

Empirical Paper

Katarzyna Kubiak, Anna Wziątek-Kubiak*

Business models innovation based on crowds: a comparative study¹

<https://doi.org/10.2478/ijme-2019-0010>

Received October 22, 2018; accepted March 21, 2019

Abstract: With arrival of information technology, interaction between consumers and companies become more common. It has implications for the way business function and for business models. The aim of the paper is to analyze crowdsourcing and compare crowdsourcing business models of three product and content crowdsourcing companies, their common features and differences. These companies differ considerably in many respects. The business model framework used is based on Osterwalder and Pigneur's approach. The paper shows various consequences of using crowds. It shows that having crowds as a key asset implies a necessity to take care of the crowd and network effect before launching a crowdsourcing initiative. The paper gives those involved in crowdsourcing insight about factors crucial for their company and points to where they need to concentrate their resources.

Keywords: open business model innovation, crowdsourcing, crowdsourcing companies

JEL Classification: M19, M21, O32

1 Introduction

Over the centuries, technological progress changed the way businesses conducted their activities. However, the arrival of information technology (IT) has been one of the most powerful drivers of business model evolution. The advent of IT irreversibly changed the way businesses function, for example, the way they operate their supply chains, store information, contact their customers, and so on.

Businesses started to take advantage of a new opportunity that the internet offered: communication and interaction with and between the users. It enabled them to share files, discuss and share ideas, and finally to create together. Through such communication and collaboration an important, internet-based phenomenon known as “crowdsourcing” emerged. Outsourcing certain activities to a crowd allowed businesses to mitigate difficulties associated with two characteristics of knowledge: its wide distribution and so-called stickiness [von Hippel, 1994]. The lowering of costs associated with using the crowd gave rise to various crowdsourcing initiatives: crowds are now used to solve scientific problems, provide services, create content, and so on.

Crowdsourcing has gained increased attention as a new way of improving competitive advantage. On the one hand, it reflects real processes, especially globalization, changes in innovation environment, and IT-mediated technologies, which created new conditions to use of its resources [Roszkowska, 2017].

¹ The paper is the effect of the project *Differentiation of innovation strategies of Polish manufacturing firms as an effect of changes in macroeconomic environment*, financed by National Science Centre, Poland, contract no UMO-2015/17/B/HS4/02742.

*Corresponding author: Anna Wziątek-Kubiak, Institute of Economics, Polish Academy of Sciences,
E-mail: hkubiak@inepan.waw.pl
Katarzyna Kubiak, Bloomberg L.P., London

These technologies are physical and are also social ones that are enabling new ways of collaborating and managing activities across geographies, including emergency and management ones. On the other hand, crowdsourcing is perceived as an uncertain and risky process that inevitably accompanies the emergence of new concepts and their differentiation and is a subject of innovation in itself, for instance, business model innovation, open innovation business models, and one of its form, the crowdsourcing business model (CBM). The latter reflected a new approach to innovation. In these concepts, the process of exploitation of external knowledge that was acquired with internal one was combined. As firms possess and use different types of internal and external knowledge, there are different types of crowdsourcing and continuous process of differentiation of CBM among them. This pertains to broadcast search, crowd motivations, or crowd definitions [Amrollahi, 2015; Waldner and Poetz, 2015; Li, 2016; Massa et al., 2017] and types of platforms and generations. Each of them have different roles and characteristics [Estellés-Arolas and González-Ladrón-De-Guevara, 2012; Prpić et al., 2015; Prpić, 2016]. Also, we have other markets, including product ones, where heterogeneous firms function. The difference between them are product types and how modern they are, inner resources (according to the market they function in), ability to absorb external resources, their market placement, and how they compete, which encompasses how they add value. They also differ in terms of how they are structured, how long the market has existed, and their ability to be dynamic. As a result, there are different models of crowdsourcing and these vary in terms of their form, motivation, and the ability to use new forms of inner resources, including crowd knowledge and their result.

Crowd motivation and definition have received considerable attention from scholars, but still product and content crowdsourcing markets, an area where the crowd designs, develops, or selects products or content that are later sold, are still underestimated. These initiatives draw on crowd intelligence or crowd knowledge to create products or contents. A question arises: what similarities and differences do business models based on crowds utilized by different companies that function on different markets have? How do these models differ in terms of motivation, building blocks, including customer segments (CS) and relationship, value propositions, channels, key activities, resources, and revenues stream?

The aim of this paper is to provide an understanding of content and product markets' crowdsourcing business models and show their differentiation. It could help different firms build similar models or compete against them or perhaps be a source of inspiration. We aim to systematically compare the similarities and differences of various types of CBM of some companies across a wide range of criteria to address the gap in the literature and bring about a more nuanced understanding of models. The business model definition and the framework used to analyze the business models are both based on Osterwalder and Pigneur's [2010] work. We describe crowdsourcing business models of three product and content crowdsourcing companies and analyze and compare their business models' key segments and points to some common features.

We start first, with literature review on business models, business model's innovation, open business model innovation, and crowdsourcing business model. Next, description of the methodology that is used in analyzing the business models, the Business Model Canvas. We choose three cases of crowdsourcing business models of three various companies to ensure a degree of diversity. They are presenting diversified examples of the same business model category. A discussion of the results and conclusions are drawn in the end.

2 From business model to open business model innovation

Starting from the mid-1990s, business model (BM) has become an important concept and field of research. In the literature, one can find reviews of literature on evolution of the use of the term. Zott et al. [2011] review of the literature published between 1975 and 2010, Hossain and Kauranen [2015] between 2006 and 2014, while Massa et al. [2017] between 2010 and 2015. They compared 71 definitions of business models and introduced their own taxonomy.

BM is seen as 'the business logic of the firm' [Teece, 2010; Hienerth et al., 2011; Velu and Stiles, 2013], 'the platform which connects resources, processes and the supply of a service' [Nielsen and Lund, 2014], 'the way firms do business, creating and capturing value within a value network' [Roome and Louche, 2016]. It shows how firm works, creates value and captures its part. A general definition of a BM: 'stories

that explain how enterprises work' provided by Magretta [2002, p. 87] does not offer precise guidelines as to what a BM encompasses and how its analysis should be approached. Amit and Zott [2012, p. 42] tackle this matter from a different, more detailed perspective, stating that a business model is 'a system of interconnected and interdependent activities that determines the way the company "does business" with its customers, partners and vendors. ... a business model is a bundle of specific activities—an activity system—a conducted to satisfy the perceived needs of the market, along with the specification of which parties ... conduct which activities". BM is seen as a key component of an organization's success.

The activity-based view of BMs captures its essence and suggests two sets of design aspects: design elements and design themes [Zott and Amit, 2010]. Design elements describe the activity system's architecture of content, structure, and governance. Design themes coordinate and connect the three design elements and provide more detail on the activity system's four crucial value creation drivers.

In the paper, we use the definition proposed by Osterwalder and Pigneur [2010, p. 14]: "A business model describes the rationale of how any organization creates, delivers and captures value." Baden-Fuller et al. [2008, as cited by Casadesus-Masanell and Ricart, 2010, p. 197] provide a very similar definition of a BM: "the logic of the firm, the way it operates and how it creates value for its stakeholders." These two definitions seem to leave most room for maneuver while grasping the core of the notion. Contrary to some other definitions, this one can be used in analyzing every business, not just a particular type.

Although business model is the organization's logic for creating value, firms do need a change, improve model over time to remain profitable. Adjustment of an organization's BM for creating value and innovate new models to beat competition seems crucial. Both practitioners and scholars agree that companies which choose to take advantage of these changes to produce new business models (business model innovation, BMI) prove to grow the fastest. In order to answer to changing external environment, firm must continuously change, reconstruct or innovate its business model. So, business model is dynamic phenomenon, could be innovated enabling new ways to create and obtain value and possess flexibility. Dynamic perspective on BM leads to establishment of BMI. It is "a boundary spanning process that must involve connections and joint innovation with external partners" [Ho et al., 2011, p. 663], and "a process that deliberately changes the core elements of a firm and its business logic" [Bucherer et al., 2012, p. 184]. BMI is creating whole new bundle of customer value. In BMI value chain architecture is revolutionized in new ways: from new product development to new delivery. It goes beyond process and product offering [Amit and Zott, 2012], or creating a new technology. It results in shifting of the focus to creation of the new system and broader network, i.e. beyond the entity of the firm: its customers, stakeholders and shareholders.

BMI is central for different types of firms as it also represents a new dimension of innovation. It can complement product or process innovation or it can occur independently from them. As it is a "distinctive type of innovation" [Bucherer et al., 2012, p.193] the concept of BMI broadens the boundaries of traditional meaning of innovation [Massa and Tucci, 2014]. However, it has some similar characteristics to other forms of innovation, for example, it can be incremental or radical as well as open or closed [Vanhaverbeke and Chesbrough, 2014, ch. 3].

In 2006, Chesborough launched a new perspective of analysis of BM called open business model. The focus of this concept is the role of the network. When it is combined with innovation, or when open innovation is included, this model takes a form of open innovation business model as opposed to closed innovation business model. As there are many forms of networks and ways of utilizing them, open innovation business model can take many forms. One of them is crowdsourcing business model [Marjanovic et al., 2012; Wikhamn and Wikhamn, 2013].

3 Crowdsourcing and business models based on crowds— literature review

Crowdsourcing, a term coined by Jeff Howe [2006, p. 5], describes a BMI where a job traditionally performed by an agent is outsourced by making an open call to a large, undefined network of people. A company broadcasts a problem online, receives potential solutions posted by individuals, provides rewards for

winning solutions, and mass produces the idea [Brabham, 2008a]. The information technology (IT) has enabled its expansion as companies can now ask IT users for help.

Equally important for the existence of crowdsourcing is the motivations' driving individuals to participate. Sometimes financial rewards are an important motivation, as in the case of Innocentive, where the company provides financial prizes to researchers who provide solutions to posted problems. However, individuals often participate for other reasons, for instance because performing a certain task gives them a sense of enjoyment, provides them with an opportunity to socialize with others, or gives them a feeling of glory and recognition [Malone et al., 2010]. There are many studies that describe crowd motivations [Muhdi and Boutellier, 2011; Zheng et al., 2011; Dahlander and Piezunka, 2014] or in individual crowdsourcing companies [Brabham, 2010 and 2008a]. Empirical research underlines other area, for instance, factors influencing the originality of crowdsourcing ideas [Franke et al., 2013], process of idea generation [Schweitzer et al., 2012], and the outcome of crowdsourcing [Nishikawa et al., 2013].

The name crowdsourcing is formed from two words, "crowd" making reference to the people who participate in the initiatives, and the word "sourcing," referring to a number of procurement practices aimed at finding, evaluating, and engaging suppliers of goods and services. This concept is linked with the wisdom of the crowds and collective intelligence. Surowiecki [2004] claims that under certain conditions groups are even smarter than the smartest individuals within them. He names four conditions that must be met for a crowd to be "smart." The underlying idea of the wisdom of crowds is that if one asks a "smart" crowd to estimate or predict something and then averages the answers, the errors that each of the individuals makes will cancel themselves out. Crowdsourcing harnesses the wisdom of the crowd through IT to produce goods or services superior to those that could be produced by smaller groups. Waldner and Poetz [2015, p. 10] underlined that "crowds may possess relevant knowledge for BMI," especially for delivering and capturing value. Companies use crowdsourcing to tap the wisdom of crowds and support the creation of collective intelligence. However, crowdsourcing can be sponsored and managed by the organization, which issues the task and assesses the results and whose purpose is to generate profit for the company [Kavaliova et al., 2016]. Hence, to create and value crowdsourcing, a company has to innovate its BM, that is, prepare crowdsourcing BM (CBM).

In the literature, there are more than 40 definitions of crowdsourcing [Estellés-Arolas and González-Ladrón-De-Guevara, 2012] and new definitions spring very often. The most popular is the notion that crowdsourcing is the IT-mediated engagement of crowds for the purpose of problem-solving, task completion, and idea generation and production [Howe, 2006; Brabham 2008a]. This tool has gained popularity [Hossain and Kauranen, 2015; Poblet et al., 2017]. Along with its growth crowdsourcing, another IT-mediated technology, for example, the sharing economy is rapidly being developed [Taeiagh, 2017].

Crowdsourcing is continuously evolving and a variety of its forms are emerging [Prpić 2016; Prpić and Shukla, 2016]. It can be carried out in two ways: by "proprietary crowds" that organizations foster through their own in-house platforms or by using "third-party crowdsourcing platforms" that provide the required IT infrastructure and "built-in crowds" as a paid service. Apart of external crowdsourcing through contests, internal crowdsourcing is used and is a part of an overall innovation capability for the company [Smith et al., 2017].

In the literature, crowdsourcing practices are divided into various types and forms. Different types of crowdsourcing represent different configurations of hardware, software, and people as IT-mediated crowds (such as virtual labor markets, tournament crowdsourcing, and open collaboration and as a new generation: crowdsensing, situated crowdsourcing, spatial, and wearable crowdsourcing). One of the most popular taxonomies is done by Brabham [2011]. He categorizes these initiatives into four groups: knowledge discovery and management (the crowd is tasked with finding and collecting existing knowledge that is spread out over the internet), broadcast search (the problem that an organization defines and the crowd members find the solution), peer-vetted creative production (an organization asks the crowd to create and select creative ideas), and distributed human intelligence tasking (the crowd analyze vast amounts of information).

Another approach introduced Amrollahi [2015]. He selected 11 phases: conceptual design, participant selection deals, technical design (how crowdsourcing should be performed), the communication stage, invitation of the crowd, idea/task entry phase, the start of the interaction of the crowd with the crowdsourcing system, coordination of the crowd, idea/task revision phase (allows to remove any possible

error from inputs), evaluation of entries, granting the award, and process evaluation and documentation of the lesson learned from the crowdsourcing project and future actions to implement the results of the crowdsourcing. However, this taxonomy does not include all crowdsourcing initiatives, for instance, crowd services such as GeniusRocket or uTest. Ghezzi et al. [2017, p. 9] reviewed 121 articles on crowdsourcing (published between 2006 and 2015) and investigated crowdsourcing from the input, process, and output framework. Providing formal structure for the findings available in the academic literature, they show the main antecedents, components, and outcomes of this process. In the literature, there are other forms of crowdsourcing based on different criteria: Busarovs [2011] introduced rewards criteria, while Li [2016] selected other forms. Täuscher [2016] names the challenges organizations face: corporate goals, the costs associated with crowd creation, the split of value added between crowd users, indirect and direct effects, and the proposal of solving the problems. However, Wilson et al. [2017] investigated failed crowdsourcing projects and pointed toward the types of risk that companies are likely to have.

Dawson and Bynghall [n.d.] suggested to distinguish between eight crowdsourcing business models and exemplified them by referring to their use by different companies:

- Media and data (creation of media, content, and data by crowds).
- Marketplaces (matching buyers and sellers of services and financing through mechanism including bidding and competitions).
- Platforms (software and processes to run crowd works and crowd projects, for use with internal or external crowds).
- Crowd ventures (that are predominantly driven by crowds, including idea selection, development and commercialization).
- Crowd processes (services that provide value-added processes or aggregation to existing crowds or marketplaces).
- Crowd services (delivered fully or partially by crowds).
- Nonprofit (tapping crowds to create nonfinancial value).
- Content and product market, which is a distinct category of crowdsourcing practices. It involves the outsourcing of design, creation, or development of content or products to the crowd, and selling those mostly over the internet. This category somehow differs from the rest as it draws on global, distributed creativity of users to create physical products or content. Moreover, it has real impact on the incumbent industries.

In traditional company's product design or new product generation is either done in-house or outsourced. If the design or creative phase is outsourced to a large enough crowd, some superior designs will prevail. Although the winning designs are usually awarded with cash, the design stage is still cheaper than keeping it in-house. What is more, the crowd is often tasked with choosing the winning design, thus making sure the winning designs actually sell, and indicating the potential level of demand for the good. This also lowers the need for market research. This approach is useful when matters of taste play a large role in choosing which products to introduce to market.

Chanal and Caron-Fasan [2010] analyze crowdsourcing experiment based on strategic analysis of a start-up Crowdsprite. It outsources the entire R&D process to a community of designers and users in the domain of consumer electronics. They used the scenario-based approach to challenge the Crowdsprite business model and in a context of crowdsourcing it is necessary to distinguish between value creation (performed by the community) and value capture (should be made within the business model). They also suggest a new model of incentives for innovation activities called "collective private." Smith et al. [2017] reporting on the efforts of EMC, a global leader in data storage system and clouding computing focused on intrafirm crowdsourcing of a large company.

4 Methodology

In order to study and compare different business model based on crowds we use the Business Model Canvas framework developed Osterwalder and Pigneur [2010]. It shows the rationale of how a company intends

to capture and create value. There are two main reasons why this framework will be applied in this paper. First, the selected nine areas of activities together provide a full view of an organization, since they cover the four essential areas of a business: customers, infrastructure, the offering, and the financial logic. Second, this framework has already proven successful in describing one crowdsourcing business [Innocentive] and can be used to compare businesses.

We concentrate on product and content crowdsourcing markets, where the crowd designs, develops or selects products or content, which are later sold. Content and product markets is a distinct category of crowdsourcing practices. It involves the outsourcing of design, creation or development of content or products to the crowd, and selling those mostly over the Internet. This category somehow differs from the rest as it draws on global, distributed creativity of users to create physical products or content. Moreover, it has real impact on the incumbent industries. For instance, iStockphoto is directly competing with professional photographers, in result lowering their wages [Howe, 2006]. Examples of crowdsourcing initiatives that belong to this category include Threadless, DesignbyHumans, I vote for art, Minted, iStockphoto, Shapeways, Quirky, and Ponoko [Dawson and Byngghall, n.d.].

Using the Business Model Canvas framework and based on criteria of diversity of firms' characteristics and accessibility to information and data, we selected three firms (as case studies). The cases have been chosen to ensure a degree of diversity: two companies produce physical products, while one produces content; two generate considerable profits, while one has yet to cover its costs; one offers members the opportunity to earn their living, two do not as they differ in terms of motivations of crowds. One of them revolutionized the market on which it operated, forcing a strong drop in prices, when the other two prices did change but they changed the approach to the way of creating products. These companies differed in terms of the complexity of production processes and dynamics of growth. These case studies are mostly seen as presenting different examples of the same business model category.

Since both the term crowdsourcing and crowdsourcing companies are relatively new, this paper draws on mostly online sources, namely case studies, scholarly papers, magazine and press articles, analyzed companies' webpages, interviews with companies' founders (accessed mainly via YouTube), other videos, and e-mails.

The Business Model Canvas offers "a rigorous approach to structuring BMI efforts" and [Waldner and Poetz, 2015, p. 12] uses graphical framework, which covers nine blocks.

The nine building blocks of the Business Canvas are following:

1. Customer Segments (CS). Although the customer is central to any business, an organization cannot serve everyone—it must always decide which customer segments to target and which to let go.
2. Value Propositions (VP). It is a supplier offer that the customer reviews. However, during the consumption of the product, the customer can participate in creating value-in-use, meaning she can participate in establishing a proposal of value added and influence, for example, product properties or how it is advertised.
3. Channels (C). The customer interacts with the company mainly through communication, sales, and distribution channels which influence customer's perception of a company.
4. Customer Relationships (CR). It can take on various forms, and are driven by different motivations, such as customer acquisition, retention or sales boosting.
5. Revenue Streams (RS). These represent the company's revenue model: for instance, a company can sell assets, or lease them; collect subscription or licensing fees, or collect revenues from advertising etc.
6. Key Resources (KR). Every business has resources that are key to its existence: for some companies, it's the brand, for others it's the financial capital. They are categorized into four groups: financial, human, intellectual, and physical.
7. Key Activities (KA). Each business model has different actions that are essential to deliver the value proposition. Osterwalder and Pigneur [2010] suggest three categories: production-related, problem solving-related, or platform/network-related.
8. Key Partnerships (KP). This segment analyses a company's most important partners and lists the key resources and activities which are performed by them. Partnerships take the form of a strategic alliance, coopetition (partnerships with competitors), joint venture, or a buyer-supplier relationship.

9. Cost Structure (CS). Businesses can operate with high or low costs, high variable or high fixed cost, etc. Cost- and value-driven business models are distinguished.

Putting these nine building blocks together creates the Business Model Canvas, which allows for the analysis of a company's business model.

5 The overview of three case studies

5.1 Threadless

Threadless is an entirely web-based clothing company that crowdsources apparel design to a community. Its umbrella company is skinnyCorp, which built other community-based projects, such as I Park Like an Idiot, Extra Tasty or Naked & Angry. However, Threadless still remains the most successful endeavor [Burkitt, 2010; Menichinelli, n.d.]. Threadless was created when one of the founders won a t-shirt design contest sponsored by the Dreamless community. He shared his experience of winning with another Dreamless member, and both decided that co-creation of t-shirts had market potential [Lakhani and Panetta, 2007]. Threadless started out as a t-shirt company, where the users were posting t-shirt designs in hope of winning a cash prize. The company sells not only t-shirts, but many other garments, indicating that the company is successfully expanding horizontally. The Threadless community has over 2.5 million members, over 500 000 submitted designs and almost 5000 designs printed.

Membership in the Threadless community is free and anyone can sign up. Community membership is not limited to designing apparel—users can also comment on the work of others, vote on designs, purchase or influence them. They can also post photos of themselves wearing the apparel on their blog, which earns them extra 'Threadless' dollars to use for apparel purchases. Anyone who wants to upload their design can do so on the web page. Next, all submitted designs are scored by the community with an unbinding 'I'd buy it' option. The designs with the highest scores are evaluated by Threadless staff who announce the week's winners and award them with a cash prize² and royalties [3-20%] based on the product's sales. The winning designs are printed and made available for sale. All printed designs are usually sold out to make room for new designs. However, if demand is high, some old designs are reprinted.

5.2 iStockphoto

iStockphoto sells royalty-free photographs, video clips and other animations over the internet. The company was established in 2000 when the founder decided that he could avoid paying high licensing fees for stock photos by starting his own webpage where he would share his photographs for free. Those who wanted to use his photographs had to post some of theirs in exchange. His webpage became so popular he needed to start collecting fees to keep it going and imposed a quarter per image fee. The popularity of the company grew as the common fees for stock photos at the time were about \$300 [Howe, 2008]. Nowadays, most photographs at iStockphoto cost about \$1, although high-resolution pictures cost more.

Although the photographs must fulfill some basic technical criteria, anyone who has a camera can post photos on the webpage. Once someone downloads their image, they receive 20% of the purchase price [Brabham, 2008b]. More involved community members who screen applicants and maintain the company's database can make exclusive contracts with iStockphoto and receive 40% of their photographs' income. Some photographers derive their income solely from iStockphoto. Like Threadless, iStockphoto also has a strong impact on its industry, making irreversible changes—professional photographers outside of iStockphoto notice a considerable decline in their returns on stock portfolios.

² The prizes are usually around \$2000, but if a designer is competing in a themed competition, they can be much larger. For instance, the prize for winning "Aqua TV" show was \$4000 (<http://www.threadless.com/adultswim/>).

5.3 Quirky

Quirky is a consumer products company that deals in making ordinary people's ideas into physical products. The founder won an entrepreneurial award in high school when he built his own company that designed products [Taylor, 2011]. Although he sold it later, he came up with the idea of Quirky when he saw a woman wear one of his earlier designed products [Ludwig, 2012]. The experience of seeing someone wearing his product was so strong he decided to form a company where more people could share the strong feeling.

Each week many people submit their product ideas on Quirky's website. Community members then comment on the ideas, add their suggestions, discuss them, and vote on them. The next stage involves Quirky's employees evaluating ideas based on their viability, design potential, and marketing potential. Each product receives a score from the employees and the winning one is sent to production. However, unlike in Threadless, it is not only the person who wins the competition that gets the reward. Community users earn money through contributing to the product, amongst others by answering survey questions, helping name the project, create its logo, and so on. Together around 30% of product revenues are given back to the community and the innovator [The Economist, 2012]. Quirky's most successful product is an adjustable power strip named 'Pivot Power', sold at \$29.99. It was invented by a U.S. high-school student, with 27 other community members influence and 1516 product followers. It has been in store for over the year and has already sold over 600 000 units.

The company has already developed above 400 products and its community base reaches more than 500 000 people. Although in 2012 the company's revenues were \$18 million, its valuation \$150 million in September 2012, it still hasn't managed to earn a profit [Colao, 2013].

6 The analysis of the Business Model Canvas in Threadless, iStockphoto, and Quirky

6.1 Research method

The Business Model Canvas has been split vertically into left and right side for clarity. In describing the business models, the cost structure and revenue stream have been combined to show overall financial result. Although the community might be argued to be a "key partner," this paper will consider it to be a customer as crowdsourcing companies aim to sell the products to community members. Another reason is that the partners are usually involved to serve the community, which makes it, again more of a client than a partner. Each company's business model is summarized in tables. The abbreviations used henceforth are: KP—Key Partners, KA—Key Activities, KR—Key Resources, VP—Value Proposition, CS—Cost Structure, CR—Customer Relationship, C—Channels, RS—Revenue Stream, and CS—Customer Segments.

6.2 Threadless

6.2.1 Key activities (KA)

The key activities seem to be associated with community catering, logistics, and order fulfillment (Table 1). As a crowdsourcing company, Threadless relies heavily on its crowd. As a consequence, the company has to cater its community to keep it motivated to submit ideas, influence designs, and buy the products. Catering the community takes on many forms in this case, for instance, sending newsletters, writing blog posts or making interviews with competition winners. The company needs to be transparent as even the smallest mistake can turn the community away from the company³. Having community catering as a key activity

³ As illustrated by the case of Digg. Digg, a social news website, suffered a vast loss of users when it introduced a new web layout, the community disliked. Within hours, the community quit the company and joined the competitor, Reddit [Friedman, 2010].

Table 1. Threadless Business Model Canvas, left side

KP	KA	VP
<ul style="list-style-type: none"> – Retailers (Bed Bath and Beyond, Gap) – Design partners (Absolut, Thermos, Dell) 	<ul style="list-style-type: none"> – Logistics and order fulfillment – Community catering 	<ul style="list-style-type: none"> – For designers: “show your designs to an exciting community who will rate it, with a chance of producing it on a garment.” – For buyers: “get clothes that are particularly strong on the artistic side and that you helped create.”
KR <ul style="list-style-type: none"> – Community – Brand community – Platform 		
CS Low cost model		

also has two important consequences: customer loyalty and so-called “brand community”⁴. If the crowd is well taken care of, it does not have a motivation to move to a different company and a feeling of “love of community”⁵ reinforces the brand and customer loyalty.

The second key activity, Logistics and Order Fulfillment, is associated with producing a physical product, which needs to be delivered to the customer. Although the company outsources clothes production, it has to manage operations in its warehouse and ship the goods. When a customer wants to buy a t-shirt, the exact information about how many t-shirts are left for sale is shown, which implies a very modern logistics system. This, in turn, might also be one of the major cost drivers.

6.2.2 Key resources (KR)

The key resources (KR) are associated with the existence of crowd on the internet. The community is a straightforward resource: it delivers, buys the designs, and essentially drives the business. The Threadless brand is a consequence of brand community, and any imitator would need to create an equally strong relationship with its customers, which takes time and effort. This, in turn, provides Threadless with a first-mover advantage. The third resource, the platform, allows for the whole company to exist in the first place.

6.2.3 Customer segments (KS)

Threadless serves two types of customers: the designers and the garment buyers. The designers are young people who want to test their skills, keep on improving them while having fun. Most buyers also participate in the community. It would be difficult to argue that the company segments its customers, rather, the client is the community with two distinctive subgroups.

6.2.4 Value proposition (VP)

Each customer segment has different reasons to take part in the community. In the case of the designers, they get to see what their potential customers think of the design, practice their skills, and work in a “fun” community in exchange for a potential of winning a cash prize, or being found by job hunters. This is reinforced by the so-called “flow state,” which also exists when open source programmers design software

⁴ Brand community (Muniz and O’Guinn, 2001, p. 412, cited in Brabham, 2010) is defined as “specialized, non-geographically-bound community, based on a structured set of social relations among admirers of a brand.”

⁵ The feeling of “love” in the case of Threadless was confirmed in Brabham’s (2010) study.

[Lakhani and Panetta, 2007]. When designers attain such a state, they find the process of designing particularly enjoyable.

With a small number of major fashion retailers dominating the fashion industry, it is not uncommon to see two people wearing the same piece of clothing. The sense of individuality also disappears as consumers do not know who designed the product and what the so-called story behind it is. Threadless buyers want clothes that focus on the artistic part of the design, are not worn by everyone else around them, have been influenced by them and they want to know the story behind the design. In exchange for the garment price they also obtain a sense of belonging to a fun community [Brabham, 2010].

6.2.5 Channels (C)

Threadless communicates with its community both offline and online. Online methods include the company's blog, the forum, and the newsletter. The community members can also communicate with Threadless staff in the physical shop, where it can also talk to other community members and improve designing skills. Some Threadless products can also be purchased at partner stores (see Section 6.3.5).

6.2.6 Customer relationship (KR)

The customer relationship is entirely community-driven. Threadless takes care to ensure that the interaction between the users and the website is fun: even pressing the cart button to buy a product produces a smiling shopping cart with an expression '1 yummy item added to my carty belly'. This type of a relationship seems to be the key to ensuring that the community keeps on interacting with the company.

6.2.7 Key partners (KP)

The key partners seem to be retailers and design partners. Retailers reinforce the company's business model since they allow to sell Threadless products in more physical stores. The existence of retailers also draws more designers into the community as they receive the opportunity to sell their designs in well-known, established fashion industry giants, and earn more money due to royalties. However, Threadless does not partner with any retailer—in 2006, it refused to work with Urban Outfitters when the community deemed the company "uncool" and didn't want the t-shirts sold there.

The design partners, besides giving rights to use their copyrighted characters, also serve another purpose: they provide high rewards for competition winners thus drawing more designers to join the community.

6.2.8 Revenue stream (RS) and cost structure (CS)

The main source of revenues is product sales: t-shirts alone cost between \$19.50 and \$24.50. Combining that with t-shirt costs yields a considerable profit margin. By expanding into more expensive products, such as "hoodies," which cost \$49.50⁶, the company tapped into a considerable revenue stream. What is more, a revenue reinforcement stream is also taking place: a sold-out clothing piece cannot be ordered until there is a reprint, which is somehow similar to Zara's strategy [Simchi-Levi et al., 2007] as it creates a sense of urgency to buy the product.

What distinguishes Threadless from incumbent firms in the fashion industry is its low cost structure. The cost of a t-shirt after printing and transportation costs amount to between \$5 and \$7. The company has only two shops and employs around a hundred employees. It entirely relies on word-of-mouth marketing

⁶ <http://www.threadless.com/catalog/line,threadless/type,guys/view,24/order,popular/style,hoodies>.

(Table 2) and does not hire any models as the community members make pictures of themselves wearing Threadless t-shirts. Costs associated with rewarding the community are also present and are linked with prizes for winning the competitions and royalties. However, the major costs seem to be associated with the technology: keeping the platform running and sustaining the logistics system.

6.3 iStockphoto

6.3.1 Customer segments (CS)

iStockphoto serves two customer groups: the photographers and organizations (Table 3). Photographers are both amateurs and professionals who want to sell their work. The amateurs realize their work might not be highly paid, but want to see how their skill set relates to others and whether they could photograph professionally. Photographers were researched by Brabham [2008b], who found that the group is homogenous: it is dominated by “white, middle- and upper-class, higher educated, and with home high-speed Internet connections.” iStockphoto’s second customer group, the organizations, are most often small businesses that do not have the resources to pay for expensive photographs and want royalty-free stock ones.

6.3.2 Value proposition (VP)

The photographers are given freedom regarding the place, time, and subject of work while enjoying the access to a vast database of potential clients. Photographers also enjoy certain support from iStockphoto: they are provided with certain marketing materials like customizable business cards, tutorials, or potential to create a professional network. Organizations are given access to a vast database of inexpensive, good quality and royalty-free stock photographs that are legal—iStockphoto checks all pictures for copyright and trademarks.

Table 2. Threadless Business Model Canvas, right side

CR	
– Community-driven (fun, exciting, and transparent)	
C	CS
– Online (Threadless.com, newsletter)	– Designers
– Offline (own store and headquarters, partner stores)	– Community buyers
	– Plain buyers (5% of total buyers)
RS	
Product sales	

Table 3. iStockphoto Business Model Canvas, right side

VP	CR	CS
– Photographers: “allowing flexibility in terms of photo subject, work place, and time while providing access to a vast client database.”	– Transparent	– Photographers
– Organizations: “provide royalty-free, inexpensive but good quality and legal photographs, in a quick sale.”	– Supporting	– Organizations
	C	
	Forum	
	iStockalypsies	
RS		
Photo sales (60%–80% photo price)		

6.3.3 Customer relationship (CR)

In catering relationships with customers, iStockphoto tends to concentrate more on nurturing the photographers. The relationship can be described with two characteristics: transparency and support. Transparency was present from the very beginning relating to the number of downloads each user had, the number of paid photos from each member, or the procedures regarding the choice of accepted photographs. Transparency is connected with support iStockphoto gives its photographers: each rejected photograph gets detailed feedback. Amateur photographers use this knowledge to improve their photographs: sometimes even a person with 25% acceptance rate can jump to 75%–90% acceptance rate through applying continuous feedback [Kempton and Gabbay, 2006]. However, support does not stop there, for instance, iStockphoto organizes iStockalypse events where it provides photographers with models, lightning, locations, and other materials to help them improve their skills.

6.3.4 Channels

iStockphoto communicates with its customers through its forum, iStockalypse events, and e-mails. Besides the common communication about functionality or ideas, the communication on the forum involves setting up competitions, for instance, The Steel Cage, and selecting winners.

6.3.5 Key activities (KA)

Key activities relate to three aspects: sustaining the platform, ensuring quality control, and community nurturing (Table 4). The first activity, sustaining the platform, is important for the company because it physically allows for the various interactions between users and enables the company to grow. The second activity, ensuring quality control, stems from performing activities to ensure quality, and legitimacy of submitted photographs. This is particularly important as some buildings or sites are not legally allowed to be photographed; not following legal guidelines could bring lawsuits.

6.3.6 Key resources (KR)

There are two key resources in iStockphoto's business model: its platform (see Section 6.3.5) and its community. iStockphoto's founder accentuates the importance of its community for its business model: he claims that everyone could copy the business, but creating that community from scratch would be difficult. Although this might sound as flattery rather than a genuine advantage, it is most likely genuine: iStockphoto might have captured some loyalty from its community since it enabled some amateur photographers to

Table 4. iStockPhoto Business Model Canvas, left side

KP – Related to photography – Getty	KA – Community nurturing – Quality control – Platform
	KR – Community – Platform – Brand
	CS Platform-related

make a living from selling photographs, helped some artists improve their work or even encouraged some to become professionals [Howe, 2008].

6.3.7 Partners (P)

The first important partner is Getty, the company that bought iStockphoto in 2006, which gave iStockphoto not only capital to finance its expansions [Carlson, 2007], but also provided patented technologies that helped iStockphoto expand geographically. The second group, which constitutes partners related to photography, mostly serves as a marketing tool: the partners' clients are offered some free iStockphoto photographs.

6.3.8 Revenue Stream (RS) and Cost Structure (CS)

The revenues are driven by photograph sales; depending on the type of customer relationship (80% standard versus 60% purchase price when photographer becomes exclusive to iStockphoto). The cost structure is more difficult to evaluate—the costs associated with running the platform surely exist, since they were the main reason iStockphoto started charging users for downloading photographs. However, for the time being there is no indication about other major costs.

6.4 Quirky

6.4.1 Customer segments (CS)

Quirky serves three customer groups (Table 5). The first group, the inventors, includes people who have a product idea which solves a problem, but do not have the resources to make the product themselves. The second group, the influencers, impacts the products design and earn money in return. The third group, product buyers, both inside and outside the community.

6.4.2 Value proposition (VP)

Value propositions depend on the customer group. The innovators are ordinary people who, in return for product idea and a potential slice of revenues, get their products brought to market. Quirky helps by providing the capabilities and resources the individual does not possess to create the product. The second group, the influencers, offers their expertise or creativity in exchange for money. The third group, the product buyers, receives solutions to everyday problems.

6.4.3 Channels (C)

The channels of communication are key to this business model. Quirky frequently communicates with the community through “Eval” and brainstorming sessions. During the weekly Eval, the staff hosts live product evaluations: the community members can come to company headquarters and discuss the idea,

Table 5. Quirky Business Model Canvas, right side

VP	CR	CS
– For the innovators: “offer those who have a consumer product idea the opportunity to bring it to market.”	Fun, personal and partner-like community	– Inventors
– For the influencers: “get your expertise and ideas turned into money and respect.”		– Influencers
– For the buyers: “receive untypical solutions to everyday problems.”	C Deep and extensive interaction	– Buyers
RS Product sales		

vote on it or share their opinion. Real-time videoconferencing is also provided for those who cannot attend. Brainstorming sessions also take place in the company's headquarters. When a product is chosen for production, the staff discusses ideas about the product in a special room surrounded by cameras: the community is given the opportunity to chat with the staff and videoconference with them.

There are many other means through which Quirky ensures constant interaction with the community: for instance, it hosted a launch party for the community, or the company staff physically meets with the inventors whose products have been chosen for production.

Quirky manages to form a personal relationship with its community as it gives its community the opportunity to meet with the company. All the sessions are fun and interactive; the inventors are given full credit and are featured on the product they invented. As a result, the community, similarly to the case of Threadless, shares a feeling of "love" for the company.

6.4.4 Revenue stream (RS) and cost structure (CS)

The primary source of revenue comes from product sales. Quirky only manufactures products, which reach a certain threshold of orders to ensure the demand for the product covers the cost of producing it. However, combining the revenue stream with cost structure does not yield a profit because of high costs incurred in the business model: Quirky does almost everything in-house, from product prototyping to photo shoots with inventors. Especially the vast amount of machinery kept for prototyping products requires a lot of capital. However, once these costs are amortized over longer periods, the company might reach a profit. This cost structure implies high entry barriers for potential competitors.

6.4.5 Key activities (KA)

There are two groups of key activities highlighted in this model (Table 6). The first one is associated with Quirky producing a physical product, which indicates that the key activities involve industrial design, product prototyping, and selling the product. The second group of key activities is associated with the community: staff has to evaluate the ideas on the basis of viability and nurture the community to keep it submitting ideas.

6.4.6 Key resources (KR)

The key resources in the case of Quirky are the community, employees, and corporate culture. Just like with any crowdsourcing business model, the community is key to the company's bare existence. The employees, particularly in the engineering department, are another important asset: Quirky needs engineers who can

Table 6. Quirky Business Model Canvas, left side

KP	KA
Online and traditional retailers (Bed Bath & Beyond, Radio Shack, Amazon, Auchan)	<ul style="list-style-type: none"> – Product prototyping – Ideas evaluation – Industrial design – Community-related
	KR
	<ul style="list-style-type: none"> – Community – Employees – Corporate culture
<p style="text-align: center;">CS: high cost Manufacturing, prototyping, engineering</p>	

understand various materials, physically prepare prototypes or design a product. The corporate culture is another important aspect of the company. Quirky's core values all go into one direction: to get the product into production. It is perhaps this determination to launch the product that makes the community so engaged: the community sees that the employees want to see the product launch, so they see the probability of it launching as high, which induces them to participate.

6.4.7 Key partners (KP)

Quirky relies on both online and offline retailers to sell their products, for instance Amazon, Bed Bath & Beyond, or Auchan. These partnerships offer the opportunity to sell the company's product in the mass market and popularize the company. Retailers also serve as advisors: before deciding whether to launch a product, retailers are asked their opinion.

7 Discussion

Following the description of the business models, this paper identifies key segments in each company's business model. The building blocks (following Osterwalder and Pigneur's [2010] framework) are given in brackets using the abbreviations used in Section 5 of this paper.

The key building blocks of Threadless business model have been identified (Figure 1) as: customer relationship (CR), community catering (KA), brand (KR), community (KR), key partners (P), and channels ©. These can be presented using two mechanisms (Figure 2).

The customer relationship can be best described using three words: transparency [suggested by Lakhani and Panetta, 2007], fun, and excitement [proposed by Brabham, 2010]. Threadless, like many crowdsourcing companies, is transparent to avoid any backlashes from the community: even increasing the frequency of newsletters had to be accepted by the community before being introduced. Fun and excitement are another important aspect: many Threadless users enjoy participating because it brings them joy. The second building block, community catering (KA) takes on many forms: ensuring that designers have inspiration to design, keep on wanting to be part of the community, and that the community still wants to help the company grow, and so on. These two building blocks have two consequences: "love of community" and "brand community."

The customers value the brand and "love" being a part of community because they find pleasure in interacting with others: working together on designs, discussing changes, waiting for the winners to be announced, and so on. They feel that Threadless offers them this opportunity—the company considers them an important partner by asking for opinions before making any changes to the website. These two effects, love of community and brand community, impact two other areas: brand (KR) and community (KR). As a result of the two effects, the Threadless brand has significant value; a competitor who would try

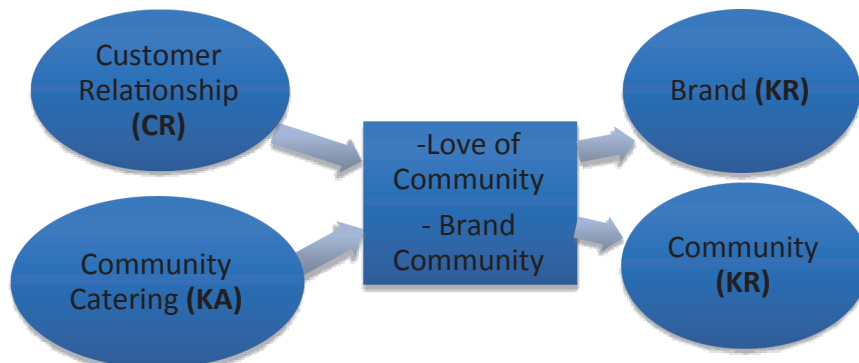


Figure 1. Threadless key building blocks

to imitate the company would have to build their own brand first. Community is also the result of the two phenomena; the two effects make the community exist, be motivated to contribute, and “love” Threadless.

The second mechanism occurs with another building block: key partners. Both the retail partners and design partners increase the number of channels of interaction, nurture the community, increase sales, and serve as a marketing tool. All these consequences have an interesting outcome: they reinforce the network effect. The more channels there are, the more customers are reached, and the more designers want to join; the more the community is nurtured the more designers want to join, and so on. A larger number of talented designers produce better designs, which increases the number of people who want to participate.

iStockphoto’s business model logic is different. In this model, there are four key building blocks: customer relationship, community nurturing (KA), community (KR), and brand (KR). Community nurturing takes place from the beginning: if the photograph does not pass the screening process, the photographer receives feedback. By using feedback, tutorials located on iStockphoto’s webpage, and the forum (together these form the “support” relationship, part of CR), the photographers improve and start passing the selection process. As a result, iStockphoto creates its own pool or network of photographers, both amateurs and professionals, which makes the community its key resource (Figure 3). As the community learns and improves their skills, the iStockphoto brand is enhanced: the quality of submitted photographs improves and the company is probably seen as more professional. This is particularly important as photographs need to be checked for legal issues: if the brand is reliable, customers are not reluctant to buy the photographs.



Figure 2. Threadless network effect mechanism

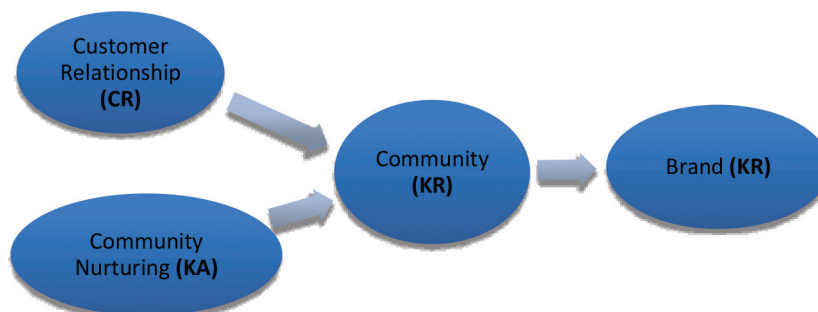


Figure 3. iStockphoto key building blocks

There are five business model key building blocks in the case of Quirky: community nurturing (KA), channels (C), corporate culture (KR), customer relationship (CR), and community (KR) (Figure 4). The channels, for instance, Eval or brainstorming sessions, are meant to engage the community in the process of bringing a product to market. Quirky engages this community through these channels using its corporate culture, which emphasizes doing almost anything to bring the product to market. The channels and the corporate culture together nurture the community (KA) by making it engaged in the whole process. This, in turn, creates the relationship between Quirky and the community (CR), which is similar to that of Threadless: transparent, fun, and exciting. Community nurturing also has an impact on the community itself: it creates a community with certain traits that differs from other communities, for instance, that of iStockphoto.

Although key partners are not included in Figure 4, they are also a key building block: they allow products to be sold to the mass market, enabling Quirky to reach a broad customer base.

Comparing the three business models shows some commonalities between them (Table 7).

These business models have common building blocks: first, the key resource is always the community. However, the community is not a largely random crowd: it has been built over a period of time and holds certain characteristics. It is worth noticing that it does not always fulfill Surowiecki's [2004] "smart crowd" criteria, for instance, iStockphoto's community is quite homogenous. Second, another key building block is customer relationship: the result of such close interaction with the crowd is necessity of determining the type relationship that needs to be formed. However, the characteristics of the relationship differ between the cases: iStockphoto's relationship can be described as transparency and support, while Threadless's fun and transparency. Third, the key common activity is community nurturing with the main goal of motivating community members to participate.

Outside the Business Model Canvas other commonalities became evident:

1. These crowdsourcing business models are a combination of two types of business models: open business models and multisided platforms. They exhibit traits that are characteristic for the two business models. In relation to open business models, they all have screening activities to select products that will be sold. Similarly, they have to learn how to manage the network of external labor: choosing some products over others requires product evaluation guidelines. Multisided platforms are visible in this type of business model: iStockphoto and Threadless are examples of double-sided platforms, Quirky is a triple-sided one. A result of having a business model based on a multisided platform is having different customer groups with different participation motivations, which implies different value propositions. The network effect also plays an important role in this crowdsourcing business model.



Figure 4. Quirky business model's key building blocks

Table 7. Commonalities between business models

Shared key building blocks		Not shared key building blocks			
		Brand	Partners	Corporate culture	Channels
Threadless	Customer relationship (CR)	✓	✓	x	✓
iStockphoto	Community (KR)	✓	X	x	x
Quirky	Community nurturing (KA)	x	✓	✓	✓

2. Crowdsourcing initiatives are not mainly about the end product, they are about the experience. This relates more to the community members. Both Threadless and Quirky were founded because the founders won a t-shirt design competition or saw someone wear their product. They both realized the strength of that feeling and decided to give others the opportunity to experience it [Ludwig, 2012]. Threadless designers take part in competitions not only to win the award: seeing someone wear their design evokes extremely strong, positive feelings in them. It is the same feeling that Quirky inventors feel when they see their product on shelves, with their photograph and name on it. Even the community members who do not win experience peer recognition, learn, and have followers, which is a different form of experience. This helps to sustain the business model where the costs of participation in the competition are vast, yet the chances of winning slim.
3. Product and content crowdsourcing initiatives blur the line between fun and work. In crowdsourcing, crowds contribute their time and resources to perform certain activities that are normally paid for. However, crowds sometimes get paid for these tasks⁷, while sometimes they do not⁸. What all three cases have in common is the element of fun: even iStockphoto has a special contest, *The Steel Cage* where photographers can “duel” each other to a Ping-Pong-like match of Photoshop. The element of fun might be specific to product and content crowdsourcing initiatives—after all, it’s hard to argue that this could apply to, for instance, Innocentive.
4. One important factor might contribute to the crowd motivation: the joy of creation. In one of TedxBoulder events Threadless CEO, Jake Nickell, speaks of the importance of creating. He talks about how Jeff Howe went with a work tour for a year, where he met many creative people. He noticed that they were creating things not because they wanted to make money from it, but because “making stuff is the most joyful occupation in which we ever engage” [TEDxTalks, 2011]. While Jake Nickell agrees with the quote, it seems more romantic than scientific. However, it might bring value as it captures why, potentially, people want to engage in product and content market crowdsourcing initiatives: creating something, like a physical product, gives a vast sense of enjoyment.

8 Conclusions

This study illustrated the commonalities between content and product crowdsourcing business models. Although the business models had some differences in their key building blocks, three common segments were also captured. Four other themes, relating mostly to the elements of fun and the feeling of creating something, also surfaced.

The paper has implications for managers both employed inside crowdsourcing ventures and outside. Understanding crowdsourcing business models and identifying their key building blocks give those involved in crowdsourcing initiatives insight about factors crucial for their company and point to where they need to concentrate their resources and time. Crowdsourcing start-ups are also given a sense of direction regarding the various choices they can or need to make.

Understanding crowdsourcing business models has also implications for those who compete with crowdsourcing ventures, for instance, incumbent firms in relative industries. They can recognize the various strengths and weaknesses associated with these crowdsourcing business models and use them to their advantage. Also, when incumbents want to build their own communities, they can realize the cost associated with that and learn how to build such communities.

Companies wanting to use crowdsourcing methods need to remember that there are certain consequences of using crowds. First, having crowds as a key asset implies a necessity to take care of the crowd, to nurture it: letting it simply be neither builds a community nor sustains one. Second, such an interaction requires developing a specific customer relationship. Third, a barrier to entry, network effect,

⁷ The most extreme case being iStockphoto, where members can earn the equivalent of their wages.

⁸ Threadless users who comment on designs.

must be considered before launching a crowdsourcing initiative. Fourth, crowds need an element of fun or excitement to blur the line between fun and work. Fifth, crowdsourcing is often not just about the end product, but more about the “experience.” Mechanisms must exist to ensure that community members can benefit not just from introducing the end product, but also from interacting with each other. Sixth, the “joy of creation” might induce crowd participation, so tasks that have potential to wake such feeling should be considered to be given to the crowd.

To expand the base of knowledge on crowdsourcing initiatives, further research could consider applying a different framework, for instance, Amit and Zott’s [2012], which is tailored to e-businesses. Viewing the business models from a different perspective could provide additional insights and show new mechanisms. Comparing product and content business models to incumbent firms in their relative industries could also provide additional insight regarding where the strengths and weaknesses of such business models lie and propose how to use that knowledge. Another interesting area of research could focus on determining whether the “joy of creation” or the elements of fun and transparency are also driving other crowdsourcing ventures.

As with any other study, ours is not without limitations. The presented analysis is based on three case studies, and the methods, model that we put forth in the paper, are surely not exhaustive. Although the case studies were chosen to be diverse, the findings might be different when one analyses different case studies. Similarly, the cases were analyzed using a specific framework. However, each framework has its advantages and disadvantages. Although Business Model Canvas is useful to analyze and compare businesses, it has certain drawbacks for analyzing crowdsourcing ventures. For example, it doesn’t cover crowd motivations, which allow to understand the reasons why these companies function, and how they function. Similarly, it doesn’t easily capture any mechanisms, such as brand community, network effect, or switching costs. In this paper, this is evidenced by the reflections that emerged during analysis, but are not visible in the Business Model Canvas itself. We feel that our recommendation will only get better once more engagement research join our attempts at presenting various business models based on crowds.

References

- Amit, R., Zott, C. (2012), Creating value through business model innovation, MIT Sloan Management Review, Vol. 53, No. 3, pp. 41–49.
- Amrollahi, A. (2015), A process model for crowdsourcing: insights from the literature on implementation, in: Australasian Conference on Information Systems, Adelaide, pp. 1–12.
- Baden-Fuller, C.H., MacMillan, I., Demil, B., Lecocq, X. (2008), Call for papers for *Long Range Planning* special issue on business models.
- Brabham, D.C. (2008a), Crowdsourcing as a model for problem solving: an introduction and cases, *Convergence*, The International Journal of Research into New Media Technologies, Vol. 14, No.1, pp. 75–90.
- Brabham, D.C. (2008b), Moving the crowd at iStockphoto: the composition of the crowd and motivations for participation in a crowdsourcing application, *First Monday*, [Online], Vol. 13, No. 6, retrieved from: <http://journals.uic.edu/fm/article/view/2159/1969> [11th August].
- Brabham, D.C. (2010), Moving the crowd at threadless. *Information, Communication & Society*, Vol. 13, No. 8, pp. 1122–1145.
- Brabham, D.C. (2011), Crowdsourcing: a model for leveraging online communities, in: A. Delwiche, J. Henderson, (Eds), *The handbook of participatory cultures*, Routledge, New York.
- Bucherer, E., Eisert, U., Gassmann, O. (2012), Towards systematic business model innovation: lessons from product innovation management, *Creativity and Innovation Management*, Vol. 21, No. 2, pp. 183–199.
- Burkitt, L. (2010), Need to build a community? Learn from threadless. *Forbes*, [Online], retrieved from: <http://www.forbes.com/2010/01/06/threadless-t-shirt-community-crowdsourcing-cmo-network-threadless.html> [1st August 2013].
- Busarovs, A. (2011), Crowdsourcing as user-driven innovation, new business philosophy’s model, *Journal of Business Management*, Vol. 4, pp. 53–60.
- Carlson, N. (2007) Bruce Livingstone, President, CEO, iStockphoto, [Online], retrieved from <http://www.internetnews.com/ec-news/article.php/3674556> [8th August 2013].
- Casadesus-Masanell, R., Ricart, J.E. (2010), From strategy to business models and onto tactics’, *Long Range Planning*, Vol. 43, pp. 195–215.
- Chanal, V., Caron-Fasan, M.-L. (2010), How to invent a new business model based on crowdsourcing: the Crowdsprit® case, HAL Id: halshs-00486794, retrieved from <https://halshs.archives-ouvertes.fr/halshs-00486794>.

- Colao, J.J. (2013), Crowdsourcing, *Forbes*, [Online], retrieved from <http://www.forbes.com/sites/jjcolao/2013/05/09/can-a-crowdsourcing-invention-company-become-the-best-retailer-in-the-world/> [3rd August 2013].
- Dahlander, L., Piezunka, H. (2014), Open to suggestion: how organization elicit suggestions through proactive and reactive attention, *Research Policy*, Vol. 43, No.5, pp. 812–827.
- Dawson, R., Byngghall, S. (n.d.), Crowd business models, [Online], retrieved from <http://www.resultsfromcrowds.com/features/crowd-business-models/> [3rd August 2013].
- Enright, A. (2010), Increased e-mail frequency and relevance bring new sales for Threadless.com, retrieved from <http://www.internetretailer.com/2010/08/20/increased-e-mail-frequency-brings-new-sales-threadlesscom> [13th August 2013].
- Estellés-Arolas, E., González-Ladrón-De-Guevara, F. (2012), Towards an integrated crowdsourcing definition, *Journal of Information Science*, Vol. 32, No. 2, pp. 189–200.
- Franke, N., Lettl, C., Roiser, S., Tuertscher, P. (2013) Does god play dice? Randomness vs. deterministic explanation of idea originality in crowdsourcing, in: 35th DRUIT Celebration Conference, Barcelona.
- Friedman, M. (2010), Dig users lash out at new format, join forces with reddit. *Time*, [Online], retrieved from <http://newsfeed.time.com/2010/08/30/digg-users-lash-out-at-new-format-join-forces-with-reddit/> [10th August 2013].
- Ghezzi, A., Gabelloni, D., Martini, A., Natalicchio, A. (2017), Crowdsourcing: a review of suggestions and future research, *International Journal of Management Reviews*, Vol. 20, No. 2, pp. 343–342.
- Hiennerth, C., Keinz, P.P., Lettl, C. (2011), Exploring the nature and implementation process of user-centric business models, *Long Range Planning*, Vol. 44, pp. 344–374.
- Ho, Y.C., Fang, H.C., Hsieh, M.J. (2011), The relationship between Business-model innovation and firm value: a dynamic perspective, *World Academy of Science, Engineering and Technology*, Vol. 77, pp. 656–664.
- Hossain, M., Kauranen, I. (2015), Crowdsourcing: a comprehensive literature review, *Strategic Outsourcing: An International Journal*, Vol. 8, No. 1, pp. 2–22.
- Howe, J. (2006), The rise of crowdsourcing, *Wired Magazine*, Issue 14.06, retrieved from http://www.wired.com/wired/archive/14.06/crowds_pr.html.
- Howe, J. (2008), *Crowdsourcing*, Crown Publishing Group, New York.
- Kavaliova, M., Virjee, F., Maehle, N., Kleppe, I. A. (2016), Crowdsourcing innovation and product development: Gamification as a motivational, *Cogent Business & Management*, Vol. 3, No.1, pp. 1–18.
- Kempton, L., Gabbay, N. (2006), iStockphoto case study: how to evolve from a free community site to successful business, retrieved from <http://web.archive.org/web/20080213030045/http://www.startup-review.com/blog/istockphoto-case-study-how-to-evolve-from-a-free-community-site-to-successful-business.php> [8th August 2013].
- Lakhani, K.R., Panetta, J.A. (2007), The principles of distributed innovation, *Innovations: Technology, Governance, Globalization*, Vol. 2, No. 3, pp. 97–112.
- Levy, P. (1995), *Collective intelligence: Mankind's emerging world in cyberspace*, Perseus Book Cambridge, MA, USA, ISBN: 0306456354.
- Li, G. (2016), The application and innovation of crowdsourcing in the internet age, *Open Journal of Social Sciences*, Vol. 4, No. 3, pp. 199–204.
- Ludwig, A. (2012), Don't call it crowdsourcing: quirky CEO Ben Kaufman brings invention to the masses. *Forbes*, [Online], retrieved from <http://www.forbes.com/sites/techonomy/2012/04/23/dont-call-it-crowdsourcing-quirky-ceo-ben-kaufman-brings-invention-to-the-masses/> [4th August 2013].
- Magretta, J. (2002), Why business models matter, *Harvard Business Review*, Vol. 80, No. 5, pp. 86–92.
- Malone, T.W., Laubacher, R., Dellarocas, C. (2010), The collective intelligence genome, *Sloan Management Review*, Vol. 5, No. 3, pp. 21–31 (Reprint No. 51303).
- Marjanovic, S., Fry, C., Chataway, J. (2012), Crowdsourcing based business models: in search of evidence for innovation 2.0, *Science and Public Policy*, Vol. 39, No. 3, pp. 318–332.
- Massa, L., Tucci, C.L. (2014), Business model innovation, in: M. Dodgson, D.M. Gann, N. Phillips, (Eds), *The Oxford handbook of innovation management*, Oxford University Press, Oxford, UK, pp. 420–441.
- Massa, L., Tucci, Ch.I., Afuah, A. (2017), A critical assessment of business model research, *Academy of Management Annals*, Vol. 11, No. 1, pp. 73–104.
- Menichinelli, M. (n.d.), Threadless – business model, [Online], retrieved from http://p2pfoundation.net/Threadless_-_business_model [1st August 2013].
- Muhdi, L., Boutellier, R. (2011), Motivation factors affecting participation and contribution of member in two different Swiss innovation communities, *International Journal of Innovation Management*, Vol. 15, No. 3, pp. 543–562.
- Muniz, A.M. Jr., O'Guinn, T.C. (2001), Brand community, *Journal of Consumer Research*, Vol. 27, No. 4, pp. 412–432.
- Nielsen, C., Lund, M. (2014), An introduction to business models, in: C. Nielsen, M. Lund, (Eds), *The basics of business models*, BookBoon.com/Ventus Publishing Aps, Copenhagen, Denmark.
- Nishikawa, H., Schreier, M., Ogawa, S. (2013) Under-generated versus designer-generated product: a performance assessment at Muji, *International Journal of Research in Marketing*, Vol. 30, No. 2, pp. 160–167.
- Osterwalder, A., Pigneur, Y. (2010), *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*, John Wiley and Sons, Inc. Hoboken, New Jersey, ISBN: 978-2-8399-0580-0.

- Poblet, M., García-Cuesta, E., Casanovas, P. (2017), Crowdsourcing roles, methods and tools for data-intensive disaster management, *Information Systems Frontiers*, Vol. 20, No. 6, pp. 1363–1379.
- Prpić, J. (2016), Next generation crowdsourcing for collective intelligence, *Collective Intelligence*, arXiv preprint arXiv:1702.03109, 2017 - arxiv.org.
- Prpić, J., Shukla, P. (2016), Crowd science: measurements, models, and methods, in: 49th Hawaii International Conference on System Sciences, Kauai, Hawaii, USA, pp. 4365–4374.
- Prpić, J., Taeihagh, A., Melton, J. (2015), The fundamentals of policy crowdsourcing, *Policy & Internet*, Vol. 7, pp. 340–361.
- Results from crowds. (n.d.), [Online], retrieved from <http://www.resultsfromcrowds.com/features/crowd-business-models/> [3rd August 2013].
- Roome, N., Louche, C. (2016), Journeying toward business models for sustainability: a conceptual model found inside the black box of organisational transformation, *Organization & Environment*, Vol. 29, pp. 11–35.
- Roszkowska, D. (2017), External knowledge sourcing and innovation processes in modern economic environment, *International Journal of Management and Economics*, Vol. 53, No. 2, pp. 39–56.
- Schweitzer, F.M., Buchinger, W., Gassmann, O., Obrist, M., (2012) Crowdsourcing: leveraging innovation through online idea competition, *Research Technology Management*, Vol. 55, No. 3, pp. 32–38.
- Simchi-Levi, D., Kaminsky P., Simchi-Levi E. (2007), *Designing and managing the supply chain, concepts, strategies and case studies*, 3rd edn, McGraw-Hill.
- Smith, C., Fixson, S.K., Paniagua-Ferrari, C., Parise, S. (2017), Evolution of an Innovation Capability, *Research-Technology Management*, Vol. 20, No. 2, pp. 26–35.
- Surowiecki, J. (2004), *The wisdom of crowds: why the many are smarter than the few and how collective wisdom shapes business, economies, societies, and nations*, Doubleday, New York.
- Taeihagh, A. (2017), Crowdsourcing, sharing economies and development, *Journal of Developing Societies*, Vol. 33, No. 2, pp. 191–222.
- Täuscher, K. (2016), Leveraging collective intelligence: how to design and manage crowd-based business models, *Business Horizons*, Vol. 60, No. 2, pp. 237–245.
- Taylor, P. (2011), Using crowdsourcing for product development. *Financial Times*, [Online], retrieved from <http://www.ft.com/cms/s/0/e66f157e-a72d-11e0-b6d4-00144feabdc0.html#axzz2b72ajZaz> [5th August 2013].
- TEDxTalks (2011), TEDxBOULDER – Jake Nickell – Never Stop Making, [Video], retrieved from <http://www.youtube.com/watch?v=mB2e4f1YhYw> [15th August 2013].
- Teece, D.J. (2010), Business models, business strategy and innovation, *Long Range Planning*, Vol. 43, pp. 172–194.
- The Economist. (2012), All together now; Collaborative manufacturing, *The Economist*, (August 8).
- Vanhaverbeke, W., Chesbrough, H. (2014), A classification of open innovation and open business models, in: *New frontier in open innovation*, (Eds), H. Chesbrough, W. Vanhaverbeke, J. West, Oxford University Press, Oxford, pp. 50–70.
- Velu, C., Stiles, P.P. (2013), Managing decision-making and cannibalization for parallel business models, *Long Range Planning*, Vol. 46, pp. 443–458.
- Von Hippel, E.A. (1994), Sticky information' and the locus of problem solving: implications for innovation, *Management Science*, Vol. 40, No. 4, pp. 429–439.
- Waldner, F., Poetz, M.K. (2015), Crowdsourcing business model innovation, in: Paper to be presented at DRUID conference, 15, Rome, June 15–17.
- Wikhamn, B.R., Wikhamn, W. (2013), Structuring of the open innovation field, *Journal of Technology Management & Innovation*, Vol. 8, No. 3, pp. 173–185.
- Wilson, M., Robson, K., Botha, E. (2017), Crowdsourcing in a time of empowered stakeholders: lessons from failed crowd-sourcing campaigns, *Business Horizons*. doi:10.1016/j.bushor.2016.11.009.
- Zheng, H., Li, D., Hou, W. (2011), Task design, motivation, and participation in crowdsourcing contests, *International Journal of Electronic Commerce*, Vol. 15, No. 4, pp. 57–88.
- Zott, C., Amit, R. (2010), Business model design: an activity system perspective, *Long Range Planning*, Vol. 43, No. 2–3, pp. 216–226.
- Zott, C., Amit, R., Massa, L. (2011), The business model: recent developments and future research, *Journal of Management*, Vol. 37, pp. 1019–1104.