

Models of consumer value cocreation in health care

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Background: In recent years, consumer participation in health care has gained critical importance as health care organizations (HCOs) seek varied avenues to enhance the quality and the value of their offerings. Many large HCOs have established online health communities where health care consumers (patients) can interact with one another to share knowledge and offer emotional support in disease management and care. Importantly, the focus of consumer participation in health care has moved beyond such personal health care management as the potential for consumers to participate in innovation and value creation in varied areas of the health care industry becomes increasingly evident. Realizing such potential, however, will require HCOs to develop a better understanding of the varied types of consumer value cocreation that are enabled by new information and communication technologies such as online health communities and Web 2.0 (social media) technologies.

Purposes: This article seeks to contribute toward such an understanding by offering a concise and coherent theoretical framework to analyze consumer value cocreation in health care. We identify four alternate models of consumer value cocreation—the partnership model, the open-source model, the support-group model, and the diffusion model—and discuss their implications for HCOs.

Method: We develop our theoretical framework by drawing on theories and concepts in knowledge creation, innovation management, and online communities. A set of propositions are developed by combining theoretical insights from these areas with real-world examples of consumer value cocreation in health care.

Findings: The theoretical framework offered here informs on the potential impact of the different models of consumer value cocreation on important organizational variables such as innovation cost and time, service quality, and consumer perceptions of HCO.

Practice Implications: An understanding of the four models of consumer value cocreation can help HCOs adopt appropriate strategies and practices to embrace consumers as partners in the development and delivery of innovative health care products and services.

In recent years, consumer participation in health care has gained critical importance as health care organizations (HCOs) seek varied avenues to en-

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hance the quality and the value of their offerings (Hibbard, 2003; Ouschan, Sweeney, & Johnson, 2000; Purdy, Finkelstein, Fletcher, Christiansen, & Inui, 2000). The easy access to and the availability of medical information on health Web sites combined with the enhanced ability to interact with one another in disease-focused online health communities have empowered today's health consumers to be active participants in managing their own health care (Gustafson et al., 1999; Ouschan et al., 2000). Large HCOs such as Kaiser Permanente and Johns Hopkins have established online health communities that serve as a social support forum for their patients, that is, online forums where health care consumers (patients) could interact with others with the same or similar health conditions to obtain

help and emotional support in disease management and care (Williams & Cothrel, 2000).

Importantly, the focus of consumer participation in health care has started to move beyond such personal health care management as the potential for consumers to participate in innovation and value creation in varied areas of the health care industry becomes increasingly evident. For example, consumer participation in online health communities has involved raising funds to support research on specific diseases (Brainard, 2003; Ferguson, 2002), the sharing of innovative ideas with HCOs to improve health care services (Ouschan et al., 2000), conducting disease-focused research activities (Ferguson, 2002; Frost & Massagli, 2008; Sarasohn-Kahn, 2008), and contributing to the development and the diffusion of public policies on health care (Brainard, 2003). Although such consumer value cocreation in health care is still a relatively nascent phenomenon, it is likely to have important implications for HCOs as they continue to seek new ways to reduce health care costs and enhance health care quality.

Realizing such potential, however, will require HCOs to develop a better understanding of the varied types of consumer value cocreation possible in online health communities and the organizational mechanisms that can be deployed to embrace health care consumers as partners in the development and the delivery of innovative health care products and services. In this article, we seek to contribute toward such an understanding by offering a concise and coherent theoretical framework to analyze consumer value cocreation in health care. Specifically, we identify four alternate models of consumer value cocreation that are enabled by new information and communication technologies such as online health communities and Web 2.0 technologies¹ and discuss their implications for HCOs.

Consumer coinnovation and value cocreation through online forums have become a norm in many non-health care industries. Companies as varied as Microsoft, Nokia, Sony, IBM, and Ducati have established online product-centered customer communities that enable their customers to interact with one another and with the company and participate in different innovation and value creation activities (Fuller, Bartl, & Muhlbacher, 2006; Jeppesen & Molin, 2003; Nambisan, 2002). Recent research suggests

that such consumer participation in innovation and value creation through online communities may also have the potential to shape consumer perceptions about the company and the quality of its products and services (Nambisan & Nambisan, 2008). Insights from research in this area hold important implications for consumer value cocreation in the health care industry too.

In this article, we draw on this research and develop a two-dimensional framework that identifies four alternate models of consumer value cocreation through online health communities. Our framework is grounded in theories on knowledge creation, innovation management, and online communities. Specifically, based on the nature of knowledge activity and the nature of community governance, four models of consumer value cocreation in health care are defined: the partnership model, the open-source model, the support-group model, and the diffusion model. Drawing on a set of relevant case studies and examples, we illustrate these four models and offer propositions that capture their implications on health care service quality and other HCO-related outcome variables.

The remainder of this article is organized as follows. In the next section, we provide the theoretical background for our study. In Models of Consumer Value Cocreation in Health Care section, we present our theoretical framework and discuss the four models of consumer value cocreation in health care. We conclude by identifying the important issues for future research in this area and by discussing the key managerial and practice implications for HCOs.

Theoretical Background

Consumer Value Cocreation

The concept of cocreating value with consumers has received significant attention in recent years as companies struggle to sustain their competitive advantage in more competitive and dynamic markets (Pralhad & Ramaswamy, 2004; Thomke & von Hippel, 2002; Vargo & Lusch, 2004). Customers can play important roles in different types of innovation and value creation activities—in product ideation (i.e., generation of innovative product improvement or new product ideas), product design and development, product testing, product support, and product marketing and the diffusion of new products and services (Lengnick-Hall, 1996; Nambisan, 2002). This holds true not just in the case of products but in services as well (Bendapudi & Leone, 2003).

Companies have gained varied types of benefits by establishing online customer communities that host such consumer value cocreation activities. For example, in the case of Microsoft, it has led to the reduction of

¹Web 2.0 relates to a set of Web application development and design technologies and concepts—information sharing, interoperability, communication, and collaboration—that emphasize utilizing the Web as a user participation platform or social media (O'Reilly, 2005; Vickery & Wunsch-Vincent, 2007). The technologies that underlie Web 2.0 applications include both relatively old technologies (e.g. RSS) as well as newer technologies (e.g. Ajax, service oriented architecture, etc.). The deployment of these technologies have led to varied social networking tools and applications such as blogs, wikis, web-based communities, twitter, and hosted services.

customer support costs; in the case of Nokia, it has led to the development of several new products based on consumer-generated ideas; and in the case of Samsung, it has allowed faster diffusion of new products in the market.

More broadly, studies indicate that consumer value cocreation can lead to two broad sets of beneficial outcomes (Nambisan & Nambisan, 2008). The first set of benefits relates to the innovation itself. As the examples mentioned earlier indicate, companies can enhance the innovativeness and appeal of their products and services and reduce the time to market by partnering with customers in product development or enhancement (Fuller et al., 2006; von Hippel, 2006). The second set of benefits relates to customer relationship management. The psychological impact on customers of participating in value cocreation is equally important. In particular, it has been shown that consumer involvement in innovation and value creation can lead to enhanced customer loyalty, customer satisfaction, and customer quality perceptions (Bendapudi & Leone, 2003; Dabholkar, 1990).

The potential for deriving such critical benefits has led an increasing number of companies to incorporate consumer value cocreation as a critical element of their customer and product strategies. Prior studies in this area indicate the importance of two theoretical perspectives to understand the nature and the organization of a company's consumer value cocreation strategy—knowledge management perspective (Nonaka, 1994) and community governance perspective (Benkler, 2006). We discuss these next.

Consumer Value Cocreation as a Network Model of Knowledge Management

Two primary models of knowledge management have been identified in the literature: the repository model and the network model (Alavi, 2000; Fahey & Prusak, 1998; Hansen, Nohira, & Tierney, 1999). The former relates to static knowledge or knowledge that resides in inanimate objects (databases, reports, etc.), whereas the latter relates to knowledge that resides in human beings and is accessible through interactions. Although much of the early research on knowledge management adopted the repository model perspective and focused on managing knowledge embedded in documents, organizational routines, processes, practices, and norms (Davenport & Prusak, 1998), more recent research has adopted the network model perspective and started focusing on managing knowledge resident in individuals by deploying new technologies and creating more effective communication channels.

The network model thus emphasizes the emerging sociological perspective of knowledge management (Sawhney & Prandelli, 2000). Social relationships become the foundation for new knowledge creation. Thus, from the so-

ciological perspective, the interactions among individuals provide the context for the discovery and the transfer of knowledge from one individual to another and in the process new knowledge gradually evolves. The focus thus is on establishing varied organizational mechanisms and communication channels to facilitate rich and intense interactions among individuals.

The network model of knowledge creation and management underlies consumer value cocreation. In most instances, online customer communities serve as the social forum and host the interactions that drive new knowledge creation. However, to better understand the pattern of such knowledge interactions involved in consumer value cocreation, we need to draw on Nonaka's (1994) dynamic theory of knowledge creation. The fundamental thesis behind this theory is that new knowledge creation occurs through a continuous exchange and conversion of two types of knowledge, explicit knowledge (knowledge that can be codified) and tacit knowledge (knowledge that is experiential and is not codified).

Four possible modes of knowledge conversion were identified. Socialization—tacit-knowledge-to-tacit-knowledge conversion—requires people to interact with one another and also be involved in some form of shared experiences so that they can derive tacit knowledge from one another through learning. Combination—explicit-knowledge-to-explicit-knowledge conversion—is a process where the explicit knowledge held by different individuals is brought together and combined or integrated to create new explicit knowledge. Externalization—tacit-knowledge-to-explicit knowledge conversion—requires interactions among individuals so as to bring forth the tacit knowledge and externalize it so that other people can acquire such knowledge. Finally, internalization—explicit-knowledge-to-tacit-knowledge conversion—focuses on individuals receiving explicit knowledge and integrating it with their own particular experiences, thereby internalizing it (or converting it into tacit knowledge).

These four modes of knowledge conversion are complementary, and together, they enable new knowledge creation. As such, companies that facilitate all the four types of knowledge conversion by providing appropriate technological and organizational infrastructure are more likely to derive the benefits of such new knowledge creation (Nonaka, 1994). As we will discuss later, online customer communities that host the interactions among customers facilitate these four types of knowledge conversions and thereby drive consumer value cocreation.

Consumer Value Cocreation as a Form of Community Governance

At its core, consumer value cocreation involves organizing for the production of new ideas. As such, the philosophical roots of consumer value cocreation can be

traced to the literature on the alternate modes of governance. Economists have long maintained that there are two primary modes of producing goods: markets and hierarchies. Ronald Coase (1937), in his classic work, *The Nature of the Firm*, set out the rationale for the existence of the firm (the “hierarchy” mode of production) using the concept of *transaction costs* (i.e., costs associated with conducting a market transaction). When the transaction costs increase beyond a certain level, it becomes more profitable to conduct and coordinate the production activities inside a firm instead of using a market-based mode of production.

The successful development of Linux and other Open Source software products in the 1990s implied a third mode of governance of innovation or new knowledge creation—one that was not just a hybrid of markets and firms. Yochai Benkler (2002, 2006) called this the *commons-based peer production* model or community governance. Using the same transaction cost logic, Benkler (2002) argued that, when the “cost of organizing an activity on a peered basis is lower than the cost of using the market, and the cost of peering is lower than the cost of hierarchical organization” (p. 381), the commons-based peer model of production will emerge, as it did in the case of open-source software.

The emerging models of consumer value cocreation emphasize how companies can partner with consumers in community-based forums to facilitate commons-based peer production of new knowledge or value. As such, the insights on the governance of innovation derived from the literature mentioned earlier apply equally well to the context of consumer value cocreation in health care.

In the next section, we offer a theoretical framework that draws on the two theoretical perspectives and delineates four models of consumer value cocreation in health care and then illustrate them through specific examples.

Models of Consumer Value Cocreation in Health Care

Dimensions of Consumer Value Cocreation

Consideration of online health communities as a platform for customer engagement in innovation or value creation in health care emphasizes two fundamental dimensions: the nature of leadership of the online health community and the nature of knowledge activity facilitated by the online health community. The first dimension relates to the leadership or governance of the online community. Studies on innovation management suggest that the nature of leadership of the value cocreation platform would likely shape the nature of outcomes (Nambisan & Sawhney, 2007; Sawhney & Prandelli, 2000), and as such, this dimension assumes im-

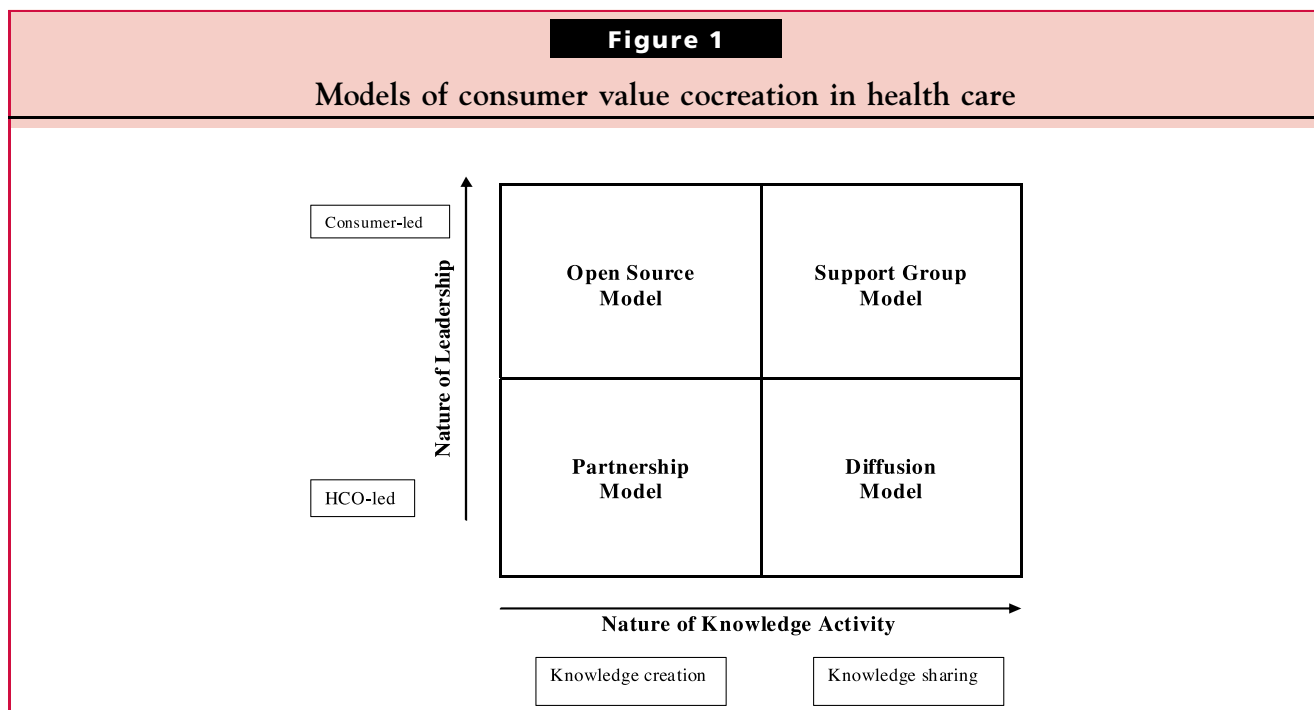
portance in the current context. Here, we will consider whether the value cocreation activities are initiated and led by the HCO (HCO led) or by the community of consumers (community led). The second dimension relates to the nature of knowledge activity in the online health community. On the basis of prior studies in knowledge management (Nonaka & Konno, 1998; Wenger, McDermott, & Snyder, 2002), we classify knowledge activities in online health communities into two broad categories: new knowledge creation (i.e., development of innovative ideas and solutions related to new or existing services or treatments) and knowledge sharing (i.e., diffusing knowledge on diseases, treatments, services, etc., among peer consumers).

On the basis of these two dimensions, we define four distinct models of consumer value cocreation in health care: the partnership model, the open-source model, the support-group model, and the diffusion model (Figure 1). Next, we define each of these models and describe their underlying characteristics through examples. Table 1 lists the key objectives and outcomes related to the four models.

Model 1: Partnership Model of Consumer Value Cocreation in Health Care

The first model of consumer value cocreation—the partnership model—implies an online health community context wherein consumers (patients) participate in HCO-initiated and HCO-led activities that are primarily focused on new knowledge creation. Thus, the context for innovation or value creation is defined and established by the HCO—for example, health care research activities, testing of new disease treatment methods, generation of ideas for improving patient services, etc.—and the consumers are assigned specific role and incorporated into that context as innovation partners. The dominant mode of knowledge creation is knowledge combination as explicit knowledge acquired from consumers (e.g., innovative ideas, evaluation of new services, etc.) is combined with other existing knowledge to develop new solutions or improve existing services.

An example of the partnership model involves the development of the cancer drug Gleevec. Initial empirical evidence showed that Gleevec was effective in reducing tumor size in patients affected by chronic myelogenous leukemia, a potentially deadly form of cancer. To get the drug approved by Food and Drug Administration (FDA), typically, it would have required several rounds of clinical trials, with lead times of several months or even years. In the case of Gleevec, however, an innovative HCO–patient partnership evolved that accelerated the laboratory-to-market process. Patients with this disease got together and formed a group called *Life Raft* and created an e-mail listserv where they could



share their knowledge about the drug, its benefits and side effects, and their personal experiences at the clinical trial. New knowledge, particularly related to the potential side effects of the drug, was created by integrating explicit experiential knowledge that emerged from the consumer interactions in the online health community. This in turn led hundreds more of patients with the disease to sign up for the clinical trials, eventually forcing the FDA to fast track the drug approval process. Although data on the financial implications of this HCO–patient partnership are not public, prior studies on clinical trials (Emanuel, Schnipper, Kamin, Levinson, & Lichter, 2003) suggest that fast tracking the clinical trial process could amount to millions of dollars in savings for the company. For patients, this partnership translated into better awareness and early availability of an important treatment option for a deadly disease. In October 2001, this group of patients, none of whom had any prior formal medical education, published a review of Gleevec’s side effects in a medical journal (Solowitch, 2001), thereby demonstrating the value of the new knowledge created.

Similar HCO–patient partnerships—facilitated by information and communication technologies—in other phases of the drug discovery and testing process have emerged in recent years, with benefits for both sets of stakeholders (Purdy et al., 2000). Acknowledging the growing significance of such value cocreation partnerships between HCOs and patients, researchers at Weill Cornell Medical College recently started a project called *IMPACT* (Improving Methods for Patient Accrual to Clinical

Trials) that is aimed at understanding the sociopsychological barriers for participation and practices that would help manage intensive risk communication strategies. Apart from participation in clinical trials, health care consumers are partnering with HCOs in other value creation activities too, including in the implementation of health information technology applications (Dare, 2008).

Clearly, consumer participation in HCO-directed innovation activities can have considerable impact on both innovation cost and time to market. As evidenced in the case of Gleevec, it can cut down product development and testing time that would potentially translate into cost savings. More importantly, the knowledge cocreated by consumers about new products (e.g., potential side effects of new drugs) provides critical insights that may enable HCOs to reorient their product development and testing efforts and to minimize the wastage of valuable research and development resources. Engaging consumers early on in the research activities can aid in dispelling doubts about certain types of drugs or treatments or even research methods (e.g., stem cell research) and enhance consumer trust and confidence in the final outcomes. Importantly, such a partnership can also contribute to shaping consumers’ attitude toward the HCO. Open calls for participation enable consumers to better understand the innovation objectives and activities of the HCO and to perceive themselves as being a part of the organization and the innovation initiative, leading to more positive attitudes toward the HCO (Purdy et al., 2000). As studies in other industries have shown, this could also translate into more positive

Table 1

Four models of consumer value cocreation in health care

	Model 1: Partnership	Model 2: Open Source	Model 3: Support Group	Model 4: Diffusion
Nature and organization of value cocreation	Value cocreation projects that are led by HCOs and involve consumers as partners in creating new (or improving existing) products and services	Value cocreation projects that are led by consumers and involve the creation of new knowledge for the benefit of the community	Value cocreation projects that are led by consumers and involve the sharing of experiential knowledge (disease or service related) among consumers	Value cocreation projects that are led by HCOs and are focused on diffusing knowledge about new products and services among consumers
Key outcomes	(a) Innovative ideas related to HCO's existing or new services or offerings (b) Reduced innovation cost and time to market for HCO (c) Positive perceptions regarding HCO	(a) Innovative ideas for new treatments, clinical research, or general services in health care (b) Better market fit of HCO's innovation agenda (c) Positive perceptions regarding HCO	(a) Address peer consumers' questions on existing products and services (b) Deployment of cost-effective patient support services by HCO (c) Identification of service improvement opportunities	(a) Faster diffusion of HCO's new products and services (b) Positive perceptions regarding HCO and its services and products
Critical success factors	(a) HCO's ability to cultivate long-term trust-based relationship with consumers (b) Open or transparent innovation systems and processes	(a) HCO's ability to provide infrastructural and other resources to support consumer-led initiatives (b) HCO's ability to play nonlead roles	(a) HCO's ability to complement peer knowledge sharing with appropriate support services	(a) HCO's ability to "listen to" and engage with consumers in product diffusion (b) Timely sharing of appropriate product or service related knowledge

Note. HCO = health care organization.

perceptions of the HCO's offerings, including its products and services (Nambisan & Watt, 2008).

Thus, we can conclude that effective deployment of the partnership model of consumer value cocreation would, on the one hand, lead to new knowledge creation that reduces HCO's innovation cost and time and on the other hand contribute to the development of more positive consumer attitudes toward the HCO.

Proposition 1: Deployment of the partnership model of consumer value cocreation will be (a) negatively associated with HCO's innovation cost and time to market and (b) positively associated with consumer perceptions regarding the HCO.

Model 2: Open-Source Model of Consumer Value Cocreation in Health Care

The second model of consumer value cocreation—the open-source model—involves consumer-community-led

activities that are focused on new knowledge creation. An increasing number of examples in health care indicate that online health communities can serve as a platform for consumers to create new knowledge in a collaborative manner, that is, become consumer-led "centers of research."

This model is similar to that of open-source software development communities in two key respects. First, the community members together define the objectives of the value creation activities and bear shared responsibility for coordinating or providing leadership for those activities. Second, the community members share in the benefits associated with the activities, that is, the ownership of the outcomes lies with the community and not with any one company or member (Benkler, 2006).

Consider the following example of the open-source model of consumer value cocreation. Consumers with rare diseases such as 18 q- (a partial deletion of the 18th chromosome) and pseudoxanthoma elasticum (a

rare genetic disorder) discovered that there was very limited focus on their diseases in the scientific community, partly due to the small number of affected patients (Solowitch, 2001). In the late 1990s and the early 2000s, some of these consumers came together to organize research-focused online health communities, that is, online communities focused on researching specific diseases. These communities allowed them to not only share knowledge and experiences related to the disease with one another but also play the role of “citizen scientist” and to collaborate in finding new cures. Their activities involved establishing blood and tissue banks, building vast genetic databases, raising millions of dollars for research, and getting researchers in universities and other traditional research centers to collaborate with them on specific research initiatives. The early success of some of these activities implies that consumers (patients) “often know more about the diseases than health care providers” (Solowitch, 2001, p. 2), and the collective pooling of resources and information by online consumer groups focused on advancing medical research on particular diseases hold particular promise (Ferguson, 2002).

Consider another example. Members in the Patients LikeMe community (an online health community) have been conducting “clinical trials” related to the use of lithium in amyotrophic lateral sclerosis (ALS) treatment (Frost & Massagli, 2008). Although there are issues related to the credibility of such patient-led research, increasingly, such efforts have started complementing more formal health care research. In the PatientsLikeMe community, patients share and report their own personal data on lithium usage, and the body of evidence thus developed has helped in advancing ongoing clinical research in this area. In addition to the lithium treatment of ALS, members in the PatientsLikeMe community have been conducting similar “clinical trials” on other treatments too, including those related to low-dose naltrexone, stem cell transplants in ALS, 4-aminopyridine, and Botox injections to manage excess saliva.

In most such situations, new knowledge creation tends to involve both knowledge externalization as consumers convert their tacit experiential knowledge into explicit knowledge as well as knowledge combination as explicit knowledge held by different patients is integrated to create new avenues for research. HCOs can play a positive role in promoting such consumer-led initiatives. Specifically, they can become innovation champions by offering financial support, sharing knowledge, or even contributing some of their internal resources (e.g., employee time). Such partnership with consumer-led groups helps companies to demonstrate that they are “good citizens” of the health care industry and to create goodwill and further enhance their image in the community. Studies on similar roles played by

companies in the open-source software context (e.g., IBM’s partnership with the Linux community) shows that such outcomes eventually lead to more positive perceptions of the company among consumers that could in turn enhance customer loyalty and satisfaction (Nambisan & Sawhney, 2007). IBM’s example also indicates another positive outcome. Through its involvement with the Linux community, IBM developed a better understanding of the broader implications of open-source software, and this helped the company to make important and timely changes in its own innovation portfolio (Nambisan & Sawhney, 2007). In the health care context, participation in consumer-led knowledge creation activities could enable HCOs to keep abreast of important new trends in disease treatments and health care services or practices. Early information on such trends may help the HCO in reorienting its innovation agenda to better fit the changing market conditions and thereby enhance the success of all of its future innovation initiatives. Thus, based on the discussion earlier, we offer the following proposition.

Proposition 2: HCO’s involvement in the open-source model of consumer value cocreation will be positively associated (a) with the overall market fit of the HCO’s innovation agenda and (b) with consumer perceptions regarding the HCO.

Model 3: Support-Group Model of Consumer Value Cocreation in Health Care

The third model of consumer value cocreation—the support-group model—emphasizes a consumer-community-led forum for sharing consumers’ knowledge and experiences related to a disease or treatment, with the objective of providing support to peer consumers. Typically, the technological infrastructure of the online forum may be owned and operated by third-party agencies (and in some cases by HCOs); however, they would still exercise limited or no influence on the forum membership or on the nature of interactions.

Examples of such support forums are evident in varied contexts. Some of the support forums are run by non-HCOs—for example, the Yahoo or USENET forums on health. Others are operated by independent health care information organizations (e.g., WebMD) and by university-affiliated health care research centers (Comprehensive Health Enhancement Support System (CHESS) forum at the University of Wisconsin-Madison). A few others are affiliated with one or more HCOs—for example, the online forum run by Johns Hopkins’ pathology department, the online diabetes forum run by Joslin Diabetes Center affiliated with Harvard Medical School, and the online forum run by Mayo clinic, Cleveland clinic, and Kaiser Permanente. In all of these contexts, the

objective of the interactions is to offer support to peer consumers or patients.

Three types of support can be identified: informational support (i.e., enhancing the awareness of patients regarding specific diseases or new treatments), emotional support (i.e., providing empathy or understanding with regard to any particular disease), and social support (i.e., providing a social network for patients to establish relationship with one another and to feel a sense of belongingness; Gustafson, et al., 1999; Shaw, McTavish, Hawkins, Gustafson, & Pingree, 2000). By combining the online forums with varied Web 2.0 tools and resources (such as blogs, wikis, etc.) HCOs can provide consumers with additional benefits. For example, in the PatientsLikeMe community, personal health data are acquired from community members and analyzed using such technology-based tools. The tools use visual graphics to explain the implications of the analysis findings to members. The tools also enable members to identify other members with similar medical situations and to connect with them (Frost & Massagli, 2008).

Although HCOs may not have a leadership role in these online support groups, they can promote such initiatives through various means—by offering access to health databases, by offering complementary services, and by providing superior technological infrastructure support. The primary outcome of such help from HCOs would be additional avenues for patients to derive disease-related information and support. However, HCOs also gain from these consumer-led initiatives. First, HCOs can complement their traditional patient support services (e.g., 24-hour nurse hotline) with such online forums. This could enable HCOs to focus their resources on answering the more complex and knowledge-intensive patient queries and to leverage patient–patient interactions in the online forums for providing answers to more common types of patient queries. Thus, such an approach may enable HCOs to enhance the cost-effectiveness of their overall patient support services. Second, as noted previously, patients often have equivalent or more knowledge about their disease compared with a physician or health care practitioner. By studying the patient interactions in the online support groups, HCOs could gain critical insights on new avenues for disease treatment, opportunities for developing new types of patient services, or ideas for improving existing patient services. Thus, based on the discussion earlier, we offer the following proposition.

Proposition 3: HCO's involvement in the support-group model of consumer value cocreation will be positively associated (a) with the deployment of more cost-effective patient support practices and (b) with the identification of opportunities for service innovation.

Model 4: Diffusion Model of Consumer Value Cocreation

The fourth model of consumer value co-creation—the diffusion model—involves knowledge-sharing activities that are initiated and led by HCOs. Unlike in the case of the support-group model, here the online consumer discussions would be centered on a particular product or service offered by the HCO rather than on a more general topic (say, a disease). The key objective is to enable consumers to discuss and provide feedback regarding the company's new offerings and to share information about new services with peer consumers—in short, to facilitate the diffusion of knowledge related to HCO's existing and new products and services.

A good illustration of this model is offered by the launch of GlaxoSmithKline (GSK) of its new weight loss drug, Alli. Alli is an over-the-counter, FDA-approved drug which combines a clinically proven product with an individualized treatment plan. GSK launched its new drug by inviting 400 overweight men and women to use the drug and to share their drug-related experiences by participating in its online community. Such consumer interactions in the online community enabled them to share their experiences with the company and with the peer consumers. GSK used such consumer feedback to improve the sales and marketing practices associated with the drug—for example, to design the educational materials that accompany the drug, to decide the distribution channels for the drug, etc. Because creating an individualized or customized treatment plan was crucial for the success of this drug, the online community interactions become the foundation for sharing such knowledge and for enabling new consumers to manage the learning curve associated with the drug. Through its support of this online community, GSK was also able to enhance consumer satisfaction with the new treatment and to create positive perceptions regarding the quality of the new product. Further, it also helped the company to generate word-of-mouth referrals on the drug, thereby accelerating the diffusion of the new product.

Other HCOs have also started establishing similar online communities to support different aspects of their product or service launch and marketing activities. For example, Kaiser Permanente employs its online forum to facilitate rapid diffusion of knowledge among members about its new health care services and programs. The company has succeeded in seamless integration of the online forum with its other services and internal resources, thereby enhancing the overall service quality (Williams & Cothrel, 2000).

There are two key factors that shape the success of the diffusion model of consumer value cocreation. The first factor relates to the ability of the company to “listen to” the customers' experiences (Urban & Houser,

2004) and to derive critical information from their interactions that can then be incorporated to enhance or ease product or service diffusion. The second factor relates to the company's ability to engage with the customers in the interactions and its willingness to share product-related or service-related information with them. Such information would complement customers' experiential knowledge and enable them to better interpret the product's or service's benefits or attributes. Bringing such transparency is thus important for the interactions in the online community to be beneficial to consumers and to enhance their quality perceptions. Better engagement of customers in value cocreation in the diffusion model can thus lead to both faster adoption of new products and services and to more favorable perceptions of the HCO's service quality. Unlike Model 3, the diffusion model provides the HCO with more opportunities to actually engage with the customers and to derive immediate benefits. Thus, we offer the following proposition:

Proposition 4: Deployment of the diffusion model of consumer value cocreation will be positively associated (a) with the rate of product or service diffusion and (b) with consumer perceptions regarding the HCO's product or service quality.

Discussion and Conclusions

As HCOs face greater competitive pressures, they will need to address three key challenges: providing innovative value-added services at lower costs, improving consumers' perceptions regarding service quality, and enhancing the overall positive image of the HCO. Embracing customers as partners in the creation and the delivery of new health care services become an important strategic avenue to address the challenges mentioned earlier. The four models of consumer value cocreation described here indicate the different approaches that HCOs can adopt to pursue such a strategy and hold important implications for both future research and practice.

Research Implications

The first research implication relates to the impact of consumer value cocreation on health care outcomes. Recent research in the service sector has shown that consumer value cocreation in services can affect and shape consumers' perceptions regarding the services and the service providers (Bendapudi & Leone, 2003; Goodman, Fichman, Lerch, & Snyder, 1995). In this article, we offered four propositions that connect the different models of value cocreation to consumer perceptions of the HCO and its offerings and to HCO's innovation performance (e.g., innovation cost, time to market, etc.). Future research that empirically validates

these propositions could provide valuable insights on the relative impact of the four models on these different outcomes. Such insights could be useful for guiding HCO's investments and practices related to supporting consumer value cocreation.

The second research implication relates to the role of new social media technologies—collectively referred to as *Web 2.0*—in facilitating consumer participation in health care (Sarasohn-Kahn, 2008). There is a critical need for research on how HCOs could deploy such social media technologies to improve health care services delivery. The models proposed here could serve as a foundational framework to guide such research and bring coherence to findings in diverse health care contexts.

The third research implication relates to the role of consumers within the context of the modern HCO. With HCOs trying to become more open and transparent (Feder, 2008) and health care management processes and activities crossing organizational boundaries, it will be imperative that we develop a deeper understanding of the different roles that today's health care consumers could assume in such a context. The consumer value cocreation framework offered here forms an important step in that direction. Future research may focus on studying the different value cocreation roles in more detail and examining the specific ways in which HCOs could incorporate those roles within their strategies and practices related to innovation and customer relationship management.

Practice Implications

From a more practical perspective, the framework implies how online health communities can serve as an important complementary resource for patients. The rapidly increasing cost of physicians and other health care experts has led to significant deficiencies in providing patients with chronic illness with the necessary level of support. Although it is evident that online health communities can be utilized to provide consumers with the needed social or emotional support, the examples discussed here imply a more powerful role for online communities. It can empower consumers to create collective knowledge about their diseases and treatments that could not only help them to deal with their particular health situations more effectively but also enable them to evaluate and identify those services that deliver value. As our framework indicates, HCOs that offer online health communities as part of their service offerings could potentially enhance the overall quality and value of their service portfolio in a cost-effective manner.

On the basis of our study of the different cases, we can identify three broad issues that HCOs would need to address to ensure the success of their consumer value cocreation initiatives. First, such initiatives are predicated on the notion that customers (patients) are

knowledgeable about their own disease or health care condition and that this knowledge can be usefully tapped in the innovation process. In other words, consumers form an important source of innovation (von Hippel, 1988), and as such, HCOs need to embrace them as partners in the innovation process. This might be a radical departure for many HCOs that are used to viewing their customers solely as “receivers” and not as “producers” of their offerings. As such, customer relationship management practices that embed patients as true partners in the innovation and value creation process will be of utmost importance. Second, for the initiatives to be sustainable, consumers have to perceive the benefits that they could potentially derive from their participation in the process. Thus, the HCO would need to state upfront the potential outcomes from the innovation process and clarify how those benefits (or rewards) would be shared with the patients who contribute to the process. Third, HCOs would also need to provide leadership in the initiatives without seeming to be too controlling. Clearly, in the open-source and the support-group models, HCOs play largely championing roles. However, even in the other two models—the partnership model and the diffusion model—where they provide more direct leadership, the HCOs objective should not be to direct consumer activities but instead to facilitate the engagement of patients as “partial employees” of the organization (Mills & Morris, 1986) and to foster their continued participation by establishing the right governance structure and the appropriate support infrastructure.

Finally, the framework also implies the need for HCOs to adopt a holistic perspective in deploying their online and offline patient relationship and support strategies. It is evident that patients’ offline interactions and experiences (say, with their physicians or nurses) will complement their interactions and experiences in the online health community. For example, patients may become aware of new treatments from their interactions in the online community and then bring such information to their offline interactions with physicians to gain more clarity. Similarly, patients may “consult” with peer patients on treatments recommended by their physicians. Strategies and practices that leverage such potential synergies between offline health care facilities and online forums will thus be very beneficial to both health care consumers and HCOs.

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