Crowdsourcing-based business model for online customer service: A case study

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Abstract: Crowdsourcing has changed how people work and created new types of business models. Crowdsourcing can be utilised by outsourcing small organisational tasks that are usually performed in-house or building the whole business concept upon an unknown crowd. This paper presents how a literature-based framework can be applied to develop an innovative crowdsourcing-based business model in online customer service. The relevant literature on crowdsourcing, business models, and customer services was reviewed. The business model of a start-up firm was analysed in the empirical study. The key elements, challenges, and benefits of a crowdsourcing-based online customer service business were defined. The key challenges of the model include service quality, service availability, crowd motivation, client attraction, a balance between the crowd and client numbers, and platform-related challenges. The main advantages of the model include cost-effectiveness, an industry-specific crowd, service availability, competitive service quality, human touch, and a lower price point.

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1. Introduction

The concept of crowdsourcing was first introduced by Howe (2006) and refers to outsourcing organisational tasks to an undefined large group of people. Today, crowdsourcing has affected how people think about work and how firms do business. People can conduct work more freely, earn income, or make use of their free time or assets for other things (Howe, 2009). Crowdsourcing has resulted in the emergence of completely new types of business models – for example, the biggest accommodation firm globally (Airbnb) does not own a single room and the biggest taxi firm (Uber) does not own any cars. Yet these firms are just a few examples, as the internet has exponentially increased the opportunities to utilise crowdsourcing around the world (Saxton et al., 2013). Some firms expand rapidly around the world, and some stay within their national borders, while some disappear from the market.

Unique factors in a crowdsourcing business model include opening firms' internal information to groups of unknown people, depending on the internet, and creating the majority of the firm's value using people outside the focal organisation (Kohler, 2015). The possibilities of crowdsourcing are great; thus, studying crowdsourcing is appealing and valuable from both academic and practical perspectives.

However, knowing solely about crowdsourcing is insufficient when firms pursue the creation of a successful and sustainable crowdsourcing-based business model. Therefore, tools such as the business model canvas (Osterwalder and Pigneur, 2010) are needed. The use of the value creation, delivery, and capture framework is especially vital in the early phases of a business (Morris et al., 2005). Developing an understanding of the unique characteristics and requirements of crowdsourcing and defining all the required key factors in the business model canvas is a challenge that many existing and new enterprises face today. This topic is also quite novel in academic research, particularly regarding online customer service business.

This study aims to analyse how a literature-based framework can be applied to create a crowdsourcing-based business model for online customer service business. The literature-based framework was utilised to analyse the business model of the case firm (Smilee), which is a start-up with a novel online customer service offering. The research questions (RQs) were set as follows:

RQ1: What is crowdsourcing and how can it be utilised in an online customer service business?

RQ2: What are the elements, challenges, and advantages of the crowdsourcing-based business model of the case firm?

This paper begins by presenting relevant literature on crowdsourcing, business models, and customer services. Then the study's research methodology and findings are presented and discussed. The paper concludes by highlighting the study's results, limitations, and future research recommendations.

2. Crowdsourcing, business models, and customer services

2.1. Crowdsourcing

Crowdsourcing is the practice of engaging a 'crowd' of people to achieve a common goal – often innovation, problem-solving, or efficiency. The term was first introduced by Howe (2006). Howe (2009) later defined that in crowdsourcing a task that is traditionally performed by a designated agent (such as an employee or a contractor) is outsourced through an open call to an undefined but large group of people. The power of the crowd allows to accomplish tasks that were once the province of just a specialised few. The interest in crowdsourcing has increased in recent years (Assis Neto and Santos, 2018), and various definitions of the term have been proposed. For example, Estellés-Arolas and González-Ladrón-de-Guevara (2012) aimed to provide a unified definition and formulated the following eight key characteristics for a crowdsourcing system: there is a clearly defined crowd, there exists a task with a clear goal, the recompense received by the crowd is clear, the crowdsourcer is clearly defined, the compensation for the crowdsourcer is clearly defined, the system is an online-assigned process of the participative type, it uses an open call of a variable extent, and it uses the internet.

Hosseini et al. (2014) and Murturi et al. (2015) presented four defining elements of crowdsourcing. These include the crowd, the crowdsourcer, the crowdsourcing task, and the crowdsourcing platform. These elements are key in crowdsourcing, and their definitions explain the core of crowdsourcing. The crowd can be defined as a large group or network of people (Howe, 2009) who participate in crowdsourcing tasks (Hosseini et al., 2014). The crowd participants can work independently or collaboratively (Nakatsu et al., 2014; Saxton et al., 2013) and mostly online (Hosseini et al., 2014).

The crowd is utilised for production, innovation, problem-solving (Saxton et al., 2013), or cost efficiency (Howe, 2009). The crowd executes the crowdsourced tasks in exchange for some incentives (Vukovic, 2009), but firms do not permanently employ the people in the crowd (Ford et al., 2015; Saxton et al., 2013). To engage people and ensure they participate and complete the tasks successfully, motivational incentives are required (Allahbakhsh et al., 2013; Ford et al., 2015; Howe, 2009). These incentives can be, for example, monetary, material, or psychological (Allahbakhsh et al., 2013). Some people may work for fun or to share knowledge (Estellés-Arolas and González-Ladrón-de-Guevara, 2012) or to get credit for an innovation (Ford et al., 2015). The incentives can also be self-advancement, curiosity, altruism, talent and experience accumulation, reputation, or a chance to get some type of social benefit (Ford et al., 2015).

The crowdsourcer is either a for-profit or nonprofit entity, an institution, a firm, or a person that initiates the crowdsourcing process and seeks the crowd to complete the task at hand (Estellés-Arolas and González-Ladrón-de-Guevara, 2012; Hosseini et al., 2014; Zhao and Zhu, 2014). In return for task completion, the crowdsourcer receives knowledge, talent, ideas, skills, experience, money, social feedback, or some type of added value (Estellés-Arolas and

González-Ladrón-de-Guevara 2012). The crowdsourcer also manages and reimburses the crowd after the successful completion of the requested task and is expected to give and receive feedback regarding task completion, platform, or other changes (Vukovic, 2009). The crowdsourcer may also be a client who sponsors the task participation and buys the product or service (Kohler, 2015).

The crowdsourcing task is an outsourced activity provided by the crowdsourcer and performed by undefined individuals – that is, the crowd (Hosseini et al., 2014). The task can be a fundraising scheme, a problem, data collection, or an innovation-seeking model (Allon and Babich, 2020; Hosseini et al., 2014). The crowd needs to provide, for example, money, expertise, experience (Estellés-Arolas and González-Ladrón-de-Guevara, 2012), skills, or ideas to complete the task (Hosseini et al., 2014). Tasks are the ultimate core in crowdsourcing (Nakatsu et al., 2014). The tasks must be properly defined for the right crowd to pick and perform the tasks successfully. Providing enough information and precise requirements is vital (Allahbakhsh et al., 2013).

The crowdsourcing platform is the system, either software or nonsoftware, within which the crowdsourcing tasks are performed (Hosseini et al., 2014). The platform is provided, maintained, and developed by the firm that uses crowdsourcing as its core business model and enables interactions between the crowd and the crowdsourcer (Hoßfeld et al., 2011; Hosseini et al., 2014; Kohler, 2015; Vukovic, 2009). Thus, the platform facilitates the other main elements of crowdsourcing. The platform must attract both the crowd and the crowdsourcer; otherwise, it would be unsustainable (Kohler, 2015). Even though the crowd and the crowdsourcers may change within the platform, the platform itself should not change radically and should stay as the core of the business (Suchita and Uguccioni, 2013).

The four elements – that is, the crowd, crowdsourcer, tasks, and platform – create a crowdsourcing system. It is a man-made socio-technical system involving a process or processes that transform the crowd inputs into outputs (Liu et al., 2016; Zhao and Zhu, 2014). This process begins with registration and ends with task compensation (Zhao and Zhu, 2014). Estellés-Arolas and González-Ladrón-de-Guevara (2012) defined the crowdsourcing process as an online process distributed by the internet which requires the participation of the crowd. The process includes other characteristics, depending on the chosen crowdsourcing initiative. Nakatsu et al. (2014) also formed a clear four-step process for crowdsourcing. These steps include registration and specification, a crowdsourcing request, the process of carrying out the request, and completion of the crowdsourcing task.

2.2. Business models and customer services

The term 'business model' is common among industry practitioners, but people can interpret it in different ways. Hamermesh et al. (2002, p. 1) define a business model as 'a summation of the core business decisions and trade-offs employed by a firm to earn a profit'. These business decisions and trade-offs fall into the following four groups: revenue sources, size of the investment, key expenses, and key success factors. Osterwalder and Pigneur (2010), in turn, note that business models describe how organisations create, deliver, and capture value. According to Johnson et al. (2008), the elements of a successful business model include customer value propositions (target customer, job to be done, and offering), profit formulas (revenue model, cost structure, margin model, and resource velocity), key resources (e.g., people, technology, products, equipment, information, channels, partnerships, alliances, and brand), and key processes (e.g., processes, rules and metrics, and norms).

Osterwalder and Pigneur (2010) propose a canvas for describing and analysing business models. This canvas includes the following nine elements: customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partners, and cost structure. In addition to these elements, the relationships between them are important. The business model canvas has been found useful in analysing various businesses, such as the smartphone business (Majava and Isoherranen, 2019).

Customer segments refer to the groups of people or organisations that the firm aims to serve. Value propositions include product and service bundles that are offered to each customer segment. More specifically, 'the value proposition is an aggregation or bundle of benefits that a firm offers customers' (Osterwalder and Pigneur, p. 22). The values can be qualitative (e.g., design or customer experience) or quantitative (e.g., speed of service or price). Channels are the methods that are used to reach and communicate with the customers, whereas customer relationships refer to the types of relationships a firm establishes with each segment. Revenue streams include the cash that a firm generates from its customer segments. Key resources describe the assets that are necessary for the business model to function, whereas key activities refer to the most critical things that must be performed. The last two elements, key partnerships and cost structure, describe the needed supplier and partner network and all costs incurred in operating the business model (Osterwalder and Pigneur, 2010).

Customer service and firm performance have been found to have a positive correlation (Vickery et al., 2003). Customer services include various dimensions whose importance is dependent on the industry (Isoherranen and Majava, 2018). Different dimensions include pre-sales service, delivery dependability and speed, product technical support (after-sales service), and responsiveness to customer queries, among others. The supply chain for after-sales differs from the production supply chain in terms of the nature of demand, response times, performance metrics, the number of products, delivery network, inventory management, and reverse logistics (Cohen et al., 2006; Iraqi et al., 2016; Puurunen et al., 2014). The emergence of new technologies, such as 3D printing (Martinelli and Christopher, 2019), are also affecting after-sales services supply chains.

A natural way for a firm to expand its offering to services is to start offering product support services. According to Lele and Karmakar (1983), product support covers everything that can increase the customer's after-sales satisfaction, including spare parts and spare parts delivery, service, warranty, user and maintenance training, reliability, and serviceability engineering, and even product design. According to Cohen et al. (2006), the transition from products to solutions has provided opportunities for gaining new revenue sources from after-sales services. Customer service activities can be important for a firm's image, customer satisfaction, and customer retention (Saccani et al., 2006). Thus, customer service experience must be carefully considered when a firm designs its business model. Cohen et al. (2006) have categorised customer care business models based on service priorities, terms, and product owners. The models range from disposal (e.g., razor blades) to power by the hour (e.g., aircraft engines). The applicable models are typically industry-dependent.

2.4. Crowdsourcing-based business models for online customer services

Crowdsourcing-based business models are a relatively new phenomenon (Kohler, 2015). Yet the business models must not always be developed from scratch because crowdsourcing can also be added into an existing business model either by first crowdsourcing some business actions or using an existing customer base to gradually move into crowdsourcing (Kohler and Nickel, 2017).

Walter and Back (2010) summarise five business model characteristics when using crowdsourcing as a key resource. These include value creation by crowdsourcing, crowd description, incentives, issues, and technical solutions. Clarifying these characteristics enables defining the crowdsourcing concept and prepares the firm for possible obstacles. Value creation by crowdsourcing refers to determining how the crowd adds value to the end products or services, the concrete tasks, and whether these tasks match with the whole concept of crowdsourcing. The crowd description refers to the crowd size and assembly. Also, regarding incentives, the firm determines the types that are used in particular cases. The firm must also consider potential issues before initiating crowdsourcing. Lastly, technical solutions should be defined to support the crowdsourcing process.

The body of knowledge for creating a crowdsourcing-based business model for online customer services is not fully sufficient yet. Therefore, the extant frameworks used by other crowdsourcing firms may provide beneficial guidance. Table 1 presents a modified version of the Kohler's (2015) framework on business model canvas for crowdsourcing organisations.

Table 1. Business model canvas in crowdsourcing (modified from Kohler, 2015).

| Business model element	Key questions	Examples in crowdsourcing-based online customer services
Customer segments	Who are the primary creators on the platform? Which group of people is the value being created for?	Crowd, crowdsourcer, clients
Value proposition	What is the core value unit of this platform? What is the value that the platform creates for creators and consumers?	Cost reduction, high-quality support, sales channel, on-demand availability
Customer relationships	How does the firm attract and engage crowd members?	Marketplace, peer-to-peer
Channels	Through which channels is the firm reaching the crowd?	Website, mobile application, networking
Revenue streams	How does the firm generate revenues from customers? Which rewards are offered to the crowd for participating?	Service and transaction fee, advertising, rewards
Key resources	Which resources does the crowd provide that the firm requires for creating value?	Crowd community, expertise
Key activities	Which activities does the firm perform to create value with the crowd? Which activities does the crowd perform to create value?	Connect, provide a platform, offer service transactions
Key partners	Which partners are required for the business model to work?	Partners for acquiring crowd and clients
Cost structure	What are the costs for the firm to create and deliver value? What are the costs for the crowd to participate in the model?	Platform development, marketing

3. Research process

3.1. Research approach

This research adopted the qualitative approach. Considering the real-life context and the business model development process that was carried out, the researchers decided to utilise the action research approach in the study. This was considered the most suitable approach because the researchers facilitated and contributed to the research context. Action research stresses the interplay between practice and theory – the generation of intervention or action combined with research that intends to develop knowledge (Reason and Bradbury, 2001). Furthermore, based on the action research setting, the researchers decided to utilise the case study strategy.

Case studies are empirical inquiries that study phenomena within the real-life context to understand them, either by learning something about the case itself or by generating a broader understanding (Yin, 2009). This study was based on a single in-depth case of a Finnish online customer service start-up firm called Smilee. The literature base for the study was built by examining the following concepts: crowdsourcing, business models, and customer services.

Triangulation, which requires data collection from multiple sources, is considered important to enhance the reliability and validity of case study research (Eisenhardt, 1989; Voss et al., 2002). Data for this study were collected using (1) the researchers' observations and notes during the 24 months of research and business model development; (2) firm-, market-, and online service-related data, which were collected by observing, utilising internal documentation, and conducting workshops in the case firm; and (3) interviews with 30 existing and potential clients.

The data collected were analysed using a qualitative approach (Eisenhardt, 1989) and the business model created was validated with 15 potential customers through phone interviews. The key findings are presented in section 4 and discussed in section 5. It should be noted that in action research, the researcher can influence the phenomenon under study and can even change it purposefully, which can affect the objectivity and generalisability of the results. Despite these limitations, the action research approach and a single case study are best suited for exploratory research to meet the research objectives. Figure 1 illustrates the research process.
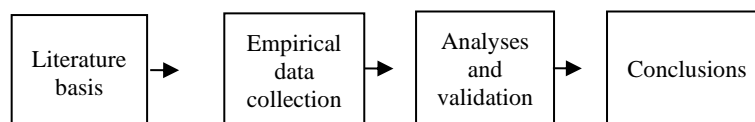
Figure 1. Research process.

3.2. Case description: Smilee

Smilee is a start-up firm that is based in Oulu, Finland. It provides online customer service and software to support the service. The firm was founded in 2013 and currently employs roughly 15 people. In addition, the firm has approximately 15 freelance online customer service team members. Smilee provides a chat software tool and an outsourced online customer service for their clients. The cloud-based chat tool is sold as software as a service. The clients can also outsource their online customer service to Smilee. The firm's vision is to utilise crowdsourcing so that the large, global crowd will produce the online customer service in the worldwide markets.

The firm's current operating model for producing online customer services relies on traditional methods. The employees are freelancers who can work either in the firm's office or at home. However, this model is considered to be only temporary, since the firm aims to move towards crowdsourcing. The first step towards this goal was to recruit employees from all over

Finland. The introduction and training were conducted remotely on the internet. The future plan includes a crowdsourcing platform where the crowd can serve customers via online chat application on the clients' websites.

4 Results

4.1. The elements of crowdsourcing in the case firm

Crowdsourcing is the practice of engaging a 'crowd' of people to achieve a common goal – often innovation, problem-solving, or efficiency. According to Hosseini et al. (2014) and Murturi et al. (2015), crowdsourcing consists of four defining elements: the crowd, the crowdsourcer, the crowdsourcing task, and the crowdsourcing platform. In the case under study, the firm aims to use crowdsourcing to provide online customer services for their clients. The firm provides the crowdsourcing platform, which enables the clients (crowdsourcer) to outsource their online customer service (tasks) to a selected crowd of online customer service agents. The objective of crowdsourcing from the case firm point of view is to gain a competitive advantage over competing offerings because the crowd-produced service is deemed to result in low costs and high service quality.

4.2. Crowdsourcing-based business model

It was found that the case firm's crowdsourcing business model exploits a multi-sided platform approach, i.e., it aims to provide unique value propositions for both the clients and the crowd (Figure 2). From the clients' perspective, the essence is high-quality, industry-specific online customer service that is available any time and with competitive pricing. For the crowd, the firm's key value proposition entails flexible employment in terms of location and working hours.

Key partners	Key activities	Value proposition	Customer relationships	Customer segments
Strategic business partners, resellers, investors, advisors, technology partners	Service production, platform development and operation, sales, marketing, crowd training and validation	For the clients: High-quality, industry-specific online customer service available any time with competitive pricing	Create and maintain with both the clients and the crowd but different priorities for cost efficiency	Large car dealers and importers, environment and waste management organisations, manufacturing firms
	Key resources Crowd, core team, advisors, clients, platform, equity, other monetary resources	For the crowd: Flexible employment in terms of location and working hours	**Channels** Face-to-face meetings, crowdsourcing platforms, LinkedIn, Facebook, Instagram, Snapchat	University students looking for income opportunities with flexible terms (part-time or full-time)

Cost structure	Revenue streams
Platform costs, sales and marketing costs, channel costs, core team salaries, crowd monetary rewards and incentives	Recurring fixed monthly price, varying unit-based price for the chats, potentially monthly fees or royalties from the crowd

Figure 2. Case firm's crowdsourcing-based business model.

Based on the research findings, the customer segments with the highest potential were identified to be large car dealers and importers, environment and waste management organisations, and manufacturing firms. The key crowd segments, in turn, were identified to be university students who are looking for income opportunities with flexible terms. Some people in the crowd would work part-time and others full-time. Ideally, people would already have experience and expertise in cars, environment, or manufacturing.

The data analysis also indicated that the firm must allocate its attention and resources in customer relationships primarily to the customer segments with the highest potential. The case firm needs to create and maintain relationships with both the clients and the crowd. Yet the crowd and client relationships should be given different priorities for the sake of cost efficiency. The sales and communication channels (face-to-face meetings, crowdsourcing platforms, LinkedIn, Facebook, Instagram, Snapchat, and websites) must also primarily target these same segments. The revenue streams that the firm generates from the clients and potentially from the crowd include a recurring fixed monthly price, varying unit-based price multiplied by the number of chats, and possibly revenue (e.g., monthly fees or royalties) from the crowd.

The key resources were identified to include human resources (crowd, core team, advisors, and clients) as well as financial and physical resources (platform, equity, and other monetary resources). The key activities are needed in value creation, delivery, and capture. Based on the analysis, these activities consist of service production, platform development and operation, sales, marketing, and crowd-related activities, such as training and validation. The key partners were identified to include noncompeting strategic business partners, resellers, investors, advisors, and technology partners that can support the firm's efforts in creating, optimising and expanding the crowd-based online customer service business. Lastly, the key costs in the business model

were identified to include platform-related costs, sales, and marketing costs, channel costs, core team salaries, and monetary rewards, and other incentives paid to the crowd.

4.3. Challenges and advantages of the crowdsourcing-based business model

One of the objectives of this research was to identify the key challenges and advantages of the case firm's crowd-based business model. The most emerging issues and challenges from both the crowdsourcing business model literature and the research include the following: ensuring the service quality in online chat sessions, ensuring service availability (< 15 s response time), attracting large enough crowd and motivating participation, attracting sufficient client base to make the platform attractive, balancing the size of the crowd and the client base, developing and maintaining the platform, and ensuring financial sustainability (short- and long-term profitability).

With regards to the advantages of the crowdsourcing-based model, it was found that the case firm can gain the following potential benefits by utilising crowdsourcing: cost efficiency, industry-specific and professional crowd, service availability, high service quality, human touch (compared to chatbots), and lower pricing.

5. Discussion

This study presented a literature-based framework for developing a crowdsourcing-based business model in the online customer service business and the research results were discussed in relation to literature and practical implications. The literature-based framework was utilised to develop and analyse a case firm's business model. As the empirical study was conducted as a single case study, comparing the results directly with other similar studies is rather difficult. The key challenges and benefits of the crowdsourcing-based business model were discussed in section 4.3. These findings can be reflected with Vignieri (2020) who found that the drivers of success for InnoCentive crowdsourcing platform include the platform attractiveness, direct and indirect network effects, platform capacity, producers side capacity, platform support capacity, pricing, and incentive work. In addition, despite the benefits of crowdsourcing-based business model, one must pay special attention to ensuring good service quality (Garrow et al., 2020).

It was found that the case firm's crowd-based business model does not directly fall into any of the categories of crowdsourcing taxonomy (Nakatsu et al., 2014). The case firm does not utilise the crowd to solve one problem or crowdsource one single organisational task; its core business is built on the crowdsourcing concept. The business logic is similar to that of firms such as Uber, Airbnb, and Treamer that focuses on crowdsourcing small tasks – for example, helping with small renovations. The business model of the case firm is novel in the customer service business and demonstrates the continuous evolution of business models in the field of customer care (Majava and Isoherranen, 2019). It also includes the essential components of crowdsourcing, i.e. the use crowd, a task that must be undertaken, and a compensation (Allon and Babich, 2020), as well as a platform (Hosseini et al., 2014).

The extant literature review on crowdsourcing, business models, and customer services proved useful to support the new business model development. The business model canvas (Osterwalder and Pigneur, 2010) was found to offer a very explicit framework. Crowdsourcing (Howe, 2006; 2009) has generated multiple applications, especially in recent years when the majority of people are connected via the internet. Contemporary literature about crowdsourcing also provides valuable advice and studies on various applications – for example, Kohler (2015)

and Kohler and Nickel (2017) have reviewed topical crowdsourcing business models. Yet crowdsourcing as a concept has remained quite ambiguous and overlaps with other concepts.

Crowdsourcing can be viewed to be a part of a 'business of sharing' revolution. Sharing business refers to a situation in which people share their assets and get value from sharing these assets during their downtime (Stephany, 2015). In other words, people may have spare time they wish to use for other things, may have cars that are idle about 23 hours in a day, may want to rent their apartment during their holiday, or may have some extra money to invest. Most crowdsourcing-based business models exploit the spare time or assets people have (Howe, 2009; Stephany, 2015). For instance, people solve science problems after work (InnoCentive, see Vignieri, 2021) or conduct small tasks to make an additional income or make all their living income whenever they want (e.g., MTurk, see Garrow et al., 2020). They can also rent their extra room when they prefer (e.g., Airbnb).

Crowdsourcing can also be viewed as a form of internet evolution where people interact, collaborate, create their own content, and participate, instead of passive browsing. However, crowdsourcing means more than just collaborating on a website. For example, peer production (Haythornthwaite, 2009), which is one form of crowdsourcing, can be defined as a production system that relies on individuals self-selecting their actions. Crowdsourcing is also related to open innovation and collaborative innovation, and it can even be utilised to support design thinking (Chesbrough, 2003; Hyrkäs et al., 2020; Mount et al., 2020; West and Bogers, 2017; Vignieri, 2021) where external ideas and knowledge complement an organisation's in-house research and development.

The literature-based framework and the analysis of the case firm provide other actors with a conceptual basis to support the development of crowdsourcing-based business models. Yet, as this empirical study included only one case, the empirical findings cannot be generalised. Therefore, future studies that will include other firms and crowdsourcing concepts in different industries are proposed. Table 2 summarises the key findings of this study and related prior research.

Table 2. Key findings of the study and related prior research.

Findings	Description	Related prior research
Key challenges of the case firm's business model	Service quality, service availability, crowd motivation, client attraction, a balance between the number of crowd and clients, platform challenges	Garrow et al. (2020) Vignieri (2021)
Key advantages of the case firm's business model	Cost-effectiveness, industry-specific crowd, service availability, competitive service quality, human touch, lower price point	Vignieri (2021)
The case firm's crowdsourcing components	A crowd, a task that must be undertaken, a compensation, a platform	Allon and Babich (2020) Hosseini et al. (2014)
The case firm's novel business model	The studied model does not directly fall into a specific category of crowdsourcing taxonomy, as the core business is built on the crowdsourcing concept	Nakatsu et al. (2014)

Unique way to provide online customer service	The case under study illustrates the evolution of customer service business models	Majava and Isoherranen (2019)
Applicability of literature-based framework	The literature review on crowdsourcing, business models, and customer services proved useful in supporting the case firm's business model development	Howe (2006, 2009) Kohler (2015) Kohler and Nickel (2017) Osterwalder and Pigneur (2010)
Crowdsourcing as business of sharing and resource utilisation	The case firm's crowdsourcing-based business model exploits people's spare time and expertise	Garrow et al. (2020) Howe (2009) Stephany (2015) Vignieri (2021)
Crowdsourcing as a phenomenon of internet evolution	The case firm's business model encourages people to interact and collaborate instead of passive browsing. Crowdsourcing also supports open innovation, collaborative innovation, and complex problem solving.	Chesbrough (2003) Haythornthwaite (2009) Hyrkäs et al. (2020) Mount et al. (2020) West and Bogers (2017) Vignieri (2021)

6. Conclusions

Crowdsourcing has changed people's work around the world and resulted in new and innovative business models. This study described how a literature-based framework can be applied to develop a crowdsourcing-based business model in the online customer service business. Relevant literature addressing crowdsourcing, business models, and customer services were presented, while the business model of the case firm, the key challenges, and the benefits of the model were then analysed.

Based on the results, the key challenges of the crowdsourcing-based business model were found to include service quality, service availability, crowd motivation, client attraction, a balance between the number of crowd and clients, and platform-related challenges. The key advantages, in turn, were found to be cost-effectiveness, industry-specific crowd, service availability, competitive service quality, human touch, and lower price point.

The findings of this study indicated that the literature-based framework and the business model canvas can be useful tools for firms that aim to develop crowdsourcing-based business models. However, due to the limitations of the case study method, the generalisability of the findings is limited. Thus, the authors propose further research in other industries and organisations to validate the results and further expand the knowledge on crowdsourcing-based business models.

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