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From a competing to a collaborative crowd: Tactics for co-creation with innovative bottom-up communities☆

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INTRODUCTION

Co-creation — a collaboration between producers and users initiated by a firm to generate value for and with customers — has become a prominent feature in practice and in academic discussions. Co-creation enables companies to involve their users in innovation processes, develop valuable solutions for free or at a very low cost, align their strategies with customers' needs, and thus become more competitive. With this principle in mind, a variety of companies ranging from big players, such as IBM, Procter & Gamble, Amazon, Dell, and Walt Disney, to small firms invest in co-creation with their customers, guide innovative user communities (IUCs), and develop the capabilities necessary to support these activities. However, a closer look at the co-creation boom reveals that one important aspect has been neglected — collaboration with non-customer groups, such as innovative bottom-up communities.

Innovative bottom-up communities (IBCs) are those communities that develop innovative alternatives to products and services offered by companies, which, for some reasons (e.g., a lack of supporting infrastructure, high costs, or remote locations), are not affordable for certain groups of people or do not respond to their needs. Therefore, in contrast to UICs in which customers are engaged in innovation co-creation focused on existing company products, IBCs are composed of non-customers who create innovative alternatives to a company's products. These bottom-up initiatives take place around the world, and they often succeed in areas where traditional companies fail or find their efforts to be unprofitable. In addition, they often go beyond specific company target groups.

In recent years, many IBCs have focused on the establishment of Internet infrastructure. In Canada, Belarus, Germany, Greece, Spain, the UK, and the US, bottom-up communities of residents have successfully developed high-quality Internet infrastructures that provide Internet access at lower prices than those offered by commercial Internet service providers (ISPs) (see Table 1). Consider, for example, "Guifi-net," an Internet IBC that connects 15,000 homes in Spain, or "B4RN," a broadband community initiative in rural areas of the UK, which was recently discussed by the BBC (http://www.bbc.co.uk/news/technology-21442348). Other examples of IBCs include Maker movements to offer alternatives to manufactured products, community television, community radios, and community gardens taking place worldwide; repair cafes in Belgium and the Netherlands; the Silicon Valley's Homebrew Computer Club; and numerous social-network and citizen hacker initiatives (see Table 1). For example, in the Belgian and Dutch repair cafes, communities of volunteers repair products that otherwise would be costly to mend or thrown away, and they do so for free. The logics behind the initiative are to reduce waste, to maintain the knowledge of retired equipment experts, to practice repairing as hobby, and to strengthen the social cohesion of local residents.

Some of these developments have been discovered by companies. In fact, a mutual cooperation agreement between an IBC and a firm can significantly increase the profitability and competitiveness of the firm, while also leveraging and supporting IBC innovations. For example, Steve Jobs and Steve Wozniak used the Silicon Valley's Homebrew Computer Club (see Table 1) as a testing arena for their Apple innovations. Nevertheless, the majority of IBCs are still waiting for their co-creation potential to be discovered.

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Table 1 Examples of innovation bottom-up communities.

Bottom-up initiatives	Country	Short description
Internet-related IBCs		
Homenets	Belarus	Communities of neighboring residents that developed wired and wireless mesh-based local Internet infrastructures, and linked them with Internet access provided by ISPs. Included more than 90% of all home computers in Minsk
Numerous grassroots initiatives	Canada	Bottom-up broadband community initiatives building communications in remote and rural areas. http://firstmile.ca/, http://knet.ca
BBNC (Citizens' Broadband Network Company)	Germany	Initiative in an isolated German village, Löwensted, aimed at dealing with slow, low-quality Internet access provided by companies. Citizens co-funded the development of high-speed fiber-optic. http://www.thelocal.de/20140601/german-villagers-build-own-broadband-network
A.W.M.N. (Athens Wireless Metropolitan Network)	Greece	A bottom-up broadband initiative started in 2002 by residents frustrated by Athen's slow broadband. The network offers high-speed Internet and incorporates more than 2500 users throughout the metropolitan area and neighboring islands. https://www.awmn.net
Wireless Leiden	Netherlands	Grassroots Internet community in the city of Leiden, the Netherlands.
Guifi-net	Spain	Grassroots telecommunications network built on an open and free peer-to-peer agreement. Anyone can join the network by providing his connection point, thereby extending the network and connectivity to all. More than 15,000 nodes connected. guifi.net
B4RN	UK	Community-owned broadband initiative in the northern UK. http://b4rn.org.uk/
Personal Telco	US	Grassroots Internet community located in Portland, Oregon, and created in 2000. Uses Wi-Fi to transform residential houses and apartments into wireless hotspots (or ''nodes''). https://personaltelco.net/wiki
Examples of non-Internet IBCs		
Silicon Valley's Homebrew Computer Club	US	*Alternative to a costly IBM PC* Community of hobbyists trading tips, hacks, and parts for building do-it-yourself (DIY) computers on the basis of MIT Altair and its DIY kit launched in 1975. Computers were based on the same micro-processor as the IBM PC and cost less than USD 400 (IBM's minimum price was USD 2400 and its maximum price was USD 10,000 with all add-ons).
Maker Movement	Worldwide	*Alternatives to company manufacturing* Building on the progress, variety, and decreasing cost of technologies available at home, people organize in communities to build something rather than buy it. The following areas are particularly vibrant: - *Technology and digital manufacturing*: e.g., 3D printers, web-design tools, electronics kits, laser cuts, open-source tools, sewing machines, welding equipment, robots, drones, microprocessors; - *crafts*: e.g., food crafts, gardening, kneeling, woodworking, fine arts, jewelry making, gifts; - *men's, women's, children's, and pet's clothes and accessories;- products*: e.g., food products, sports, musical instruments, media; - *furniture and home design*. The movement has a specialized magazine, *Make* (http://www.makezine.com/), and numerous Makerspaces that focus on DIY and do-it-with-others (DIWO) projects
Dodgeball	US	*A personalized local-search advisor* An early city-search social networking service co-founded by Dennis Crowley and Alex Rainert, and supported by tech-savvy user communities in New York, Seattle, Chicago, San Francisco, Los Angeles, and 17 other US cities, who developed the city's public Wi-Fi access before municipalities joined. The service allowed community members to text their locations and be notified notifies about friends' locations, friends' friends locations, and interesting venues nearby. Acquired by Google in 2005 and discontinued in 2009

Table 1 (*Continued*)

	Examples of non-Internet IBCs	
Community Energy Initiatives	UK	*Alternative to business- and government-driven energy solutions* *Dyfi Solar Club* — a community-based project making solar energy technology cheaper and more accessible; *South Wheatley Environmental Trust* — a community-owned project generating energy from a 15 kW wind turbine since 2007, selling it to the grid, and investing the surplus in local household energy-efficiency projects; *South Wheatley Environmental Trust* — a community generating energy and revenue from a wind turbine, and investing in local household and school education projects (http://grassrootsinnovations.files.wordpress.com/2014/05/1-s2-0-s2210422414000227-main.pdf)
Repair Cafes	Netherlands Belgium	*Alternative to for-profit repair firms* Meeting points organized by and for local residents to repair broken devices and other items by volunteers at no cost. Aim is to reduce waste, maintain repair knowledge, and strengthen social cohesion. (www.en.wikipedia.org/wiki/Repair_Café)
Community Gardens	Worldwide	*Alternative to privately owned gardens and agricultural firms* Collectively gardened land of which members share ownership, labor, and tools; members might grow organic food for themselves, donate their crops to low-income families, or participate in greening projects or in the beautification of urban areas. Examples include *Green Guerillas*, the oldest community-garden association in New York, which unites more than 600 community gardens in the city (http://www.greenguerillas.org/); *Culpeper Community Garden* in London (http://www.culpeper.org.uk/); *Ringwood Community Garden* in Australia (http://ringwoodcommunitygarden.org.au); *Jardin potager des Oiseaux* in Paris (http://potagerdesoiseaux.blogspot.fr/); and numerous urban gardens in Barcelona (http://urbangardensbarcelona.wordpress.com)
Community television	Worldwide	*Alternative to commercial and public TV* Communities generate content that is interesting for local residents. Examples include *Community Channel* in the UK (http://www.communitychannel.org), *Cork Community TV* in Ireland (http://www.corkcommunitytv.ie), and *Catia TVe* in Venezuela (http://www.catiatve.org.ve)
Community Telehealth	Canada	*Alternative to commercial and public health services* Community-driven and led health services (KOTM) providing teleconference medical visits to remote areas and educational programs. (http://telemedicine.knet.ca)
Community radios	Worldwide	*Alternative to commercial and public radio* Broadcast content overlooked by traditional radios but relevant to some local groups. In Australia, 0.1% of the population is engaged in volunteering for community radio, which amounts to AUD 145 million in unpaid work each year. Examples include *PBA—FM* (http://www.users.on.net/~pbafm2/) in Australia; *Breeze FM*, which educates communities on alternatives to charcoal use in South Africa; *Resonance FM* (http://resonancefm.com/), which specializes in the arts; and *Forest of Dean Radio* (http://www.fodradio.f9.co.uk/forestmedia/), which specializes in agriculture in the UK; *CFWE-FM Radio* (http://www.ammsa.com/content/cfwe-fm-radio), which is run by aboriginal communities in Canada.
Botanicalls	US	*Innovation addressing an ecological challenge* Launched in 2006 by community activists to care for houseplants producing oxygen in city apartments. Moisture sensors wedged among the plant's roots are connected to the Internet in the cloud, Twitter, and the phone system. Plants "cry for help" when dryness is detected and express gratitude when watered. (https://twitter.com/botanicalls)

argues that co-creation with IBCs provides complementary benefits for both sides. While the IBCs provide creativity, new ideas, and innovative ways of thinking about problems and solutions, companies provide excellence in engineering as well as access to relevant resources. Townsend suggests that in order to move toward technologies that are big, profitable, and reflect open and democratic values and cultures, conversations and collaborations between the industry and the IBCs are needed.

Surprisingly, however, despite the ongoing discussion of the value of co-creation, the potential of co-creation with ''atypical'' actors has largely been ignored. This paper represents a first step toward improving our understanding of how companies can co-create with their ''competing'' non-customers, such as IBCs. To do so, this paper first discusses the potential of co-creation with IBCs and what many companies miss about this. Second, the paper presents a framework for co-creation with IBCs, which highlights the main challenges of co-creation and suggests tactics for addressing those challenges. It also offers a discussion of how this type of co-creation is similar to and different from co-creation with customers. Third, the paper illustrates the challenges and lessons learned using an extreme case of co-creation between IBCs and ISPs that took place in Belarus and lasted for more than ten years.

THE POTENTIAL OF BOTTOM-UPS

The potential of IBCs is often neglected by companies, as they tend to focus on customers rather than non-customers. However, if companies make an effort to understand the logic behind bottom-up initiatives, both sides might enjoy enormous benefits. In particular, co-creation with IBCs has the potential to boost and multiply innovations through the complementary resources of both parties (e.g., new ideas and collective intelligence from bottom-ups, and resources and engineering from companies). It can also align the corporate and public interests, and assist in the development of complementary alternative solutions that may attract non-customers. Moreover, through such activities, companies and IBCs may co-produce lacking infrastructure, test innovations within community infrastructures, and leverage community innovations to a company scale.

First, IBCs have significant potential to boost, co-produce, and complement company-based innovation. For example, IBCs have significantly contributed to Apple's success several times. In Apple's early years, Steve Jobs and Steve Wozniak collaborated with the Silicon Valley Homebrew Computer club, an IBC that aimed at providing alternatives to the costly IBM PC (see Table 1), in the testing and development of the Apple I and Apple II computers. These products became the first highly successful, mass-produced microcomputers.

Second, IBCs are often mission driven. They seek to provide solutions in areas that are not addressed by conventional organizations or solutions that are more socially inclusive than those offered by traditional companies. Their solutions are often of equal quality and lower in price. These initiatives typically emerge in regions where gaining access to the focal product is difficult (e.g., remote areas) or unaffordable (e.g., low quality or high prices). For example, Canadian residents have created community-wide wireless infrastructures to provide Internet access in remote areas where traditional companies are not found. In the UK, a group of residents in the small town of Arkholme successfully launched a B4RN project (http://b4rn.org.uk/) for high-speed, inter-city, community-owned broadband access that offers 500 Mbps instead of the average 10 Mbps offered by traditional telecommunication companies. As Drayton and Budinich argue, collaboration between for-profit businesses and mission-driven organizations will be key for global change and the most important form of collaboration in the 21st century.

Evidence from practice illustrates that companies that find a way to align IBCs' socially inclusive and mission-driven initiatives with commercial activities gain significant advantages over their competitors. This is, for example, how a Kenyan M-PESA mobile money-transfer system managed to become the world's most successful mobile microfinance platform. In 2002, researchers from the UK's Department of International Development noticed that many Africans in Uganda, Botswana, and Ghana had developed bottom-up practices of using airtime (pre-paid cell-phone credits) for money transfers (transferring or reselling airtime to relatives and friends). Safaricom, a cell-phone company in Kenya, was the first to capitalize on this idea by launching the M-PESA mobile money-transfer system, which allows individuals to deposit, send, and withdraw funds using their cell phones. The system facilitates the safe storage and transfer of money in geographically remote areas in which infrastructure is underdeveloped and a significant proportion of the population does not have bank accounts (http://www.vodafone.com/content/index/about/about-us/money_transfer.html). Moreover, M-PESA allows immigrant workers to send money to their families or pay bills from their mobile phones rather than risk traveling to an often distant office with cash and waiting in long lines. By 2012, M-Pesa has become the most successful mobile financial service in the developing world (17 million M-PESA accounts in Kenya alone).

Third, the evidence illustrates that even understanding and building on a few of the principles specific to an IBCs' functioning — such as co-creating part of the infrastructure or sharing resources and infrastructures with community members — boosts company effectiveness and competitiveness. For example, individuals have long privately rented and co-shared their apartments and cars for relatively low prices, thereby providing an alternative to hotels and car-rental companies. Several recently emerged companies, including Airbnb (www.airbnb.com), Relay Rides (www.relayrides.com), Uber (www.uber.com), and BlaBla Car (http://www.covoiturage.fr), enjoy success because they grasped the logics of peer-to-peer community sharing of resources and provided an Internet platform for doing so. Similarly, services like Etsy (www.etsy.com) celebrate the IBC principles of creating and innovating by offering an analogue to E-Bay for crafters to sell their products to users worldwide.

Some IBCs organize for visibility and communication through specialized websites that post news about their initiatives (i.e., http://grassrootsinnovations.org/), or through community-based digital workshops where people come together to learn about and discuss initiatives (e.g., Makerspaces, http://makerspace.com/; FabLabs, http://wiki.fablab.is/wiki/Portal:Labs/; and Hackerspaces, http://hackerspaces.org/wiki/). These websites might also

link communities to companies, and provide the latter with an understanding of the guiding principles and logics of different IBCs. Some initiatives, such as Kickstarter (www.kickstarter.com) and Indiegogo (www.indiegogo.com), serve as crowdfunding platforms to activate support for bottom-up projects in a variety of areas, such as film, music, shows, technology, education, journalism, video games, food, crafts, and fashion.

Some companies and entrepreneurs recognize that bottom-up innovations and related principles have the potential to redefine the ways in which business is done. Consider, for example, Lincoln Motors' (http://www.lincoln.com) partnership with CustomMade (http://www.custommade.com), which aims to allow for creation of custom artifacts for new Lincoln owners. Similarly, Comcast (http://www.comcast.com) invested USD 1m in Maker's Row (http://makersrow.com), while Inventables (www.inventables.com), an online hardware store, sells equipment to designers active in the Maker Movement. However, the majority of businesses still need to discover the IBCs' potential and ways to co-create with them.

Surprisingly, governments and NGOs, especially those in developing countries, have been faster than companies to discover the potential inherent in networking with IBCs. Thus, the Social Technologies Network, which was organized in Brazil in 2000, links communities, academics, unions, government representatives, funding agencies, and NGOs. It not only provides technology to communities, but also scales up and manufactures technologies developed in communities. Moreover, since 2001, the Banco do Brasil Foundation has offered an annual award for social-technology initiatives. As a result, it has access to a huge bank of grassroots innovations developed in the areas of agro-ecological production, water recollection, education, and renewable energy. Similarly, India's Honey Bee Network, an informal network of scientists, academics, government representatives, and interested others, has worked since 1989 to help scout out and document local innovations. It has assisted with prototypes, incubation, and seed funding. Thus far, the network has mobilized more than 170,000 ideas, innovations, and traditional knowledge practices from 545 Indian districts. In the US, President Obama hosted the first White House Maker Faire on June 18, 2014, in recognition of the potential and importance of the Maker Movement for the future of innovation.

KEY POINTS ABOUT IBCS FOR THE CORPORATE WORLD

Despite its great potential, co-creation with IBCs is a complex process associated with multiple pitfalls and incorrect assumptions. Notably, when companies encounter IBC initiatives, they often adopt one of the three unsuccessful approaches.

First, many companies tend to simply ignore IBCs, which they associated with high costs and a lack of profitability. For example, in remote regions of Canada, residents have created community wireless infrastructures to provide Internet access in areas where traditional companies have found a presence to be unprofitable.

Second, companies often refuse to attempt to understand IBCs. Collaboration with IBC initiatives requires an understanding of their driving logics, which might differ significantly from those of the firm, as they are inspired by mission-driven motivations, horizontal organizational structures, collective decision-making processes, entrepreneurial culture, and community-based resource-allocation processes. For example, in 2005, Google acquired Dodgeball, a city-search social networking service (a precursor of today's local search and discovery services, such as Foursquare and Google Latitude) that was co-founded by Dennis Crowley and Alex Rainert. Dodgeball was supported by citizen hackers and tech-savvy user communities from New York, Seattle, Chicago, San Francisco, Los Angeles, and 17 other US cities (see Table 1). However, the driving logics of the two actors were vastly different. In 2009, Dodgeball was shut down after four years of struggling to fit into Google's structure and finance allocation schemas. The future of the service within Google was never truly clarified. Dennis Crowley was let go from the company in 2007 on less than pleasant terms. He then launched Foursquare, a mobile service that provides a personalized local-search experience to consumers. By October 2014, Foursquare had 45 million registered users worldwide.

Third, even when companies acknowledge bottom-up initiatives, they often perceive them as rivals. Hacker innovations, open-source software, and communities delivering affordable and even cheaper services are rarely warmly greeted by conventional organizations, and for good reason. Consider, for example, how Wikipedia has taken significant market share from the iconic Encyclopedia Britannica. This typical company attitude is based on the assumption that shared creation, production, distribution, trade, and consumption might negatively affect products and services offered by traditional organizations. For instance, those using sharing-economy businesses, such as Airbnb (www.airbnb.com) and Relay Rides (relayrides.com), rent their flats and cars on a peer-to-peer basis rather than booking with hotels or car-rental firms. As a result, they try to compete and even lobby against IBC initiatives when possible. In March 2013, several leading US telecommunication companies in Georgia supported the introduction of an American Legislative Exchange Council (ALEC) bill that aimed to restrict local community and municipal Internet initiatives offering cheap Internet access. Similar bills were subsequently introduced in 19 other US states. While this option might help an organization beat the competition, it is costly (e.g., lobbying and court fees) and destroys the potential benefits of co-creation.

How, then, can companies successfully co-create with IBCs?

THE FRAMEWORK AND TACTICS OF CO-CREATION WITH IBCS

Gloor and Cooper propose three main principles for doing business with the "swarm," which is the term they use to refer to the collective intelligence of a crowd. These principles are: (1) gain power by giving it away, (2) share with the swarm, and (3) concentrate on the swarm rather than on making money. However, what collaborative tactics can be used if a crowd is organized in a community, like an IBC, and develops innovative alternatives to the products and services offered by traditional companies? In response to this question, Table 2 provides a framework of the main challenges and lessons of co-creating with IBCs, and the differences between this type of co-creation and co-creation with customers.

Table 2 Framework of main challenges and lessons of co-creating with bottom-up communities.

Cell 1: Organizational Challenges	***Cell 2. Technological Challenges***
— Understanding the logics of IBCs	— Finding the touch points and technological infrastructure needed to ensure the company — bottom-up collaboration
— Bridging conventional and grassroots forms of business	
Lessons learned	**Lessons learned**
— *Discuss the potential to launch a collaboration based on IBC needs*	— *Share touch points*
— *Get to know the community by hiring its leaders*	— *Borrow touch points from other sectors*
— *Maintain good relationships with community leaders*	— *Co-create infrastructure with the bottom-up communities*
Differences from co-creation with customers	**Differences from co-creation with customers**
— Instead of knowing each customer and establishing personal relationships with them, ISPs derived value from focusing on community leaders (e.g., hiring some community leaders as managers, ensuring community communication, maintaining good relationships with community leads)	— Instead of investing in the most optimal technology, ISPs invested in ''good enough'' solutions
	— Instead of guiding customers, ISPs provided technologies and infrastructure only to the touch points and let the community members co-create thereafter; this was in line with such community values as independence, freedom, and creativity
Similarities with co-creation with customers	
— Change required on both sides	
— Importance of understanding key driving values	
Cell 3: Innovation Management Challenges	***Cell 4: Financial Challenges***
— Identifying, testing, and developing innovations with bottom-up communities	— Evaluating and making the financial investments necessary to ensure collaboration with bottom-up communities
Lessons learned	**Lessons learned**
— *Identify and leverage bottom-up innovations*	— *Development of a network of agents*
— *Use community platforms to test and develop company innovations*	— *Principle of smart, selective investments*
— *Control over IBC infrastructures is counterproductive*	**Differences from co-creation with customers**
Differences from co-creation with customers	— Instead of investing in employee co-creation, training, customer surveys, and data collection, ISPs made limited investments focused on solutions for organizational, technological, and innovative challenges
— Instead of educating customers on using innovations developed by companies, ISPs tested and developed their own early stage innovations and technologies within communities	
— Instead of training employees to train customers, ISPs trained employees to learn from innovations developed within communities	— The principle of smart selective investments is in line with the IBC principles of an ability to co-create the infrastructure and products, and share them among community members
Similarities with co-creation with customers	
Linking non-(typical) users with new ideas to companies (few companies, e.g., InnoCentive)	

The value of this framework lies in the fact that it goes beyond the general guidelines of co-creating with a crowd. In particular, it focuses on co-creation with an organized crowd that develops alternatives to products and services offered by companies, such as an IBC community. It covers the main challenges of such co-creation and proposes managerial tactics for co-crating with IBCs. The framework also highlights differences and similarities between co-creation with IBCs and co-creation with customers and crowds in general.

The framework is based on a data collected for a PhD dissertation that focused on a ten-year case of co-creation between IBCs in the form of home-based local area networks (''homenets'') developed by residents (see Table 1) and ISPs. The collaboration proved to be very successful, as it resulted in the commercial success of the ISPs, boosted innovation, and connected more than 90% of all home computers in the Belarus capital of Minsk to the Internet. The data were gathered from 75 interviews: 59 interviews with administrators and users of homenets who created and developed these communities over the ten-year period, and 16 interviews with CEOs and managers in eight different ISPs. Data were also collected from documents, participant observations, and archival sources. Moreover, before starting the data collection, the author was a user of one of the largest homenets in Minsk for more than three years. This experience contributed to an in-depth understanding of the guiding logics, organizing principles, and problems of homenets. It was also particularly helpful in conducting the study, as it allowed for identification of administrators and users of homenets, helped in the design of questionnaires, and assisted in analyses of the results.

As Table 2 illustrates, companies that would like to collaborate with IBCs face organizational, innovation management, technological, and financial challenges. The framework also illustrates certain lessons derived from the case. These insights might serve as guidelines for companies wishing to collaborate with bottom-up communities and for companies that meet similar challenges when trying to innovate with customers.

The first main lesson is that companies often fail to collaborate with bottom-up organizations because they do not understand their underlying logics and values (such as a

community feeling, independence, and creativity), or the fact that IBC innovations are byproducts of these logics and values. In addition, certain elements of bottom-up communities, such as organizational structures, incentives, and decision-making processes, differ from those found in conventional organizations. The framework offers several best practices that may be valuable in addressing these gaps.

The second main lesson is that companies need to find a way to bridge organizational, technological, financial, and innovation processes without introducing substitutes for products and services that have already been developed by community members. Collaborations should be organized in such a way that they supplement and add value to the products and services developed in bottom-up communities. Successful companies, such as Airbnb and Relay Rides, build on a similar principle when they use the assets of the community (such as flats and cars) rather than introducing their own.

Finally, companies might be able to find ways to test and develop their own innovations within communities, especially in the areas of innovation management and technological challenges. In contrast to the recommendations found in the literature on co-creating with customers, the results of the case study suggest that companies need to get to know and establish good relationships with community leaders (instead of trying to build personal relationships with all customers), train their employees to learn from community innovations and to test early stage company innovations within communities (instead of training users how to use innovations), and provide technology and infrastructure only to the touch point of the community (instead of guiding customer journeys).

While the case of homenets in Belarus is an extreme example, it provides valuable insights on company-IBC co-creation. The exceptionally long duration (more than ten years) of the ISP-homenet case provides a possibility to learn from numerous challenges and best practices developed on both sides. Finally, even though such companies as Amazon, Airbnb, Apple, Relay Rides, and Safaricom are participating in some elements of co-creation with IBCs, the case of the ISP-homenet collaboration provides a consistent framework and detailed tactics for long-term co-creation with IBCs.

Co-creating with IBCs in Belarus: The Case of Homenets

Belarus is an East European country that is well-known for providing IT and outsourcing services. According to the *Central and Eastern Europe IT Outsourcing Review 2010*, the country's outsourcing revenue was USD 384 million in 2010, while the corresponding figures for the Czech Republic, Serbia, and Lithuania (its nearest EU neighbors) were USD 371 million, USD 200 million, and USD 66 million. During the Soviet period, Belarus, which lacked rich mineral resources, was designated as one of the main strategic centers of engineering. In fact, over 50% of the computers and computer components in the former USSR were manufactured in Belarus. This resulted in generations of families who were inspired by and highly interested in technology and personal computers (PCs).

The post-Soviet period of the 1990s and early 2000s was characterized by economic depression and significantly reduced consumer-purchasing power. At the time, ISPs naturally focused on developing B2B access and infrastructure. As a result, evening traffic was largely absent, and the main clients were organizations rather than residents. Beltelecom, a dominant state-owned ISP, was the first company to offer residential Internet access. However, this did not occur until 1999, and the service lacked quality (dial-up connections) and was very expensive. On the one hand, therefore, Belarus had numerous tech-savvy residents who desired a tool for resource sharing and entertainment, such as multi-party computer games. On the other hand, Internet access was largely unavailable to individual users.

In an attempt to fulfill their needs, residents organized peer-based, bottom-up communities and created alternative Internet infrastructures known as "homenets." Early creators of home LANs state that they decided to develop a local version of the Internet. They initially linked residential users of home computers together with coaxial cables. Later, optic fiber and radio modems connected users in different flats and throughout multistoried buildings. The number of computers connected in a network ranged from several dozen to several thousand. At the time, these homenets did not have Internet access. However, they did develop local infrastructures and various innovative services, such as file sharing and exchange, multi-party gaming, community forums, and radio, as substitutes for the Internet.

In 2000, homenets came up with the idea that their network could serve as an infrastructure for sharing Internet access, which was very expensive and otherwise unaffordable. After negotiations, they entered into a collaboration with private ISPs. This collaboration proved extremely successful and lasted for ten years.

For ten years, homenets served as the main form of Internet access and resource sharing. They offered high-quality, inexpensive Internet access for residents, and thereby provided opportunities for online and face-to-face social communication. They included thousands of members and covered all city areas. The collaboration led to the successful co-creation of the national residential Internet infrastructure despite the monopolistic position of the state's Internet provider. In fact, according to expert evaluations, more than 90% of all home computers in the Belarus capital of Minsk were connected to the Internet through the community-based infrastructure in 2008. The cooperation also led to the success and empowerment of private ISPs as well as to a series of innovations among bottom-up communities that were later incorporated by ISPs as national standards in residential Internet services.

In 2010, the pro-Lukashenko government officially declared homenets to be illegal. The declaration was a result of the inability to control information exchange within the communities in the pre-election period and the fact that ISP-homenet collaboration offered significantly more competitive prices than the state-run ISP. It was also a response to the growing demands among private ISPs to de-monopolize the state-run ISP.

Despite the imposed end of the collaboration, the successful ten-year period of pioneering collaboration provides a rich setting from which to derive lessons on the multiple challenges associated with company-IBC collaborations and possible solutions. Furthermore, this successful collaboration illustrates that, rather than fighting against Internet-focused IBC initiatives (see Table 1) or lobbying against them (as has

occurred in more than 20 US twenty states), commercial ISPs could start a mutually profitable collaboration with IBCs.

CHALLENGES AND LESSONS OF CO-CREATING WITH IBCS

In line with the proposed framework (see Table 2), this subsection presents the challenges and lessons learned from the homenet-ISP collaboration. In addition, it covers how this collaboration differs from co-creation with customers.

CELL 1: ORGANIZATIONAL CHALLENGES

Organizational challenges refer to challenges of organizing collaborations between companies and bottom-up communities, and bridging the differences between them. Bottom-up communities often have different structures (usually horizontal rather than vertical), operate with different logics (in which the principles of extrinsic motivation and pure economic reasoning might not work and may even be harmful), have forms of collective ownership, and employ community-based decision-making processes. These differences make it difficult for companies to understand what they might offer to bottom-up communities, thereby making the main principle of co-creation — finding a space to create shared value — difficult to implement. In this light, the implementation of a collaboration with a bottom-up community requires answers to numerous questions, such as *How can the company can initiate a collaboration?*, *How do bottom-up communities think and operate?*, and *How can long-lasting relationships be created?*

Even when companies can distinguish bottom-up communities from non-customers or competing groups, they might not develop their interest further because they lack an understanding of how bottom-up communities are significantly different from conventional organizations and how they operate. Therefore, opportunities for shared value co-creation may not be recognized not because they are irrelevant but because they look different from what is expected or assumed by company managers. For example, one of the main reasons for Google's failure with Dodgeball was that Google failed to recognize the importance of mobile/social/local as early as in 2005 when the mobile Internet was undeveloped and Crowley's propositions seemed to be too "different."

Lessons Learned from the Homenet-ISP Collaboration

Discuss the potential for collaboration based on IBC needs. As mentioned above, before the ISPs and homenets started to collaborate in 2000, they offered similar services for more than six years without any attempt to introduce a bridge between them. Even when administrators of one of the homenets visited all of the ISPs with a proposition to collaborate and to exchange access to users in the network for a cheap, high-quality Internet connection, the collaboration did not have an easy start. When confronted with these young computer experts who proposed collaboration, all ISPs except one rejected the initiative. The anti-collaboration ISPs preferred to invest in technology — a resource that had proven important for their businesses in the past and which they believed would be important in the future. As one ISP director mentioned in an interview: "Nobody took residents or homenets seriously back then."

The only provider that agreed to try the collaboration was Solo, a company without a leading position in the market. The state-owned provider, Beltelecom, was earning massive profits from its monopoly by buying access to the out-of-country Internet channel and re-selling it to other Internet providers. These other ISPs were obliged to sell Internet access to end-users only, but residential users could not afford it because prices were high. ISPs therefore focused on corporate clients (businesses and NGOs). As a result, all ISPs except Beltelecom found themselves in a difficult economic situation: their evening traffic was very light and only about 70% of channel capacities were used. However, even among those in difficulties, Solo was not in the best position. This led the company's CEO, Vladimir Ivashkevich, to give the homenet proposal a try.

The risky decision proved to be beneficial on both sides. After launching its collaboration with homenets, Solo rapidly outpaced rivals that were following more traditional strategies. After about a year, when the collaboration between Solo and the homenets was clearly successful, other ISPs joined the game. These ISP-homenet collaborations conquered the market of residential Internet access in Belarus.

Get to know the IBC by hiring its leaders. This lesson is crucial for bridging the logics of the conventional and bottom-up initiatives. The organizing and operating principles of bottom-up organizations are different from those of conventional organizations in many respects, including structures, hierarchies, missions, strategies, and motivations. As one ISP manager explained:

> Back then, few people could imagine the logics of "these strange homenet users" and nobody knew what services could be proposed to them with at least some probability of success.

ISPs answered the challenge by hiring some network administrators as specialists responsible for the collaboration. These managers handled the companies' strategies regarding homenets. As one manager explained:

> Based on my seven-year experience of being an administrator in one of the biggest homenets in Minsk, I knew how homenets thought, what their problems were, and how those problems could be solved.

ISPs usually provided these managers with some authority and with limited access to their organizational resources. For example, they were allowed to engage certain company workers, such as programmers, system developers, constructors, and mounters, in their projects, which aimed to attract new homenets and increase the loyalty of those homenets that were already involved in the collaboration.

Maintain good relationships with community leaders. ISPs managed to apply this lesson very effectively. After launching a collaboration with homenets, ISPs had two strategic alternatives: to impose their domination by forcing the homenets to choose one provider per network, or to "give the power away" by giving each community user the freedom to decide which ISP he or she would use. In the latter case, multiple ISPs

operated within the same network. The ISPs did not interfere in the policies and affairs of the homenets, and networks were free to make agreements with as many Internet providers as they wanted. Thus, instead of trying to increase their influence on homenet users within the network, ISPs gambled on informal power and good relationships with administrators. One ISP manager discussed this policy:

> In general, out of 100 users, there will always be one or two who will say: ''I want another provider.'' The administrator then has two options: argue with those users or help them to link up with the selected provider. We understood that if the administrator had a good relationship with users, he would have more power in the community. Thus, we focused on maintaining good relationships with the administrator as the key to success in the community. In this light, adding another provider to the network was not such a big loss when compared to the influence that doing so would bring the administrator in managing the network.

Differences from and Similarities to Co-creating with Customers

As the lessons of homenet-ISP collaboration illustrate, even though bottom-up developments might look ''strange,'' these communities operate at the organizational level and need to be understood. The fact that bottom-up communities have structures, operating logics, and decision-making processes different from those of conventional organizations should not prevent companies from considering the potential of such collaborations. This lesson is the first crucial step toward bridging the two organizational forms.

The main difference between co-creating with bottom-up communities and co-creating with customers is the *focus* of interactions. While companies that co-create with customers derive value from knowing each of their customers and establishing personal relations with them, companies that successfully co-create with IBCs concentrate on community leaders rather than on all community members. ISPs in Minsk did so by hiring some homenet administrators as specialists to work as mediators, managers, and marketing specialists focused on the communities, and by establishing good relationships with administrators from the collaborating networks. This approach created significant advantages for ISPs, as the hired specialists were experts on homenets. Similarly, in the case of M-PESA, Vodafone failed to notice the mobile micro-finance tools developed by residents from the bottom-up until experts in the field — researchers from the Commonwealth Telecommunications Organization who studied the use of mobile phones in Africa — approached the company and acted as mediators between the bottom-up communities and the company.

Furthermore, by maintaining good relationships with administrators and by deciding not to impose ISP exclusivity, the ISPs ensured the loyalty not only of administrators but also of members, as the opinion and support of the community leaders served as an excellent (and free) marketing tool.

The main similarity between this type of co-creation and co-creation with customers lies in the change required on both sides. Another similarity is the importance of understanding the key values driving those on the other side of the collaboration. While companies co-creating with customers address this issue by undertaking extensive and often costly surveys, the ISPs did so by hiring homenet administrators who were aware of these values. Furthermore, on a general level, the practices of homenets and private ISPs in Minsk support the principles of doing business with the swarm highlighted Gloor and Cooper. The ISPs ''gained power by giving it away'' — by letting homenets include multiple providers in their networks and by maintaining good relationships with administrators rather than trying to gain a monopoly in the network. In so doing, so they concentrated on a selected group within the swarm — administrators who were leaders in the focal communities. Similarly, when Finnair, a Finnish airline, wished to engage its customers in co-creations, it relied on a help from an independent expert to bridge the gaps in logics and values. Through a publicly open process, the company hired several ''quality hunters'' (QH) — people who traveled to different flight destinations in the search of ''quality signs,'' and reported their opinions in their blogs and on the company's Facebook page. Finnair did not impose any restriction on the QHs with regards to posting negative comments and information. Instead, the QHs were given the status of ''independent advisors.'' As such, they were responsible for sharing their opinions and communicating with the company's customers. As a result, the company's websites were visited by millions of customers, and trust and collaboration increased significantly.

CELL 2: TECHNOLOGICAL CHALLENGES

Technological challenges refers to the need to find and develop touch points and technological infrastructures that can support the company-IBC collaboration. The development of technologies for touch-points and information infrastructures is challenging because of the risks associated with creating new technological solutions that aim to satisfy all actors involved in a collaboration and the risk of creating ineffective technologies. Furthermore, the creation and testing processes are usually associated with high costs. The following subsections illustrate how ISPs and communities addressed these challenges.

Lessons Learned from Responding to Technological Challenges

A number of technologies were developed or used to support ISP-homenet collaborations. They included switches, modems, fiber optics, innovative VPN solutions, Internet cards enabling traffic monitoring, and Internet-based accounting software enabling individual payments despite the collective sharing of modems (see Table 2 for details). Three lessons were derived from the development of these technologies.

Share touch points. Collaboration with homenets implied that new infrastructural technologies needed to be developed. These technologies enabled the ISP to be connected to every community member. As building such technologies would be too costly for ISPs, the ISPs and homenets came up with another solution: companies provided the IBCs with a few free modems. The communities then shared those

modems and cross-multiplied the Internet channel through the wired within-community infrastructures.

Borrow touch points from other sectors. Another challenge that ISPs faced was the need to develop technologies that could register each community member's traffic when many users shared the same modem. This type of technology had not previously been used for residential Internet access in Belarus. Therefore, Solo borrowed the technology from the banking sector. As one ISP manager explained:

> Usually, providers used technologies that viewed their client-organization as one subscriber: the Internet usage consumed by all organizational members was charged as if it were one person. Our situation was the exact opposite. We could have around a thousand users at the same connection point. We did not want to be responsible for them. For example, why should somebody be affected if his neighbor does not pay for his connection? We understood that we needed other solutions. As a result, we thought of a new technology, VPN, which at the time was only being used in some banks and closed organizations. We also considered individual Internet-traffic cards, which would provide the user with a certain amount of Internet access.

Co-create the infrastructure with the bottom-up communities. Another lesson derived from addressing technological challenges was the need to co-create the infrastructures and technologies with the bottom-up community. This principle implied that ISPs developed infrastructures only to a certain point, after which they allowed communities to co-create access for individual members. Examples of this practice included the previously mentioned sharing of modems and the cross-multiplying of the Internet channel, as well as the innovation, development, co-creation, and co-funding of fiber optics, as discussed below.

Differences from Co-creating with Customers

The main difference between co-creating with bottom-up communities and co-creating with customers is that, in the former, communities co-create the end-user infrastructures. While companies such as IKEA and Disney, which are well known for their co-creation with consumers, try to protect, guide, and control the experiences of their customers, ISPs developed and controlled infrastructures and touch points only to the community level. This approach was significantly less costly for ISPs, and it was in line with key values of the communities, such as creativity, a community feeling, and independence. In this light, applying the guidance principles of co-creation with customers might be counterproductive for collaborating with IBCs, as doing so might contradict their values and thus undermine innovations.

CELL 3: INNOVATION-MANAGEMENT CHALLENGES

Innovation-management challenges refers to the identification, testing, and development of innovations created by the bottom-up communities, and to the need to find ways to test company innovations within the communities.

Lessons Learned from Responding to Innovation-Management Challenges

Identify and leverage IBC innovations. In addition to the local infrastructures that provided cheap Internet access, each homenet made a number of services and local innovations available to its users. These were usually developed by network users (amateurs) and included such services as network radio; file search engines; chat programs; user profiles with photos, addresses, and interests (long before the emergence of Facebook or similar social-networking sites); file archives; codes for improving the network server's speed and security; and the cross-multiplication, re-enforcement, and distribution of the Internet signal. Some ISPs decided to use this innovation potential to build their own competitive advantages. As one Solo director mentioned:

> As the prices for Internet access are falling globally, you cannot expect to have a sustainable competitive advantage with the Internet for an extended period of time. Services become increasingly important and will become even more so in the future.

Providers started tracking local users' interesting innovations and implementing modified versions of those innovations in their own global network infrastructures, thereby making them available to all ISP users. The rationale behind this movement was the following:

> We needed services that would be in demand, not those that would be unused and a dead weight for the company. In particular, we studied innovations in different homenets and took the best from each, choosing the most popular and convenient services. These services were made available free of charge to our clients (with the possibility of charging for them in the future). They worked really well for market-share acquisition.

One of Solo's managers in charge of relationships with homenets explained this process:

> We provided a platform for leveraging local innovations. For example, if a network of one hundred users had some new and interesting innovation, why wouldn't they share it with others? Of course, the capacity of their small network did not allow them to do so, as their local server was too small. We offered them a new server or a place to install an innovation on Solo's servers. The administrator of the small network continued to develop the service, but it was made available to all company clients. This is how we managed to conquer the market with almost no investments on our part.

These services were important for residents when choosing ISP providers.

Use community platforms to test and develop company innovations. Co-creation is valuable for companies because the level of consumer value and satisfaction are significantly increased when customers engage in all stages of product development. The ISPs took a unique step, even for technology-savvy companies, in using the bottom-up infrastructures — such as homenet communication channels, chat services, and websites — to test, improve, and develop their own innovations. In this regard, their approach was different from

the practices followed by most companies when co-creating with their customers, which typically rely on in-company infrastructures or on general social platforms, such as Twitter or LinkedIn. By placing the innovation into the existing homenet infrastructures — environments that were highly innovative and were particularly tailored for users to be innovative, creative, and communicate easily — ISPs gained value and enhanced the quality of the innovation in a way that would otherwise be difficult to achieve. This practice provided an opportunity to see how people reacted to innovations and to understand what they really needed. The gains were twofold: (1) ISPs learned how the innovation might be used, and (2) users were educated about the new service and how to use it. Thus, by the time the innovation or service became commercialized, it was already in a demand and highly customized. ISP managers explained how the process was organized:

> The main challenge in creating a service is to make it interesting for people — to ensure that they understand what they need it for and how to use it. We simply put a raw prototype on the intranet and let the [users] do what they liked. We learned along with our users... For example, before making IP TV a commercial project, Solo provided it for free for four years through its intranet infrastructure. Initially, it was an experiment: we quickly created a prototype and put the service on the network. We observed how people tried to use it. One user wrote a code to improve it, another adjusted it and developed something else, and so on.

> Two other managers and I constantly looked through the related forum discussions in order to find trends and select the best patterns of use. We observed how a particular service was used. Then we modified it to make it convenient for a general user. After this, we provided recommendations on how to exploit it for those that had never used the service. Of course, by then it was convenient and easy to use because it was already based on other users' experiences. Therefore, newcomers also became comfortable with the service. This is how we could start selling services that were not 100% ready but still had some consumer value.

Control over IBC infrastructures is counterproductive. Evidence from the Belarus case suggests that attempts to control IBC infrastructures kill their innovative capacity. After being pronounced illegal in 2010, some homenets went underground, but the majority ceased to exist independently. The infrastructures of the latter were incorporated by ISPs and homenet users became typical ISP customers. In this regard, the story might seem to have an unhappy ending. However, it provides a unique opportunity to examine what happens when companies start to dominate a collaboration of this type.

ISP customers and past homenet users highlight a significant point:

> Yes, we have Internet and very similar services now, but it is not the same. We do not feel special anymore. Before [in homenets], the Internet access and speed were more basic, but it was much more interesting.

The incorporation of homenet users into standard ISPs changed the motivations of community members to innovate. Enthusiasm and internal motivation had been the main drivers of the homenet phenomenon — people devoted a great amount of their spare time to innovate, improve, and develop networks for free because they found it exciting and meaningful for themselves and for other members of their community. They shared a feeling of belonging to their unique communities, ownership, pride, and respect for their contributions. Thus, the introduction of total control was against the main driving values of homenets.

Differences from and Similarities to Co-creating with Customers

Some companies, such as Procter & Gamble and IBM, have invested in developing special online platforms intended to generate new ideas and innovative solutions among customers. Nevertheless, giving preference to co-creation with typical customers has an important consequence: in the long run, the company might miss opportunities for radical innovation, as decisions made by the majority (usually those who are already customers) tend to be more incremental and aligned with the dominant thought paradigm. In this light, collaboration with IBCs provides access to new ideas and ways of thinking.

While such radical (from the companies' point of view) innovations as Epcot's ''Land Pavilion'' (Disney) and IKEA's onsite dining options might have been the result of detailed interviews with customers, such an approach might not fit when developing radical IT-driven innovations. As several ISP representatives mentioned during the interviews, developing radical IT innovations, such as iTV (Internet TV), is challenging because users do not have similar previous experiences. They therefore need time to learn how to use the technology and to understand why it might be needed. This challenge can addressed by using community platforms to test, develop, and co-create a company's innovations with community members. In contrast to widely proposed models, such as models in which the company studies customers' ideas, develops related innovations, and teaches other customers how to use them, the ISPs implemented a model in which the company gradually co-created innovations based on how the users learned about them. In contrast, radical innovations might require ideas from non-customers or atypical customers. In this sense, InnoCentive (www.innocentive.com) builds on the same logics as ISPs when linking non- (atypical) users, who propose solutions for companies.

Furthermore, companies that try to co-innovate with their customers often struggle to select and identify which ideas, among the thousands generated by users, might be successful. For example, in February 2007, Dell developed IdeaStorm (www.ideastorm.com), a platform for co-innovating with customers. Within five first months, the company received 6,200 suggestions for potential innovations. Dell had to activate significant resources to address a number of challenges. For instance, it had to train and allocate workers to analyze the ideas and to understand them from the users' perspective. It also had to identify promising ideas, and sustain the community of users, including those whose ideas might be rejected and those who might perceive the

organization as being non-responsive. In contrast, in the homenet case, ISPs identified and leveraged community innovations and used community platforms to test their own innovations. These practices allowed them to avoid the above challenges, and to concentrate on ideas that had already proved interesting.

In addition, while the literature on co-creation with customers argues that different degrees of innovation require different innovation strategies, the lessons learned from the ISP-homenet case show that different phases of innovation need to be addressed in strategically different ways. In other words, if an innovation is developed within a company and is in the later phases of development (e.g., advocacy, screening, experimentation, or commercialization), the company may benefit from implementing and testing it within community infrastructures. Moreover, it can do so at little or no cost. For example, the French telecommunication provider Orange (http://www.orange.fr) collaborates with several hacker-activist groups in order to test and improve its online security system. At the same time, collaborating with companies might be helpful for IBC innovations that are stuck in the early stages of development because the IBC lacks resources. In this regard, companies might create value by leveraging these developments with their bigger infrastructures. They may eventually gain profits without investing in idea generation, screening, and some parts of experimentation — activities already carried out by the IBC.

This approach also reveals another difference from co-creation with customers. In contrast to examples of co-creation with customers that depend on the degree to which the company has trained its employees to educate customers, such as the introduction of self-service technologies at airline check-ins and retail checkouts, the lessons learned from the co-creation with IBCs relate to the community side. In other words, instead of training employees to train and educate customers, companies co-creating with innovative communities should train their employees to learn from innovative developments within the communities.

CELL 4: FINANCIAL CHALLENGES

Financial challenges refers to the financial investments necessary to support collaboration with IBCs. This area is challenging because of the risk of investing ineffectively.

Lessons Learned from Financial Challenges

Develop a network of agents. As previously mentioned, instead of investing in relationships with all community members, the ISPs focused on administrators. In particular, they invested in developing a *network of agents* within homenets. For example, ISPs started selling Internet-access traffic cards to homenet administrators at a 10% discount. Administrators who sold at least 10 cards to their network users were offered free Internet access, while those selling more could gain a profit. This solution thus increased both the number customers and the loyalty of administrators.

One ISP manager discussed the reasons for this decision:

> The most important thing was that the administrator had to be affiliated with the company. This is why we invested in our relationships with administrators. In addition to paying 10% bonuses, we treated them and their networks' problems as important, and we tried to provide the network with special services or equipment if the administrator was loyal.

The principle of smart selective investments. ISPs made limited financial investments in the communities' operational processes and technological infrastructures in order to support the collaboration. These investments were made in such a way that they resulted in significantly more profit than costs, and they took several forms.

First, the salary paid to managers hired from homenets was an effective financial tool. It was cheaper for the company to hire someone who already understood the context and the details of managing homenets than to train a new specialist.

Second, the free modems that the ISPs provided to every 5—10 networked individuals (depending on the ISP's policy) stimulated the growth of new homenets and, as a result, increased the number of ISP clients. Previously, residential users had to pay a fixed fee to use a modem. As part of the collaboration negotiations, the homenet administrators ensured that a certain number of free modems would be provided to each homenet. They also posted a notice about this aspect on their websites. This supported the development of a new generation of homenets, which emerged to take advantage of cheap, high-quality Internet access.

Third, the 10% bonuses for administrators served as an effective financial tool because they allowed for creation of a network of agents. In addition, the ISPs saved money, as they did not have to invest in a relationship with every user. Moreover, administrators assisted in the promotion of ISPs among other community administrators, who had good reputations and significant experience in the eyes of community members.

Fourth, by refusing to invest in becoming the only provider in a particular homenet, ISPs let users compare and become aware of other providers' activities.

Fifth, the innovation-management policies discussed in the previous sub-section enabled ISPs to more effectively manage innovation costs, and to save money on innovation prototyping, testing, and promotion.

Sixth, the opportunities offered by co-creation with homenets, such as the possibility to co-create technologies and infrastructures and to crowd-fund the introduction of fiber optics, not only lowered costs but also motivated homenets to engage in additional innovation and collaboration. As mentioned by one homenet user, the status of being ''special'' — of having a chance to create and to make decisions as a community — was very important. Along these lines, ISPs offered free fiber-optic connections to some strategically situated communities (such as those that would bridge two major areas already under the influence of an ISP) in order to attract new homenets. In those cases, homenets could negotiate prices with the ISP and crowd-fund the fiber-optic connections through their networks.

Differences from Co-creating with Customers

In contrast to co-creation with customers, ISPs made limited (but effective) investments in co-creation with IBCs. In particular, instead of investing in each customer, they invested in

relationships with administrators. This approach was cheap and effective because the administrators already had trusting relationships with community users.

Furthermore, when addressing the financial challenges, ISPs built on one of the principles of co-creating with the swarm — "give power away to the crowd." However, ISPs expanded this principle to include their financial investments (e.g., crowd funding and co-creation of infrastructure).

CONCLUSION

Extant studies have largely overlooked opportunities for companies to co-create value with atypical actors, such as diverse bottom-up organizations. This paper takes one of the first steps toward improving our understanding of this issue. First, the paper discusses the potential of co-creation with IBCs and the major misunderstandings of companies in this regard. Second, it details how the co-creation process might be organized in terms of managerial practices. In particular, it discusses the major challenges of co-creating with bottom-up communities and the lessons learned from a ten-year experience with such co-creation.

The framework of co-creating with IBCs (see Table 2) developed in this paper may be of particular interest to managers who desire a consistent view on co-creating value with bottom-up communities. While companies like Amazon, Apple, Airbnb, IBM, Finnair, and Relay Rent already rely on some of these elements, the proposed framework presents numerous detailed and long-term tactics. It also offers a discussion of similarities and differences between co-creating with IBCs and co-creating with customers worldwide.

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