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The Empowered Customer: User-Generated Content and the Future of Marketing

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ABSTRACT

The boundaries that traditionally delineated the roles of consumers and firms are being blurred as users take on creative tasks that were previously managed solely by commercial firms. This paper argues that the user-generated content (UGC) created by these consumers represents a profound shift of power from firms to consumers. In order to better understand this changing landscape, as well as to distinguish the various types of UGC in which customers most commonly engage, and highlight the benefits and challenges associated with these types, we present a new UGC typology that takes into account the objectives that consumers pursue as well as the type of knowledge flow that is activated when consumers produce UGC. We draw on existing literature and use illustrative examples to explicate these UGC types and explore the implications of UGC for marketing thought and practice.

Introduction

The *marketing concept* has guided and shaped more than two decades of marketing research. Kotler and Armstrong defined the marketing concept as: "The marketing management philosophy which holds that achieving organizational goals depends on determining the needs and wants of target markets and delivering the desired level of satisfaction more effectively and efficiently than competitors" (Kotler and Armstrong, 1989, p. 638). There is general agreement among scholars that two-way interaction with consumers is essential for enhancing a firm's new product development (NPD) and marketing communication initiatives. However, due to a variety of reasons, ranging from failure to fully understand the concept to technological gaps in implementing it, the marketing concept has attracted praise from marketing scholars and practitioners, but has, at best, been implemented imperfectly.

Perhaps more importantly, the marketing concept evokes images of an orderly world in which firms have significant control over their environment and are almost solely responsible for the critical activities designed to educate customers and satisfy users' needs, such as crafting effective marketing communications and developing innovative new products. In recent years, however, this traditional paradigm has been challenged by new business models and technologies that transfer significant power over these critical activities to consumers. Indeed, we are moving quickly into a new era of customer empowerment, in which consumers are increasingly able to directly influence marketing outcomes by contributing their own user-generated content (UGC). Although the long-term implications of this change are yet to be seen, this shift represents a fundamental change in the power relationship between marketing and consumers and may have substantial ramifications for marketing thought and practice (Kahle, Marshall, and Kropp, 2003).

The rapid growth of UGC has attracted the attention of researchers across a number of different disciplines, including computer science, marketing, management, and journalism (Brabham, 2013; Krishnamurthy and Dou, 2008; von Hippel, 2005). Research in this domain has highlighted a number of UGC types, including large-scale crowdsourcing initiatives that enable users to share their ideas with firms and participate directly in the creation of new commercial products (Brabham, 2013; Cook, 2006); online product review websites that allow users to evaluate existing products and share their opinions with fellow users (Chevalier and Mayzlin, 2006; Mayzlin, 2006; Moe and Schweidel, 2012); and small groups of lead users who often develop original new product concepts and share these innovations with their peers without any active firm involvement (von Hippel, 2005). As these examples illustrate, the nascent literature in this area is quite diffuse. The

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term UGC is currently used to describe a broad range of phenomena that differ from one another both in terms of the objectives that consumers pursue when they create UGC and in terms of the way that knowledge flows from one party to another in the UGC process. The next section of this paper contributes new knowledge to this domain by synthesizing these diverse forms of UGC into a coherent typology that enables us to better characterize the potential benefits and challenges that accompany each type of UGC.

A Typology of UGC

The dramatic rise in connectivity afforded by the Internet and the emergence of advanced design tools that often rival those used by professional designers have enabled users to create high-quality new content using a wide range of different media and materials (such as graphic design, digital software code, and homemade physical prototypes) and to give other interested parties around the world access to their creations (von Hippel, 2005). Examples of these tools, which are often made available to users at little or no cost, include the Android Software Development Kit (SDK) that allows users and third parties to create their own Android-compatible mobile phone applications (apps); and SketchUp, a free graphic design product that enables users to create digital 3D models of their work. Recent research on consumers' online activity suggests that users are embracing these new tools and using them to express themselves online using text, photos, software code, and digital audio recordings. A 2012 report by the Pew Research Center indicates that approximately 62 percent of American men and 71 percent of American women are actively creating new content on Facebook (Duggan and Brenner 2012). Tens of millions of consumers around the world are now creating their own UGC and sharing it with their peers and/or the brands with which they are involved.

Here, we define UGC *as original contributions that are created by users, are expressed in a number of different media (such as physical objects, sound recordings, computer code, and graphic designs), and are widely shared with other users and/or with firms*. Our typology is depicted in Fig. 1. As the figure shows, the four forms of UGC we identify differ along two key dimensions. Firstly, we suggest that users usually have two primary objectives when creating UGC. Users pursuing the first of these objectives may create original content in order to draw attention to a particular product or brand and express their satisfaction (or dissatisfaction) with an offering or a company. The primary objective of this type of UGC is *product promotion*, as the content that users create typically highlights the strengths/ weaknesses associated with a given product or brand and is designed to stimulate further word-of-mouth activity (Chevalier and Mayzlin, 2006; Mayzlin, 2006). Users who pursue the second

type of objective often have little or no interest in promoting a product or a brand, but may still be deeply involved in improving an existing product or developing an original new product of their own. This type of UGC contributor is focused less on product promotion than on *product innovation*.

Fig. 1 also shows that different types of UGC vary on a second dimension; namely, the directionality of the knowledge flows that result from the UGC process. Some forms of UGC, such as user-produced social media or online product reviews, primarily target a user's fellow users by providing them with new ideas, insights, and/ or product designs. UGC of this kind is characterized by customer-to-customer (*C2C*) knowledge flows. In contrast, other forms of UGC begin with an original idea conceived by a creative user, but are designed to convey knowledge to a particular firm rather than to fellow users. Hence, because the firm is the primary target of this new knowledge, this type of UGC inherently involves customer-to-business (*C2B*) knowledge flows. We use this typology below to describe four distinct types of UGC, offer illustrative examples of each type of UGC, and highlight the different sets of rewards and challenges that firms are likely to encounter when they attempt to manage each type of UGC.

Informing

We define *informing* as a process that engages users in the creation of content that either praises or criticizes a particular product or brand (promotion-focused user activity) and directs these user-generated reactions primarily at the users' fellow customers (C2C knowledge flows). The existing marketing literature typically describes this kind of user activity with the more generic umbrella term user-generated content (UGC). However, we refer to it as informing, as we believe this label more accurately reflects both the underlying goal that users pursue when sharing their opinions with their peers, as well as the effect that this type of contribution is likely to have on their fellow users.

Recent marketing literature has emphasized the seminal role that users can play in drawing attention to a firm's products via their online communications. The impact of user communications on marketing outcomes has attracted the interest a number of marketing scholars, who have typically focused on online product reviews as the prototypical example of informing activity. For example, Chevalier and Mayzlin (2006), Dhar and Chang (2009), and Liu (2006) found a positive relationship between the volume of advising activity by users and subsequent demand by consumers in the form of online book sales, music sales, and box office receipts, respectively. Conceptually, studies in this domain view reviews as a form of customer word of mouth (Li and Hitt, 2008; Moe and

		User Contribution Objective	
		Product Promotion	Product Innovation
Direction of UGC Knowledge Flows	C2C Knowledge Row	**Informing**	**Pioneering**
	C2B Knowledge Row	**Co-Communicating**	**Co-Creating**

Figure 1. A typology of user-generated content.

Schweidel, 2012). This literature is therefore consistent with our typology in that it concentrates on user reviews as an important form of C2C communication and examines the impact of such reviews as a vehicle for promoting (for example, creating a buzz about) a particular commercial product or brand.

As noted above, most of the existing empirical studies that have examined the effect of UGC on marketing outcomes have done so in the context of online product reviews shared on popular websites such as Amazon.com, Ebay.com, and Barnesandnoble.com. Collectively, these studies have tended to highlight the positive role that online word of mouth plays in terms of stimulating subsequent market response to new product offerings (Chevalier and Mayzlin, 2006; Liu, 2006). Although extant research in this area has yielded a number of useful insights, it may be ill-equipped to provide guidance relating to the more radical shift of power from firms to consumers that results from new forms of independent C2C promotional activity. The following section focuses on this phenomenon and explores some of the ways in which this kind of C2C activity can influence consumers' evaluations of a firm's products and brands.

There is a long-held customer service truism that if a customer is dissatisfied with a product or service, she will tell 10 people about her negative experience. Today, however, dissatisfied customers can use the Internet to potentially air their grievances to tens of millions of other Internet users in a matter of seconds (Gillin, 2009; Mangold and Faulds, 2009). Li and Bernhoff (2008) suggested that the rising popularity of social media websites (such as Facebook and Twitter) has helped to fuel a "groundswell" of independent user-generated content that now largely occurs outside the walled gardens of firm-sponsored websites. For example, in September 2012, Facebook achieved the milestone of attracting over 1 billion registered users (Fowler, 2012).

In the past, consumers' complaints may have been directed to a firm's employees or to a relatively small group of friends. Today, many such communications occur on platforms that are completely independent of the firm, have the potential to reach millions of other customers around the globe, and can profoundly impact the way a firm is viewed by its key stakeholders (such as existing and potential customers, employees, and investors). Negative word of mouth often emerges as a direct response by consumers to corporate practices that they view as unethical or unfair.

A well-known example of the potential impact that informing activity can have on a firm's brand image is former MIT student Jonah Peretti's 2001 attempt to use Nike's mass customization platform NikeID to order a customized pair of tennis shoes with the word "sweatshop" embroidered on it. When Peretti posted Nike's refusal letter and a chain of subsequent email correspondences with the company online, the information went viral, drawing unwanted attention to allegations of unfair labor practices by Nike (Guardian, 2001). Similarly, a Canadian musician named Dave Carroll used a creative informing strategy to draw attention to a customer service problem he experienced when United Airlines baggage handlers severely damaged his guitar and company officials repeatedly refused to compensate him for his loss. In July 2009, frustrated by the firm's lack of responsiveness over the course of several months, Carroll recorded a song entitled "United Breaks Guitars" and posted a video of himself singing his song on YouTube. By late August 2009, the online video had been viewed over five million times and the song had become the most downloaded song on iTunes (Deighton and Kornfeld, 2010). By mid-2013, this user-generated YouTube video had been viewed over 13 million times (Carroll, 2009).

An even more recent example of informing activity relates not to a company's failure to satisfy a particular customer, but rather to an organic (and visceral) user-generated response prompted by a firm's marketing communications. In early 2012, McDonald's began a Twitter campaign to highlight positive stories about the farmers who produce ingredients for its core products. The firm launched the campaign under the hashtag #McDStories, and the first tweet read, "when u make something w/pride, people can taste it. McD potato supplier #McDStories". Within minutes, Twitter users pushed back with critical tweets and flooded the #McDStories Twitter feed with a range of negative stories relating to poor food quality, unfair labor practices, and animal welfare issues (Lyon and Montgomery, 2013). Completely unprepared for this scathing consumer backlash, McDonald's responded by ending the social media campaign only two hours after it had started.

As the above examples show, informing can have a major negative or positive influence on a firm's reputation, which can impact a firm's success in the marketplace (Boush & Kahle, 2001, 2005; Kahle & Valette-Florence, 2012). Moreover, a firm may find it difficult to craft effective responses to this form of UGC, because the motivations behind such user-generated outcries may be quite diverse and difficult to ascertain (Minton, Lee, Orth, Kim, & Kahle, 2012).

Co-Communicating

We define *co-communicating* as a process that occurs when users create their own novel marketing materials (promotion-focused user activity) and share them directly with a firm (C2B knowledge flow) to enhance the firm's marketing communications. Conceptually, co-communicating is similar to user-generated advertising, a phenomenon that Campbell, Pitt, Parent, and Berthon, (2008, p. 7.) describe as, "…any publicly disseminated, consumer-generated advertising messages whose subject is a collectively recognized brand." However, we recognize that firms may face very different challenges in managing user-generated promotional content depending on whether the UGC in question involves C2B or C2C knowledge flows; hence, our typology draws a clear distinction between user-generated promotional content targeted at fellow users (informing) and user-generated promotional content directed at firms (co-communicating).

Co-communication initiatives typically begin with an open call or contest that encourages consumers to develop innovative new promotional collateral that the firm can utilize in a future advertising campaign. Although most co-communication programs follow this approach, managers have significant freedom to determine the extent to which end-users can participate in developing promotional content for the firm. For example, some co-communication campaigns encourage consumers to simply share advertising ideas or concepts with the firm, whereas others ask users to submit finished advertisements that the firm can use in its marketing communications with minimal additional effort (Thompson and Malaviya, 2013).

An example of a highly effective co-communication initiative is Doritos' "Crash the Super Bowl" campaign, a competition in which consumers created their own 30-second videos for an original Doritos commercial and shared these works with the Frito Lay company. In a five-week period from October to November 2012, customers submitted approximately 3,500 videos to the company (Heine 2013). In the final round of the competition, consumers were also allowed to vote to determine which two ads out of five nominees would premier during the 2013 Super Bowl. One of the winners, entitled "Goat 4 Sale", created by amateur filmmaker Ben Callner, was inspired by a friend's story of his goat greedily eating chips out of a bag. The other winner, "Fashionista Daddy", by another hobbyist named Mark Freiburger, was reportedly shot over the course of a weekend using friends and family as volunteer actors on a budget of $300, including the cost of the Doritos chips used in the ads (Facebook 2012). The promotional impact of this campaign was substantial. The final round of voting drew 100 million online page views for the five finalist videos and drove the number of fans on Doritos' Facebook page over four million for the first time (Heine, 2013). The firm was able to leverage this co-communication contest

to build significant buzz around its campaign, significantly enhance its social media presence, and communicate with current and potential customers in a new and innovative way.

As the Doritos example illustrates, the ability to source creative new promotional content directly from users is one of the key benefits that firms can garner via their co-communication campaigns. Frito Lay was able to gain access to and implement novel marketing messages that would probably never have emerged had the firm relied on its own brand managers or a professional ad agency to create these commercials. Indeed, in an interview with *AdWeek*, Frito Lay's senior marketing director, Jeff Klein, admitted that under a traditional advertising approach, the company most likely would not have purchased the scripts for the two Super Bowl ads, because of concerns that they were too offbeat and unconventional to be effective (Heine, 2013). By allowing customers to play a major role in producing the new advertisements it later aired, Frito Lay was able to pursue new creative directions, thereby invigorating its Doritos brand. At the same time, by encouraging consumers to play an active role in selecting the advertisement they found most appealing, Frito Lay not only deepened users' involvement with the campaign, but also gained access to a rich stream of consumer input that enabled it to monitor which of these user-generated ads were especially appealing to other customers. This C2B knowledge flow was vital, as it allowed Frito Lay managers to accurately gauge which ads would be most effective, while simultaneously making them more comfortable with the idea of ceding significant creative power to their customers.

Although co-communicating offers firms a number of benefits, there are certain challenges and possible side effects that firms wishing to employ this type of strategy should anticipate. Firstly, according to conventional marketing thought, much of the attractiveness of a co-communication campaign may lie in its ability to generate engaging new promotional content while greatly reducing the production costs associated with creating and in-house advertisement (Winer, 2009). However, anecdotal evidence suggests that the potential cost savings associated with co-communicating may have been significantly overstated. In fact, executives at large consumer products companies such as Heinz and Frito Lay agree that the costs of a co-communication campaign can often equal or even exceed those of a traditional advertising campaign. Firms that initiate co-communication campaigns typically find that they must invest millions of dollars at the front-end in order to effectively 'promote the promotion' and ensure that a sufficient number of users participate in a sponsored contest (Story, 2007). Firms must also contend with the fact that a large number of user-created advertisements are likely to be of low quality, may portray the brand in an unusual or unflattering light, or may simply fail to excite and resonate with consumers. For example, a co-communication campaign initiated by Heinz had difficulty attracting a critical mass of submissions and struggled to garner professional looking and engaging video submissions. In fact, managers at Heinz were dismayed by a number of videos that depicted users using the product in unusual ways, such as brushing their teeth, washing their hair, and shaving with Heinz ketchup (Story, 2007). These examples suggest that firms with minimal experience in managing co-communication campaigns or firms that overestimate consumers' involvement in their brand may unintentionally create their own negative publicity by launching contests that attract only a limited number of submissions and/or submissions that may have a negative influence on their brand equity.

Even co-communication campaigns that attract a large number of users can lead to negative publicity for the sponsoring firm. For example, a General Motors campaign that urged users to insert their own short taglines into a company-created ad for the Chevy Tahoe (a large sport utility vehicle) attracted a high volume of responses that criticized the company for failing to produce more fuel-efficient

vehicles. One message, which later went viral, read, "Our planet's oil is almost gone. You don't need G.P.S. to see where this road leads" (Bosman, 2006). This example suggests that firms that produce controversial products may be especially prone to attracting a negative public backlash to their co-communication campaigns.

Co-Creating

We define *co-creating* as a process that occurs when users create their own novel product designs (innovation-focused user activity) and share these designs directly with a firm (C2B knowledge flow) for the purpose of enhancing the firm's new product offerings.

A small but growing body of research has emerged around this topic in the last few years and has begun to shed light on the myriad ways in which consumers can work with firms to co-develop innovative new products. This has led to the development of new typologies that categorize various forms of co-creation activity (Piller, Ihl and Vossen, 2010; Hoyer, Chandy, Dorotic, Krafft, and Singh, 2010; O'Hern and Rindfleisch, 2010), research that examines how consumers react to co-created new products (Fuchs and Schreier, 2011), and studies that highlight the managerial implications of allowing users to work directly with firms to co-create new product offerings (Cook 2008; Ogawa and Piller 2006). O'Hern and Rindfleisch (2010) suggested that co-creation initiatives vary significantly along two dimensions: the degree to which customers are empowered to create new product designs and the degree to which customers are empowered to select which designs will be marketed as commercial products. Product creation and product selection are both vitally important activities in the NPD process. Accordingly, in the illustrative example of co-creation described below, customers make contributions in both of these key areas.

One of the best examples of co-creating is the online apparel and accessories manufacturer Threadless.com. Unlike most of its competitors, Threadless employs no in-house designers and instead depends on its extensive network of customers to provide it with a critical mass of designs that it can use to create new products in its core categories (graphic t-shirts, cellphone cases, and wall art). Using this 'crowdsourcing' approach, Threadless is able to solicit over 1,000 new product designs from its customers each week, which it uses to release five to seven new products each week (Lakhani and Kanji 2008).

Threadless also enables its consumers to play a leading role in selecting the products that will be launched in the future. Consumers are encouraged to vote on the product designs that their peers have submitted, thereby determining which submissions should be produced as commercial products. Indeed, according to Ogawa and Piller (2006), granting customers substantial power to participate in the selection process is an essential element of the co-creation process because it enables firms to reduce the chance of a new product launch being a commercial failure. Under this approach, firms are able to gain access to highly innovative UGC that they can then use to enhance their NPD. Moreover, by gauging customer response to each new product design they consider, firms can effectively reduce the risk of new product failures by producing only those designs that engender the greatest positive response from consumers (Ogawa and Piller 2006).

Although co-creating offers a number of potential benefits to firms, it can also present several challenges. First and foremost, firms must succeed in attracting a cadre of talented product designers to their co-creation initiatives in order to ensure a steady stream of high-quality content from users. In addition, in order to reduce the risk associated with releasing new products, firms must simultaneously recruit a community of interested consumers who will invest their time and energy to evaluate the new product designs that their peers create. New entrants into a market may find this process of fostering and maintaining a high degree of co-creator

involvement particularly daunting. More broadly, most firms will find it difficult to manage their co-creation communities as little is currently known about the factors that motivate customers to participate in the co-creation process. Moreover, creators and selectors may have very different motives for participating in co-creation programs.

Pioneering

We define *pioneering* as a process in which customers create their own new product improvements (innovation-focused activity) and share these inventions directly with their fellow users (C2C knowledge flow). As Fig. 1 shows, we conceptualize pioneering as a type of user contribution that offers consumers substantial freedom to develop new products. Unlike co-creating, however, this creative effort is primarily targeted at other users rather than at the firm.

Innovation researchers have compiled a large body of evidence over the last two decades that indicates that consumers can be quite effective at developing their own innovative new products and services. Existing research strongly suggests that much of this innovation is the result of creative activity on the part of lead users. Lead users are defined as individuals who experience specialized needs ahead of the broader market and have the necessary specialized skills, insights, and vision to create their own novel solutions to satisfy these needs (Franke and Shah, 2003; Lüthje and von Hippel, 2005). Emerging research on this topic suggests that lead user innovation is widespread and often results in the creation of highly novel new products (von Hippel, de Jong and Flowers, 2012). For example, research into lead user innovation across several diverse industries such as extreme sports, medical devices, and computer gaming Füller and Matzler, 2007; Haefliger, Jäger, and von Krogh, 2010; Lüthje, Herstatt and von Hippel, 2005) has found that lead users often manage to develop working prototypes of their inventions and share these discoveries with other users long before commercial versions of these products appear. The term we have used to describe this type of user contribution (pioneering) is appropriate, as the lack of adequate commercially produced options often spurs creative users to develop their own customized solutions to the problems they face (von Hippel, 2005).

Although research on lead users is a well-established stream within the larger innovation literature, the prototypical example of pioneering activity that we highlight here – three-dimensional (3D) printing – is truly at the cutting edge of innovation and promises to have a number of wide-reaching implications for business thought and practice. Although 3D printing has been used by commercial firms for many years, especially by those in the design and automotive industries (Malone and Lipson, 2007), it is only recently that the price of personal 3D printers has fallen to a level that allows small firms and end-users to design (and actually produce) their own physical products in their homes or offices.

In terms of its technology, 3D printing is an additive manufacturing technique that allows users to create (that is, 'print') physical objects by systematically applying thin, successive layers of a material (usually a molten plastic) (Anderson, 2012). Users typically create their designs using low-cost or open source consumer-aided design (CAD) programs (such as Tinkercad and SketchUp; Anderson 2012). These digital designs can then be distributed via the Internet to other users interested in printing their own version of a product or in tinkering with an underlying design to customize it for their own use.

One aspect of the 3D printing movement that underscores the importance of C2C knowledge flows is that fact that most users do not submit their creations to a commercial firm in the hope of having them mass-produced, but instead create these products themselves and share their designs with their fellow consumers. This characteristic differentiates pioneering activity from co-creating, which relies on C2B knowledge flows to drive innovation. In fact, a number of online websites, such as 3D Warehouse and Thingiverse, allow users to freely download other customers' novel creations and make their own designs widely available to their peers. Thingiverse now contains over 30,000 individual product designs, all of which can be easily downloaded and replicated at home by interested users with access to a 3D printer.

A good example of the innovative potential of pioneering is the case of the Robohand project. The genesis for this project occurred when South African carpenter Richard Van As accidentally lost four of his fingers while operating a circular saw. Seeking an affordable solution to his problem, Van As began to develop a working prosthetic hand that could provide him with some of the basic functionality he had lost in his accident. While searching the Internet in an effort to improve his initial prototype, Van As chanced upon a video highlighting the work of Ivan Owen, a mechanical puppeteer from the US state of Washington, who had developed a design for a puppet hand in which thin steel cables play the role of tendons and enable the metal fingers of the hand to bend (Robohand 2013). Working remotely, the two pioneers significantly improved Van As' original design, but their progress was slowed by the time involved in creating new prototypes, shipping these inventions halfway around the globe, making additional modifications, and beginning the process anew.

A significant breakthrough in the Robohand project came when Makerbot Industries offered to donate two 3D printers to support the work of these two designers. This technology fundamentally changed both the design process and the scale of the Robohand project. By creating digital designs, sharing them via the Internet, and using digital files to print prototypes on a 3D printer, processes that had previously taken weeks, such as milling finger parts, testing components, and making design changes, could now be completed in a matter of hours. As Van As noted, "[The 3D printer] dramatically increased the speed at which we could prototype and try out ideas, and gave us the ability to both hold a physical copy of the exact same thing, even though we were separated by 10,000 miles" (Rockefeller Foundation 2013). The new 3D technology also enabled Van As and Owen to expand the scope of their project dramatically. To increase children's access to this life-changing technology, Van As and Owen freely shared their design for the Robohand online. The project has since helped dozens children around the world get fitted with Robohands. The original cost of the materials required to produce the Robohand was approximately US$150, but the most advanced version of this device can now be manufactured by anyone with a 3D printer for an out-of-pocket cost of about US$5. Essentially, this pioneering solution provides users with excellent functionality, can be produced and assembled by anyone with access to a 3D printer, and costs far less than the tens of thousands of dollars often charged for commercially developed products of the same kind. Thousands of people around the world will soon have access to this user-generated technology, which promises to dramatically enhance their quality of life.

Of course, this innovative technology can be used for many types of products, some of which can be quite dangerous. For example, University of Texas law student Cody Wilson created (and fired) a fully 3D-printed prototype of a .38 caliber pistol. A radical libertarian and anarchist, Wilson was motivated to start this project in order to demonstrate how the U.S. government's attempts at gun control could be easily thwarted by the new technological possibilities offered by 3D printing. As Wilson put it, he aimed to show that, "Anywhere there's a computer and an Internet connection, there would be the promise of a gun" (Greenberg, 2013). The ability of average citizens to print lethal weapons with no metal parts and modify the design of these weapons so that they no longer resemble traditional firearms and are therefore much more difficult to detect has substantial ramifications for public safety and law enforcement.

Discussion

As highlighted above, user-generated content offers unprecedented opportunities for firms, but also poses significant new challenges. In fact, a firm's ability to respond to these challenges will probably depend both on the objective of the user contribution (that is, product promotion vs. product innovation) as well as the directionality of the information flows involved (that is, C2C vs. C2B knowledge flows). As the examples discussed above show, UGC represents an important paradigm shift in which firms must be willing to cede to customers certain powers that the firms have traditionally controlled tightly. While many of the larger implications of this transfer of power for marketing thought and practice are yet unclear, there is reason to believe that their impact may be quite profound. The final section of this paper briefly examines five UGC-related issues that are highly relevant to managers. These issues are: managing negative UGC, reassessing the promise and limitations of globalization, protecting intellectual property assets, improving sustainability, and enhancing customer value.

Managing Negative UGC

Existing marketing research has largely focused on the positive impact of UGC and, in most cases, has found that a high volume of UGC is positively related to subsequent market response (Liu 2006; Mayzlin 2006). However, much less is known about how customers respond to negative online word of mouth created by their dissatisfied peers. This question is highly relevant, as demonstrated by the related literature on service failure, which suggests that a 'double deviation' (that is, an initial service failure followed by an unsuccessful attempt at service recovery) often negatively influences the affected consumers' impressions of the company and increases the probability that these consumers will speak out against the firm (Grégoire, Tripp, and Legoux 2009). The NikeID "sweatshop" and the "United Breaks Guitars" informing campaigns were both initiated because of a firm's failure to adequately respond to a customer service issue. In each case, detailed accounts of a customer's correspondence with the involved firm were used to suggest that the firm treated the customer unfairly and was unresponsive to his pleas. To insulate themselves more effectively from the negative UGC that can result from a service failure, firms should adopt a comprehensive service approach that involves training employees to recognize and to understand the implications of negative UGC, developing monitoring systems that enable the firm to recognize when customer complaints are beginning to go 'viral' on popular social media websites, and implementing rapid response protocols to help service experts with the company to assess a problem more effectively and to develop customized solutions to deal with negative UGC.

Similarly, UGC clearly challenges many of the established precepts that guide the way that firms manage and promote their brands. For example, the concept of integrated marketing communications (IMC) dictates that firms should develop highly coordinated and consistent brand messages to communicate effectively with consumers over a variety of different media (Keller 2001; Madhavaram, Badrinarayanan and McDonald, 2005). In the new world order of UGC, however, even the largest firms (such as McDonald's, Nike, United Airlines) must recognize that they are no longer fully in control of their brands and that C2C communications now play a seminal role in determining how consumers perceive a brand.

Extant research suggests that firms can choose from several options when responding to negative UGC. These options range from direct *intervention* to remove offensive UGC to a process of *conversion*, whereby a firm establishes authentic conversations with dissatisfied consumers in the hope of collaboratively resolving their problems and transforming them into brand advocates (Noble, Noble, and Adjei,

2012). Some firms, such as Apple, employ a relatively heavy-handed intervention strategy and regularly remove UGC from their websites that portrays their brands in a negative light. Other firms, such as Symantec (a leading provider of computer security software) allow negative comments to remain on the forums they sponsor and encourage their employees to interact with dissatisfied customers to find creative solutions and new product improvements that can enhance their overall experience (Noble, Noble, and Adjei 2012).

Although such solutions may be highly effective in the context of firm-sponsored websites, questions remain regarding how a firm should respond to negative UGC when it occurs on platforms over which the firm has little or no control (such as social media websites). As the McDonald's example illustrates, negative UGC is often not directly related to a particular customer's failed service experience, but instead emerges when a controversial corporate practice (such as denying adequate worker rights, posting misleading product claims, greenwashing) incites a large number of consumers to attack a company (Lyon and Montgomery, 2013). Effective responses to such negative UGC involve more than simply resolving a single customer service issue, and satisfying a virtual mob of angry consumers can be quite difficult. In the case of the #McDStories Twitter initiative, McDonald's chose to end this campaign only hours after it started in order to minimize the future impact of the negative UGC it generated.

In this case, other options for McDonald's could have included having key individuals within McDonald's engage in thoughtful conversations with critical consumers or calling on the farmers who produce products for McDonald's to write about their own experiences and the pride they put into their work. However, both of these approaches would have exposed the company to significant additional risk. The former would have ensured a well-coordinated response, but may have been viewed as inauthentic by disgruntled consumers. Moreover, the related stream of research on brand ambushing suggests that employing a head-on response to such attacks can be counterproductive because it can merely succeed in drawing additional attention to the problem and increase the potential reach of negative UGC (Humphreys, Cornwell, McAlister, Kelly, Quinn, and Murray, 2010). Conversely, calling on involved farmers to respond to negative customer responses to the campaign may have been viewed as a more authentic response by consumers, but may also have led to a response that was fractured, inconsistent, and in some cases perhaps belligerent.

Clearly, there are no easy answers to how firms should respond to widespread expressions of negative UGC that often occur outside a firm-sponsored website. However, managers must be cognizant of the risks posed by this type of negative UGC and must develop appropriate responses to deal effectively with viral outbreaks of negative UGC. Some experts maintain that such social media-fueled episodes are typically short-lived and suggest that firms should remain largely silent and bide their time until the volume of negative UGC begins to wane (Scott and Jacka 2011). However, some firms may find that more proactive strategies are better to help them deal with the issue of negative UGC. One intriguing idea is for the company to encourage its loyal customers to speak up against the consumers who are posting negative comments about the company. Indeed, the literature on source effects (see Wilson and Sherrell's 1993 review) suggests that messages from fellow consumers might be more influential than those from the firm if these consumers are regarded as being more trustworthy than a firm's employees. Firms that are interested in employing this kind of user-generated response may need to strike a delicate balance between organizing and shaping their consumers' responses to negative UGC while not appearing contrived, manipulative, or duplicitous. For example, a firm that calls on its loyal users to draft their own original responses in defense of the company could offer suggestions to maximize the impact of these responses (for example, be brief, remain on point,

convey a positive message, don't go on the attack), while also increasing the chances that these responses will be viewed as authentic expressions of consumer sentiment rather than as a cynical, firm-orchestrated marketing ploy.

It is likely that a firm's attempt to coordinate the response of its loyal users will be leaked and made publicly available. Therefore, firms that pursue this kind of strategy must ensure that their communication with loyal users is not coercive, focuses on the meaningful relationships that consumers have with the brand, and is an authentic call for support that sets the tone for the type of online posts that users should create while also giving users the freedom to express themselves in their own unique ways. Future research should explore the conditions under which a user-generated response to negative UGC is most effective (for example, which types of controversies are best quieted by a user-generated response, and what types of brands are most likely to achieve positive results using this type of response). Moreover, future research could explore the issue of response timing to examine when a user-generated response to negative UGC is most impactful (that is, in the early stages of a crisis, when negative UGC is at its highest level, or when negative UGC is already in decline) in order to gain additional insights into the opportunities and limitations that this approach offers.

Reassessing the Promise and Limitations of Globalization

The preceding section argues that firms must find ways to effectively shield their brands from the negative UGC that often appears in the social media landscape. The rise of social media has fundamentally changed how conversations around a brand occur, and the advent of additive manufacturing (such as 3D printing) has also started to alter traditional business practices. For example, digital designs can now be sent around the world in seconds and printed in a variety of materials including plastic, resin, ceramics, and metal (Anderson 2012). As another example, Nike is currently using advanced additive manufacturing technology to produce the entire upper section of its Nike Flyknit running shoe as a single piece, which is dramatically reducing the number of components needed to manufacture the shoe and removing much of the labor cost from the production process (Koten, 2013).

One important implication of these technological advances is that reducing the number of components simplifies the assembly process and reduces the corresponding labor costs. In this way, the competitive advantage of producing shoes in low-wage markets such as Bangladesh, China, and Vietnam is greatly diminished. For example, Adidas now finds it cost-effective to produce a similar shoe, the Adidas PrimeKnit, in a factory in Germany. Firms involved in heavy industry and aviation such as Boeing and General Electric (GE) are also investing heavily in additive technology. For example, GE projects that it will spend $3.5 billion on additive manufacturing technologies in the next five years and plans to produce 100,000 parts for its engines by 2020 (Koten, 2013). These examples indicate that additive manufacturing (including 3D printing) is not a niche technology found only in domains such as university laboratories and hobbyists' garages. Additive manufacturing is now a mainstream approach employed by many of the world's most successful companies that has profound implications for global supply chains and international trade (Anderson 2012). For example, highly agile firms such as San Francisco-based DodoCase, a startup firm that manufactures high-quality protective covers for the Apple iPad, finds it so easy to rapidly develop prototypes using 3D printing technology that it does not even consider offshoring the production of its products to low-wage countries. Recognizing this trend, some innovation experts suggest that the ability of this technology to reduce product development time and get products to market more rapidly may lead an increasing number of firms to produce more goods in developed nations instead of the developing world (Fowler, 2013).

Protecting Intellectual Property Assets

Along with the ability of additive manufacturing to disrupt established paradigms that dictate where and how firms produce the goods that consumers need, one particular additive manufacturing technology (3D printing) poses substantial challenges to traditional brand management practices. As the prices for high-quality 3D printers has fallen (many are now priced below US$2,000), thousands of new enthusiasts are now purchasing their own 3D printers to use at home. Similarly, many high-quality 3D modeling programs (such as Tinkercad, Blender, and SketchUp) are now freely available online. Creating 3D models once required substantial technical expertise and familiarity with computer-assisted drawing (CAD) software. However, new applications such as 123D Catch and Trimensional have eliminated this hurdle and enable consumers to create copies of physical objects using their mobile phone cameras. Hence, technologies that were previously inaccessible to consumers because of barriers relating to price and expertise are now opening to a broader segment of users, many of whom do not possess strong technical skills. Simply stated, the potential implications of being able to produce a replica of an existing object using relatively inexpensive off-the-shelf technology are substantial.

A quick perusal of the Thingiverse website, a virtual clearing house for finished 3D models that can be freely downloaded by any user with basic computer skills, reveals the challenge that this new technology presents for the world's most successful brands, as well as for lesser-known designers. Examples of downloadable products on this site that consumers have created and shared with their peers (pioneering activity) include large-scale Lego mini-figures with Santa Claus hats, a Star Wars Death Star birdfeeder, and a 3D model of the Nike 'Swoosh' logo. In each case, consumers took intellectual property that is protected by copyright law and appropriated it to create digital files that have since been downloaded by thousands of fellow users and used to produce exact replicas of these works. Other iconic brands that have had their intellectual property copied and distributed in this way without their permission include Disney, Pokemon, and Hello Kitty.

Many firms have viewed 3D printing as a niche phenomenon with so few adherents that intervening seemed to be more trouble than it was worth. Although legal precedents in this new domain are still emerging, current laws generally allow the replication of "useful" physical objects for personal use without violating copyright laws (Gore, 2013). However, because this technology is becoming more ubiquitous and because physical objects across a wide range of product categories (such as home furnishings, toys, and art) can now be easily digitized, produced with relative ease, and freely shared with millions of consumers, many design-oriented industries may now be forced to tackle the same kinds of intellectual property rights issues that have troubled the recording industry for years. This situation is complicated by the fact that the consumers who create these original products often count themselves among a firm's most loyal and involved customers and may even regard their infringement on intellectual property rights as an expression of devotion that highlights their love for a particular brand. In such cases, firms must decide whether their best course of action is to sue these pioneers or issue cease-and-desist orders, as the negative word of mouth precipitated by such actions is likely to spread rapidly online. Moreover, existing research suggests that loyal customers who become alienated from a brand are more likely to later become its most ardent critics (Grégoire, Tripp, and Legoux, 2009), which makes direct intervention an especially risky strategy.

In essence, pioneering activity has the potential to negatively impact a brand in at least three ways. Firstly, if a firm's products can be easily downloaded and replicated by consumers, the brand faces a potential loss of revenue from cannibalized sales. Secondly, if user-generated products appear similar to the products produced by

the firm, but do not perform as well as the original products, this may create issues of customer confusion similar to those associated with counterfeit goods, and customers may be likely to blame the focal brand when they purchase a user-generated product of substandard quality. Thirdly, technically skilled pioneers are now able to produce highly creative product mash-ups that combine intellectual property assets from two separate firms and may portray a brand in an undesirable or unwanted light. For example, Thingiverse offers a Star Wars stormtrooper/Hello Kitty mash-up that combines design elements from two highly popular brand franchises. In order to develop strategies that effectively address these concerns, forward-thinking firms must recognize that the physical world has become digitized and is available for distribution and home-production, virtually at the click of a mouse.

Some firms will no doubt discount these developments and declare that they are unready to embrace UGC as part of their overall strategy. However, the sizeable shift of power from the firm to customers may mean that these companies cannot choose when and how they are first touched by UGC. In many cases, their users are likely to make this decision for them. For example, in November 2010, the X-Box Kinect gaming system was reverse-engineered and modified by a skilled hacker named Hector Martin only days after being released to the public (BBC, 2010). Confronted by this unforeseen UGC, Microsoft was forced to decide whether to pursue legal action against the consumer who had modified its product; it ultimately chose not to sue this customer. Although guidance relating to these issues is still emerging, anecdotal evidence suggests that it can be difficult to predict when user-generated violations of a firm's IP will occur and what form they might take. This uncertainty makes it likely that firms that are skilled in organizational improvisation and effectual thinking (Moorman and Miner, 1997; Read, Dew, Sarasvathy, Song, and Wiltbank, 2009) may be better equipped to quickly adapt to these new challenges as they emerge and to develop strategies to creatively protect their intellectual property interests without alienating their loyal customers. In contrast, firms that adopt a more traditional, highly regimented strategy to deal with this kind of UGC may find that their approach is too formulaic and static to adequately address the myriad IP-related issues that are likely to arise through unauthorized pioneering activity.

Improving Sustainability

The relation between UGC and sustainability is not yet clear, but it could potentially be quite positive. Consumers who have the opportunity to purchase exactly what they want may be happier and select items that make the most efficient use of resources. As 3D printing becomes a more common method of manufacturing, the shipping of products will presumably be done with greater efficiency and with a lower environmental impact. For example, as more and more companies like Nike and Adidas adopt additive manufacturing strategies and choose to move production away from low-wage countries, the resources required to ship goods from point to point should fall (Koten 2013). Moreover, the ability to replicate replacement parts on an 'as needed' basis would reduce the need to stockpile parts, reduce the need for large warehouses, increase efficiency, and improve sustainability. Finally, as Gore (2013) notes, additive manufacturing generates substantially less waste than other, more traditional manufacturing techniques. As these examples illustrate, the shift to additive manufacturing may yield sizeable energy and materials savings and lead to a greater overall 'greening' of the manufacturing process.

Customer Valuation

Understanding and properly assessing customer value is currently an important topic in marketing (Marketing Science Institute, 2012). The existing research on issues relating to customer value has focused heavily on users' roles, not as producers of a product in their own right, but rather as consumers of firm-produced products. Hence, the extant literature has defined customer lifetime value (CLV) almost solely in terms of a user's propensity to purchase products over time and to create positive buzz around products via positive word of mouth (Gupta, Lehmann, and Stuart 2004; Reinartz and Kumar 2003). This rather narrow focus reflects the belief within marketing circles that production and consumption occur in two distinct domains: one in which firms are responsible for developing products, and another in which customers are responsible for consuming products. Although many academics and managers still share this traditional perspective, the concept's basic tenets seem at odds with the increasingly blurred boundaries between the roles of consumers and producers.

As increasing numbers of users begin to play leading roles in creating their own new products and sharing these inventions with firms and with their peers, firms must develop new approaches to customer valuation that more accurately reflect the degree to which customers can positively (and negatively) affect firm value through their UGC activity. Firms must determine the extent to which users can repeatedly contribute valuable ideas, especially when engaging in pioneering and co-creating activity. The limited research on this topic suggests that the typical user innovator is able to generate (at most) one commercially attractive idea and then has significant difficulty achieving any further breakthroughs (Bayus 2013). Future research should more closely examine UGC activity to determine whether there are conditions in which consumers can contribute to firm value by serving as serial innovators. If this is the case, firms can potentially achieve a competitive advantage by developing initiatives that motivate consumers to stay with the firm and continue to contribute their insights over time (such as co-creator loyalty programs) and/or by developing strategies to identify independent pioneers and have them play a more collaborative role in the NPD process by engaging in co-creating activity.

Conclusion

A paradigm shift is now underway in marketing, whereby firms are devolving significant amounts of power away from their own centralized control towards millions of creative consumers around the world who are interested in sharing their opinions, inventions, and insights. As UGC becomes more ubiquitous, traditional theories that regard firms as the primary agents of production and promotion are giving way to a more nuanced view that recognizes the increasingly fragmented boundaries between consumers and firms as ever more users seek to become active contributors rather than passive recipients of innovation and promotion. Although each of the four types of UGC described in our typology is characterized by a distinct combination of knowledge flows, objectives, and implications, each form promises to profoundly influence the future of marketing on a global scale.

Acknowledgments

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