processing power upgrades. Given the relatively high design quality already available, these innovations generated only minor improvements for a significant cost. Consequently, these new consoles only marginally increased video game capability at a time when global video game usage exploded to nearly 1.4 billion players worldwide in 2011[10].

At the same time, two growing segments of video game consumers were looking for new ways to engage with video game content, especially when playing the game was impossible. The first group, spectators, wanted to observe other players during their gameplay – a concept familiar from the early-day gaming arcades. However, the current social media platforms (Facebook and YouTube specifically) were not suited to satisfy this peripheral consumption experience since they could not capture one of the most important aspects of gaming: the shared experience of playing a game with others. The second group, esports athletes, aimed to compete in major tournaments. Although these competitions were already gathering large in-person crowds at the time, their reach was limited as these communities did not have strong connections to the casual gaming

communities, nor did they have the ability to broadcast these live events to groups with no prior knowledge of the competitions.

Twitch was able to satisfy these customers by offering the peripheral experience innovation (Stage 2) necessary to serve both segments. It emerged during this time as a way for gamers to consume additional video game content. However, different from viewing highlights of a game session, content popular on YouTube during this period, consumers could co-experience the game with the streamer and other consumers. Twitch became the most important social media site focused on video game streaming. It allowed influencers to produce live video game content synchronously with the consumption and interaction of the content by consumers and consumers to turn their video game hobby into a career by becoming full-time streamers.

Although Twitch seems like a simple adaptation of live streaming to the video game context and a peripheral innovation at best, it had dramatic effects on the video game industry and the core consumption experience of gaming. Before Twitch, the only core consumption experience that was considered by the gaming industry was the gameplay itself. However, once Twitch emerged as a platform, the peripheral experiences of spectating, whether through consuming casual video game content or watching highly competitive esports events, quickly rose in popularity. The core consumption experience was adapted through Twitch by integrating an aspect into it (Stage 3).

To showcase the extent to which video game streaming has become part of the consumption experience, look at some figures. Twitch had roughly 40 million users when Amazon purchased the company in 2014. Today, it has 150 million unique users. In parallel, other streaming platforms emerged, such as YouTube Gaming and Facebook Gaming (with 40 million and 110 million users, respectively). Esports, which started as small, firm-organized tournaments, now

constitutes a $1.4 billion industry and has events that surpass the viewership of the NFL Super Bowl[11]. The ability to be a spectator of video game content, whether it is in a casual community or a competitive environment, has gone from a peripheral consumption experience enjoyed by a small subset of consumers to merging with gameplay to become part of the average consumer's core experience with the video game industry.

The Effect of Streaming on Stakeholders

This shift in the core consumption experience, in turn, influenced the behavior of other stakeholders in the video game industry. Video game publishers (i.e., producers) adapted their products to integrate streaming as an integral part of the consumption experience, resulting in two major changes: First, video game streaming platforms offered video game companies a new way to market their products to potential customers through a highly specialized form of influencer marketing. This incentivized producers to implement free-to-play monetization structures. Instead of requiring consumers to pay upfront for a game (typically $50-$70), companies today allow consumers to access the core elements of the game experience for free. Revenue generation instead focuses on reaching the broadest player base possible to monetize through marketing revenue or in-app purchases of vanity or functional items. Video game streaming platforms help to diffuse content on these games quickly to assist in growing their player base, while this structure helps streamers by reducing their content creation costs.

Second, today games are created with the streaming experience at the forefront, and most major video games are designed with streamer-friendly modes that make content creation easier by removing copyrighted material from the gameplay, such as music or art. Along with this, video game companies have altered the life cycle of games by leveraging consumer feedback and

continued engagement. It is now standard practice in the industry to use consumer and streamer conversations on these platforms as crowdsourced feedback to continually reshape their game through minor updates. Also, as streamers continue to play a game, it keeps driving consumer re-engagement in the game. As such, new high-level games are created for multi-year lifecycles with multiple small updates to keep gaming content fresh. In parallel, the promotion of the industry has shifted with video game companies specifically designing free in-game content for streamers to give to their followers. This strategy helps drive more players to the game for the video game companies while synergistically supporting streamers.

Beyond the consumers and producers, disruption is also visible in adjacent sectors with the influx of accessories and software for video game streaming and the development of supporting technologies such as VR headsets. Using Christensen's original theory (and most adaptations), it would appear on the surface that the video game industry had been relatively disruption-free for 30+ years. However, even though the largest incumbents still control the majority of market share due to their ability to adapt quickly to the changing consumer expectations and shifting consumer base, it is clear that consumer expectations and consumption behaviors have been drastically disrupted. As a result, stakeholders in the industry have had to adapt appropriately.

Conclusion

In this manuscript, we provide a new perspective on the concept of disruptive innovations. Our framework is based on the change the innovation triggers among industry stakeholders, namely consumers, producers, suppliers and retailers, and producers in adjacent sectors. To explain disruption on the stakeholder level, we propose a mechanism that drives disruption via a peripheral consumption experience that evolves and becomes integrated into the core consumption

experience. This shift in the core consumption experience, in turn, shifts the behavior of other stakeholders in the industry, eventually supplanting the incumbent technology. We provide a scale that allows measuring the degree of disruption an innovation represents and show that our concept better reflects the common understanding of disruptive innovations in the marketplace. We illustrate our theory using the video game ecosystem, which has seen substantial innovations over the past two decades, none of which would be considered disruptive in the traditional sense.

Let's take a look at two of the six disruptions listed in Table 1, namely video games and apartment rental services. We see that relying on the failure of firms and low-end entry as a basis of disruption just does not cut it. In the video games industry, the same three main players still control the market: Nintendo, Xbox, and PlayStation. The disruption occurred mainly at the consumer level, with two new massive segments of old consumers and spectators. In the apartment rental services, Airbnb, while certainly large, has not displaced established hotel services and hardly affected their prices. The famous duck test of abductive reasoning says that if it looks like a duck, swims like a duck, and quacks like a duck, it is probably a duck. The same applies to disruptive innovations. If it looks like a disruption, then it is probably a disruption. And if the common definition does not classify it as one, then maybe it's time for a new definition.

Table 1: Scale of disruption in six major markets

Panel 1: Major Disruptions (8-10 on the Disruption Scale)

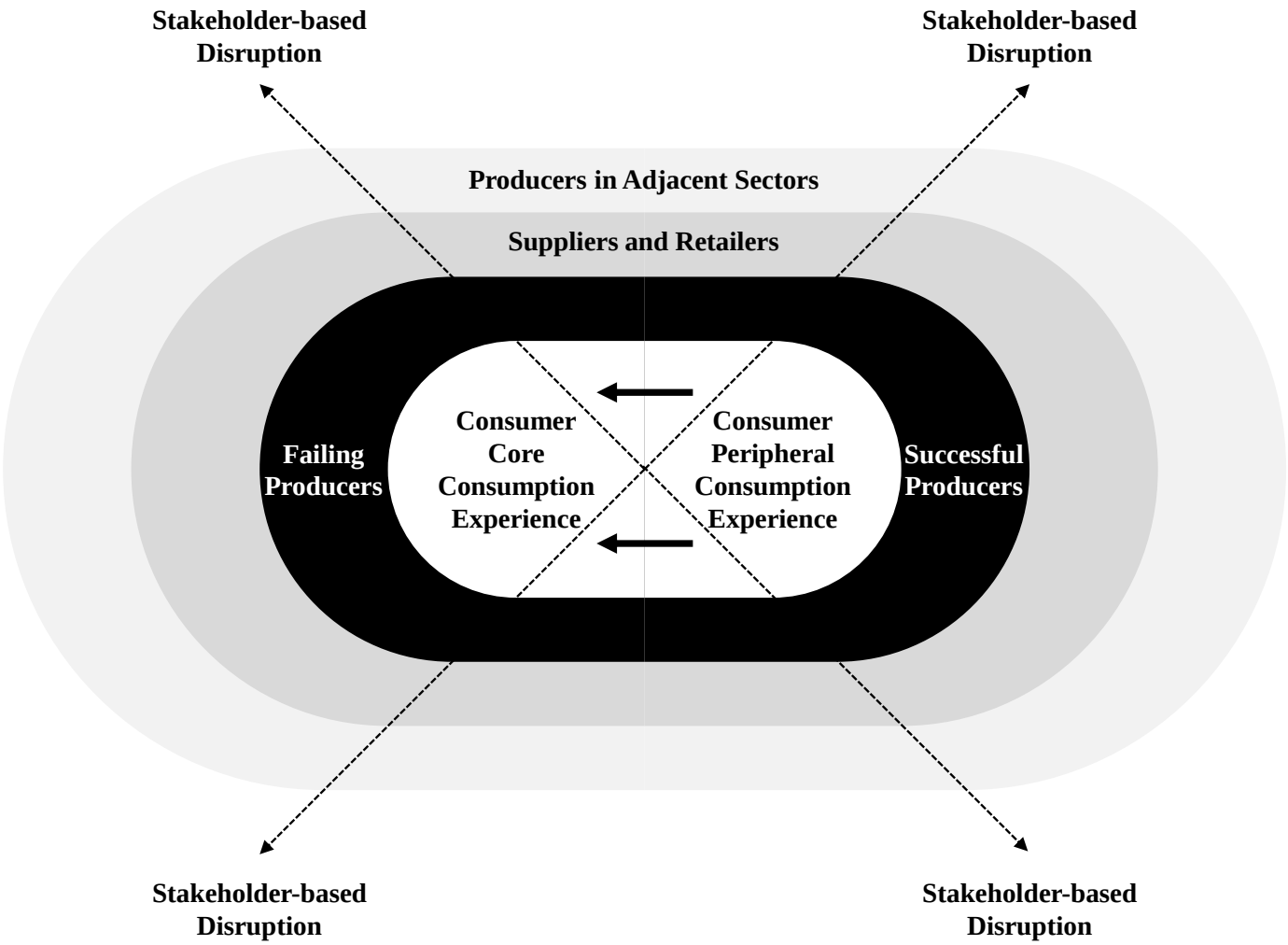
	Smartphones	**Video Streaming Services**	**Video Games**
Consumers	2: Usage of apps, social networks, music, navigation	2: Consumers are "cutting the cord" and watching what they like at the time they prefer	2: The early niche market for teenage boys evolved into a worldwide market for all ages and genders. The emergence of a massive segment of spectators
Producers in the Focal Industry	2: Positive: Apple, Samsung, Huawei, Xiaomi. Negative: Nokia, Microsoft, LG	2: Providers such as AT&T regard multi-channel TV as cash cows and find other opportunities for growth	1: The same three main players control the market: Nintendo, Xbox, and PlayStation. Lots of new players in mobile games
Suppliers & Retailers	2: App publishers; Telecoms; Famously, a city in Hunan province, China, home of Foxconn	1: Content providers tailor their offering to streaming services	2: Platforms such as Apple Arcade, independent game publishers
Producers in Adjacent Sectors	2: Video Games, Digital Cameras, Navigation Systems, High-speed wi-fi	1: Smart TVs, Roku, Amazon Stick, and other streamers are increasing sales	2: Streaming of televised games via Twitch. VR headsets. High-speed wi-fi
Supplants Incumbent Technology	2: Within seven years, overcame dumb phones even in sub-Sahara Africa, the poorest region in the world	2: Streaming services such as Disney+ and Netflix each have more subscribers than all multi-channel TV subscribers combined	1: Same incumbents still operating, yet lost ground to casual and hyper-casual mobile games
Total	**10**	**8**	**8**

Panel 2: Moderate Disruptions (4-7 on the Disruption Scale)

	Music Streaming Services	**Ride-Hailing Services**	**Esports**	**Apartment Rental Services**
Consumers	2: Though there is some nostalgic return to LP records, consumers adopted the likes of Spotify and Apple Music without looking back	2: Hailing a Yellow cab (or the equivalent) is now an inferior option	2: Competitive players now expect large design concessions. Incentivized many players to become content creators	1: It's one more option on vacation. Not an option for business travelers
Producers in the Focal Industry	2: New players dominate markets, such as Spotify, Apple Music, and Tencent	2: Taxicabs are desperate, Medallions are "distressed assets"	2: Most video game producers must now include resource-intensive esports features such as spectator mode and ranked play	1: Hotels, even in smaller cities such as Austin, TX, have hardly reduced price
Suppliers & Retailers	1: Largest studios hold share, though losing some. Artists adjust their music to some degree, mostly on channels such as TikTok	0: None	0: Although game design changes, most of the products are built roughly similar	1: Homeowners are renting to Airbnb. Long-term renters are suffering
Producers in Adjacent Sectors	0: Apple stopped the production of iPods in 2022	1: Rental cars to business travelers suffer	2: Helped launch the popularity of video game content creation and video game tournaments	0: None
Supplants Incumbent Technology	2: CDs and LP records are now only about 10% of the recorded music in the US and about 20% globally	2: As early as 2019, Uber overcame Yellow cabs in NYC and wherever regulation allows	0: None	1: Airbnb's share is less than 10%, even in its best markets. It's bigger than the largest hotel chain, though
Total	**7**	**7**	**6**	**4**

Note: The data collected to populate the scale can come from multiple sources, including expert judgments, interviews, or customer surveys. In most cases, several methods will need to be combined.

Figure 1: Stakeholder-Based Disruption Theory



Notes

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[3] This definition is an expanded and revised version of the definition in Eitan Muller "Delimiting Disruption: Why Uber is disruptive, but Airbnb is not," *International Journal of Research in Marketing*, (37), pp. 43-55, which by itself was constructed based on three articles in the *Wall Street Journal* that summarized the effect of the iPhone, ten years after its introduction, on various stakeholders in the industry and adjacent sectors: Dou, Eva, How the iPhone built a city in China. *Wall Street Journal*, July 3. Morris, Betsy (2017), From music to maps, how Apple's iPhone changed business. *Wall Street Journal*, June 23. Tripp, Mickle (2017), Among the iPhone's biggest transformations: Apple itself. *Wall Street Journal*, June 20.

[4] Christensen, Clayton, M., Michael E. Raynor, and Rory McDonald (2015), What is disruptive innovation? *Harvard Business Review*, 93 (12) 44-53.

[5] Sood, Ashish and Gerard J. Tellis (2005), Technological evolution and radical innovation? *Journal of Marketing*. 69 (3), 152-168. Sood, Ashish, and Gerard J. Tellis (2011), Demystifying disruption: A new model for understanding and predicting disruptive technologies. *Marketing Science*, 30 (2), 339-354. Chandrasekaran, Deepa, Gerard J. Tellis, and Gareth M. James (2022), Leapfrogging, Cannibalization, and Survival During Disruptive Technological Change: The Critical Role of Rate of Disengagement. *Journal of Marketing*, 86 (1), 149–166.

[6] Based on common understanding, the video game industry comprises six players, which can be split into two groups. The first group consists of those players whose interactions dynamically impact the video game experience: (1) video game companies who create and manage the video game experience (e.g., Activision Blizzard or Epic Games); (2) consumers who engage with the video game experience and consume video game content; and (3) marketers and brands who integrate content through the video game experience. The second group represents pillars that drive continuous engagement with the video game experience without directly impacting it: (4) video game streaming platforms, such as Twitch or YouTube Gaming; (5) consumer communities formed on other digital platforms (such as Discord and Reddit) where consumers exchange game-relevant information with each other; and (6) support infrastructure that helps consumers store and access games when they wish to do so (such as Steam and Epic Games Launcher) and optimize the video game experience.

[7] These figures are discussed in: https://retroonly.com/how-much-did-arcade-machines-cost-in-the-80s/; https://www.someecards.com/usercards/viewcard/MjAxMS1hMjI4YmUyMTJmOWZhNTIz/;https://www.quora.com/How-much-did-the-game-Super-Mario-Bros-cost; https://www.usgamer.net/articles/top-10-biggest-grossing-arcade-games-of-all-time; https://www.quora.com/How-expensive-was-the-Nintendo-Entertainment-System-when-it-came-out; https://www.one37pm.com/gaming/consoles/how-much-is-an-original-gameboy-worth

[8] Seeking Alpha 2014

[9] Influencer Marketing Hub 2022

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