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Managerial perspectives on crowdsourcing in the new product development process

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ABSTRACT

One way organizations have sought to improve the new product development (NPD) process is to leverage the wisdom of crowds by reaching out to different communities for product and service ideas. However, integrating crowdsourcing into NPD can be challenging for managers and executives managing the process. This exploratory, qualitative research provides internal perspectives from managers and executives at business to business (B2B) firms utilizing crowdsourcing during NPD. Their insights suggest that input gathered through online forums from internal crowds is typically used in the fuzzy-front end (FFE) of the NPD process, whereas externally generated ideas tend to be used more during the commercialization stage of development. Interestingly, in these data, crowdsourced ideas during NPD tended to result in product line extensions rather than new-to-the-world products. This result is due to operational barriers which include the absence of a formal process and infrastructure for crowdsourcing, lack of alignment between budgeting and project timelines with crowdsourcing efforts, and unclear responsibility for managing and validating crowdsourced ideas. In addition, online platforms that can be used for crowdsourcing (e.g., social media) may not be viewed as legitimate tools for idea generation. Therefore, crowdsourced ideas are still considered supplemental to more traditional market research.

1. Introduction

New products are key contributors to organizational growth, especially in the business-to-business (B2B) sector where they account for over 30% of B2B firms' annual sales and profits (Markham & Lee, 2013). In spite of this contribution to corporate success, new product failure rates remain high, averaging 40% (Markham & Lee, 2013). Therefore, organizations continue to search for ways to improve their NPD proficiency to ensure continued survival and growth (e.g., Pitta & Pitta, 2012). One way managers try to increase NPD success is to improve idea generation in the fuzzy front end (FFE) of the development cycle.

The reason for this focus on the FFE is that improvements in the early stage of development can generate higher profits faster than in later stages (Koen et al., 2002; Stevens, Burley, & Divine, 1999). This result occurs because idea generation often has more profit impact than improvement in commercialization and launch. Therefore, with knowledge of this impact, organizations have long sought to incorporate customer insights into the front end of NPD, using techniques including the Lead User Method (Herstatt & Hippel, 1992), one-on-one interviews (Griffin & Hauser, 1993), traditional market research, and other techniques such as conjoint analysis (Green & Srinivasan, 1990).

Yet another mechanism to gather ideas in the FFE is crowdsourcing. The term crowdsourcing refers to the act of taking a job traditionally performed by an employee or specific team and outsourcing it to an undefined, generally large group of people in the form of an open call (Howe, 2008). The goal of the process is to improve the overall quality/quantity of ideas obtained or the task performed. In the business context, crowds can be comprised of internal (employees) or external (lead users and customers) members. In new product development, crowdsourcing has been utilized as an operational innovation to enhance firms' new product development, extending the development process beyond its traditional organizational boundaries (Laursen & Salter, 2006; Wang, Hsiao, Yang, & Hajli, 2016). Managers may decide to involve customers in designing new products when the products are perceived to be difficult to use in order to gain consumers' perspectives early in the development process (Allen, Chandrasekaran, & Basuroy, 2016). Incorporating more feedback into NPD may also lead to innovative, new-to-the-world products.

The trend towards crowdsourcing has occurred in part because advances in technology have made it possible to gather ideas through

online communities quickly and efficiently (Howe, 2006; Simula, Töllinen, & Karjaluoto, 2013) versus traditional methods of focus groups, meetings, and other forums. Yet, despite the potential to generate creative and novel ideas, the use of crowdsourcing in the NPD process is still relatively new for most organizations. Managers are likely to encounter both advantages and challenges in adapting an existing NPD process to include crowdsourcing. Challenges may include designing an effective method for identifying good quality ideas and then incorporating these ideas in to the process.

To date, researchers have analyzed the ways organizations utilize crowdsourcing (e.g., Whitla, 2009), the various methods for crowdsourcing (e.g., Lüttgens, Pollok, Antons, & Piller, 2014), and the outcomes (i.e., success) of crowdsourced products (e.g., Lilien, Morrison, Searls, Sonnack, & von Hippel, 2002). In contrast to prior research, this paper examines the perspectives of individuals directly responsible for managing crowdsourcing efforts to understand operational advantages and challenges. This research also extends the current literature which has highlighted *what* crowdsourcing can be used for in NPD by uncovering *why* and *how* crowds are utilized in the NPD process.

Towards these ends, this research utilizes a series of in-depth interviews with managers and executives who are directly involved with new product development (NPD) and crowdsourcing in their respective organizations. To focus on the research questions and to illuminate the challenges facing managers in this area, this study relies on the resource based view (RBV) of the firm. The RBV is relevant in this context because crowdsourcing serves as an operational innovation that firms can utilize in their NPD processes. Crowdsourcing may allow them to better exploit internal and external human capital resources, which is necessary to maintain competitive advantage.

The following section provides an overview of the literature in the context of the questions guiding this research. As this is a qualitative study, the work was guided by broad research questions generated from the literature. Next, a detailed discussion describing the sample, data, and methodology used to answer these questions is provided, followed by a section addressing the results of the analysis and their organizational implications. The section concludes with a discussion of the limitations of the research and areas for future research.

2. Literature review and theoretical framework

This research uses the resource based view (RBV) of the firm as a theoretical lens to focus on three research questions which investigate how, in B2B marketing, crowdsourcing can be integrated in to the NPD process, the managerial advantages and challenges in the process, and the extent to which the resultant crowdsourced ideas are new-to-the-world products versus line extensions.

As a starting point, the RBV of the firm indeed provides a useful framework to understand how crowdsourcing can result in competitive advantage for organizations. The theory suggests that exploitation of the tangible and intangible resources of an organization serve as the basis of competitive advantage (e.g., Barney, 1991; Penrose, 1959; Wernerfelt, 1984). In order to effectively exploit resources, organizations must not only be able to leverage existing resources but also to develop new and dynamic capabilities to maintain competitive advantage in changing industry environments (Teece, Pisano, & Shuen, 1997).

Organizations can build these above-mentioned dynamic capabilities through organizational innovations, which are new methods used in business practices, workplace organization, or external relationships (Camisón & Villar-López, 2014; OECD, 2005). In turn, these organizational innovations can fall in to the following categories: 1)

administrative innovations which change the ways administrative duties are conducted (e.g., Damanpour, Szabat, & Evan, 1989), 2) management innovations which alter how managers make decisions or motivate employees (e.g., Birkinshaw, Hamel, & Mol, 2008; Hamel, 2006), or 3) operational innovations which are entirely new ways of doing things, like filling orders. Operational innovations can include processes such as providing customer service, or, the focus of this research, developing new products (e.g., Hammer, 2004, 2005). These new methods can involve both individuals within the company and external participants (e.g., Armbruster, Bikfalvi, Kinkel, & Lay, 2008) and serve as a powerful source of competitive advantage.

Therefore, in order to contend with the pressure to constantly innovate, organizations are utilizing various communities in their research and development (R&D) processes, shifting development from the R&D team alone to internal and external collaborators. Prior work has examined the use of innovation networks (Smart, Bessant, & Gupta, 2007) and stakeholder dialogues (Ayuso, Ángel Rodríguez, & Enric Ricart, 2006) as operational innovations for enhancing the R&D process. In similar vein, this inquiry rests squarely on the integration of crowdsourced information, from all sources, into the NPD process as an operational innovation.

Indeed, when examining the literature (e.g., Fernandes & Remelhe, 2015; Simula & Vuori, 2012) it appears that crowdsourcing tools in general, and particularly in B2B, can be classified by whether they are internal or external to the organization. This distinction will be critical in our analysis later, but for introductory purposes, it is important to note that crowdsourcing offers a method for both employees (internal crowds) and customers (external crowds) to provide ideas and feedback in a company's NPD process. In fact, researchers have posited that organizations can use crowdsourcing to tap into different communities of people. Simula and Vuori (2012) describe these different "layers of crowdsourcing" in a B2B context. The authors contend that ideas can first be crowdsourced internally from employees within an organization to provide a foundation for development.

The next layer of crowdsourcing can occur with trusted partners and pre-qualified participants. These relationships may include individuals with certain skills or expertise required for the project. Finally, in some contexts, organizations may wish to garner insights from a broader, more general crowd, perhaps for very early-stage brainstorming or new-to-the-world product development.

Managers may also rely on more specialized crowds. For example, developer communities are online communities for lead users or expert users to offer insights and ideas, empowering them as co-producers of new products (Fernandes & Remelhe, 2015). These communities are commonly used in B2B environments, such as those studied here. Given the growing prevalence of customer co-creation in product development (e.g., Prahalad & Ramaswamy, 2004) and the rush to incorporate external crowds into development, it might be anticipated that the bulk of ideas in NPD is crowdsourced from external sources, specifically lead users and customers.

In addition, the review of the literature (e.g., Gassmann & Schweitzer, 2014; Schweitzer, Buchinger, Gassmann, & Obrist, 2012) suggests that crowdsourcing may primarily be used to generate ideas in the fuzzy-front end (FFE) of the NPD process. However, there appears to be no definitive answer on either front. Specifically, there is a lack of clarity as to which publics (internal or external) are best used in the NPD process and whether crowdsourcing is mainly an innovation in the FFE of the process. Since internal collaborations require different management practices compared to collaborations with external communities (Djelassi & Decoopman, 2016; Simula & Ahola, 2014), there may be variation in how crowdsourcing is utilized in different stages of

the NPD process. This research suggests an opportunity to extend the current literature by providing greater insights on when in the NPD process crowdsourcing is used and what crowds are leveraged in different stages of the process. Therefore, the first research question posed, in the B2B context, is the following:

Research Question 1. When and how (in what stage of the NPD process and what crowds are utilized) can crowdsourcing be integrated into the NPD process?

2.1. What are the advantages and challenges?

The second research question seeks to address the managerial advantages and challenges in implementing crowdsourcing for NPD. The literature on dynamic capabilities suggests that the development of these capabilities is a process (e.g., Teece et al., 1997). According to this approach, an operational innovation like crowdsourcing is likely to go through periods of iterative improvement. This process occurs as managers use the innovation and understand the contexts in which it is effective and ineffective so they can make improvements (Hammer, 2004). Factors which impact crowdsourcing success include business model structure, characteristics of the crowd, and the actual managerial process of crowdsourcing. For example, Djelassi and Decoopman (2013) find that a more open business model may be needed to achieve successful crowdsourcing outcomes. An open business model is likely to reduce apprehension of both the consumers participating in a crowdsourcing effort and the hosting organization.

The characteristics of the crowd also moderate the success of crowdsourcing in the NPD process. Afuah and Tucci (2012) suggest that contexts in which the crowd is likely to have requisite knowledge about the problem and where the solution is not overly specific to a particular organization are conducive for crowdsourcing. The aptitudes and skills sets of the users also impact the success of crowdsourced ideas. Community users' creativity impacts the numbers of ideas submitted to a crowdsourcing platform while their proactivity affects whether their ideas are pursued by the organizations sponsoring an ideation contest (Zhu, Djurjagina, & Leker, 2014). Users with strong technical skills are likely to produce more technically feasible ideas while more trend-aware and technically-innovative users are likely to produce more novel ideas (Schweitzer, Gassmann, & Rau, 2014). In addition, users with engineering experience are better able to convert concepts to products compared to those with more marketing experience. However, marketing experience is more useful in generating sales of the developed products (Zhu, Li, & Andrews, 2017).

Chua, Roth, and Lemoine (2015) take a global perspective and find that individuals from tight cultures, those cultures which have strong social norms and strong sanctions for deviance from those norms, are less likely to participate and generate successful contributions in foreign crowdsourced initiatives. More specifically to our research, Piller and Ihl (2009) find that unstructured creation-based customer communities can contribute in the front end of NPD, but only when the task is highly creative. Where the task is less creative and predefined, a more structured customer interface, such as a discussion group, is more appropriate. External sources, in this research stream, have limited utility in the NPD process.

Researchers have also examined how to effectively manage crowd participation in the NPD process. Organizations hosting crowdsourcing initiatives should offer ideas themselves and respond quickly and publicly to ideas received to demonstrate their commitment to these efforts (Dahlander & Piezunka, 2017). Once ideas are collected, examining an idea's content, contributor, and crowd feedback can help

managers to determine the likelihood of implementation (Hoornaert, Ballings, Malthouse, & Van den Poel, 2017). Even in this managerially focused research, the emphasis remains the crowd as it highlights crowd engagement and the evaluation of crowd-generated ideas.

In spite of the focus on the crowd as a continuing research stream, it seems that few studies focus on the overall management of the crowdsourcing process and the identification and incorporation of ideas in NPD. Usually overlooked in research is the fact that it is managers must make this process work, as management provides the bridge between the crowd and the firm. This situation occurs because individuals involved in managing an operational innovation are critical to its success and offer unique perspectives about the different organizational and environmental factors which can impact its success or failure (Salaman & Storey, 2002). There is a noticeable gap in the exploration of managerial perceptions of the advantages and challenges to integrating crowd sourcing in the new product development process. Therefore, to fill this research gap, we ask our second research question, within a B2B context.

Research Question 2. What are the advantages and challenges of using crowdsourcing in the NPD process from a managerial perspective?

2.2. What type?

Our third research question follows from the second by exploring the nature of the new products developed from crowdsourced ideas. Crowdsourcing can enhance the technological capabilities of an organization, leading to novel products, improved economic performance (Camisón & Villar-López, 2014), and a stronger competitive position (e.g., Teece et al., 1997). However, despite its benefits, crowdsourcing is still in its nascent stage in use in the NPD process, and research is divided as to its efficacy.

For example, in a seminal study conducted through a natural experiment at 3 M Company, Lilien et al. (2002) find that sales forecasts for product ideas generated with lead user input are about eight times higher than product ideas generated through more traditional means. In another study, the online communities of 200 companies submitted novel and new-to-the-world ideas for NPD (Füller, Bartl, Ernst, & Mühlbacher, 2004), and up to 15% of the ideas were brand-new to marketing. Taken together, these studies suggest the possibility of crowdsourcing as a useful mechanism in the development of new-to-the-world products with market potential.

However, Poetz and Schreier (2012) conducted a study in which company experts evaluated online community feedback and found less value in crowdsourced ideas. On average, user ideas scored higher in novelty and customer benefit but lower on feasibility of implementation. In other words, the ideas were highly creative, but they were also more difficult to implement from the company's perspective. This research extends these works which have evaluated the success of crowdsourcing in terms of sales or feasibility and novelty of the product ideas, by examining how the products developed fit into an organization's larger product portfolio. Specifically, given the potential novelty of the ideas submitted by crowd members (Füller et al., 2004; Poetz & Schreier, 2012), this research examines managerial assessment about whether utilizing an operational innovation like crowdsourcing results in new-to-the-world products or product line extensions in a B2B context. Therefore, the third research question focuses on new-to-the-world products that offer new sources of competitive advantage versus product line extensions that can be leveraged to maintain an organization's existing market position.

Research Question 3. What is the nature of the new products developed from crowdsourced ideas (whether new-to-the-world products or line extensions)?

3. Research methodology

3.1. Sample and data collection

To gather insights related to the three research questions, eight in-depth interviews were conducted with managers and executives involved in NPD process and with crowdsourcing efforts at five B2B firms. Because of the interdisciplinary nature of new product development and the emerging nature of social media marketing management, these titles range from Executive Director of Global Marketing, to Chief Listening Officer, to Technology Adoption Program Manager. Whatever the organizational structure, these B2B firms have made efforts to utilize crowdsourcing in their product development efforts. There are many fewer academic studies in the B2B context, but prior work suggests the current and potential importance of crowdsourcing in the development process for B2B firms (Kärkkäinen, Jussila, & Multasuo, 2012). Therefore, we focused on B2B firms which have just started to use various crowdsourcing methods.

These organizations use both traditional and virtual techniques of gathering community input, including company-sponsored online customer communities. All of the organizations are headquartered in the United States. The organizations ranged from divisions of a Fortune 500 firm with over 300,000 employees to a software firm with less than 250 employees. They all rely on various marketing techniques including digital marketing and direct marketing through sales forces. The diversity of the firms allowed the research to capture commonalities among B2B firms that cross industry and size lines. To gain the deepest insights, interviews were conducted with individuals who are directly involved with the new product development process and overseeing crowdsourcing efforts. Therefore, respondents included managers and executives because these responsibilities varied by role across organizations.

For example, an interview was conducted with an Executive Director of Global Marketing for a digital industrial company. This company develops technological innovations for a variety of industry sectors and has a global presence. Four interviews were conducted at the technology consulting company due to the size of the organization and the breadth of divisions within the firm. The core business of this organization includes development of software, cloud computing, and other technologies for business clients. Interviews were conducted with a New Product Development Project Manager, a Technology Adoption Program Manager, a Developer Communities Strategy Manager, and a Senior Digital and Social Media Marketing Manager. Each of these individuals worked on different teams which worked on different products. Multiple interviews were necessary to get an aggregate view of crowdsourcing at the organizational level.

Another interview was conducted with the Chief Listening Officer at a technology company which manufactures digital imaging products and offers related software and services. Another interview was conducted with the Vice President of Marketing and Communications of an electronics supply company. The company's customers span a wide variety of industries including automotive, medical, and telecommunications organizations. Finally, we interviewed the Director of Communications of a software development company which utilizes crowdsourcing as a mechanism to outsource clients' computer programming needs. A summary of the organizations and the different individuals interviewed is provided in Table 1.

While there are no hard and fast rules in qualitative research for the appropriate number of interviews, the interviews were stopped after the eighth interview because the trends and patterns of the responses were identifiable. In other words, the researchers reached a 'saturation point' beyond which significant new information was not being obtained. (Baker & Edwards, 2012; Bowen, 2008; Morse, 1995). The resulting data has proved a rich source of information in this area of study.

The marketing managers and executives were asked open-ended questions to assess how they are gathering feedback from community methods. The interview guide was developed based on the research questions and prior literature (e.g., Lilien et al., 2002) which suggest that crowdsourced ideas may be effectively used in the idea generation stage or fuzzy-front end (FFE) of the new product development process. The questions were broad enough to include other stages of the NPD process and contain other methods of input in NPD by means of comparison so as not to overweight the results towards the FFE of NPD or crowdsourcing and communities. The first six questions in the interview guide were focused on Research Question 1, to understand how information was gathered from crowds, what crowds were used, and when crowdsourced information was incorporated into the NPD process. Specific attention was given to whether the organization was using crowds on social media and to understand all the sources of market research in the NPD process. If the respondent did not offer reasons why a particular crowd was targeted, the interviewer probed further on this issue.

Interview questions 7 through 14 were reflective of Research Question 2 and allowed respondents to provide detail about advantages and challenges with incorporating community feedback in the NPD process. Specific questions about budgeting and timeline were asked to gain deeper insights about crowdsourcing within the organization's business operations. Finally, question 15 was designed to isolate whether crowdsourcing is used more in the development of new-to-the-world products or product line extensions, addressing Research Question 3.

Table 1
Organizations and interview respondents.

Main business	Number of employees	Geographic scope of business locations	Title of respondents
Digital Industrial Company	250,000	Global	Executive Director of Global Marketing
Technology and Consulting Company	380,000	Global	New Product Development Project Manager
			Technology Adoption Program Manager
			Developer Communications Strategy Manager
			Senior Digital/Social Media Marketing Manager
Technology and Imaging Products Company	7000	Domestic	Chief Listening Officer
Electronics Supplier	36,000	Global	Vice President of Marketing and Communications
Crowdsourced Software Development Company	200	Domestic	Director of Communications

The interview instrument is included in Appendix A. The questions were new to this research as this particular question of the managerial challenges faced in crowdsourcing has been relatively unexplored. The questions were, by their nature, open-ended to illicit the most data- rich responses (Yin, 2011). Each interview lasted between 30 and 40 min. Interviews were conducted and recorded by one of the researchers. All of the interview recordings were transcribed by a professional, and one of the researcher's duplicate, contemporaneous notes were used to verify accuracy. All the research questions required the assessment of patterns across the responses. Therefore, content analysis was used to analyze the interview transcripts.

This methodology is commonly used in qualitative research (Yin, 1994, 2011; Zahay & Peltier, 2008) to identify patterns in interview responses. The data is compiled and coded in particular categories. Often, as was the case here, several iterations of data coding are necessary to identify all the categories in the research, referred to as Level 1 and Level 2 coding. From the compiling and coding phase, researchers move to the disassembling phase, looking for patterns and themes in the data. In the reassembling phase, researchers work to summarize the results. In this case, the work was done by hand and matrices were used to reassemble the data. The emphasis was not on the counting but rather on the content of the data.

Research Questions 1 and 3 required the development of a coding dictionary, outlined in the next section, to be used by independent coders when coding the transcripts. The transcript data related to Research Question 2, which addresses the advantages and challenges of crowdsourcing in NPD, was disassembled by an independent rater without coding but through the identification of texts from the transcript and the development of substantive notes to generate the main topics. Given the highly reflective and open ended nature of the research question, this process allowed for the extraction of more thoughtful and deeper insights (Yin, 2011). To highlight our results, we provide and analyze direct quotes from the managers and executives interviewed.

3.2. Development of coding dictionary and analysis

The first step in data analysis was to prepare a coding dictionary to reflect Research Questions 1 and 3. To capture the different audiences through which information is crowdsourced, the researchers developed a coding schema. Information was categorized based on whether it was collected online or offline through more traditional methods. In terms of audiences, information was categorized as to whether it was collected internally from organizational members or externally from customers and lead users. Four categorizations emerged from the final coding dictionary: online-internal, online-external, offline-internal, and offline-external. The researchers used prior literature, marketing textbooks, public press articles, and their discussions with the executives to generate specific modes of information collection under each of these four categories. For example, many organizations use employee blogs as a forum from which to gather information. This was classified as an online-internal method of information collection.

The information resulted in positive "1" coding if it was both present in the interview transcript and was used in the NPD process. For example, if information was collected through online customer forums in four of the transcripts, the coding for one rater would be a "4." The results were added up and averaged across the raters to get an idea of broad trends and to check consistency of coding, but not to necessarily limit the insights provided in the data. The raters also looked to the rich information in the transcripts themselves when making final insights.

In order to capture when crowdsourced information is used in the

NPD process, the researchers coded if internally or externally generated information was used in the fuzzy front end (FFE) stage, development stage, or commercialization stage of the NPD process. This is consistent with the way other researchers (e.g., Zahay, Griffin, & Fredericks, 2004) have collapsed the NPD stage processes for purposes of analysis.

Finally, the coding dictionary included categories to classify whether the use of crowdsourced information resulted in new-to-the-world products or product line extensions. The coding dictionary itself is included in Appendix B.

The interviews were analyzed by three separate raters or coders. The raters made sure they understood the coding worksheet and went through several examples of the specified categories together. The raters used the analysis method prescribed by Yin (1994, 2011) and described in the previous section which involves identifying patterns in data and making adjustments in the analysis as needed. Thus, codes were added as necessary. For example, employee councils was not initially in the coding dictionary but added by one of the raters after examining the transcripts.

Each concept identified in a particular transcript was coded as a "1." As stated previously, the coding was based on the presence of the concept in the transcript and not the number of times the concept was mentioned. (Any coding discrepancies were resolved by one of the authors).

Inter-rater reliability was calculated as percentage agreement between raters per the Kappa Coefficient initially proposed by Cohen (1960) and the most common method for calculating reliability among raters (Lombard, Snyder-Duch, & Bracken, 2002). Inter-rater reliability for Raters 1 and 2 was 95.05% overall, with 93.75% reliability for the ratings related to the source of information, 97.92% reliability for the coding on the stage of the NPD process in which crowdsourced information was used, and 96.88% about the nature of new products developed. The overall inter-rater reliability for Raters 2 and 3 was 91.41%, with 92.97% reliability for the ratings related to the source of information, 87.50% reliability for the coding on the stage of the NPD process in which crowdsourced information was used, and 90.63% about the nature of new products developed. Finally, the inter-rater reliability for Raters 1 and 3 was 89.06% overall, with 89.84% reliability for the rating related to the source of information, 85.42% reliability for the coding on the stage of the NPD process in which crowdsourced information was used, and 93.75% reliability about the nature of new products developed. These standards are considered very good (above 80%) in terms of agreement between raters (Gwet, 2012).

Table 2
Patterns in interviews with B2B marketing managers and executives.

Sources of Information
Online internal: employee blogs and forums
Online external: private label social media networks for lead users and customers
Offline external: direct feedback from customers
Offline external: customer focus groups
Use of Crowdsourced Information in stages of the NPD process
Internally generated information used in fuzzy-front end of NPD process
Externally generated information used in commercialization stage of NPD process
Nature of Product Developed from Crowdsourced Ideas
Product line extensions

4. Analysis and results

4.1. Results of content analysis

The results suggest that these B2B managers and executives rely on both internal and external crowdsourcing, but that the internally-generated information is utilized more than externally generated information, particularly in the FFE. The internal information is collected primarily through employee blogs and online forums whereas external crowds are reached through a variety of private label social networks and offline mechanisms like direct feedback to sales teams and customer focus groups. Ideas generated through internal crowdsourcing are used in the FFE of the NPD process or the idea generation stage. Externally crowdsourced information is utilized more in the commercialization stage to make small changes or updates to products based on lead user and customer feedback. The resulting products from NPD processes which utilize crowdsourced information are most often line extensions to existing products rather than new-to-the-world innovations. Table 2 summarizes the sources of crowdsourced information, stage of the NPD process in which the information was used, and nature of the products developed that were most common across the interviews (occurrence in more than half of the interview sample).

4.2. Analysis of direct managerial insights

One of the raters then went through the transcripts to uncover managerial insights about the advantages and challenges of crowdsourcing. The rater went through the original transcripts four times to ensure the disassembled findings were reflective of the original data. A second rater then went through the substantive notes and disassembled findings to identify and resolve any inconsistencies. The assessment for the four interviews for the technology and consulting company was collapsed into one overall summary. Detailed insights from the interviews are included in Appendix C.

The digital industrial organization works primarily with internal communities while engaging in some external innovation contests. They find online platforms like employee blogs and forms to be a great resource for connecting functional experts across the organization to generate discussion and prospect new ideas. Externally crowdsourced ideas are used much less in the NPD process due to various operational challenges. This result makes sense since crowdsourcing is a new operational innovation and managers are still trying to navigate through the legal implications of implementing ideas of external users and allocating more of their budgets to these efforts.

In order to maximize crowdsourcing efforts in the NPD process, more time and energy must be dedicated to such initiatives, but they are not necessarily viewed as a priority for the organization. An open innovation challenge may generate thousands of entries, but it is not clear who in the organization has the time or energy to go through the submissions to even determine if they are feasible. In addition, some of newer technologies (e.g. social media) that can be levered for online crowdsourcing, especially to external constituents, have not gained legitimacy within the organization. Currently, online interactions with lead users and customers are viewed more as an engagement opportunity rather than a prospect for new product ideas.

Four separate interviews were conducted at the technology and consulting company; however, each of the managers interviewed ran clearly separate business units and had separate challenges. In general, the managers at this company prefer using their own internal communities and social media tools rather than using external crowds or tools developed commercially. The advantages to the company of using internal crowds and tools are to retain exclusive access to its own

Table 3
Sources of crowdsourced ideas in B2B NPD.

| Internal sources	External sources
Employee blogs and forums	Lead user social media networks (private label)
Employee social media networks (private label)	Direct feedback from customers (e.g., customer service calls)
Employee research-based platforms	Direct feedback from lead users
Employee focus groups	Customer focus groups
Employee development teams	Online competition/ideation contests (primarily targeting lead users)
Sales teams	
Product marketing	
Sales Teams	
Internal 'experts' and Councils	
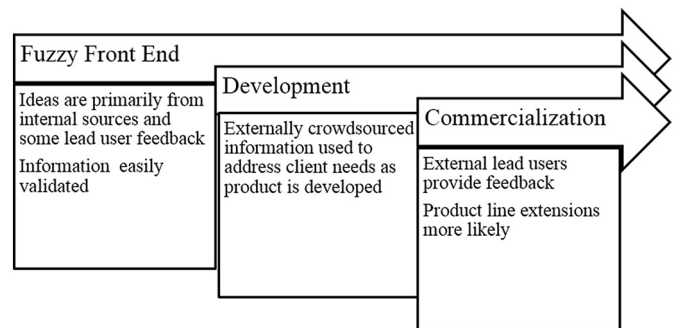
Fig. 1. Applications of crowdsourced Ideas in the B2B NPD Process.

information about company products and suggested innovations and to have more control over who participates in the community. This organization is also still searching for ways to align its budgeting and planning processes to utilize externally crowdsourced ideas. In addition, managers are not certain how often there are mutual benefit opportunities between a company and an external crowd. This complementarity is essential in continued success of crowdsourcing because otherwise the participants and the company may start to lose interest and enthusiasm in these projects.

The technology company which produces imaging products relies heavily on traditional market research and internal sources for product ideas. They supplement this with data from lead user sites collected through various social media platforms. Their external crowd is comprised mainly of lead users because they are able to provide the most detailed insights about customer needs. These insights have been helpful in the development of products which were well received by the customer base, yet the organization still struggles to find the right balance between more traditional market research and crowdsourcing for ideas. The development of more formalized procedures for crowdsourcing would likely improve the contributing role of crowdsourcing in the NPD process.

The electronics company relied heavily on its sales force to gather ideas from customers. However, customer insights were used to make modifications or adjustments to an internally developed product rather than spark the idea for a brand new product. Given the success of their sales teams in gathering customer insights, the managers of this company where still trying to figure out the best way to formally include crowdsourcing as a formal mechanism for generating ideas in the NPD process.

The crowdsourced software development company is the heaviest user of online platforms for crowdsourcing given the nature of its

Advantages	Challenges
• Reduce bureaucracy related to idea generation • Gain influence and credibility (thought leadership) • Increase interaction between departments and with customers • Increase engagement between departments and with customers	• Selecting platforms • Managing legal issues • Integrating with strategy • Finding time for validation • Determining which source at which time • Obtaining Funding/Budget • Leveraging community but not interfering

Fig. 2. Advantages and challenges of crowdsourcing in NPD.

business model. Managers in this company rely on informal, internally generated ideas in the fuzzy front end of the NPD process. In terms of external crowds, the managers utilize contests of lead users, specifically developers, during both the development and the commercialization stages of NPD. The lead user community has developed informal norms and processes which have been very effective up to this point. Thus, managers in the company struggle with how to expand their community base without alienating or jeopardizing the relationships with existing users.

Overall, internal crowdsourcing is utilized much more than external crowdsourcing in the B2B organizations examined. This result was in contrast to expectations. Examining the transcripts to identify all the sources of crowdsourced information resulted in the summary in Table 3. This summary shows that internal, online communities are targeted through platforms like employee blogs, forums, and private label social media networks. In addition, companies use their product and sales teams as test markets for their products and to generate feedback internally prior to commercialization of a product. External information is primarily gathered from lead users and through direct feedback from customers.

The use of crowdsourced data at various stages of the NPD process is illustrated in Fig. 1. The figure illustrates that ideas from internal sources and some lead user feedback predominates in the front end and of the NPD process and is perceived to be more easily validated. That is, internal sources are more likely to produce broad ideas that might lead to an innovation that could be implemented by the organization. As B2B NPD managers move across the development process to the more specific aspects of the innovation process, they are more likely to use externally crowdsourced information, especially in the development phase. Crowdsourcing information is perceived to be easier to incorporate in development as the ideas are more specific and related to a particular change to the product that the conceptual foundation of the product, particularly in B2B. Finally, product line extensions are more likely to be garnered from the crowd in the commercialization phase, but through the judicious use of external lead users. These lead users have the specific knowledge to make changes in commercialization. Therefore, as the information requested from crowds becomes more specific, managers comfort in using these ideas increases.

The in-depth examination of the interview content also uncovered that because crowdsourcing is still a new operational innovation, it is not yet considered an organizational priority. Therefore, adequate time, budget, and managerial attention have not been allocated to create formalized structures or methods to integrate crowdsourcing into the

NPD process. Consequently, most crowdsourced ideas are utilized to launch products for internal use, modify existing products, or develop line extensions rather than to create new-to-the-world products. A summary of manager's perceptions of the challenges and advantages of crowdsourcing is illustrated in Fig. 2. Findings and implications are presented in more detail in the following section.

5. Discussion and implications

This research provides specific insights from managers and executives on how B2B organizations utilize crowdsourcing in new product development. Utilizing the Resource-based View of the firm, this research highlights crowdsourcing as a viable operational innovation to enhance an organization's NPD process. It adds to the existing literature on crowdsourcing by exploring why certain crowds are targeted, the advantages and challenges of crowdsourcing in NPD, and the nature of the products developed from crowdsourced ideas.

This research is also a continuation of prior work on information use in NPD (Zahay et al., 2004; Zahay, Griffin, & Fredericks, 2011). Prior studies have analyzed how information is used in the stages of new product development in detail and at what stage of the process. This particular research combines the area of information use in new product development with interactive marketing, particularly online communities, and crowdsourcing and focuses on three specific research questions.

5.1. Research Question 1: When and how crowdsourcing is integrated into NPD

This research suggests that B2B organizations both crowdsource internally within their organization and externally with lead users and customers. Internal crowdsourcing is conducted primarily online through employee blogs, forums, and social media networks. This data is easy to verify and authenticate. Externally, information is crowdsourced through a combination of online mediums (e.g., social media networks) and offline sources such as data from sales teams and direct customer feedback. The organizations in our sample primarily relied on internal crowdsourcing, and the majority of external crowdsourcing was limited to lead users. Since crowdsourcing is still considered a new operational innovation, most managers are trying to figure out the best way to utilize it in the NPD process. Thus, it is easier, and less risky to utilize it internally first, make refinements, and then launch it externally. This is supported by the literature on dynamic capabilities (e.g., Teece et al., 1997) and operational innovations (Hammer, 2004) which suggests a process of improvement and refinement in the implementation of such innovations.

Several of the interview respondents found internal crowdsourcing an efficient way to encourage collaboration across a company and had focused on it as a method of intracompany collaboration rather than a way to gather customer feedback. Consistent with prior literature (e.g., Lilien et al., 2002), external crowdsourcing is still mainly limited to lead users due to concerns about feasibility and whether a more diverse crowd would be able to generate technically feasible ideas. However, these insights extend the prior literature and suggest an iterative process in which B2B managers and executives extend the application of crowdsourcing from employees, to lead users, to a broader customer base, reflective of the "layers of crowdsourcing" described by Simula and Vuori (2012).

The analysis also indicates that internally crowdsourced information is used more in the fuzzy front end (FFE) of new product development than external information. Externally generated information is used for modifying existing products or products already in

development to better meet customer needs. These statements are substantiated by the results of the content analysis which captured use of external information in the commercialization stage of the NPD process, but not the fuzzy front end. Both internally and externally crowdsourced information is used as supplemental knowledge to traditional market research and customer insights gathered from sales teams. Again, this analysis suggests that crowdsourcing still plays a largely peripheral role in the NPD process, particularly in the B2B context, although managers were seeking to broaden its impact and usefulness.

5.2. Research Question 2: Advantages, challenges, and opportunities to improve integration of crowdsourcing into NPD

Overall, in these data, crowdsourcing, though rich in interactivity and in the information that can be gained, is still viewed as supplemental to more traditional market research. Thus, most processes in organizations are still designed around traditional methods of gathering customer insight. For example, the budgeting process often prevents customer-generated ideas from reaching test phase because the ideas do not come through traditional channels. One of the executives interviewed explained that his organization could not keep ideas "alive" long enough to be considered in the annual budgeting cycle. The real-time feedback from the crowd was often frustrated by the organization's less-than-nimble response to funding its NPD plans. Aligning budgeting and other operational processes to complement crowdsourcing would likely enhance its value in the NPD process because without such support, it is unlikely that crowdsourcing can serve as a catalyst for superior technological innovation (e.g., Camisón & Villar-López, 2014). In addition, the RBV of the firm is at the organizational level (e.g., Wernerfelt, 1984) suggesting that synergies across an organization, rather than isolated to programs or departments, are necessary to achieve successful exploitation of strategic assets, particularly in B2B environments.

Another challenge to the integration of crowdsourcing data in to the NPD process is that of data quality and integrity. Managers in the organizations were constantly seeking ways to validate the integrity, or data quality, of the multitude of online responses whether internal or external. Whereas processes exist for incorporating traditional market feedback, crowdsourced ideas were numerous and came from a multitude of sources. Therefore, managers tended to rely on the self-policing efforts of the communities to endorse new ideas or completely shut them down, meaning that not all ideas may reach marketing managers even in such an open forum. In other words, the element of trust was missing in the relationship between the firm and the sources of new product ideas, with the firm being especially uncertain about early-stage NPD ideas. This lack of trust seems to explain one reason that crowdsourcing as a source of early-stage NPD ideas is slow to develop in B2B organizations.

However, this trust challenge offers an area of opportunity for organizations to develop systems that will authenticate crowdsourced information since such data may be valuable for innovation. One of the marketing executives provided an example of using 10% of his organization's employee base to help develop and test a new product, an office communication tool, by downloading an early version of it and providing feedback. This internal community feedback helped the company to commercially release the product about a year ahead of schedule. Thus, crowdsourcing offers the advantage of early product release due to an accelerated testing phase through a crowd.

Finally, many of the organizations already have a review process in place whereby team members have to attest to the success of a particular research tool or program in terms of the NPD successes that can be

attributed to the program. However, the managers interviewed were somewhat frustrated by the inability to properly measure and evaluate the results from innovations garnered from community feedback, even if the feedback comprised a substantial portion of the changes that were made to existing products. Therefore, it may be useful to put evaluation systems in place to assess and appraise the success of research generated from crowdsourced information. Measured, positive returns could likely support the case for more time, funding, and employees dedicated to crowdsourcing efforts.

5.3. Research Question 3: New-to-the-world products or product line extensions

Ultimately although crowdsourcing, especially through external crowds, has the potential to generate novel ideas (Füller et al., 2004), our research indicates crowdsourced information is not being used to develop new-to-the-world products in the B2B sector. Internally generated ideas are often used in products piloted within the organization. This process results in useful innovations within the company, but there are still some disconnects between internal implementation and full commercialization.

External ideas are currently utilized to modify existing products to better meet customer needs. This insight suggests internally and externally crowdsourced information may be complimentary in nature. Internally crowdsourced ideas in the FFE, developed and piloted within the organization, may provide the structure and framework needed to further develop externally sourced ideas to create new-to-the-world products. It is likely that organizations which are able to successfully evolve from using crowdsourcing as a way to modify existing product lines to a viable way to develop novel, new products can carve out a more distinct competitive position in the market.

The overall findings suggest that while organizations are utilizing both internal and external crowdsourcing, the information generated through these means is not being fully connected to the NPD process. Crowdsourcing is still viewed as supplementary to traditional market research. However, all of the individuals interviewed identified ways that crowdsourcing could be further leveraged in the future. These ideas included improving internal processes to better capitalize on ideas obtained through external crowdsourcing in a timely manner and also using such platforms as a way to identify talent for the organization.

They were especially optimistic about greater use of platforms such as employee blogs, forums, and social media networks to reach online communities. They believed that with adequate administrative and budgetary support, members of online communities could easily propose product functions, vote and comment on these functions, link to ideas that are similar, and provide the companies ideas of which features and functions are most likely to succeed. Overall, these results suggest that, in spite of inherent challenges, the value of crowdsourcing, and specifically online communities, is likely to grow in the NPD process for B2B firms.

5.4. Managerial implications

For B2B managers, specifically, this research has some far-reaching implications. While it appears managers are reluctant to abandon whole-heartedly traditional market research method in the FFE of the NPD process, they also appear to understand and appreciate contributions gained through crowdsourcing. As Fig. 1 illustrates, external feedback is more likely to be utilized by these managers in the latter stages of the process.

Therefore, the challenge for managers seems to come with external rather than internal communities. While crowdsourcing may at first

appear to lessen the load for managers in terms of providing 'free' sources of ideas for new product development, the process has some inherent managerial challenges. The quality of new ideas must be assessed, and then these ideas must be scheduled in to the NPD process. This must all be done in the context of an often-challenging annual budget cycle. Consequently, there appears to be a blossoming opportunity for managing this effort, as can be seen by the rise of platforms to manage this entire process. Proactive managers will allocate their resources to judiciously incorporate externally crowdsourced ideas. Rigorous vetting of ideas will help them to incorporate these challenges in to their new product development process.

In addition, creating formal processes and metrics to measure to success of crowdsourced outcomes is likely to legitimize crowdsourcing as a viable means of idea generation in the NPD processes. The formal processes will alleviate some of the uncertainty other organizational members and the managers themselves may have about crowdsourcing. Tracking metrics related to crowdsourcing efforts will provide data that can validate any successes related to these efforts. These processes will involve utilizing existing resources in new ways and may involve investment in employees to manage the crowdsourcing process.

In summary, the RBV suggests that the effective management of crowdsourcing represents can be seen as an operational innovation for building dynamic capabilities to maintain competitive advantage. Managerial failure to incorporate the lessons of crowdsourcing from both internal and external sources through effective internal processes, systems, and controls means the organization runs the risk of not capturing some potentially rich sources of ideas to form the basis of firm advantage. Formal, iterative processes for evaluating crowdsourced ideas, adequate resources in this area, and revamped budgeting cycles are just some of the changes that managers will need to consider initiating to capture the potential benefits crowdsourced new product ideas on an enterprise level.

6. Future directions and limitations

The results of the content analysis in this research suggest that internal crowds serve as both a source of new ideas and a test market for implementing these ideas. Managers simply have greater control of the community and the information obtained from the crowd through internal crowdsourcing. Future worked aimed at understanding the culture and management structures in organizations which effectively utilize employee ideas in this manner would be a worthy endeavor.

The interviews with the managers and executives studied in this research also uncovered many challenges related to external crowdsourcing in B2B marketing, including data authentication, regulating community participants, and aligning operational processes to take advantage of the ideas generated through external community platforms. Research examining how organizations transform their operational and NPD processes to better incorporate externally crowdsourced ideas would be useful for marketing academics and practitioners to understand complementarities between traditional market research and crowdsourcing. This future work could be conducted as a field study.

An already planned research effort will explore whether managers' perceptions of the value of crowdsourced and community information is correct. In other words, is the lack of trust on the part of managers justified? This research will compare and evaluate the ideas gathered from 'the crowd' to those gathered by more traditional market research approaches, such as 1 to 1 interviews and lead users. If indeed the crowd provides as much or more valuable information as other methods, managers might consider relying more on external feedback in the early stages of NPD.

A possible limitation of this research is that four of the interviews were conducted at business units of one large firm. While this could be a limiting factor in interpreting the results, the fact that the themes and implications are consistent across size and type of company mitigate this possible effect. Crowdsourcing from external sources in the FFE is a challenge no matter what the size of B2B organization and whether or not it is a division of a larger firm.

Another limitation of this research is that it focused on organizations based in the United States. The nature of crowdsourcing and how such ideas are utilized in the NPD process may vary by geographic location (Chua et al., 2015). For example, ideation contests and other externally crowdsourcing mechanisms are very prevalent in Europe. Examining crowdsourcing in the NPD process in other countries merits investigation as it may provide insights on regulations, cultural practices, and other factors which enhance the use of communities in the development of new products.

This research was conducted to generate insights on B2B organizations. Therefore, we did not obtain insights from managers integrating crowdsourcing into the NPD processes of business to consumers (B2C) organizations. Prior work (Fuchs, Prandelli, Schreier, & Dahl, 2013) suggests that although B2C companies often offer products closely tied to consumer identities, such as clothing, products developed from community ideas may be devalued by consumers. More work is necessary to explore managerial perspectives of crowdsourcing in the NPD processes of B2C organizations.

Crowdsourcing is an interactive exchange between an organization and members of a crowd or various crowds. This research provided an in-depth analysis of the perspectives of managers and executives within the organization involved in managing the NPD process and crowdsourcing. While there is rich literature on crowd characteristics and ideas submitted by crowds (e.g., Schweitzer et al., 2014), future examination of the perspectives of crowd participants is warranted. Understanding the motivations, frustrations, and expectations of crowd participants would offer a deeper understanding of the reciprocal relationships between organizations and crowds. It may inform managers about better ways to design and manage crowdsourcing initiatives.

Finally, another limitation is based in the nature of qualitative exploration itself. Qualitative research, by its nature, opens itself up to multiple interpretations (Krippendorff, 2013). This research hoped to limit possible bias by using independent coders and calculating interrater reliability. However, it is possible that some themes and patterns may have been overlooked in the analysis.

In sum, this research provides insights on how B2B organizations utilize crowds, both internal and external, in the NPD process, adding to the rich bodies of work focused on crowdsourcing and new product development. Insights from these managers and executives suggest while both internal and external crowdsourcing are utilized, many impediments remain before crowdsourced ideas can be fully implemented into the NPD process. Hopefully, this work will serve as an impetus for more research on crowdsourcing in new product development.

Funding

Appendix A. Interview questionnaire

1. What is your firm's presence on the web and social media?
2. Where does the information about customer needs using in developing a new product primarily come from? (Probe why) What kinds of market research are done before and during new product development?
3. Do you have a "stage-gate" or other New Product Development (NPD) Process?
4. What formal roles do social networking and community sites play in that process?
5. When you develop a new product, what roles does information from online community sources play? What type of sources? After open-ended, then prompt with each of these specific probes:
   - Online communities you have set up
   - Not-for-profit communities your customers have set up
   - Online communities for competitor products
   - Online commercial social media sites (Facebook, Myspace)
   - Second life
   - Blogs and bloggers
   - Twitter
1. Think back to the last time information from an online source or community was used in molding a new product idea or concept, or in changing one that was already under development. Tell me the story of what happened and how it came to be incorporated.
2. How do the functional departments share information that comes from community sources?
3. How do you know you are getting the right information from community sources regarding NPD? How do you make sure one customer's voice does not dominate?
4. How do you know you have been successful in incorporating social networking and community feedback into your NPD process?
5. What is the strongest impediment to successfully incorporating social networking and community feedback into your NPD process?
6. If you could change one thing about the current process for incorporating social media and community feedback into your NPD process, what would it be?
7. Does your company plan to spend more on NPD in the coming year? If so, by what %?
8. How is NPD funded? % of revenue, Fixed number related to costs for NPD
9. What is the typical time frame for NPD – From idea conception to going to market?
10. Do you differentiate NPD vs. line extension? (If yes, probe nature of products developed from crowdsourced ideas).

Appendix B. Coding dictionary

A. Source of information collected through internal channels online
A1. Information is collected through employee blogs and forms
A2. Information is collected through employee social media networks
B. Source of information collected through internal channels offline
B1. Information is collected through employee focus groups
B2. Information is collected through employee councils
B3. Information is collected and researched by product marketing team
C. Source of information collected through external channels online
C1. Information is collected through blogs intended for lead users
C2. Information is collected through online forums for customers
C3. Information is collected through competitions and ideation contests
C4. Information is collected through private label social media networks intended for lead users/customers
C5. Information is collected through social media networks intended for lead users/customers
D. Source of information collected through external channels offline
D1. Information is collected through consumer focus groups/other market research
D2. Information is collected through direct feedback from consumers and lead users (e.g., customer service calls)
D3. Information is collected through offline open innovation communities
D4. Information is collected through offline predictive models
D5. Information is collected from customers by sales teams
E. Information generated internally used in NPD process
E1. Information internally generated is used in the FFE of the NPD process
E2. Information internally generated is used in the development stage of the NPD process
E3. Information internally generated is used in the commercialization stage of the NPD process
F. Information generated externally used in NPD process
F1. Information externally generated is used in the FFE of the NPD process
F2. Information externally generated is used in the development stage of the NPD process
F3. Information externally generated is used in the commercialization stage of the NPD process
G. Outcomes of crowdsourced information in the NPD process
G1. The use of crowdsourced information generated in the NPD process results in product line extensions
G2. The use of crowdsourced information in the NPD process results in new-to-the-world products

Appendix C. B2B Managers and executives perceive crowdsourcing with caution and See advantages and challenges-(Supporting Comments)

	Digital Industrial Company Executive Director of Global Marketing	Technology and Consulting Company Four Interviews New Product Development Project Manager Technology Adoption Program Manager Developer Communications Strategy Manager Senior Digital and Social Media Marketing Manager	Technology Company: Imaging Products Chief Listening Officer	Electronics Supplier Vice President of Marketing and Communications	Crowdsourced Software Development Company Director of Communications
Question 1. Internal vs. External	Crowdsourcing used as a method "to form a community across businesses and across geographies to work on needs of the community."	This company most often utilizes internal crowds so the crowdsourcing platforms provide an "informal environment, where mistakes are fine, and things may not all work, and that is an accepted culture within this environment." Lead user communities are also used because they have the requisite knowledge, and their input can be "more easily validated."	Crowdsourcing "is still in infancy and there is no formal infrastructure." It's easier to supplement traditional market research with employee and lead user feedback than from a broader segment.	Most customer feedback is gained through the sales force. Since crowdsourcing in the NPD process is just being initiated, most of the focus is on internal crowds. "An internal crowdsourcing site is currently being developed where contributors can both share and take ideas and information."	Online contests are focused on communities of lead users (developers); This company does not anticipate expanding beyond that community because they are worried about "diluting the sense of community." Other contributors may not be as knowledgeable or as involved as lead users.
Question 1. Integration with existing NPD process	The company has a "multi-step new product innovation process that is built around technological feasibility and technological capabilities." Internal community feedback supplements more traditional market research used in the idea generation stage of the innovation process, rather than a formalized separate step.	Internal crowds are used in the NPD process to develop and test new product ideas (early-stage). The lead user communities provide early feedback on what is/is not working with products before full commercial launch.	Internally crowdsourced information and feedback from lead user communities (through social media sites) are used to augment traditional market research in the idea generation stage. Some external feedback about customer needs is used to modify products both during development and after initial launch.	Internally developed ideas are used early on in concept sketches with the engineering team. Externally, customer needs and requirements are obtained to incorporate into development as modifications to existing products in development.	Informal, employee generated ideas used in early stage of process Crowdsourced ideas/recommendations that address clients' programming needs are incorporated into the codes (development phase).
Question 2. Advantages of Crowdsourci-ng	Crowdsourcing can be used as a way to tackle "white space opportunities" or new areas of growth for the company. "I can tell you as both a marketer and as an employer we are we are very optimistic about getting not only great	In addition to generating new ideas, crowdsourcing platforms garner "influence and credibility through the existence of the site." Internal communities provide a way to share ideas in a way that "cuts through bureaucracy."	A specific benefit in terms of customer satisfaction is "when we first launched our digital video cameras, people loved them but they really wanted a microphone jack to record better sound, so we started getting that	"The more customer interaction and the more knowledge that you can get from your customers the better off you are."	The crowdsourcing platform can be "used to get work done, suggest feedback, and even for social engagement."

	ideas but using it as a way to identify global talent or challenges through channels we would never have before."	feedback through social media monitoring."		
Question 2 Challenges with Crowdsourcing	Managers are still trying to determine the most efficient platform to use and get through any legal loopholes and budgetary constraints for external crowdsourcing. Social media is viewed as customer tool rather than something that can be utilized in B2B; many people in the organization feel "real men don't use social media." Effective crowdsourcing also requires time and focus to be strategic about the questions which are posed to a crowd. It would be helpful if the company would invest more time and money to new techniques like crowdsourcing.	"The biggest challenge that we have right now is just finding the right people at the right time… They may never reach a level of security where they were ready to go out into the marketplace for customers." Two key issues are finding funding and the time to support ideas generated through crowdsourcing. The information gathered has to be validated. "It takes a gestation time before a community can reach a point where you can then harvest the community's goal. It always has to be a complimentary goal, so the community has to gain something and businesses have to gain something."	Project managers are still trying to figure out all the places where crowdsourced data fits within the NPD process and how to keep using it to supplement traditional market research with this data.	Managers are still trying to (1) improve their internal crowdsourcing mechanisms and (2) figure out how to leverage online networks to gain more insights directly from customers so they can have better knowledge about customer issues (needs, problems etc.)	The biggest challenge is trying to figure out how to involve more people in the crowdsourcing process while still maintaining the strong niche community they (the company) have developed for idea generation.
Question 3 Nature of Products Developed	Crowdsourcing is used to generate collaboration between different functional areas but those have not formally led to new services or developments, only incremental updates.	Crowdsourced ideas are typically used in products that may be launched internally (e.g., new internal messaging system) rather than commercially. Typically, these are enhanced versions of existing products rather than brand new types of products.	Used to update and improve existing product lines	Crowdsourced feedback does not really generate brand new products (incorporated into existing product lines).	Crowdsourced information used to solve client needs but not to develop new technologies.

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