HANGING WITH THE RIGHT CROWD:
CROWDSOURCING AS A NEW BUSINESS PRACTICE FOR INNOVATION,
PRODUCTIVITY, KNOWLEDGE CAPTURE, AND MARKETING

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ABSTRACT

In today’s connected world, the reach of the Internet and collaborative social media tools have opened up new opportunities for individuals, regardless of their location, to share their knowledge, expertise, and creativity with others. These tools have also opened up opportunities for organizations to connect with new sources of innovation to supplement or replace current practices. Reaching out to new sources of productivity, knowledge, and creativity via social media is commonly referred to as “crowdsourcing.” Each day, organizations are turning to the crowd to complete a wide variety of tasks. However, we currently know little about the motivations of these organizations, the types of tasks that are completed, the characteristics of the crowd that may be best suited to complete different tasks, and the organizational challenges and risks that such outreach creates.

Using grounded theory methods and qualitative data from literature and case studies, the goal in this research was to build a clearer understanding of the uses of crowdsourcing by established organizations with respect to innovation. This research contributes to theory in three key ways. First, it defines four common organizational uses of crowdsourcing, specifically: 1) Marketing/Branding, 2) Cost Reduction/Productivity 3) Product/Service Innovation, and 4) Knowledge Capture. This finding extends theory by building contextual understanding that links common uses or the crowd to specific organizational goals and desired outcomes. Second, the explanatory theoretical framework that was developed directly ties key characteristics of the crowd and organizational impacts to specific uses. As such, it establishes that different organizational needs necessitate the completion of different tasks that in turn require different skills and knowledge. Furthermore, different uses bring with them unique challenges and potential value. As such, the explanatory theory advances our theoretical understanding of the dynamics that present themselves when organizations attempt to integrate new resources into
current business practices. Moreover, it builds a foundation from which researchers can expand theory related to this new phenomenon. With regard to its contributions to practice, the theory provides guidance to practitioners on which crowds, challenges, impacts, and values are associated with specific uses of crowdsourcing by established organizations. Such understanding may prove critical to organizations attempting to extract value from their crowdsourcing initiatives. Third, the Internal-Crowdsourcing Acceptance Model (ICAM) proposed here advances our theoretical understanding of the use of internal crowds for Product/Service Innovation and the critical role that proactive executive leaders play in reducing barriers to use and acceptance. ICAM theorizes internal-crowdsourcing for Product/Service Innovation as a disruptive business practice that has implications for organizational culture, internal processes, and structure. As such, it extends our current theoretical understanding of the role leadership plays in facilitating this new business practice. Additionally, it provides guidance to practitioners on how to address specific challenges and barriers to use and acceptance, thereby increasing opportunities to extract value from such initiatives.
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Chapter 1

Introduction

The proliferation of collaborative social media tools combined with the reach of the Internet has opened up the possibility for individuals around the world to share their knowledge, express their creativity, and make their voices heard in ways never before possible (Parameswaran, 2007). Additionally, the availability of inexpensive consumer technologies (i.e., equipment, software, and hardware) enables individuals to more easily design, create, and sell their own products and services. This increased connectivity, combined with an individual’s “do it myself” attitude, is shifting the economic landscape and altering the role of the consumer in today’s society. Those with access have the potential to become more empowered consumers (Harrison, Waite, & Hunter, 2006), as well as to generate new sources of income (Brabham, 2008, 2009a; Felstiner, 2010).

As the same time, changes in the competitive landscape along with recent economic and market pressures are increasing the need for organizations to reduce costs, improve margins, generate new sources of revenue, and bring product/service offerings to market faster (IBM Global Business Services, 2006; Prandelli, Sawhney, & Verona, 2008). To remain competitive in today’s fast-paced global economy, organizations must rethink current business models and management practices (Birkinshaw, Bouquet, & Barsoux, 2011). As such, organizations are looking for new sources of innovation, knowledge, and productivity.
Leveraging social media tools and the reach of the Internet to connect with new empowered consumers may be one area where organizations can increase their innovative potential and competitive advantage (Howe, 2008; Malone et al., 2003; McAfee, 2009). In fact, the true power of social media may be in the creation of new disruptive business models and practices (Warlock, 2007). As such, an organization’s ability to harness social media tools to connect with new sources of knowledge and creativity may be key to its ability to remain competitive (Malone, Laubacher, & Morton, 2003; Prahalad & Ramaswamy, 2003; Sawhney, Verona, & Prandelli, 2005). A growing number of organizations are looking to the “crowd” as a new potential source of innovation, knowledge, creativity, and productivity. Commonly referred to as “crowdsourcing,” this new business practice leverages online technologies to connect organizations with individual contributors and new workforces around the world. First coined in 2006, crowdsourcing is defined as:

“...the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also often undertaken by sole individuals [sic]. The crucial prerequisite is the use of the open call format and the large network of potential laborers” (Howe, 2006a, para. 4).

Crowdsourcing is currently being used across a range of different industries for a variety of different purposes (Andriole, 2010; Bonabeau, 2009; Howe, 2008; McAfee, 2009). Tasks include tagging images or documents (Barrington, et. al., 2009), collecting distributed data (Sullivan et al., 2009), sharing of knowledge and expertise (Jana, 2009), and designing and developing evolutionary and revolutionary products (Jeppesen & Frederiksen, 2006). For example, Dell Inc. a U.S. based multinational computer technology corporation, solicits ideas from customers to extend and enhance current product offerings (Di Gangi & Wasko, 2009). Cornell Lab of Ornithology and the National Audubon Society rely on volunteer bird watchers across North America to upload data on sightings of specific birds to monitor endangered species
P&G, one of the world’s most prestigious research and development (R&D) companies, leverages the crowd to solve complex manufacturing problems that internal R&D teams have been unable to solve. Additionally, Quirky.com has created a new business that leverages the crowd to generate ideas, designs, product specifications, and marketing campaigns for new products. While each of these organizations face different organizational needs, each is leveraging crowdsourcing as a way of getting work done.

1.1 Problem Statement

We are only just beginning to understand the theoretical and practical implications of this emerging phenomenon. The growing numbers of descriptive case studies found in the literature provide evidence that many organizations are experimenting with crowdsourcing (Allen et al., 2008; Brabham, 2008a, 2009a; Chilton, 2009; Howe, 2008; Jouret, 2009). Each day, new examples illustrate the wide variety of uses and contexts. Early theoretical work has been helpful in beginning to identify key dimensions of crowdsourcing, as well as exploring the relationship of crowdsourcing to other theories (Bonabeau, 2009; Lakhani, Jeppesen, Lohse, & Panetta, 2007; Malone, Laubacher, & Dellarocas, 2009; Schenk & Guittard, 2009). However, many questions still remain. How best do researchers compare and contrast findings across the wide variety of uses? How do practitioners make strategic decisions regarding how and when to leverage the crowd and for what purposes? What impact does crowdsourcing have on organizational structure, processes, and culture?

A manifestation of the current research gap can be seen in the variety of different outcomes as reported in descriptive cases. Specifically, while organizations have reported both tangible and intangible benefits from their efforts (Allen et al., 2008; Huston & Sakkab, 2006; Jana, 2009), others report less positive or uncertain outcomes (Jouret, 2009; Knuden &
Morteusen, 2011). Still others report impacts on management practices and organizational structures (Bughin, Manyika, & Miller, 2008). Each of these cases represent different uses of crowdsourcing to meet different organizational needs within different contexts. While some organizations are leveraging the crowd for ideation, others are using crowdsourcing for data collection, and still others are attempting to increase competitive advantage by increasing innovative potential. Currently it is unclear if there are unique attributes of crowdsourcing that are best suited to generating desired outcomes in specific contexts and for specific organizational needs.

Another manifestation of this research gap can be seen in the current body of theoretical work. Specifically, current theoretical models proposed for categorizing crowdsourcing vary in terms of the dimensions that are viewed as most relevant to understanding this phenomenon. Additionally, across those models that share similar dimensions, definitions and attributes often vary greatly. Similarly, theoretical papers that explore crowdsourcing’s relationship to other theories, such as theories of innovation, community, and motivation, also employ different contexts and characteristics to define crowdsourcing. This results in findings that may be applicable to a wide range of uses or specific only to one context and type of crowdsourcing. In short, researchers and practitioners run the risk of comparing “apples to oranges.” Furthermore, there is no evidence that success with crowdsourcing in one context would generate success within a different context. Such uncertainly may lead to an over-generalization of findings and/or a misapplication of findings from one context to another.

Moving forward, it is critical to develop a clearer understanding of the differences and similarities of this new business practice with regards to the types of tasks the crowd is asked to perform. To advance the field of crowdsourcing a holistic theoretical framework is needed; one that links the different uses of crowdsourcing to key characteristics and provides in-context understanding of how these characteristics may impact an organization’s ability to extract value.
Additionally, such a framework would help to clarify which types of organizational needs may be addressed by crowdsourcing, as well as which characteristics of the crowd and which conditions may create different risks and benefits.

1.2 Motivation for the Research

The goal in this research is to expand our current understanding of how crowdsourcing is being used by established organizations to supplement or replace current innovation practices. This study seeks to identify the motivation behind organizational use of crowdsourcing, the facilitators of and risks associated with these uses, and the potential value such initiatives may provide.

The introduction of the Internet and new social media technologies are having a significant impact on how businesses interact with their customers, as well as on their innovative capacity. Crowdsourcing is a new potential business model that may allow organizations to leverage the crowd for productivity, creativity, and knowledge. As organizations continue to experiment with this new business practice, theoretical foundations are necessary for making more informed decisions regarding the potential value of crowdsourcing to organizations. The development of a theoretical framework of crowdsourcing within the context of established organizations has the potential to begin to explain which crowd may be most desired and under which specific contexts crowdsourcing may add value.

1.3 Summary of Research Contributions

Based on document analysis of literature focusing on crowdsourcing, as well as case studies with practitioners currently using crowdsourcing, this study addresses gaps in our
theoretical knowledge of crowdsourcing. Using grounded theory methods, evidence is provided that shows that different organizational needs necessitate the completion of different tasks. These tasks require different crowds that in turn bring with them different value. This work advances our theoretical understanding of why and how organizations are leveraging this new business practice and makes three key contributions. First, it presents unifying theoretical framework that identifies specific uses of crowdsourcing by established organizations, specifically: 1) Marketing/Branding, 2) Cost Reduction/Productivity, 3) Product/Service Innovation, and 4) Knowledge Capture. Second, it matches each identified organizational use to four key characteristics: 1) ideal crowd knowledge/skills, 2) preferred crowd location, 3) organizational challenges, and 4) primary value. The theoretical framework begins to clarify which organizational needs necessitate which types of crowds and how organizations may begin to make strategic decisions regarding the potential value the crowd may bring. Additionally, it provides a theoretical basis from which researchers can begin to examine similarities and differences between common organizational uses of the crowd.

Finally, the work expands our understanding of the unique challenges organizations face when leveraging internal crowds (i.e., employees) for ideation related to product and service offerings. Findings show that crowdsourcing for Product/Service Innovation represents a new disruptive business practice that requires a shift in traditional organizational perceptions of value and organizational practices. A theoretical model is presented that outlines key organizational dynamics related to the use and acceptance of internal-crowdsourcing. The model outlines implications of such initiatives on organizational culture, internal processes, and organizational structure. The theoretical model provides a deeper in-context theoretical understanding of a specific use of the crowd by established organizations. Additionally, it begins to provide guidance to practitioners wishing to implement similar internal-crowdsourcing initiatives.
1.4 Organization of Dissertation

This dissertation is organized into six chapters. Following this introductory chapter, Chapter 2 provides a comprehensive review of current literature on the phenomenon of crowdsourcing. This includes a review of descriptive case studies and detailed examples of the current use of crowdsourcing, a discussion of theoretical models for categorizing crowdsourcing, and a summary of research that applies existing theories to the study of crowdsourcing. Chapter 3 documents the research methodology used including a description of methods, data collection, and data analysis. Chapter 4 provides details on the six case studies conducted as part of this research. Additionally, a discussion and summation of key themes across cases is provided. The chapter ends with the presentation of a theoretical model that outlines unique challenges associated with internal-crowdsourcing for Product/Service Innovation. Chapter 5 details the progress of theory building and the emergence of the explanatory theoretical framework of crowdsourcing by established organizations. As discussed, this framework identifies four common uses of crowdsourcing by established organizations and links key crowd characteristics, as well as challenges, to each use. Finally, Chapter 6 provides a summary of findings, contributions, a discussion of limitations, and several suggestions for future work.
Chapter 2

Literature Review

Chapter 2 provides a comprehensive review of the current research on crowdsourcing. First, an initial categorization of descriptive case studies and examples of crowdsourcing tasks within the literature are provided. Next, theoretical models used to categorize crowdsourcing initiatives are compared and contrasted. This is followed by a summary and discussion of research applying existing theory to the phenomenon of crowdsourcing. Finally, the role technology plays in facilitating a connection to the crowd is discussed.

2.1 The Use of Crowdsourcing: Descriptive Examples

Descriptive case studies and examples of current uses of crowdsourcing within the literature provide insights into the wide variety of tasks the crowd is asked to complete. Crowdsourcing is being used by both established organizations, as well as by new businesses. Across these organizations, the crowd is completing a variety of tasks including tagging images, developing creative designs, solving complex problems, and participating in multiple phases of product innovation (see Table 2-1).
Table 2-1. An Initial Categorization of Crowdsourcing Literature by Task

<table>
<thead>
<tr>
<th>Uses of the Crowd</th>
<th>Nature of Task</th>
<th>Selected Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completing Time-consuming Tasks</td>
<td>Social Tagging, Ontologies</td>
<td>Barrington, Turnbull, O’Malley, &amp; Lanckriet, 2009; Howe, 2006b</td>
</tr>
<tr>
<td></td>
<td>Sensemaking</td>
<td>Chamberlain, Poesio, &amp; Kruschwitz, 2009; Kuo et al., 2009</td>
</tr>
<tr>
<td></td>
<td>Tagging of Images</td>
<td>Faymonville, Wang, Miller, &amp; Belongie, 2009; Ho et al., 2009; Morrison, Marchand-Maillet, &amp; Bruno, 2009</td>
</tr>
<tr>
<td></td>
<td>Improving Search Results</td>
<td>Bennett, Chickering, &amp; Mityagin, 2009; Dasdan et al., 2009; Law, von Ahn, &amp; Mitchell, 2009; Ma, Chandrasekar, Quirk, &amp; Gapp, 2009</td>
</tr>
<tr>
<td></td>
<td>Various Tasks</td>
<td>Andrea &amp; Ahn, 2010; Little et al., 2009</td>
</tr>
<tr>
<td></td>
<td>Software Coding</td>
<td>Archak, 2010; Howe, 2008</td>
</tr>
<tr>
<td>Knowledge Sharing</td>
<td>Market Research</td>
<td>Bonabeau, 2009; Brabham, 2009b; Jeppesen &amp; Frederiksen, 2006; Piller, Reichwald, &amp; Mösllein, 2000; Whitlaha, 2009</td>
</tr>
<tr>
<td></td>
<td>Data Collection</td>
<td>Chilton, 2009; Howe, 2008; Sullivan et al., 2009</td>
</tr>
<tr>
<td></td>
<td>Knowledge Bases or Customer Support Services</td>
<td>Allen et al., 2008; Howe, 2008; Jana, 2009; Vecchi &amp; Cintermini, 2010; Wasko &amp; Faraj, 2000; Yang, Adamic, &amp; Ackerman, 2008</td>
</tr>
<tr>
<td></td>
<td>Prediction Markets</td>
<td>Bichler, Gupta, &amp; Ketter, 2010; Bonabeau, 2009; Cowgill, Wolfers, &amp; Zitzewitz, 2009; Hopman, 2007; Howe, 2008; Joshi, Chi, Datta, &amp; Han, 2010; Reichwald, Seifert, Walcher, &amp; Piller, 2004; Surowiecki, 2004</td>
</tr>
<tr>
<td>Creative Outputs</td>
<td>Graphic Design</td>
<td>Brabham, 2009a; Chanal &amp; Caron-Fasan, 2008; Felstiner, 2010; Howe, 2006b; Trompette, Chanal, &amp; Pelissier, 2008</td>
</tr>
<tr>
<td></td>
<td>Photography</td>
<td>Brabham, 2008a; Howe, 2006b, 2008</td>
</tr>
<tr>
<td></td>
<td>Advertising</td>
<td>Brabham, 2009b; Howe, 2008; Whitlaha, 2009</td>
</tr>
<tr>
<td>Product Innovation</td>
<td>Product Design and Development</td>
<td>Brabham, 2008b; Bretschneider, Rajagopalan, &amp; Leimeister, 2012; Di Gangi &amp; Wasko, 2009; Howe, 2008; Jouret, 2009; Piller, Schubert, Koch, &amp; Mösllein, 2005; Poetz &amp; Schreier, 2012; Reichwald et al., 2004; Schau, Hemetsberger, &amp; Kozinet, 2008</td>
</tr>
<tr>
<td></td>
<td>Product Design and Development</td>
<td>Bichler, Gupta, &amp; Ketter, 2010; Bonabeau, 2009; Dodgson et al., 2006; Jeppesen &amp; Frederiksen, 2006; Nambisan &amp; Sawhney, 2008; Poetz &amp; Schreier, 2012; Prandelli, Sawhney, &amp; Verona, 2008; Sawhney et al., 2005</td>
</tr>
</tbody>
</table>
Tasks can be further classified into two overarching categories: 1) routine tasks and 2) non-routine tasks (Perrow, 1967). Routine tasks are typically well-structured tasks that are easy to understand and can be broken into small linear steps. Routine tasks often have a single acceptable solution or range of acceptable solutions. Complex tasks, on the other hand, tend to be less structured and often not well understood (Perrow, 1967). They typically have no single or correct answer. Instead, they can be approached in different ways that yield a variety of acceptable solutions. Next, a discussion of each of the major categories of crowdsourcing task as outlined in Table 2-1 is provided.

2.1.1 Completing Time-Consuming Tasks

The crowd is often asked to complete routine, time-consuming tasks difficult for computers but easy for humans, often referred to as human intelligence tasks (HITs). Tasks include tagging images or music (Barrington et al., 2009; Howe, 2006b), identifying handwriting (Little et al., 2009), and identifying specific information within a document (Howe, 2008). Typically, organizations turn to crowdsourcing marketplace sites such as Mechanical Turk\(^1\) to facilitate connections with large numbers of people to complete HITs. On these sites, visitors select the tasks they wish to complete and organizations pay workers based on satisfactory completion of the defined task (Andrea & Lorenzo, 2010; Little et al., 2009). Pay is typically significantly lower than it would be if individuals were hired directly by the organization (Felstiner, 2010).

Companies are also using crowdsourcing to complete complex time-consuming tasks. For example, TopCoder.com connects organizations with programmers in the crowd to build complex

\(^1\) Mechanical Turk is an Internet marketplace launched in 2005 by Amazon.com allowing anyone to post work to be completed by the crowd. Workers are paid a fee (typically nominal) for work completed.
software applications in less time than feasible using in-house staff. Organizations specify requirements, timelines, and budgets and the TopCoder community competes to see who can produce the best code in the allotted timeframe. Then TopCoder breaks large projects down into smaller more manageable modules and runs multiple competitions (Archak, 2010; Howe, 2008, chap. 4). Qualified reviewers evaluate weekly submissions, post scores for everyone to see, and select a winner. After all modules are completed, a new contest is held to assemble separate modules into the final program. Winners are paid a pre-defined fee and relinquish all rights to the code. Leveraging sites like TopCoder allows organizations to benefit from the productivity of the crowd without compromising on quality. In fact, TopCoder reports an average of .98 errors per 1000 lines of code, compared to the industry average of 6 errors per 1000 lines of code (Howe, 2008, chap. 4).

2.1.2 Knowledge Sharing

Leveraging the crowd for its knowledge is another common use of crowdsourcing. Simple tasks include leveraging the crowd for market research or to collect data. More complex tasks include relying on the crowd for customer support or to predict future events.

An example of a routine knowledge-sharing task is the use of the crowd to collect global position system (GPS) data (Chilton, 2009). By aggregating GPS data from the crowd, organizations have built local road maps, created visualizations of specific areas, and provided up-to-date information in crisis situations such as the recent earthquake in Haiti (Richmond, 2010). Another example of crowd-based knowledge sharing is PeerToPatent.org. Launched in 2007, PeerToPatent opens up the patenting process to the public. The site allows individuals to submit prior art and commentary relevant to pending patent applications within the fields of computer architecture, software, and information security. Because patent examiners in these
fields did not have timely access to the latest information regarding prior art, the United States Patent and Trademark Office (USPTO) estimated they were applying 55% of their resources examining applications that did not merit a patent (Allen et al., 2008). By reaching out to the public, the USPTO was able to improve both the speed at which patents were issued as well as reduce legal issues and suits resulting from conflicting claims (Howe, 2008).

Companies are also leveraging the knowledge of the crowd for more complex tasks such as making predictions on future product sales, inventory, and manufacturing capacity (Cowgill et al., 2009; Hopman, 2007; Howe, 2008, chap. 5; Surowiecki, 2004). Known as “prediction markets” or “information markets” these initiatives are similar to the futures exchange within financial markets. In prediction markets, individuals buy shares based on the number of products they believe will be sold and then earn money based on the accuracy of their predictions. These markets create an interesting dynamic as individuals who have access to more information (which may aid in their understanding of the market) tend to buy more shares than those who are just guessing. As such, prediction markets encourage individuals to reveal their privately held information as it gives them an advantage over those without such knowledge (Howe, 2008, chap. 6). Prediction markets have also been used for product requirements and assessment of potential risks/rewards related to new product introduction (Reichwald et al., 2004).

2.1.3 Creative Outputs

New businesses are also using crowdsourcing to provide creative services at significantly reduced costs. Examples of creative outputs include advertising, photography, and graphic design for corporate brochures and web sites (Brabham, 2008a, 2009a; Whitla, 2009). For example, iStockphoto.com is a stock photography web site built on a crowdsourcing model. Instead of employing or contracting with professional photographers, iStockphoto relies on the crowd to
voluntarily upload their photo, videos, and animation clips. By reducing costs associated with hiring and managing a workforce, and leveraging the reach of the Internet, iStockphoto sells the crowd’s creative outputs at significantly less cost to businesses and organizations around the world.

Threadless.com also takes advantage of the creativity within the crowd. However, instead of connecting companies with products, as is the case with iStockphoto, Threadless integrates the crowd’s creations directly into its final product. On Threadless, anyone can submit t-shirt designs that are voted on by the crowd (Brabham, 2009a). Visitors also indicate their willingness to purchase each design. Winners are produced by Threadless and sold back to the community. Winners receive payment upwards of $2,500, recognition on the site for their design, and their name imprinted on the manufactured shirts. By asking the community to vote on the design as well as indicate their willingness to purchase items, Threadless has immediate insights into what will sell and how many people intend to purchase each t-shirt.

Still other organizations sell creative services generated by the crowd directly to consumers (Chanal & Caron-Fasan, 2008; Felstiner, 2010; Trompette et al., 2008). For example, sites such as Wilogo, crowdSPRING, and 99Designs allow organizations needing designs for logos, brochures, and websites to specify design requirements and a fee that will be paid for the work. Anyone can submit a design for consideration. Organizations select a winning design, pay the designer the agreed upon fee and in return, designers turn over all files and rights to the creative work. Fees typically range between $100 and $2,000 and are significantly lower than the thousands to tens of thousands of dollars traditional design agencies charge for similar services.
2.1.4 Complex Problem Solving

Organizations are also leveraging crowdsourcing to solve complex R&D problems (Dodgson et al., 2006; Lakhani & Panetta, 2007; Sawhney et al., 2005). One of the most often-cited crowdsourcing sites for problem solving is InnoCentive.com (A market for ideas, 2009; Bonabeau, 2009; Brabham, 2008b; Dodgson et al., 2006; Howe, 2008, chap. 1; Kleemann et al., 2008; Lakhani & Panetta, 2007; Lakhani et al., 2007; Sawhney et al., 2005). On InnoCentive, companies, known as “seekers,” anonymously post problems to be solved. Registered participants, known as “solvers,” submit potential solutions for consideration. Once a solution has been selected, solvers relinquish all rights in return for a monetary reward. Payment for approved solutions is determined based on complexity and nature of the problem (InnoCentive, n.d.) and ranges from $500 to 1 million dollars. As of November 2012, over 1500 challenges had been posted. Firms such as P&G, Dow Chemicals, Boeing, and DuPont, have leveraged InnoCentive to help find solutions to problems such as how best to transfer a chemical powder to a specialty container, determining the most effective chemicals for art restoration, creating a compound for skin tanning, and creating a method to prevent breakage of snack chips (Howe, 2008).

2.1.5 Product Innovation

Finally, a number of organizations are using crowdsourcing for one or more stages of product innovation. Common tasks include idea generation (i.e., ideation), idea filtering, product design, and product development. While companies have used focus groups as sources of input for new products and services for years (Cooke & Buckley, 2007; Kidd & Parshall, 2000; von Hippel, 1986), what has changed is the ease with which individuals around the world can be engaged.
2.1.5.1 Ideation and Idea Filtering

The majority of organizations leveraging crowdsourcing for product innovation are doing so at the early stages of innovation (Brabham, 2008b; Bretschneider et al., 2012; Di Gangi & Wasko, 2009; Howe, 2008; Jouret, 2009; Poetz & Schreier, 2012; Reichwald et al., 2004). Organizations looking to increase the number of ideas generated or who are looking for novel ideas are reaching out to current customers (Muhdi & Boutellier, 2011; Porter, Donthu, MacElroy, & Wydra, 2011), online communities (Jeppesen & Frederiksen, 2006; Schau et al., 2008), the general public (Di Gangi & Wasko, 2009), and employees outside dedicated innovation groups (Santos & Spann, 2011; Stewart et al., 2008; Whelan & Parise, 2011). Often referred to as “idea jams,” this type of crowdsourcing can be thought of as massive online brainstorming where individuals freely reveal ideas and concepts (Howe, 2008, chap. 5). Idea jams may take the form of a one-time contest where individuals independently submit ideas for monetary rewards (Morgan & Wang, 2010; Terwiesch & Xu, 2008), on-going open forums where anyone can see and comment on the ideas of others and no monetary prizes are provided (Brabham, 2009c; Bretschneider et al., 2012; Di Gangi & Wasko, 2009), or collaborative sites where groups compete for monetary rewards (Jouret, 2009). Regardless of the structure, idea jams are not intended to solve specific problems. Instead, their purpose is to generate as many ideas as possible (Howe, 2008). An example of crowdsourcing for ideation is Dell’s IdeaStorm web site. IdeaStorm solicits suggestions for enhancements to current products or ideas for new product offerings from visitors. As of November 2012, the crowd had contributed over 18,000 ideas with over 500 currently implemented by Dell (IdeaStorm, n.d.).

After collecting potential new ideas, companies also use the crowd to sort through or “filter” ideas (Di Gangi & Wasko, 2009; Reichwald et al., 2004). Such collaborative filtering is a useful mechanism for determining potential value (Piller et al., 2005). For example, the
previously mentioned IdeaStorm site also allows visitors to vote ideas up or down. Ideas receive points based on the crowd’s approval (thumbs up) or disapproval (thumbs down). By allowing the crowd to weigh in, Dell can quickly assess the popularity of an idea with potential buyers. In addition to thumbs up/down voting, crowdsourcing sites also incorporate a “most votes wins” approach, consensus (i.e., everyone agrees), averaging (e.g., this item has an average rating of 3 stars), surveys, and polls to collaboratively filter ideas (Brabham, 2009b; Malone, Laubacher, & Dellarocas, 2009; Sawhney et al., 2005).

2.1.5.2 Product Design and Development

Although more limited than ideation initiatives, organizations are also using crowdsourcing sites to facilitate product design and development. For example, Ducati Motors, an Italian motorcycle company, posts virtual prototypes of proposed new design features and asks the crowd to provide input. Anyone visiting the site can leave a comment, discuss designs with others, and vote on proposed modifications (Prandelli et al., 2008). By engaging the crowd before entering into the manufacturing process, Ducati Motors leverages the crowd’s input at relatively low cost to design more customer-focused products. Additionally, such outreach may be helpful in building customer relations and loyalty (Kozinets, 1999).

A few organizations are also turning to the crowd for its ability to develop new products or extend current offerings (Jeppesen & Frederiksen, 2006; Nambisan & Sawhney, 2008, chap. 5; Sawhney et al., 2005). Companies are tapping into developers in the crowd by providing “toolkits” that give the crowd free access to product code and infrastructure. By providing toolkits to the crowd, sponsoring firms are able to benefit from “network effects” (Parameswaran & Whinston, 2007; Rohlfs, 1974; Schenk & Guittard, 2009). Simply put, from an economic
perspective, a network effect is the increase in value of a good or service based on the increase in numbers of individuals who make use of it.

An illustrative example of crowdsourced product innovation with network effects is the use of toolkits by Propellerhead Software (Jeppesen & Frederiksen, 2006). Propellerhead is a manufacturer of software-controlled music instruments for sound production and sound effects used in games, movies, and advertising. Propellerhead makes portions of their code available to any individual who visits their site via downloadable toolkits. Visitors can create new customer modules as well as share code modules with others. By providing access to toolkits, Propellerhead has been able to keep development costs down while increasing product features and its user base.

Still other websites completely bypass in-house product innovation processes relying on the willingness of the crowd to participate and collaborate in all phases of new product development (Antikainen & Väätäjä, 2010; Chanal & Caron-Fasan, 2008; Trompette et al., 2008). For example, Quirky.com solicits ideas from the crowd across a broad range of categories including electronics, kitchen tools, housewares, and “gadgets.” Anyone visiting the site can suggest new ideas, comment on ideas, and vote on their favorite ideas. Top ideas are moved to the next round of production where the crowd collaboratively defines product requirements, material specifications, design prototypes, product name, tagline, and marketing campaigns. Completed designs are manufactured by Quirky and sold back to the crowd. In return for the crowd’s contribution Quirky shares a portion of its net profits with contributors based on individual level of input (Piller, Ihl, & Vossen, 2010).

In summary, the cases and examples in the descriptive literature provide a broad overview and understanding of the variety of different uses of crowdsourcing by established and new organizations. Additionally, they begin to illustrate some of the potential value that may be realized by organizations that leverage crowdsourcing to meet organizational needs. However,
they provide little theoretical guidance to researchers and practitioners regarding this new phenomenon. Next, a review of theoretical models designed to help categorize crowdsourcing initiatives is provided.

### 2.2 Theoretical Models for Categorizing Crowdsourcing

A number of theoretical models for categorizing crowdsourcing initiatives also appear in the literature. Models vary in terms of complexity and dimensions. Additionally, some models are general in nature and apply to any type of crowdsourcing activity, while others are specific to crowdsourced product innovation, or creative outputs (see Table 2-2).
Table 2-2: Theoretical Models for Categorizing Crowdsourcing (*primary characteristic)

<table>
<thead>
<tr>
<th>General Models</th>
<th>Tasks Completed</th>
<th>Who Participates</th>
<th>Incentive/Motivation</th>
<th>Nature of the Collaboration</th>
<th>Governance/Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonabeau, 2009</td>
<td>✓ *</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Doan, Ramakrishnan, &amp; Halevy, 2011</td>
<td>✓</td>
<td>✓ *</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Geiger, Seedorf, &amp; Schader, 2011</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>Haythornthwaite, 2011</td>
<td>✓</td>
<td>✓ *</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Howe, 2008</td>
<td>✓</td>
<td></td>
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<tr>
<td>Kleemann, Voß, &amp; Rieder, 2008</td>
<td>✓</td>
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<td>Malone, Laubacher, &amp; Dellarocas, 2009</td>
<td>✓</td>
<td>✓</td>
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<td>Rouse, 2010</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Schenk &amp; Guittard, 2009</td>
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<table>
<thead>
<tr>
<th>Models Specific to Product Innovation</th>
<th>Tasks Completed</th>
<th>Who Participates</th>
<th>Incentive/Motivation</th>
<th>Nature of the Collaboration</th>
<th>Governance/Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chanal &amp; Caron-Fasan, 2008</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>Reichwald, Seifert, Walcher, &amp; Pillar, 2004</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Sawhney, Verona, &amp; Prandelli, 2005</td>
<td>✓</td>
<td></td>
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<tr>
<td>Trompette, Chanal, &amp; Pelissier, 2008</td>
<td></td>
<td>✓</td>
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<tr>
<td>Whitla, 2009</td>
<td>✓ *</td>
<td>✓</td>
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<tr>
<td>Zwas, 2010</td>
<td>✓</td>
<td>✓ *</td>
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<thead>
<tr>
<th>Models Specific to Creative Outputs</th>
<th>Tasks Completed</th>
<th>Who Participates</th>
<th>Incentive/Motivation</th>
<th>Nature of the Collaboration</th>
<th>Governance/Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kozinets, Hemetsberger, &amp; Schau, 2008</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whitla, 2009</td>
<td>✓ *</td>
<td>✓</td>
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</table>

As illustrated in Table 2.2, there are currently a number of different dimensions used to categorize crowdsourcing. Dimensions include: tasks completed, who participates,
incentive/motivation, nature of the collaboration, and governance/structure of the initiative. Across these models, however, the definitions and approaches used to categorize each dimension vary greatly.

For example, most models include a tasks completed dimension. At the broadest level, this dimension is used to categorize the specific task(s) to be completed. As shown in Table 2-2, nine models can be applied to any type of crowdsourcing, six are specific to product innovation, and two focus on tasks that result in creative outputs. Across these models, some list specific tasks to be completed (e.g., product development, product design, creative design) (Howe, 2008; Kleemann et al., 2008; Reichwald et al., 2004; Sawhney et al., 2005), while others use high-level constructs to categorize tasks. Constructs vary from categorizing tasks as simple or complex (Schenk & Guittard, 2009; Zwass, 2010), requiring creation or decision making (Bonabeau, 2009), resulting in value creation or value capture (Chanal & Caron-Fason, 2008), or by the length of time required to complete (Zwass, 2010).

Another common dimension in these models is who participates. Again, across these models, definitions and descriptions for this dimension vary. Models categorize participants by whether they are preselected by the organization or not (Geiger et al., 2011; Zwass, 2010), whether they represent individuals who would not typically perform such tasks (Bonabeau, 2009), whether they are targeted because they possess specific skills, knowledge, or interests (Chanal & Caron-Fasan, 2008; Kozinets et al., 2008; Reichwald et al., 2004; Whitla, 2009; Zwass, 2010), or whether they have a certain status within the community (Malone et al., 2009).

Models that include a dimension for incentive/motivation have slightly less variation in how this dimension is defined. Typically incentives are based on both intrinsic and extrinsic motivation. Common to most are incentives based on monetary rewards, status, recognition, and altruism (Doan et al., 2011; Haythornthwaite, 2011, Malone et al., 2009; Rouse, 2010; Zwass, 2010). While most specify three to four types of incentives, Zwass (2010) breaks incentives into
19 different motivators ranging on a spectrum from altruistic to monetary. Two frameworks focus instead on outcomes as motivating factors (Chanal & Caron-Fasan, 2008; Trompette, Chanal, & Pelissier, 2008). Specifically, these models differentiate between individuals motivated by outcomes that provide personal rewards versus those motivated by outcomes that produce a common good available to the public.

With respect to the nature of the collaboration, the majority of models distinguish between collaborative (i.e., individuals working together) and independent work (i.e., individuals working alone) (Bonabeau, 2009; Geiger et al., 2011; Haythornthwaite, 2011; Kozinets et al., 2008; Malone, et al., 2009; Rouse, 2010; Schenk & Guittard, 2009). A few provide more granular definitions and further categorize collaboration in terms of whether input is aggregated across individuals or whether only individual inputs are collected (Kozinets et al., 2008; Malone et al., 2009). Still others differentiate based on whether inputs are anonymous or attributed, qualitative or quantitative (Haythornthwaite, 2011), “broad” or “deep” (Sawhney et al., 2005).

Finally, with respect to governance/structure, only four of the models categorize crowdsourcing initiatives based on this dimension. Typical are categorizations based on protection of IP (Trompette et al., 2008), resolution of disputes (Doan et al., 2011), or who determines the governance and structure for the site (Trompette, Chanal, & Pelissier, 2008; Zwass, 2010).

In summary, these early theoretical models begin to identify dimensions that may be important in understanding the phenomenon of crowdsourcing. There is, however, limited agreement on which dimensions are most important and how best to define and categorize each. While some models focus primarily on the nature of the task to be completed, others focus on the nature of the collaboration or who participates. Some list specific tasks to be completed, while others provide constructs on which to categorize tasks. While these frameworks are helpful, there is currently no integrated model of crowdsourcing that begins to theorize the patterns and
relationships between specific tasks and specific dimensions of crowdsourcing. Next, a review of literature that applies existing theory to the phenomenon of crowdsourcing is provided.

2.3 Application of Existing Theory to Crowdsourcing

Researchers from across a broad spectrum of disciplines are beginning to provide theoretical discussions of crowdsourcing in relation to theories of innovation, community, motivation, and value extraction (see Table 2-3).

Table 2-3. Theoretical Crowdsourcing Research

<table>
<thead>
<tr>
<th>Theoretical Lens</th>
<th>Theory</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation</td>
<td>Open Innovation</td>
<td>Albors et al., 2008; Archak, 2010; Brabham, 2008b; Burger-Helmchen &amp; Pépin, (unpublished); Chanal &amp; Caron-Fasan, 2008; Di Gangi &amp; Wasko, 2009; Dogdson et al., 2006; Feller, Finnegan, Hayes, &amp; O'Reilly, 2010; Johnson &amp; Fillippini, 2009; Kleemann et al., 2008; Maria &amp; Finotto, 2008; Poetz &amp; Schreier, 2012</td>
</tr>
<tr>
<td></td>
<td>Open Source Communities</td>
<td>Burger-Helmchen &amp; Pépin, unpublished; Chanal &amp; Caron-Fasan, 2008; Davis &amp; Davis, 2007; Fantoni et al., 2008; Hars &amp; Ou, 2002; Lakhani &amp; Wolf, 2003; Panchal &amp; Fathianathan, 2008; Sawhney et al., 2005; Trompette et al., 2008; von Hippel, 2001; von Hippel &amp; von Krogh, 2003</td>
</tr>
<tr>
<td></td>
<td>Lead Users</td>
<td>Bilgram, Brem, &amp; Voigt, 2008; Enkel, Kausch, &amp; Gassmann, 2005; Füller &amp; Matzler, 2007; Hung, Chou, &amp; Dong, 2011; Jeppesen &amp; Laursen, 2009; Marchi, Giachetti, &amp; de Gennaro, 2011; Piller &amp; Walcher, 2006; Prügl &amp; Schreier, 2006; von Hippel, Ogawa, &amp; de Jong, 2011</td>
</tr>
<tr>
<td></td>
<td>Sense of Community</td>
<td>Boudreau &amp; Lakhani 2009; Brabham, 2008a, 2009b); Di Gangi &amp; Wasko, 2009; Ebner, Leimeister, &amp; Krmar, 2009; Haythornthwaite, 2011; Kozinets, Hemetsberger, &amp; Schau, 2008; Malone et al., 2009; Schenk &amp; Guittard, 2009; Trompette et al., 2008; West &amp; Lakhani, 2008; Wiertz &amp; de Ruyter, 2007</td>
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</table>
Next, an overview of this literature is provided.

### 2.3.1 Theories of Innovation

Within the crowdsourcing literature, theories of open innovation (Chesbrough, 2003a), open source software communities (von Hippel & von Krogh, 2003), and lead users (von Hippel, 1986) are commonly employed to build our understanding of crowdsourcing.
2.3.1.1 Open Innovation, Open Source, and Crowdsourcing

Theories of open innovation and open source software communities are most often cited for understanding the characteristics, benefits of, and structure of crowdsourcing initiatives. In contrast to “closed innovation” where all innovation happens inside the corporation, “open innovation” involves reaching outside organizational boundaries for new sources of innovation and includes two key dimensions: value creation and value capture. (Chesbrough, 2003b, 2006) (see Figure 2-1).

“Closed Innovation” Model

“Open Innovation” model

Figure 2-1: Closed Versus Open Innovation Models (Chesbrough, 2003b)

Value creation is the process of developing an idea into a new product or service. Open innovation increases potential value creation as it exposes organizations to additional sources of ideas and intellectual property (IP) that can be used to develop new products or services. Value capture involves creating unique resources, assets, or a position that enables an organization to create a competitive advantage. Open innovation increases potential to capture value as it opens up opportunities to financially benefit from ideas and IP within and outside the organization.

In contrast to open innovation, open source communities are Internet-based communities of software developers who freely collaborate to create software products (von Hippel & von
Krogh, 2003). Unique to open source communities is the ability for anyone, regardless of whether they contribute to the final product, to access the software free of charge (Aksulu & Wade, 2010; Davis & Davis, 2007; Hars & Ou, 2002; Lakhani & Wolf, 2003; von Hippel, 1986, 2001, 2005; von Hippel & von Krogh, 2003). Additionally, contributors are not paid for their efforts. Well-known examples of open source projects include the Linux operating system, Apache server software, and Perl programming language.

Within the literature there are a number of theoretical positions regarding crowdsourcing’s relationship to theories of open innovation and open source communities. While there is general agreement that open innovation, open source, and crowdsourcing are based on an open model of innovation, there is not agreement on the relationship among them.

With regard to open innovation, the majority theorize crowdsourcing as a new form or extension of open innovation (Burger-Helmchen & Pénin, unpublished; Chanal & Caron-Fasan, 2008; Fantoni et al., 2008; Knudsen & Mortensen, 2011; Leimeister et al., 2009, Panchal & Fathianathan, 2008; Piller et al., 2010; Reichwald et al., 2004; Trompette et al., 2008). In this view, both share the key characteristic of reaching out to resources outside the corporate boundaries to increase innovative potential. As such, crowdsourcing is viewed as a sub-category of open innovation (see Figure 2-2).

![Figure 2-2: Crowdsourcing as Sub-Category of Open Innovation](image)
Others, however, view open innovation and crowdsourcing as sharing some common characteristics but differing in others (Schenk & Guittard, 2009). Common to each is the ability to benefit from resources outside the organization. However, they differ in terms of who participates. While open innovation represents organization-to-organization innovation, crowdsourcing involves organizations working with an anonymous group of individuals. This theoretical perspective views open innovation and crowdsourcing as different innovation models that share one key characteristic (e.g., reaching outside the organization), yet they are unique with respect to who participates. As such, neither is considered a sub-category of the other (see Figure 2-3).

![Diagram of Open Innovation and Crowdsourcing](image)

Figure 2-3: Crowdsourcing as Sharing Characteristics with Open Innovation

Theoretical perspectives on the relationship between crowdsourcing and open source communities also vary. Specifically, similar to perspectives on open innovation and crowdsourcing, one perspective views crowdsourcing and open source as sharing some characteristics but differing in others. Specifically, while all agree that both leverage open collaboration and voluntary participation, each uses a different characteristic to illustrate differences, specifically: ownership of the final work product (communal for open source, organizations for crowdsourcing) (Schenk & Guittard, 2009), pay (none for open source, monetary for crowdsourcing) (Kleenmann, et al., 2008), and use for profit or not for profit (for profit in the case of open innovation, not for profit in the case of open source) (Burger-Helmchen...
& Pénin, unpublished). In these cases, while crowdsourcing shares some characteristics with open source, it differs in others. As such, neither is a sub-category of the other (see Figure 2-4).

![Figure 2-4: Crowdsourcing as Sharing Characteristics with Open Source](image)

Still others make the case that the differences between crowdsourcing and open source are so great that they each represent completely different theoretical models. Specifically, Brabham (2008b), makes the case that crowdsourcing is not open source because open source relies on a voluntary, unpaid community, while crowdsourcing relies on a paid model for participation. Because this key difference is viewed as critical to open source theory, this perspective views crowdsourcing and open source as different phenomena (see Figure 2-5).

![Figure 2-5: Crowdsourcing and Open Source as Different Phenomena](image)

Three papers were identified that provide a detailed theoretical discussion of open innovation, open source, and crowdsourcing (Chanal & Caron-Fasan, 2008; Schenk & Guittard, 2009; Trompette et al., 2008). Here again, there are differing perspectives. Across these three
papers, there are two main theoretical perspectives. The first places crowdsourcing and open
source within the category of open innovation but points out that there are some differences
between crowdsourcing and open source initiatives (Chanal & Caron-Fasan, 2008; Trompette et
al., 2008) (see Figure 2-6).

![Figure 2-6: Crowdsourcing and Open Source as a Sub-Set of Open Innovation](image)

The other views open innovation, open source software, and crowdsourcing as sharing some
common characteristics, but concludes that none can be categorized as a sub-category of any
other (Schenk & Guittard, 2009) (see Figure 2-7).

![Figure 2-7: Crowdsourcing and Open Source Sharing Characteristics with Open Innovation](image)

The difference between these two viewpoints may be a function of the authors’
perspectives and objectives. Researchers in the first camp (e.g., crowdsourcing as a sub-category
of open innovation) view open innovation as any initiative that includes those outside the
boundary of the corporate structure (Chanal & Caron-Fasan, 2008; Trompette et al., 2008).
Therefore, they view crowdsourcing as a sub-category of open innovation. Additionally, these authors are attempting to explain how a unique characteristic of crowdsourcing may create a new dynamic than within open innovation (i.e., the ability for an organization to profit from the collective efforts of the crowds).

Researchers in the second camp (e.g., similar but not sub-categories of each other) are attempting to define crowdsourcing in relation to other models of open innovation (Schenk & Guittard, 2009). These authors compare and contrast theory along a wide variety of different dimensions versus the key dimension of outside resources. These dimensions include: 1) ownership (communal for open sources, organizations for open innovation and crowdsourcing), 2) who participates (organization-to-organization for open innovation, organization-to-anonymous individuals for crowdsourcing), and 3) the intent of the collaboration (innovation for open innovation, various tasks for crowdsourcing). As such, they are looking to clearly define the boundaries of this field of study in relation to other innovation theories. This meta level of analysis is designed to provide a description of the unique characteristics that define each of these approaches.

In summary, as with the theoretical models previously discussed, within the theoretical discussions related to open innovation and open source, there are wide variations and limited agreement (see Table 2-4).
Table 2-4: Summary of Theoretical Positions on the Relationship Between Crowdsourcing, Open Innovation, and Open Source

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Crowdsourcing</th>
<th>Open Innovation</th>
<th>Open Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Outside Organization</td>
<td>Outside Organization</td>
<td>Outside Organization</td>
</tr>
<tr>
<td>Participants</td>
<td>Organization-to-Anonymous Crowd</td>
<td>Organization-to-Organization</td>
<td>Individual-to-Community</td>
</tr>
<tr>
<td>Ownership</td>
<td>Company</td>
<td>Company</td>
<td>Communal</td>
</tr>
<tr>
<td>Motivation</td>
<td>For Profit</td>
<td>For Profit</td>
<td>Not for Profit</td>
</tr>
<tr>
<td>Remuneration</td>
<td>Paid</td>
<td>Economic or Competitive Advantage</td>
<td>None</td>
</tr>
<tr>
<td>Purpose</td>
<td>Various Tasks</td>
<td>Innovation Specific</td>
<td>Software Development</td>
</tr>
</tbody>
</table>

Similar to the theoretical models previously discussed, researchers do not agree on which dimensions are most relevant or critical to theorizing crowdsourcing in relation to other innovation models. Furthermore, the specific dimensions used in these theoretical discussions often do not encompass the variety of different context in which crowdsourcing is used.

For example, with respect to the location of the crowd, crowdsourcing is commonly viewed as similar to open innovation as it involves reaching outside the organization. However, a number of cases in the literature describe the use of internal crowds (i.e., employees) both for ideation (Santos & Spann, 2011; Stewart et al., 2008, Whelan & Parise, 2011) and prediction markets (Cowgill et al, 2009; Hopman, 2007). This may suggest a key dimension of crowdsourcing that may be necessary for categorization and theory building – specifically internal versus external crowds.

Next, with regard to the view that crowdsourcing represents a profit making endeavor, descriptive cases provide examples of use by government agencies as well as non-profit organizations. For example, the USPTO site PeerToPatent.org described earlier is an example of
the use of crowdsourcing by a governmental agency (Allen, et al., 2008). The use of the crowd to collect data for emergency response such as the 2010 earthquake in Haiti is an example of non-profit crowdsourcing (Richmond, 2010). Again, this may suggest another critical dimension for categorizing and theorizing crowdsourcing – specifically for profit versus not for profit uses.

Finally, some theoretical discussions compare and contrast crowdsourcing with other theories of innovation based on the dimension that contributors are paid for their contributions. However, there are a number of examples within the literature where contributors do not receive payment for their contributions (e.g., initiatives that leverage the crowd to collect GPS information for mapping (Chilton, 2009), internal predictive markets (Cowgill et al, 2009; Hopman, 2007), and product development examples (Jeppesen & Frederiksen, 2006)). In fact, in Howe’s (2006) definition of crowdsourcing, no mention of monetary payment or rewards is included.

While there are differing theoretical opinions on where crowdsourcing falls within the categories of open innovation and open source communities, most agree there are unique characteristics that need to be better defined and studied (Sawhney et al., 2005; Trompette et al., 2008). Current theoretical discussions illustrate how emergent and fluid our understanding is of crowdsourcing. Additionally, these discussions invite additional theoretical exploration. Because of the number of uses and contexts in which crowdsourcing is used, it is critical that future work focuses on identifying the similarities and differences across different contexts and uses.

2.3.1.2 Lead Users and Crowdsourcing

A number of theoretical papers within the crowdsourcing literature explore lead user theory (von Hippel, 1986) as a way of better understanding the role innovative users play (Marchi et al., 2011), how best to identify innovative users (Bilgram et al., 2008; Hung et al., 2011; Piller
& Walcher, 2006), and how best to integrate innovative users into the product development process (Prügl & Schreier, 2006; Reichwald et al., 2004). First theorized by von Hippel (1986), lead users are described as individuals who: 1) have an early and advanced understanding of the future needs of the marketplace and 2) are in a position to benefit significantly from innovations around those needs (typically economically). As such, lead users are not only more likely to innovate, but their ideas tend to be more attractive to others as well as highly commercializable. Additionally, lead users have been found to be especially important in high-tech industries (von Hippel, 1986).

Research employing lead user theory has shown that lead users also play a critical role in the development of new crowdsourced products. Specifically, lead users with an interest in the topic may represent the majority of contributors to crowdsourcing sites (Brabham, 2009a, 2008a; Jeppesen & Frederiksen, 2006). In a crowdsourcing study of Propellerhead Software, a high-tech music software site, active users exhibit similar characteristics to lead users. Specifically, they were primarily hobbyists and early adopters who possessed expert technical and product knowledge. Their specialized knowledge allowed them to modify and update code to meet their specific needs, as well as help others within the community to troubleshoot potential problems. Other studies, however, have shown that lead users may not be the only source of innovation within the crowd. In a study examining the quality of ideas generated by the crowd for consumer baby products, ideas generated by the crowd were found to be more novel, better suited to customer needs, yet somewhat less feasible than ideas generated by knowledgeable professionals (Poetz & Schreier, 2009). This was the case even when participants would not be considered lead users.

Finally, researchers evaluating ideas for the design of running shoes, found that “ordinary users” (i.e., those with limited knowledge of product materials or manufacturing processes) also possessed critical knowledge that could be leveraged for innovation (Reichwald et al., 2004).
While lead users tended to contribute innovative ideas, ordinary users played a key role in refining the ideas put forth.

In summary, early evidence would suggest that similar to open innovation, lead users may play a more active role in crowdsourced product innovation, especially with high-tech products. However, in crowdsourcing initiatives focused less on high-tech products (e.g., sneakers), lead users may not be the only type of user to add value. Ordinary users or users with other characteristics may add different value to the product development process. Currently it is unclear what knowledge and which crowds may be most valuable within specific contexts.

### 2.3.2 Crowdsourcing and Community

Across the literature a number of papers theorize that the presence of community is an integral component of crowdsourcing (Di Gangi & Wasko, 2009; Kozinets et al., 2008; Malone et al., 2009; Trompette et al., 2008; Verona et al., 2006). Others, however, question whether all crowdsourcing sites represent a true community (Haythornthwaite, 2011; Schenk & Guittard, 2009). Moreover, while some use the term community to describe any group working on a task regardless of their relationship and interactions (Feller, Finnegan, Hayes, & O’Reilly, 2009; Trompette et al., 2009; Whitla, 2009), others believe interactions among members are necessary for a community to exist (Dholakia, Bagozzi, & Pearo, 2003; Haythornthwaite, 2011; Lakhani & Panetta, 2007; McAfee, 2009, chap. 5; Muniz & O’Guinn, 2001; Wasko & Faraj, 2000; Wenger & Snyder, 2000). Of the papers identified, only two provided a detailed theoretical discussion of the relationship between crowdsourcing and theories of community (Haythornthwaite, 2011; Trompette et al., 2008). Trompette et al. describe crowdsourcing as a new type of hybrid community, while Haythornthwaite theorizes that many types of crowdsourcing do not rise to the level of a community. An overview of these two theoretical positions is provided next.
Trompette et al. (2008) bring a sociological, economic, and management perspective to the theoretical discussion of community and crowdsourcing. Specifically, they focus on crowdsourcing communities where individuals are paid to create a good (e.g., logo, software, or high-tech products) and where the good is owned by the sponsoring organization and sold for profit. On these websites, goods may be produced independently or collaboratively with others in the community. Based on a review of crowdsourcing sites meeting these criteria, Trompette et al. propose a new theoretical model for innovation communities called the “collective-private” model. This model extends von Hippel and von Krogh’s (2003) work on innovation and open source communities; specifically the “private-collective” model of open source software innovation.

In von Hippel and von Krogh’s (2003) private-collective model, private investors freely relinquish control of their knowledge as well as their rights to innovation created using their knowledge in order to produce a collective or public good (i.e., nonrival – consumption by one does not preclude consumption by others, and nonexcludable – no one is excluded from use) (Kaul & Mendoza, 2003). More simply stated, individual programmers freely contribute their expertise and time to produce software available to anyone at no fee.

In contrast to the private-collective model, Trompette et al. (2008) theorize crowdsourcing as a new “collective-private” model of innovation. Here, individuals work collectively at the beginning stages to create a good. Then, once the good has been produced, the sponsoring organization shifts the dynamic exerting ownership and extracting value from the good. This results in a collective-private community model that distinguishes crowdsourcing communities from other online communities.

Haythornthwaite (2011) also theorizes the role of community in crowdsourcing that is designed to produce a common good. Key to her definition of community is the attention that individuals pay to each other. Community is defined by the quality of the relationship between
individuals. Additionally, individuals in the community share goals, norms, and freely reveal for the good of the whole. Using this relational community perspective, Haythornthwaite outlines factors that distinguish a community from a crowd. Specifically, individuals within a community have an expectation that others will contribute and respond in a timely manner and adhere to the norms of the community. Because many crowdsourcing initiatives do not require collaboration or interaction between individuals, Haythornthwaite does not classify them as true communities. Haythornthwaite theories that there is a “continuum from crowds to communities” (p. 10). Using the concept of a continuum, she further suggests that as crowds morph and change they may begin to exhibit signs of community and as such move up the continuum.

Both these perspectives discuss the creation of a common good by a community. In the case of Trompette et al. (2008), a community is represented by a group of people who have similar interests and similar skills (i.e., designers). For Haythornthwaite (2011), interactions between individuals are critical to the development of a community. Furthermore, while Trompette et al.’s model theorizes that sites of similar individuals represents a community, it is not clear from the examples provided that individuals were acting collectively to create a good. In fact, one of the sites on which this model is based holds a competition between designers. Designers comment and vote on each other’s ideas to “bring to light the most appropriate logos” (p. 14). As such, it is unclear whether individuals were working collaboratively or in their own best interest.

In summary, while we are beginning to see the emergence of a number of different perspectives, currently it is unclear what type of communities may exist within different types of crowdsourcing or whether crowdsourcing may represent a new type of hybrid-community. While there are currently many different definitions and types of community (West & Lakhani, 2008) even when using the broadest view, it is unclear what role community may play within crowdsourcing and under what context and conditions they may appear.
2.3.3 Crowdsourcing and Participant Motivation

Closely tied to the research on lead user and the role of community is the application of theories of motivation to an individual’s desire to participate in crowdsourcing initiatives (Boudreau et al., 2011; Fuller, 2010; Morgan & Wang, 2010; Muhdi & Boutellier, 2001; Nambisan & Baron, 2009; Terwiesch & Xu, 2008; Wagner, 2011). Within the literature, studies examine the relationship between social exchanges in participation (Füller, 2010; Wu & Fang, 2010), define the optimal number of participants based on reward structures (Boudreau et al., 2011), and attempt to determine how best to incentivize the most productive participants (Füller et al., 20011). Others evaluate different types of incentives, both intrinsic and extrinsic (Ebner et al. 2009; Fredberg & Piller, 2011; Leimeister et al., 2009; Muhdi & Boutellier, 2011; Nambisan & Baron, 2010; Wagner, 2011), examine which incentives are most powerful for ideation, and theorize who within the crowd is the most productive or creative (Boudreau et al., 2011; Johnson & Filippini, 2009).

Similar to the motivations of those in open source software communities (Hars & Ou, 2002, Lakhani & Panetta, 2007; Lakhani & Wolf, 2003), participants in crowdsourcing sites have indicated that they are motivated by a combination of both intrinsic and extrinsic rewards. Intrinsic rewards are those gained by participating in the task and include the challenge of tackling the task, enjoyment at working on the task, and a passion for the subject matter. Furthermore, extrinsic rewards can be direct (e.g., money, increased skills) or indirect (e.g., recognition and status within the community). Motivations reported by participants engaged in crowdsourcing include the opportunity to make money (Brabham, 2008a, 2008b; Lakhani et al., 2007), improve creative skills (Brabham, 2008a, 2008b), find potential work (Brabham, 2008a, 2008b; Lakhani et al., 2007), the love of the community (Brabham, 2008b), recognition by peers (Archak, 2010; Brabham, 2008a; Lakhani et al., 2007), challenge (Lakhani et al., 2007),
enjoyment (Brabham, 2008a), and learning (Antikainen & Väätäjä, 2010). Additionally, one study linked intrinsic motivation to specific site design features (Leimeister et al., 2009). This study showed that features that allowed participants to share knowledge and that allowed organizers to recognize participants for their contributions, were useful in increasing participation.

While some studies have shown the ability to earn extra money was a primary motivator (Brabham, 2008b), others have found even when monetary rewards are provided participation is motivated more by intrinsic rewards than by monetary ones (Lakhani et al., 2007; Leimeister et al., 2009). Key to this finding may be the make-up of the crowd. As previously mentioned, a number of studies have shown that hobbyists and lead users are more likely to contribute to crowdsourcing initiatives (Brabham, 2008a, 2009a; Jeppesen & Frederiksen, 2006). In some instances hobbyists reported being more motivated by personal interest than by monetary ones (Brabham, 2009a; Jeppesen & Frederiksen, 2006). In fact, hobbyists may be less concerned with IP and copyrights than professionals and therefore may be more likely to freely reveal their ideas. If subsequent research also finds that major contributors are more often hobbyists than professionals, then this may suggest that intrinsic rewards may be more motivating than monetary ones.

Brabham (2008a) found that hobbyists on the iStockphoto site were primarily motivated by the ability to earn extra money. Interestingly, in this same study, participants reported little interest in building friendships and many reported issues with trust among members. This finding may also tie directly to the role of community and specific site features within crowdsourcing sites, as what is unclear is whether monetary incentives reduced participants’ desire to build relationships with others or whether the structure of the site did not include sufficient features to encourage and allow for community building.
A number of studies have reported that recognition and status may also increase participation in crowdsourcing initiatives (Huberman, Romero, & Wu, 2008; Trompette et al., 2008). Specifically, the more attention a contributor received (operationalized as number of views of a video) the more likely they were to contribute again. Additionally, as attention decreased so did the likelihood of contribution. While recognition by others within the site has also been tied to contributions, there is some evidence that recognition by the sponsoring-firm may also be a powerful motivator for participation (Jeppesen & Frederiksen, 2006; Leimeister et al., 2009). In fact, recognition by the sponsoring-firm may be more motivating than recognition by others within the community (Antikainen & Vääätäjä, 2010).

While status and recognition may be motivating factors, other studies found that they can also deter less knowledgeable users from participating (Archak, 2010). In a study examining the determinants of individual performance within a contest-based programming site, researchers found that individuals who had high-status ratings (i.e., points based on contribution that were visible to all participants) inhibit other less successful individuals from participating in the same contest. Additionally, highly rated programmers used their reputation strategically to gain an advantage by signing up early for the contest to deter others from participating. It is unclear, however, if this effect would be present in non-competitive contexts. There may be a fine balance between rewarding and acknowledging the success of some contributors and deterring others from participation. Understanding the dynamics that influence who participates and who does not will be helpful in establishing guidelines and best practices for implementation of crowdsourcing sites moving forward.

To review, there is evidence that participants in crowdsourcing initiatives are motivated by a wide variety of both intrinsic and extrinsic rewards. Moreover, there is evidence to suggest that both features and interactions with others have an impact on the degree to which individuals participate in crowdsourcing tasks (Dholakia, et al., 2003; Halavais, 2009). More work is needed,
however, to understand which specific motivations and incentives impact participation within specific contexts. What is still to be determined is the conditions under which different motivations may be present.

### 2.3.4 Crowdsourcing and Value

Finally, researchers examining the value that the crowd brings are framing research using a variety of theoretical approaches including Granovetter’s theory of strong/weak ties (Fredberg & Piller, 2011), the theory of collective intelligence (Bonabeau, 2009; Brabham, 2008b, 2009a, 2009c; Malone et al., 2010; Noveck, 2006; Quinn & Bederson, 2011; Schenk & Guittard, 2009; Wiertz & de Ruyter, 2007), the theory of the wisdom of the crowd (Noveck, 2006; Schenk & Guittard, 2009; Surowiecki, 2004), and Burt’s theory of structural holes (Dodgson et al., 2006; Verona et al., 2006).  

Research findings indicate that when it comes to extracting value from crowdsourced initiatives, there are many organizational benefits. Collaboration with the crowd creates the potential for companies to reduce costs, increase innovative capacity, and reduce time to market (Enkel et al., 2009; Poetz & Schreier, 2012). Organizations report a number of intangible benefits from leveraging the crowd including generating a better understanding of potential new business opportunities, increasing understanding of how outside sources perceive the organization (Jouret, 2009), and creating a culture of innovation (Dodgson et al., 2006). In fact, the ability to access and leverage distributed sources of innovation has been directly tied to an organization’s ability to remain competitive (Poetz & Prügl, 2010). Research shows that collaboration with individuals outside the boundaries of the company can enhance an organization’s innovation capabilities (Poetz & Prügl, 2010; Poetz & Schreier, 2012). By extending reach, organizations increase

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2 An elaboration of these theories is provided in Chapter 5: Building an Explanatory Theory of Crowdsourcing.
connections to a variety of different resources. These connections provide access to additional
sources of knowledge and creativity thus increasing an organization’s innovative potential
(Chesbrough, 2003a, 2006; Jeppesen & Lakhani, 2010; Terwiesch & Xu, 2008). In fact, studies
have shown that outside resources were able to resolve 29.5% of the problems that had previously
gone unsolved by inside R&D labs (Lakhani et al., 2007). Additionally, those working outside
their particular domain in which the problem resided were 10% more likely to solve the problem
than those working within their specific fields.

While some organizations report tangible and intangible benefits from crowdsourcing
(Anthes, 2010; Poetz & Schreier, 2012), others caution that leveraging the crowd may result in
decreased time to market (Knudsen & Mortensen, 2011), more costly and resource intensive
projects (Jouret, 2009), increased costs in setting up legal frameworks and protecting IP (Jouret,
2009), as well as loss of control by the organization (Bonabeau, 2009). At this early stage of
exploration, it is still unclear under what conditions and for which purposes organizations may
benefit from crowdsourcing. Additional research is needed to clarify the value that the crowd may
bring to different tasks and different contexts.

2.4 The Role of Information Technology in Facilitating Crowdsourcing

One area within the literature where there is wide agreement is the role that technology
plays in facilitating a connection to the crowd. Findings indicate that the Internet is ideally suited
for collaboration with the crowd in three key ways. First, the reach of the Internet extends an
organization’s ability to connect with individuals regardless of their location (Chanal & Caron-
Fasan, 2008; Sawhney et al., 2005). Second, technology provides a more cost effective way to
leverage the crowd and open up the innovation process (Awazu et al., 2009; Doan et al., 2011;
Dodgson et al., 2006; Lindič, Baloh, Ribièrè, & Desouza, 2011). Collaborative social media tools
are greatly reducing costs traditionally associated with acquiring feedback on products or services (Albors et al., 2008; Feller et al., 2009; Jeppesen & Frederiksen, 2006; Kleemann et al., 2008). Third, the availability of inexpensive consumer technologies (i.e., equipment, software, and hardware) is redefining the role of consumers allowing them to more easily design, create, and produce their own products (e.g., photographs, graphic designs) (Howe, 2008). Hobbyists and lead users who have a passion for a topic can now create informational and physical products and leverage the Internet as a global platform from which to share and profit from these efforts (Howe, 2008, chap. 1; Kleemann et al., 2008). As such, consumers are shifting from passive purchasers to more active producers. This shift from passive consumer to active producer was first theorized by Marshall McLuhan and Barrington Nevitt in 1972, then expanded upon by Alvin Toffler in 1980. Specifically, the theory states that active “prosumers” (a portmanteau of “producer” and “consumer”) will be drawn into the production process blurring the line between consumer and producer. Additionally, technological advances allowing companies to economically produce short-run products at reasonable costs will increase customer demand for highly customized goods. For businesses to meet increasing consumer demands and still grow profits, Toffler (1980) foresaw the need for companies to engage with their customers as part of the production process. Today, Kleemann et al. (2008) refer to this new breed of prosumers as a “working consumer” (in original German as “arbeiternder Kunde”). In contrast to a typical consumer, working consumers add value and are active participants in the production process. Their capabilities are considered a valuable economic asset to the corporation.

2.5 Summary of Literature Review

In summary, crowdsourcing is a relatively new phenomenon, and as such there has not been sufficient time for researchers to build an extensive body of literature. At this early stage of
exploration, a large percentage for work to date is atheoretical. Descriptive case studies provide specific examples of crowdsourcing initiatives thus illustrating the wide variety of uses of crowdsourcing. Theoretical models used to categorize current initiatives begin to define relevant dimensions. Theoretical work aids in our understanding of crowdsourcing in relationship to theories of innovation, community, motivation, and value extraction. However, there is limited understanding of which crowdsourcing dimensions and characteristics are most relevant within specific contexts.

While the body of literature related to the phenomenon of crowdsourcing is growing, there is a current lack of theory that begins to explain which crowds are best suited to addressing specific organizational needs. Research is unclear about how companies are integrating the crowd into current internal practices, the characteristics that identify the best crowd for the job, and the risks and benefits associated with different uses of the crowd (Andriole, 2010; Bonabeau, 2009; Kleenmann et al., 2008). The development of an integrated theory of crowdsourcing that theorizes the patterns and relationships between specific tasks and specific dimensions of crowdsourcing would begin to shed light on the key decisions that organizations must make before reaching out to the crowd. Explanatory theory of this type is critical in extending our theoretical knowledge related to this new phenomenon, as well as providing guidance to corporations who wish to implement such initiatives (Wasko & Teigland, 2004).
Chapter 3

Methodology

Chapter 3 presents the research design employed in this research. First, the research questions are identified. Then, as this research study was designed to build theory, a discussion of the purpose of theory within the context of this research is provided. This is followed by a discussion of the epistemological perspectives brought to the study and the research methods used. Next, an in-depth description of data collection and data analysis is provided. Finally, a discussion of criteria for evaluating the quality of the research is given.

3.1 Research Questions

As discussed in Chapter 2, crowdsourcing is a relatively new phenomenon with limited theoretical work that links different uses of the crowd to key characteristics. Such work would begin to provide contextual understanding regarding which organizational needs may be addressed by crowdsourcing and which crowds and conditions may be best suited for extracting value. To address this gap, the goal in this research was to build theory that provides a clearer understanding of the uses of crowdsourcing by established organizations with respect to innovation. Specifically, the research question addressed by this study was:

*How are organizations integrating crowdsourcing into their current innovation processes?*

Underlying this essential question were four supporting questions:

1. *Why do organizations use crowdsourcing?*
2. *What tasks are the crowd being asked to perform?*
3. What are the facilitators of and barriers to implementing crowdsourcing initiatives?

4. How do organizations determine the success of crowdsourced initiatives?

While there are many definitions of innovation (Baregheh, Rowley, & Sambrook, 2009; West & Gallagher, 2006), as well as distinctions among types of innovation (e.g., radical vs. incremental) (O’Connor, 2006), for this study a broad view of innovation was used. Within this context, innovation was defined as new ideas or solutions to problems that lead to improvements or advancements for the organization within its marketplace. This included both incremental or breakthrough innovation that may result in reduced costs, improved productivity, or entry into new unexplored markets (Baregheh et al., 2009). Furthermore, the crowd was defined as individuals who would not typically participate in such activities and could consist of individuals inside the organization (i.e., employees), outside the organization (e.g., customers), or a combination of both.

The objective in answering these research questions was to create a theoretical framework that would assist both researchers and practitioners in describing and explaining the uses of the crowd by established organizations, and to identify key characteristics related to risks, benefits, and value capture. Because the intent of this research was to develop theory, a discussion of the definition and nature of theory is provided next.

### 3.2 Theory Building

Theory, in this context, was defined broadly as descriptions, models, frameworks, explanations, or predictions regarding observed or experienced phenomena (Gioia & Pitre, 1990; Gregor, 2006). Additionally, Gregor’s (2006) taxonomy of theory was used to guide theory building at this early stage of understanding (see Table 3-1).
Table 3-1: Taxonomy of Theory Types in Information Systems Research (from Gregor, 2006, p. 620)

<table>
<thead>
<tr>
<th>Theory Type</th>
<th>Distinguishing Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Analysis</td>
<td>Says what is. The theory does not extend beyond analysis and description. No casual relationships among phenomena are specified and no predictions are made.</td>
</tr>
<tr>
<td>II. Explanation</td>
<td>Says what is, how, why, when, and where. The theory provides explanations but does not aim to predict with any precision. There are no testable propositions.</td>
</tr>
<tr>
<td>III. Prediction</td>
<td>Says what is and what will be. The theory provides predictions and has testable propositions but does not have well-developed justificatory causal explanations.</td>
</tr>
<tr>
<td>IV. Explanation &amp; prediction (EP)</td>
<td>Says what is, how, why, when, where, and what will be. Provides predictions and has both testable propositions and causal explanations.</td>
</tr>
<tr>
<td>V. Design &amp; action</td>
<td>Says how to do something. The theory gives explicit prescriptions (e.g., methods, techniques, principles of form and function) for constructing an artifact.</td>
</tr>
</tbody>
</table>

According to Gregor (2006), the first phase of theory building is Type I, *analysis*, or what could be called “descriptive” theory. *Descriptive theories* are foundational for understanding the dimensions or characteristics of a phenomenon. They often take the form of frameworks or taxonomies that specify and classify the nature of a phenomenon. Such theories are viewed as critical for providing clarity regarding what is being studied. Type II, or *explanatory theories*, explain “how” and “why” a phenomenon occurs. Explanatory theories do not attempt to make predictions. Instead, they help to advance understanding of how things are and why they are that way. Type III theories, also known as *predictive theories*, predict the outcomes of explanatory factors, and yet do not clearly explain the underlying connections between factors. Type IV theories are referred to as *theories for explaining and predicting*. These theories help to provide an understanding of underlying causes and predictions, as well as the theoretical relationships between constructs. Such theories result in testable propositions and include grand theories related to a broad range of social phenomena. Finally, Type V, or *theories for design and action*, clearly specify how to do something. Type V theories provide design principles that aid in the
development of artifacts. While Type I, II, III, and IV theories can be easily applied to other disciplines, Type V theories are specific to domains where physical artifacts are built, as they provide understanding of both the actors and the context in which the artifact resides (e.g., information systems, engineering). Finally, each theory type builds on and extends theory that has come before (see Figure 3-1).

![Figure 3-1: Interrelationships Among Theory Types (from Gregor, 2005).](image)

As discussed in Chapter 2, crowdsourcing is a relatively new phenomenon with little agreement on the characteristics that define it and the context under which different characteristics may be most relevant. As such, the focus of this research was on the development of Type I (descriptive) and Type II (explanatory) theory.

### 3.3 Epistemology

The primary research question to be addressed in this study was how organizations are integrating crowdsourcing into their current innovation processes. In striving to answer this
question, a constructionist ontology and interpretive epistemology were employed. A constructionist ontology takes the perspective that what can be known is a function of an individual’s perceptions and mental models. Furthermore, it acknowledges that an individual’s understanding is influenced by his or her one-on-one interactions with others, experiences within groups and organizations, and broader experiences within society. Lastly, it allows for shifts in understanding based on new experiences and/or contexts (Charmaz, 2003). Epistemologically, an interpretive approach takes the perspective that understanding is built through the interpretations of others and takes into account the participants’ experiences within specific context (Meyers, 2009; Trauth & Jessup, 2000; Walsham, 1995). This is especially important in organizational settings where status, role, and power can dramatically influence individuals’ perceptions of events.

The selection of research methods was driven by the epistemological choices and the objective of building theory (Meyers, 2009; Trauth & Erickson, 2012). Because a constructionist interpretivist lens is used, qualitative methods were selected to understand the phenomenon through the viewpoint of those who are experiencing it (Meyers, 1997). Additionally, because context plays a key role in shaping an individual’s understanding, qualitative methods allowed for the examination of the phenomenon within the desired context, specifically within an established organization (Meyers, 2009). Next, details on the research methods used are provided.

3.4 Research Methods

The goal in the research was to build new theory by interpreting the phenomenon through the perspective of those currently engaged in crowdsourcing initiatives. As discussed in Chapter 2, crowdsourcing is an emergent phenomenon with limited empirical work. With this in mind, the approach taken to theory was the use of grounded theory methods. Two research methods were
also used, document analysis and exploratory case studies. An elaboration of the approach to theory and each research method is provided next.

3.4.1 Grounded Theory

Grounded theory is an inductive and interpretive approach to theory directed at developing meaningful categories and relationships among categories. The selection of grounded theory was chosen as the approach to theory and data analysis for five key reasons. First, grounded theory methods are appropriate when studying emerging phenomenon with limited empirical work and existing theory, as is the case with crowdsourcing (Lehmann 2010; Orlikowski, 1993). Second, because crowdsourcing initiatives take place within the context of an organization, this approach provided the opportunity to uncover reoccurring patterns in data and build theory grounded in context (Glaser & Strauss, 1967). Third, because the research questions focused on both the organization and the impact of the initiative on the organization, grounded theory allowed for the examination of key organizational differences by taking into account the complexities of organizational contexts (Orlikowski, 1993). Fourth, it allowed for integration of the researcher’s experiences and knowledge during analysis, but also provided controls to reduce the risk of introducing bias into the results (Fernández, 2004; Walsham, 1995). Fifth, grounded theory has been used within the discipline of information systems (IS) to study complex phenomena and to build new theory that is grounded in the systematic gathering and analysis of data (Fernández, 2004; Gregor, 2006; Lehmann, 2010; Orlikowski, 1993). Thus, it provided a solid methodological foundation for building theory related to emerging socio-technical phenomena.
3.4.1.1 Glaserian Versus Straussian Approaches

As the goal in this research was to uncover patterns of use within organizational contexts to build theory and relevance to practice, a Glaserian approach to data analysis was used. Specifically, a Glaserian approach allowed a focus on building abstract conceptualizations at an organizational level. This was preferred over a Straussian approach, which is orientated towards building full descriptions at an individual level of enquiry (Lehmann, 2010). A Glaserian approach also allowed for more flexible coding, especially during early stages of coding, as well as the incorporation of the researcher’s scholarly knowledge regarding the subject (Kelle, 2007). Moreover, a Glaserian approach centers on what is revealed by the data. That is, it focuses on asking, “what is” and not “what might be” questions (Heath & Cowley, 2004). Such an approach was well suited to identifying broad reoccurring themes and was appropriate for this early stage of investigating the use of crowdsourcing (Fernández, 2004; Urquhart et al., 2010).

It should be noted, that while a Glaserian approach specifies two levels of coding (i.e., substantive and theoretical), the decision was made to use Strauss’ terminology in the description of coding as it is more common in the literature and more approachable in terms of explaining the coding and analysis process (see Table 3-2).
Table 3-2: Glaser and Strauss Coding Differences (from Heath & Cowley, 2004, p. 146)

<table>
<thead>
<tr>
<th>Strauss &amp; Corbin</th>
<th>Glaser</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial coding</strong></td>
<td><strong>Glaser</strong></td>
</tr>
<tr>
<td>Open coding</td>
<td>Substantive coding</td>
</tr>
<tr>
<td>Use of analytic technique</td>
<td>Data dependent</td>
</tr>
<tr>
<td><strong>Intermediate phase</strong></td>
<td><strong>Glaser</strong></td>
</tr>
<tr>
<td>Axial coding</td>
<td>Continuous with previous phase</td>
</tr>
<tr>
<td>Reduction and clustering of categories (paradigm model)</td>
<td>Comparisons, with focus on data, become more abstract, categories refitted, emerging frameworks</td>
</tr>
<tr>
<td><strong>Final development</strong></td>
<td><strong>Glaser</strong></td>
</tr>
<tr>
<td>Selective coding</td>
<td>Theoretical coding</td>
</tr>
<tr>
<td>Detailed development of categories, selection of core, integration of categories</td>
<td>Refitting and refinement of categories which integrate around emerging core</td>
</tr>
<tr>
<td><strong>Theory</strong></td>
<td><strong>Glaser</strong></td>
</tr>
<tr>
<td>Detailed and dense process fully described</td>
<td>Parsimony, scope, and modifiability</td>
</tr>
</tbody>
</table>

While a Glaserian approach does not specify a separate intermediate phase of coding by name, it does advocate for the continued abstraction of data during the substantive coding phase. For this study, the intermediate phase of analysis is discussed separately as it was deemed more useful in clearly illustrating how theory emerged.

### 3.4.2 Document Analysis

Document analysis was used as the primary method of analyzing published literature on the topic of crowdsourcing. Document analysis allowed for the incorporation and folding in of large amounts of textual information in the analysis process and is often used in grounded theory studies. As discussed in Chapter 2, a large portion of current crowdsourcing literature consists of descriptive case studies. These case studies were reviewed using open coding to extract relevant characteristics, themes, and concepts. Additionally, early theoretical frameworks and papers were reviewed to extract relevant themes. As themes developed, a return to literature was conducted and axial coding was used to look for specific occurrences of identified themes with the purpose of extending and clarifying them. Finally, documents were analyzed using selective coding with
the purpose of building of building theory (for a more detailed description of coding and analysis process, see section 3.6).

3.4.3 Exploratory Case Studies

The second method used in this research study was exploratory case studies. As the goal in this research was to uncover patterns of use within contextual settings, examining crowdsourcing within the context of the organization was essential to answering the research questions and building useful theory (Mason, 2002). Case studies were selected for four key reasons. First, they are appropriate when seeking to examine *how* and *why* questions, when focused on contemporary events, and when the researcher does not attempt to control actual events (Yin, 2009). Case study research is often most appropriate when the phenomenon is broad and complex in nature and where the current existing body of knowledge is deemed insufficient (Pare, 2004), as is the case with crowdsourcing. Second, case studies lend themselves to an interpretive approach to research (Meyers, 2009) and are used to build understanding within specific contexts (Mason, 2002). With regard to an interpretive orientation, they allowed direct access to individuals engaged in the phenomenon, as well as exploration of the phenomenon within real-life contexts (Klein & Myers, 1999; Yin 2009). Third, case studies are an excellent fit with grounded theory methods (Fernández, 2004). Specifically, case studies are an acknowledged and accepted method for theory exploration, especially in the early stages of research (Eisenhardt, 1989; Gregor, 2006; Klein & Myers, 1999; Myers, 2009; Yin, 2009) thus, they complement both the emergent nature of the phenomenon and the use of grounded theory methods. While interviews were the primary source of data, case studies also allowed for collection and analysis of a “full variety of evidence” including observations, interviews, documents, archival records, interviews, direct observation, and physical artifacts (Yin, 2009, p. 11). As such, they
complemented the grounded theory tenet of collecting and analyzing “slices of data.” Such an approach facilitated the building of more compelling findings, as well as provided support for the practical implications of findings (Yin, 2009). Finally, case study research is a well-accepted research strategy within the IS domain (Klein & Myers, 1999; Lee, 1989; Lee, Liebenau, & DeGross, 1997). Next, details on the case study design are provided.

3.4.3.1 Unit of Analysis

Because the research questions to be addressed focused on building theory related to why and how organizations are leveraging crowdsourcing for innovation, an embedded case study design was used to explore two distinct levels of analysis: 1) the organization and 2) the initiative (Yin, 2009). Specifically, the essential research question (i.e., How are organizations integrating the crowd into their current innovation processes?) focused on an organizational level of analysis. The four supporting research questions (i.e., Why do organizations use crowdsourcing? What tasks are the crowd being asked to perform? What are the facilitators of and barriers to implementing crowdsourcing initiatives? How do organizations determine the success of crowdsourced initiatives?) focused on the project, or initiative, level of analysis. The organizational level of analysis was defined as the company in which the initiative was taking place and included organizational demographics, culture, structure, and processes. An initiative was defined as an on-going project that used social media to connect with the crowd in order to meet a specified organizational goal.

Interviews with individuals within the organization were the primary means of case study data collection. In order to address the two defined levels of analysis, specific interview questions were created at each level (Yin, 2009). To address the organizational level of analysis, interview questions focused on the company’s goals for the initiative, organizational culture, structure, and
innovation processes. To gather information at the initiative level, questions focused on the purpose of the initiative, the tasks being completed, and who was invited to participate (i.e., the crowd). A number of questions were also included that span both levels of analysis, thus providing insights into the organization and the initiative. For example, questions related to facilitators of and barriers to implementation were helpful in revealing organizational-specific issues such as challenges related to culture or processes and initiative-specific issues such as technical problems and daily processes.

3.4.3.2 Multiple-Case Study Design

A multiple-case study design was chosen for three reasons. First, the emergent nature of crowdsourcing and lack of well-formulated theory necessitated a broader examination of the phenomenon (Yin, 2009). Second, interviews across multiple organizations allowed for the emergence of within-case and across-case patterns (Eisenhardt, 1989) that are useful when building theory. Third, findings from multiple cases would assist in building a more robust and compelling framework from which to better understand the common uses of crowdsourcing.

3.4.3.3 Case Study Selection

Companies were recruited using opportunistic sampling to cast a wide net for the purpose of understanding the phenomenon as it currently manifests itself within practice (Patton, 2002). Because the nature of the research question was broad in its scope (i.e., to identify how existing companies and leveraging crowdsourcing for innovation), cases were selected from across a wide range of industries. Additionally, selecting cases across a broad range of industries was desirable at this early stage of attempting to build comprehensive theory (Eisenhardt, 1989; Miles &
Huberman, 1984). The objective was to locate and recruit companies that were currently using crowdsourcing to complete different organizational tasks. Companies would be required to provide access to multiple individuals within the organization currently participating in or working on the initiative. Next, details on data collection and analysis are provided.

3.5 Data Collection and Analysis

The selection of grounded theory, as developed by Glaser & Strauss (1967), required a specific methodological approach to data collection, analysis, and theory building (Urquhart, Lehmann, & Meyers, 2010), specifically:

1. Data collection and analysis happened simultaneously and themes and categories were constantly contrasted and compared to each other.

2. All types and kinds of data (often referred to as “slices of data”) were selected to provide different views from which to understand emergent themes and categories. Established categories and themes were used to direct future data collection through theoretical sampling.

3. Prior knowledge of the field was not used to pre-formulate hypotheses to be verified. Instead, preconceptions were constantly questioned to ensure the opportunity for themes to emerge from the data.

In line with grounded theory methods, literature was not used to identify relevant theory from which to generate research questions and build research design. This did not mean however, that theory was absent in toto. Before specifying the problem to be addressed, a review of literature surrounding the phenomenon was conducted to ensure sensitivity to the potential problem and to better define the problem space (Suddaby, 2006; Urquhart & Fernández, 2006). However, current theory did not play a continuous role during data collection or analysis. Only
after new theory emerged was literature reviewed to identify relevant theory and its application to
the findings. Additionally, both inductive and deductive logic was used during analysis.
Specifically, the process of *constant comparison* was combined with an iterative process of data
collection and analysis to build theory (Fernández, 2004; Glaser & Strauss, 1967).

Finally, throughout the study extensive *memoing* was used to capture reoccurring themes
and to reflect on and conceptualize emerging theory (Fernández, 2004; Glaser & Holton, 2004;
Urquhart et al., 2010). Throughout the memoing process, findings from current interviews were
compared and contrasted with previous memos. Insights and potential patterns were noted both
within cases and across cases. As themes emerged, questions and discussions during subsequent
interviews were adapted to allow for further exploration of emerging patterns, themes, and
notions. Figure 3-2 illustrates the timeline of data collection and analysis events.
Figure 3-2: Timeline of Data Collection and Analysis

<table>
<thead>
<tr>
<th>Data Collection</th>
<th>Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Initial Review</td>
</tr>
<tr>
<td></td>
<td>• Systematic Review</td>
</tr>
<tr>
<td></td>
<td>• Extant Review</td>
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<table>
<thead>
<tr>
<th>Practitioner Interviews</th>
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<tbody>
<tr>
<td>• Exploratory Interviews</td>
</tr>
<tr>
<td>• Case Study Recruiting</td>
</tr>
<tr>
<td>• Auto Inc. Interviews</td>
</tr>
<tr>
<td>• AdvanceTech Interviews</td>
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<tr>
<td>• IAA Interviews</td>
</tr>
<tr>
<td>• The Council Interviews</td>
</tr>
<tr>
<td>• DocCorp Interviews</td>
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<tr>
<td>• HealthCo Interviews</td>
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<td>• Memoing</td>
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<thead>
<tr>
<th>Data Analysis</th>
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<tbody>
<tr>
<td>Open Coding</td>
</tr>
<tr>
<td>Preliminary Categories Emerge</td>
</tr>
<tr>
<td>Core Category Emerges</td>
</tr>
<tr>
<td>Development of Descriptive Framework</td>
</tr>
<tr>
<td>Development of Coding Guide</td>
</tr>
<tr>
<td>Axial Coding/Refinement of Categories</td>
</tr>
<tr>
<td>Selective Coding/Identification of Patterns</td>
</tr>
<tr>
<td>Development of Explanatory Framework</td>
</tr>
<tr>
<td>Development of ICAM</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Date</th>
<th>J</th>
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<th>A</th>
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<th>J</th>
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<th>D</th>
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</thead>
<tbody>
<tr>
<td>2010</td>
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<td>2011</td>
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<tr>
<td>2012</td>
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</tbody>
</table>

= follow-up interview  = milestone
Because the data collection process was intertwined with the analysis process, it is difficult to convey in a linear fashion how findings were uncovered. Therefore, a description of the different data sources used in this research study is provided next. This is followed by a more in-depth discussion describing the timing of data collection in relation to analysis and emerging theory.

3.5.1 Data Collection

Prior to recruiting of participants and collection of data, approval for the research protocol was obtained from the Institutional Review Board in the Office for Research Protection. A broad representational approach to data collection was chosen in order to characterize the uses and attributes of crowdsourcing (Mason, 2002). Two primary sources of qualitative data were collected: 1) crowdsourcing literature and 2) interviews with practitioners (see Figure 3-3). The combination of qualitative data from these sources proved valuable in gaining a deeper and more nuanced understanding of key themes and patterns through constant comparison (Glaser & Holton, 2004).

![Qualitative Data Sources](image)

Figure 3-3. Qualitative Data Sources
3.5.1.1 Literature

As mentioned, literature was used as a source of data and not for theoretical positioning (Glaser & Holton, 2004). Data collection from literature took place in two phases. In Phase 1, a broad literature review was completed to begin the process of identifying the common uses and characteristics of crowdsourcing. In Phase 2, as theory emerged, a more focused literature review was completed for the purpose of theoretical sampling related to emerging theory.

Phase 1: Preliminary Broad Literature Search

At the start of the research study, a broad initial literature search was conducted to identify scholarly work containing the term “crowdsourcing” with the purpose of identifying characteristics commonly associated with the phenomenon. Limiting the search to publications that reference crowdsourcing was seen as the first step in assessing the current state of research specifically purporting to examine this new phenomenon. From this corpus, both a backwards and forwards citation search was completed to identify additional relevant literature. This resulted in a total of 72 peer-reviewed journal articles, academic conference papers, professional working papers, and books from researchers across a wide variety of disciplines.

Phase 2: Systematic Literature Search

Approximately one year after conducting the preliminary literature search, a second systematic literature review was conducted to further examine emerging theory. Starting with the preliminary literature review, the discipline areas of the papers were identified. Disciplines included: 1) information systems, 2) information science, 3) organizational science, 4) organizational studies/management science, 5) innovation, 6) communications, and 7) business.
The top five journals in each of these disciplines were identified to establish a more complete corpus of literature specific to the phenomenon of crowdsourcing. Top journals were identified based on rankings from the Association of Information Systems, Association of Business Schools, ScienceWatch.com’s rankings based on Journal Citations Reports (JCR) impact factors, and the most cited technology and innovation management journals (Linton & Thongpapanl, 2004). This resulted in a total of 30 publications (see Table 3-3).
Table 3-3: List of Journals Included in Systematic Literature Review

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Journal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Systems</td>
<td>Communications of the ACM</td>
</tr>
<tr>
<td>Information Systems</td>
<td>Information Systems Research</td>
</tr>
<tr>
<td>Information Systems</td>
<td>Journal of Management Information Systems</td>
</tr>
<tr>
<td>Information Systems</td>
<td>Management Information Systems Quarterly (MISQ)</td>
</tr>
<tr>
<td>Information Science</td>
<td>Information Science &amp; Technology</td>
</tr>
<tr>
<td>Information Science</td>
<td>International Journal of Information Management</td>
</tr>
<tr>
<td>Information Science</td>
<td>Journal of Informetrics</td>
</tr>
<tr>
<td>Information Systems/Management Science</td>
<td>Management Science</td>
</tr>
<tr>
<td>Organizational Studies/Management</td>
<td>Administrative Science Quarterly</td>
</tr>
<tr>
<td>Organizational Studies/Management</td>
<td>Organization Science</td>
</tr>
<tr>
<td>Organizational Studies/Management</td>
<td>Organization Studies</td>
</tr>
<tr>
<td>Organizational Studies/Management</td>
<td>Operations Research</td>
</tr>
<tr>
<td>Management Science</td>
<td>Academy of Management Journal (includes Academy of Management Annals)</td>
</tr>
<tr>
<td>Management Science</td>
<td>Academy of Management Review</td>
</tr>
<tr>
<td>Management Science</td>
<td>Journal of Management</td>
</tr>
<tr>
<td>Management Science</td>
<td>Strategic Management Journal</td>
</tr>
<tr>
<td>Innovation</td>
<td>IEEE Transactions on Engineering Management</td>
</tr>
<tr>
<td>Innovation</td>
<td>Industry and Innovation</td>
</tr>
<tr>
<td>Innovation</td>
<td>International Journal of Innovation Management (IJIM)</td>
</tr>
<tr>
<td>Innovation</td>
<td>Journal of Product Innovation Management (JPIM)</td>
</tr>
<tr>
<td>Innovation</td>
<td>Research Policy</td>
</tr>
<tr>
<td>Innovation</td>
<td>Research Technology Management</td>
</tr>
<tr>
<td>Innovation</td>
<td>R&amp;D Management</td>
</tr>
<tr>
<td>Innovation</td>
<td>Technovation</td>
</tr>
<tr>
<td>Communications</td>
<td>Journal of Communication</td>
</tr>
<tr>
<td>Communications</td>
<td>Journal Computer-Mediated Communications</td>
</tr>
<tr>
<td>Business</td>
<td>Academy of Management Executive (renamed Academy of Management Perspectives in 2006)</td>
</tr>
<tr>
<td>Business</td>
<td>California Management Review</td>
</tr>
<tr>
<td>Business</td>
<td>Harvard Business Review</td>
</tr>
<tr>
<td>Business</td>
<td>MIT Sloan Management Review</td>
</tr>
</tbody>
</table>

3 Top ranked journals focusing on areas outside of innovation, as defined here, were eliminated from the list (e.g., medicine, health care, public opinion, and leadership).
Databases for each of these journals were searched to identify articles containing terms commonly used to describe the use of the crowd, specifically “crowdsourcing,” “crowd-sourcing,” “distributed innovation,” “community based innovation,” “collaborative innovation,” “collaborative development,” and “network centric innovation.” Additionally, because crowdsourcing is relatively new and, as defined here, facilitated by the use of online tools, search results were limited to articles published on or after the year 2000. A total of 382 articles were identified from the 30 selected journals (see Table 3-4).
Table 3-4: Article Number by Journal

<table>
<thead>
<tr>
<th>Articles Identified</th>
<th>Journal</th>
</tr>
</thead>
<tbody>
<tr>
<td>59</td>
<td>Research Policy</td>
</tr>
<tr>
<td>48</td>
<td>R&amp;D Management</td>
</tr>
<tr>
<td>47</td>
<td>Research Technology Management</td>
</tr>
<tr>
<td>39</td>
<td>Technovation</td>
</tr>
<tr>
<td>29</td>
<td>Journal of Product Innovation Management (JPIM)</td>
</tr>
<tr>
<td>25</td>
<td>Communications of the ACM</td>
</tr>
<tr>
<td>16</td>
<td>MIT Sloan Management Review</td>
</tr>
<tr>
<td>14</td>
<td>International Journal of Information Management (IJIM)</td>
</tr>
<tr>
<td>13</td>
<td>Organization Science</td>
</tr>
<tr>
<td>12</td>
<td>Management Science</td>
</tr>
<tr>
<td>11</td>
<td>Industry and Innovation</td>
</tr>
<tr>
<td>9</td>
<td>Journal of Management Information Systems</td>
</tr>
<tr>
<td>8</td>
<td>Information Science &amp; Technology</td>
</tr>
<tr>
<td>6</td>
<td>Academy of Management Journal</td>
</tr>
<tr>
<td>6</td>
<td>(includes Academy of Management Annals)</td>
</tr>
<tr>
<td>5</td>
<td>Academy of Management Review</td>
</tr>
<tr>
<td>5</td>
<td>California Management Review</td>
</tr>
<tr>
<td>5</td>
<td>Information Systems Research</td>
</tr>
<tr>
<td>5</td>
<td>International Journal of Innovation Management (IJIM)</td>
</tr>
<tr>
<td>5</td>
<td>Journal of Management</td>
</tr>
<tr>
<td>5</td>
<td>Organization Studies</td>
</tr>
<tr>
<td>3</td>
<td>Harvard Business Review</td>
</tr>
<tr>
<td>3</td>
<td>Journal of Informetrics</td>
</tr>
<tr>
<td>2</td>
<td>Academy of Management Executive</td>
</tr>
<tr>
<td>2</td>
<td>(renamed Academy of Management Perspectives in 2006)</td>
</tr>
<tr>
<td>2</td>
<td>Journal of Communication</td>
</tr>
<tr>
<td>2</td>
<td>Strategic Management Journal</td>
</tr>
<tr>
<td>1</td>
<td>Administrative Science Quarterly</td>
</tr>
<tr>
<td>1</td>
<td>Journal Computer-Mediated. Communications</td>
</tr>
<tr>
<td>1</td>
<td>Management Information Systems Quarterly (MISQ)</td>
</tr>
<tr>
<td>0</td>
<td>IEEE Transactions on Engineering Management</td>
</tr>
<tr>
<td>0</td>
<td>Operations Research</td>
</tr>
<tr>
<td><strong>382</strong></td>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

Abstracts for all articles were manually reviewed to determine which items were directly related to crowdsourcing. Because the intent was to clarify emerging theory related to crowdsourcing use by established organizations, both descriptive case studies and theoretical papers were included. When abstracts were missing, or when it was difficult to ascertain the exact focus of the paper from the abstract provided, a manual review of the full paper was conducted to
determine its applicability. Articles were eliminated for one of two reasons. First, book reviews and editorial or introductory materials summarizing contents of specific journal issues were eliminated. Second, as the focus was on established organizations, publications focused on new businesses were eliminated. After the initial review, 46 articles remained creating a total of 118 publications in the corpus.

3.5.1.2 Practitioner Interviews

Practitioner interviews were used to build understanding of current uses of crowdsourcing within established organizations and to examine specific initiatives within organizational contexts. Specifically, data collection from practitioners took place in two phases. In Phase 1, a series of exploratory interviews were held with practitioners with the objective of gaining a better understanding of the current uses of crowdsourcing. In Phase 2, case study participants were recruited, and a series of semi-structured interviews were conducted with the purpose of gaining a deeper understanding of the uses, barriers, facilitators, and impacts of crowdsourcing initiatives on the organization. Next, a review of data collected in each phase is provided.

Phase 1: Exploratory Interviews

The study began with the identification of practitioners working within or supporting innovation for U.S.-based organizations using snowball sampling (Patton, 2002). Recruiting began by first reaching out to personal business contacts. Next, personal contacts within academia with connections to practitioners were asked to facilitate introductions to potential participants.
Finally, during interviews, participants were asked to recommend others who fit the criteria and might be interested in participating in the research study.

A total of 18 semi-structured interviews were conducted over a three-month period. Interviewees included Chief Executive Officers, Chief Information Officers, Chief Marketing Officers, Presidents, Directors, Product Managers, Strategists, Independent Consultants, and Directors/Managers at governmental or public institutions tasked with facilitating regional innovation. Prior to interviews, a list of semi-structured questions was created to solicit information on participants’ experiences with crowdsourcing, as well as the issues and challenges their organizations faced (see Appendix A). Interviews lasted between 30-60 minutes each and were conducted via phone. Exploratory interviews revealed that small organizations were not currently leveraging crowdsourcing as a tool to enhance innovation. In fact, most were only in the very early stages of learning about and evaluating whether reaching out to the crowd via the Internet made sense for their organizations. Based on these exploratory interviews, criteria for inclusion in the case study portion of the study were created, specifically: companies 3+ years in age, with at least 100 employees, and who are currently using social media to crowdsource one or more stages of innovation.

Phase 2: Case Studies

Immediately following preliminary interviews, recruitment for case studies began. Recruitment and scheduling of interviews spanned approximately a one-year period. Seven companies meeting the case criteria were recruited to participate in the study. During the process of scheduling interviews, one company decided not to participate, as they were unable to provide access within the required time period. The six remaining companies represented a broad range of industries including: 1) an international automotive manufacturer, 2) a global company
specializing in the research, design, development, and integration of advanced technologies related to security, aerospace, and defense, 3) a governmental agency responsible for public safety, 4) a U.S. public institution of higher education, 5) a global document management and business process outsourcing (BPO) services company, and 6) a U.S. company specializing in software for coding of medical records for insurance reimbursement (see Table 3-5).

Table 3-5: Overview of Cases

<table>
<thead>
<tr>
<th>Case</th>
<th>Industry</th>
<th>Employees</th>
<th>Initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Inc.</td>
<td>Automotive Manufacturer (private sector)</td>
<td>500,000</td>
<td>Internal ideation for new products</td>
</tr>
<tr>
<td>AdvanceTech</td>
<td>Aerospace and Defense Contractor (private sector)</td>
<td>120,000</td>
<td>Internal ideation for new and existing products</td>
</tr>
<tr>
<td>IAA</td>
<td>Public Safety (public sector)</td>
<td>50,000</td>
<td>Internal ideation for new services</td>
</tr>
<tr>
<td>The Council</td>
<td>Higher-education (public sector)</td>
<td>44,000</td>
<td>Gather public input on strategic plan</td>
</tr>
<tr>
<td>DocCorp</td>
<td>Document Management and Business Processes Outsourcing Services (public sector)</td>
<td>100,000</td>
<td>Build an on-demand workforce to complete labor-intensive tasks</td>
</tr>
<tr>
<td>HealthCo</td>
<td>Healthcare Software (private sector)</td>
<td>120</td>
<td>Aggregate customer inputs as training data</td>
</tr>
</tbody>
</table>

Prior to conducting interviews, a flexible interview protocol was created to focus discussions on the key questions under study (see Appendix B). Questions were designed to elicit information regarding the organization’s motivation for engaging the crowd, the task(s) to be complete, the crowd being targeted, and the processes for integrating the crowd’s input into current innovation processes. Additionally, questions were designed to elicit discussion on both facilitators of and barriers to implementation, resources required, value realized, and unexpected outcomes or issues. In order to optimize understanding and theory building from interviews, as

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4 A detailed description of each case is provided in Chapter 4
5 Pseudonyms are used to protect the identity of participating organizations.
themes emerged, interview questions were adapted to explicitly include probing questions that would address emerging themes in line with evolving theory (Charmaz, 2003).

Participants

Because individuals within the organization studied came with differing experiences and understanding, it was important to gather a wide range of perspectives (Yin, 2009). Moreover, because information within organizations is often compartmentalized, it was important to interview individuals at different levels within the organization. This would help to expose potential differences in understanding of organizational goals, as well as different understandings regarding the potential benefits and challenges associated with the crowdsourcing initiative. All participants were required to have direct, first-hand experience with the initiative such as participating directly in the initiative (e.g., submitting ideas), being part of the implementation or support team, or being responsible for the management of the initiative. By collecting data from multiple individuals, perspectives could be compared and contrasted to identify patterns or unique viewpoints that might impact the use and adoption of such initiatives.

Working with a designated contact within each company, interviews with multiple individuals at multiple levels within the company were scheduled. Where possible, interviews for a single case were scheduled as close together in timing as possible. However, depending on availability, interviews for single case were completed in as little as one day or over a four-month span of time. Therefore, data collection of interview data often occurred simultaneously moving back and forth between cases.

Prior to interviews, participants in face-to-face sessions were provided with an informed consent form stating the purpose of the study, the processes to be used to ensure anonymity, and their right to ask questions and refuse to answer questions (see Appendix C). Participants
interviewed via phone were emailed an implied consent form for review (see Appendix C). For those interviewed face-to-face, each participant signed and returned a consent form. For phone interviews, participants were asked to provide verbal consent to participate in the study.

A total of 27 in-depth semi-structured interviews across the six case studies were conducted with individuals at multiple levels within the organization. Additionally, seven follow-up interviews were conducted six months to one year after initial interviews with five of the six cases. These interviews were used to review findings as a means of member checking and to gather information on the progress of the initiative. In total, 34 interviews were conducted across the six cases (see Table 3-6).

Table 3-6: Overview of Case Study Participants

<table>
<thead>
<tr>
<th>Case</th>
<th>Participants Roles</th>
<th>Initial Interviews</th>
<th>Follow-up Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Inc.</td>
<td>Director, Portfolio Strategist, IT Manager, Intern</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>AdvanceTech</td>
<td>VP/CTO, Strategic Planning Manager, Program Manager, R&amp;D Manager, Enterprise Systems Architect</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>IAA</td>
<td>Program Director, Manager, Program Analyst</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>The Council</td>
<td>Executive Director, Co-chair, Members, Student Representaive</td>
<td>6</td>
<td>0⁶</td>
</tr>
<tr>
<td>DocCorp</td>
<td>Director, Area Manager, Manager, Research Scientist, Postdoctoral Researcher,</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>HealthCo</td>
<td>President, Vice President</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>27</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td><strong>Total Interviews</strong></td>
<td><strong>34</strong></td>
<td></td>
</tr>
</tbody>
</table>

Twenty-two face-to-face interviews were conducted at the company’s physical offices, and five interviews were held via phone. Face-to-face interviews were preferred as they allowed for observation of participants in the context in which the initiative was taking place.

Furthermore, one-on-one in-person interviews helped to create a more personal and intimate

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⁶ No response to request for follow-up interview was received.
interaction that facilitated information sharing and trust. Phone interviews were held when there were conflicts in schedules or participants were physically located in areas that would require air travel. All seven follow-up interviews were conducted via phone.

Interviews lasted between 60-90 minutes each and were audio recorded to facilitate a natural flow of the conversation and reduce distractions. This also allowed for a more personal connection with interviewees and the ability to more easily explore areas that seemed interesting or relevant to previous insights or interviews. After each interview, time was spent memoing to immediately capture thoughts, observations, and insights. Where possible, in addition to interviews, written documents such as communications regarding the initiative, proposals for launching or managing initiatives, interim or final reports, or company brochures were obtained. Prior to data analysis, all interviews were transcribed word for word. Additionally, steps were taken to ensure anonymity of participants. Specifically, some genders were changed; that is, genders used in the write up of cases are not necessarily the gender of actual interviewees.

### 3.5.2 Data Analysis

An iterative process of data collection, coding, and categorization was used to identify patterns and trends and develop meaningful categories in grounded fashion (Strauss, 1987; Trauth & Jessup, 2000). That is, insights were not the result of a linear process and data collection and analysis took place simultaneously. As such, details on the analysis process have been collapsed into manageable chunks that describe key moments of insight or progress towards theory building. Additionally, examples extracted from actual data have been provided to illustrate the process of moving from details to concepts to explanatory theory.
3.5.2.1 Open Coding: Identifying Characteristics of Crowdsourcing

Open coding was used to analyze both literature and case study interviews to create logical descriptive categories (Byrant & Charmaz, 2007). Because the purpose was to generate new theory and not to test existing theory, no *a priori* categories were created (Fernández, 2004). Instead, themes and concepts emerged using inductive reasoning. Open coding was used to extract and collect themes until patterns began to emerge and higher-level categories could be created (Trauth & Jessup, 2000). As more data was gathered, existing categories were further defined and new categories were identified.

Open coding of the corpus of crowdsourcing literature led to the identification of 58 characteristics related to the organizational use of crowdsourcing. As characteristics emerged, annotations were made in the transcribed documents to indicate the specific characteristic identified (e.g., tasks, goal, challenge). During the open coding process, mini-memos were also created to capture thoughts and insights on characteristics and emerging themes.

After identification of 58 different characteristics, themes were grouped into logical categories (see Table 3-7). This process of identifying characteristics, developing descriptive categories, and returning to the data continued until categories started to stabilize and new characteristics fit nicely within identified groupings (e.g., who, why). This iterative process of constant comparison and categorization resulted in a broad set of categories, events, and characteristics associated with the use of crowdsourcing initiatives within established organizations.
Table 3-7: Example of Initial Categories of Crowdsourcing Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>Who</td>
</tr>
<tr>
<td>Trusted partners</td>
<td></td>
</tr>
<tr>
<td>Communities of practice</td>
<td></td>
</tr>
<tr>
<td>Communities of science</td>
<td></td>
</tr>
<tr>
<td>Universities</td>
<td></td>
</tr>
<tr>
<td>Customers</td>
<td></td>
</tr>
<tr>
<td>General public</td>
<td></td>
</tr>
<tr>
<td>Reduced costs</td>
<td>Why</td>
</tr>
<tr>
<td>Sales revenue</td>
<td></td>
</tr>
<tr>
<td>Speed to market</td>
<td></td>
</tr>
<tr>
<td>Awareness</td>
<td></td>
</tr>
<tr>
<td>Improved employee morale</td>
<td></td>
</tr>
</tbody>
</table>

3.5.2.2 Axial Coding: Abstraction and Building the Conceptual Framework

Next, patterns and relationships that represented more abstract concepts began to emerge. As new data was collected, prior categories were reconfigured, combined, or eliminated (Trauth & Jessup, 2000). Axial coding was used to bring individual coded items back together into coherent categories (Strauss & Corbin, 1990). During axial coding, analysis focused on one category at a time with the purpose of building clarity around the category. Sub-categories also began to emerge as more and more open items were subsumed into larger thematic categories. During this time, a process of constantly moving back and forth between data collection and coding, as well as constantly comparing identified themes and concepts to each other, was used.

As patterns emerged, a systematic literature review was conducted to find evidence to support the initial categories, as well as to look for additional sub-components and new categories not yet identified. This iterative process of constant comparison and categorization lead to more robust categories that defined outlined specific characteristics and the further abstraction of categories into meta-categories (see Table 3-8).
Table 3-8: Example of Progression of Coding from Detailed Characteristics to Abstract Concepts

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Category</th>
<th>Meta-category</th>
</tr>
</thead>
</table>
| • R&D Department  
  • Employees         | Internal |               |
| • Trusted partners  
  • Communities of practice  
  • Communities of science  
  • Universities  
  • Customers  
  • General public | External | Location of the crowd |
| • Reduced costs  
  • Sales revenue  
  • Speed to market | Tangible | Value Capture |
| • Awareness  
  • Improved employee morale  
  • Increased knowledge | Intangible |               |

As the analysis and data collection process continued, meta-categories were once again collapsed into higher order concepts and newly identified concepts were added as they emerged (see Table 3-9).
### Table 3-9: Example of Abstraction of Categories to Meta-Categories

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Category</th>
<th>Meta-category</th>
<th>Organizing Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>• R&amp;D Department&lt;br&gt;• Employees</td>
<td><em>Internal</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Trusted partners&lt;br&gt;• Communities of practice&lt;br&gt;• Communities of science&lt;br&gt;• Universities&lt;br&gt;• Customers&lt;br&gt;• General public</td>
<td><em>External</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• General&lt;br&gt;• Product/Service (i.e., specific to the sponsoring organization)&lt;br&gt;• Situational (e.g., time, place, event)&lt;br&gt;• Specialized (e.g., graphic design, programming)&lt;br&gt;• Domain expertise (e.g., chemistry, medical)&lt;br&gt;• Problem solving</td>
<td><em>Knowledge</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Reduced costs&lt;br&gt;• Sales revenue&lt;br&gt;• Speed to market</td>
<td><em>Tangible</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Awareness&lt;br&gt;• Improved employee morale&lt;br&gt;• Increased knowledge</td>
<td><em>Intangible</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Accuracy/Quality of work&lt;br&gt;• Availability of crowd&lt;br&gt;• IP leakage&lt;br&gt;• Clearly articulating the task&lt;br&gt;• Internal acceptance/buy-in&lt;br&gt;• Motivating the crowd&lt;br&gt;• Loss of control</td>
<td><em>Value Capture</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3.5.2.3 Emergence of the Core Category

During this stage of analysis, a core category emerged. Specifically, the core category of “use” was the organizing concept needed to begin theory building. The core category acted as an organizing theme that helped to describe and explain the relationship between identified
categories and sub-categories (Glaser, 2007). Emergence of one or more core categories is crucial to the development of theory and signals a turning point in the collection and analysis process.

Initially six common organizational uses were identified: 1) marketing and market research, 2) completing of routine time-consuming tasks, 3) ideation and evaluation of new product/service ideas, 4) solving complex problems, 5) collecting distributed data, and 6) sharing of knowledge. Further analysis and mapping of key categories to these six uses, led to a more nuanced categorization of uses, specifically: 1) Marketing/Branding, 2) Cost Reduction/Productivity, 3) Product/Service Innovation, and 4) Knowledge Capture (see Table 3-10).

Table 3-10: Refinement of Core Category

<table>
<thead>
<tr>
<th>Initial Categories of Use</th>
<th>Final Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Marketing and market research</td>
<td>Marketing/Branding</td>
</tr>
<tr>
<td>• Completing of routine time-consuming task</td>
<td>Cost Reduction/Productivity</td>
</tr>
<tr>
<td>• Ideation and evaluation of new product/service ideas</td>
<td>Product/Service Innovation</td>
</tr>
<tr>
<td>• Solving complex problems</td>
<td></td>
</tr>
<tr>
<td>• Collecting distributed data</td>
<td>Knowledge Capture</td>
</tr>
<tr>
<td>• Sharing of knowledge</td>
<td></td>
</tr>
</tbody>
</table>

Identification of these four common uses resulted in a preliminary descriptive theoretical framework of common uses of the crowd by established organizations. The emergence of this framework laid the groundwork for the exploration of different patterns and concepts related to organizational uses of crowdsourcing and the development of explanatory theory.
3.5.2.4 Selective Coding: Building Theory

After identification of the core category of use, selective coding was used to explore the relationship between use and other emerging themes. Using the preliminary descriptive framework as the basis of understanding, a coding guide was created which included all identified themes (see Appendix D). After each interview was coded, codes and annotated references were copied to a Microsoft® Excel spreadsheet. For each reference, the source document was listed, as were notes on context (see Appendix E). Identified themes were moved to Excel to facilitate sorting of data by theme, case, and participant. At this time, process of linking specific characteristics and categories to each defined use began. This included matching specific challenges, crowd location, crowd knowledge, and value capture to identified uses. This led to further expansion of the descriptive framework. As the framework became more robust and more categories were integrated, theory moved from a descriptive stage to an explanatory one.

As relationships solidified, data collection and analysis focused on theory development and saturation of identified concepts. Specifically, papers in the corpus of literature were reviewed to clarify the relationships and interdependencies of the emerging theory in order to help ensure the comprehensive nature of the theory (Urquhart et al., 2010). Finally, as theory solidified, relevant literature was identified and reviewed as a means of situating theory within current knowledge (Stern, 2007) (details of enfolding of extant literature are provided in section 5.1.5).

3.5.2.5 Within and Across Case Analysis

One advantage of a multiple-case design was the ability to conduct both within and across case analysis (Eisenhardt, 1989; Yin, 2009). Within case analysis was used to identify
reoccurring themes or patterns within one specific case. Specifically, as previously discussed, Excel spreadsheets were used to sort coded transcripts by individual codes. Codes were organized by categories such as organizational goals, desired outcomes, challenges, barriers, tasks, knowledge and value (see Appendix D). This facilitated the identification of key themes within the case. Within case themes were identified based on two criteria. First, a theme was identified if more than one interviewee mentioned a similar concern, issue, or topic. For example, if two interviewees mentioned the same challenge related to use and adoption of the initiative it was noted as a theme for that case. Second, a theme was created when one interviewee described a situation, activity, or event that would help to explain or account for a comment by another interviewee. For example, if one interviewee reported that some individuals were reluctant to participate in an initiative and another reported that managers in charge of these individuals had discouraged or prohibited participation, a new theme was created to capture this dynamic.

Additionally, detailed case write-ups were created for each case that included a synthesis of all interviews. Write-ups were organized around research questions and included: 1) an overview of the organization, 2) data collected, 3) a description of the initiative, including goals, implementation, participants, tasks to be completed, and success metrics, 4) impacts to the organization, both positive and negative, 5) facilitators, 6) challenges, and 7) a discussion of findings (see Chapter 4). These detailed write-ups were instrumental in identifying unique patterns as they helped to organized findings in line with the research questions and enabled a more intimate understanding of case details (Eisenhardt, 1989).

Across case analysis was facilitated by combining all codes from all cases into one spreadsheet (see Appendix E). This allowed key themes identified within a case to be compared and contrasted across all cases thus helping to highlight similarities and differences among cases (Eisenhardt, 1989). For example, comparing challenges identified in each case across all cases yielded key differences by organizational needs. This was critical in development of the
explanatory theoretical framework as it provided clarification of common and unique organizational challenges based on use of the crowd (see Chapter 6). Additionally, flowcharts, diagrams, and 2x2 matrices were used to explore potential patterns and to visualize relationships (Miles & Huberman 1984). Finally, the three cases that used crowdsourcing for internal crowdsourcing were compared and contrasted by making lists of similarities and differences. Interestingly, one of these cases provided the opportunity to compare a failed initiative against two more successful ones. This comparison was instrumental in identifying the why of what happened and led to the building of the model discussed in detail in Chapter 5.

3.5.3 Theoretical Saturation

During data collection and analysis, a key question to be answered was when theoretical saturation had been reached, or when to stop collecting and analyzing data (Guest, Bunce, & Johnson, 2006; Mason, 2010). Simply put, theoretical saturation is the point in the data collection and analysis process where the continuation of either would result in only limited or minor advances in learning. Making decisions on when saturation has been reached is often combined with pragmatic considerations such as time, money or available resources (Eisenhardt, 1989).

In preparing to address this question, considerable time was spent examining different perspectives on when enough is enough. While hard and fast rules or numbers would be anathema to the concept of letting the data speak for itself, a review of different approaches to theoretical saturation was conducted to build a clearer understanding of the relationship between sample size and theoretical saturation. A review of this process is provided next.

Only a handful of papers provided guidance on appropriate sample size metrics for qualitative research and their relation to saturation. With regard to qualitative research, Guest et al. (2006) argued that 15 interviews are minimum for qualitative studies, with sizes of 20-30 and
30-50 most appropriate for grounded theory. Others found that little new emerged from
interviews of more than 20 people (Thomson, 2004 as reported in Mason, 2010). Finally, a
review of 560 qualitative studies by Mason (2010) found the most common sample size was 20-
40, followed by 40, 10, and 25. While such research may be helpful in informing researchers as to
what was done before, attempts to create broad generalizations or guidelines were ultimately of
limited use in deciding when to stop collecting and analyzing data. Of more use were discussions
that linked theoretical saturation to the researcher’s specific study and purpose. In these
discussions, theoretical saturation was closely tied to the research question being addressed, the
nature of the topic, and the claims that were being made (Eisenhardt, 1989; Gregor, 2006; Mason,
2010; Strauss & Corbin, 1990). These papers suggested that studies seeking to make “modest
claims” might reach theoretical saturation more quickly than those attempting to make claims that
are more grand (Charmaz, 2006, p. 114). Furthermore, Guest et al. (2006) conclude that when the
aim of the research is to understand common perceptions or high-level overarching themes, a
sample size of 12 interviews is sufficient. This of course begs the question of what would be
considered “high-level.” Finally, Eisenhardt (1989) suggests that between four to ten cases are
typically sufficient for early theory building.

Reflecting on the different philosophies behind appropriate sample size, led to the
decision that the research questions to be addressed and the current understanding of
crowdsourcing would be the driving force in determining theoretical saturation. Since the
research questions were of an exploratory nature related to a new or emerging phenomenon, the
purpose was to create clarity and understanding around the common uses of crowdsourcing
within the context of organizational use. After the identification of the core category and the
creation of a descriptive framework, a return to the literature was conducted with the purpose of
identifying cases that could be used to support the emerging theory. Additionally, examples of
publically available online crowdsourcing sites were surveyed. After mapping over 90 published
works and 65 current web sites to the initial framework, it was determined that continuing to do so would not provide any additional learning and data collection and analysis was concluded. However, because crowdsourcing continues to evolve on an almost daily basis it is necessary to continue to uncover emerging themes related to organizational use. New themes, links, and patterns will likely emerge for years to come. Nevertheless, the objective of this research is to lay the groundwork from which these continued explorations can take shape. Without first laying the groundwork from which to frame the discussion and exploration moving forward, researchers may in fact limit applicability of findings both to theory and to practice (Trauth & Erickson, 2012).

In should be noted that this approach to theoretical saturation does not mean that theory building is complete or final. Instead, saturation is thought of as a “matter of degree” (Strauss & Corbin, 1990, p.136). That is, saturation for this research study was viewed as a function of the claims being made, the stage or formality of the theory being generated, and the research questions being addressed. As such, theoretical saturation does not signal the end of exploration and understanding; in fact, it likely signals only the end of the first stage of exploration.

3.6 Research Evaluation

A number of methods were used to evaluate findings including member checking, submission to peer-reviewed publications, Lincoln & Guba’s (1985) criteria for interpretive research, and Klein & Myers’ (1999) seven principles for IS interpretive research. Each is described next along with details on how each was employed in this study.
3.6.1 Member Checking and Peer-Reviewed Publications

In addition to collecting multiple sources of data (i.e., literature, interviews, and documentation from case studies), member checking and submission to peer-reviewed conference publications was used to corroborate findings. Member checking was used to ensure that detailed case write-ups “rang true” to those individuals participating in the initiative and that cases were free of factual errors (Lincoln & Guba, 1985). Specifically, one individual from each case was selected to review the case. Because cases were lengthy and would require time to review, decisions on which individual to contact was based on his or her initial interest in the research and whether the individual had expressed interest in continuing to follow the progress of the research. An email was sent to inquire if each would be willing to review the case and comment on findings, conclusions, interpretations, and whether the case contained any factual errors. Three of the reviewers had only minor changes such as changing a title or who reported to whom. A fourth required that some passages and quotes be deleted due to concerns about leakage of proprietary information. A fifth did not respond to repeated requests for review. The sixth continued to postpone scheduled phone conversations and a convenient time to speak could not be found.
In addition to member checking, findings from this study were submitted to five peer-reviewed conferences and each was accepted for publication. Finally, selected conference papers were also shared with a number of interviewees to obtain their feedback on findings, interpretations, and conclusions drawn.

3.6.2 Evaluating Trustworthiness and Quality of Interpretive Research

To critically evaluate the trustworthiness of the emergent theory, Lincoln & Guba’s (1985) criteria for interpretive research were employed. Specifically, the following areas were evaluated:

1. **Credibility**: Are results believable?
2. **Transferability**: To what degree can results be generalized to other contexts?
3. **Dependability**: Does the researcher account for the changing nature of the context?
4. **Confirmability**: Has data been confirmed or corroborated by others indicating data is not researcher biased?

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Table 3-11 provides details on how each of these questions was addressed.

### Table 3-11. Four Criteria for Judging the Trustworthiness of Qualitative Research

<table>
<thead>
<tr>
<th>Question</th>
<th>Application of Question within the Research Context</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Credibility</strong></td>
<td>Credibility of findings was addressed by:</td>
</tr>
<tr>
<td></td>
<td>• using well-established and accepted research methods within the field of IS research,</td>
</tr>
<tr>
<td></td>
<td>• providing a clear and detailed description of the research methods used,</td>
</tr>
<tr>
<td></td>
<td>• constant awareness of and reflection on potential biases that may be brought to the process, and</td>
</tr>
<tr>
<td></td>
<td>• the willingness to reframe the research questions and case criteria when data demanded.</td>
</tr>
<tr>
<td><strong>Transferability</strong></td>
<td>Transferability of findings was addressed by:</td>
</tr>
<tr>
<td></td>
<td>• clearly articulating the specific context in which the research took place,</td>
</tr>
<tr>
<td></td>
<td>• providing thick descriptions of individual cases (see Chapter 4), and</td>
</tr>
<tr>
<td></td>
<td>• clearly conveying the boundaries of the study and the generalizability of the results (see Chapter 4).</td>
</tr>
<tr>
<td><strong>Dependability</strong></td>
<td>Dependability of findings was addressed by:</td>
</tr>
<tr>
<td></td>
<td>• providing a transparent and detailed chain of evidence regarding how categories and theory emerged from the data, and</td>
</tr>
<tr>
<td></td>
<td>• leveraging multiple sources of data including current literature, practitioner interviews, and case study documentation.</td>
</tr>
<tr>
<td><strong>Confirmability</strong></td>
<td>Confirmability of findings was addressed by:</td>
</tr>
<tr>
<td></td>
<td>• purposefully engaging practitioners and scholarly individuals to challenge any assumptions and preconceived notions,</td>
</tr>
<tr>
<td></td>
<td>• conducting member checks (i.e., soliciting input from study participants on case details and resulting theory) to help ensure findings “ring true,” (Trauth &amp; Jessup, 2000; Walsham, 2003), and</td>
</tr>
<tr>
<td></td>
<td>• submitting findings for peer-review by academic scholars within the field of IS as previously noted.</td>
</tr>
</tbody>
</table>

Throughout the research process, Klein & Myers’ (1999) seven principles for IS interpretive field research were also applied. These seven principles helped provide guidance during the research process as well as during analysis. Additionally, they addressed the quality of the research and the rigor used in conducting the research. Table 3-12 provides a brief summary of each of the seven principles and how each principle was applied during data analysis.
<table>
<thead>
<tr>
<th>Principle</th>
<th>Application of Principle Within this Research Context</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 The Fundamental Principle of the Hermeneutic Circle</strong>&lt;br&gt;Foundational to all interpretive work, the hermeneutic circle is based on the proposition that the data collected must be read and interpreted. It is through such interpretations that IS researchers come to a better understanding of complex phenomena. This requires understanding the meanings associated with smaller parts of the whole, as well as developing an understanding of the relationship between the parts.</td>
<td>The hermeneutic circle is also fundamental to the coding of data in a grounded fashion. Key to grounded theory is moving to higher levels of abstraction and identifying relationships between concepts and themes.</td>
</tr>
<tr>
<td><strong>2 The Principle of Contextualization</strong>&lt;br&gt;Contextualization requires the phenomenon under study to be set within its social and historical context and the researcher to reflect on the impact of the context on the phenomenon.</td>
<td>During analysis, multiple contextual elements were taken into consideration including, organizational culture, structure and processes, as well as the responsibilities of participants in relation to the initiative. Analysis specifically examined the relationship between these contextual elements.</td>
</tr>
<tr>
<td><strong>3 The Principle of Interaction Between the Researcher and the Participants</strong>&lt;br&gt;This requires the researcher to reflect on how data may be a result of social constructions resulting from interactions between the researcher and participants.</td>
<td>While interactions between participants and the researcher were limited, care was taken to carefully pose open questions that would not suggest specific answers or lead participants to draw specific conclusions. In short, every attempt was made to ask neutral questions and remain open to participants’ unique perspectives.</td>
</tr>
<tr>
<td><strong>4 The Principle of Abstraction and Generalization</strong>&lt;br&gt;Findings emerge from logical reasoning in drawing conclusions and not from statistical relevance. This principle also takes into account the different types of interpretive generalizability: 1) development of concepts, 2) generation of theory, 3) drawing of specific implications, and 4) contributions of rich insights (Walsham, 1995).</td>
<td>Findings were based on a series of iterative steps moving from specific to more abstract concepts. Furthermore, findings are not being generalized to specific populations but instead to specific contexts that facilitate the building of explanatory theory.</td>
</tr>
<tr>
<td><strong>5 The Principle of Dialogical Reasoning</strong>&lt;br&gt;Closely connected to principle 3 (interaction between researcher and participant), dialogical reasoning requires the researcher to confront potential preconceived notions or prejudices.</td>
<td>Memoing played a key role in facilitating reflection on preconceived notions. In fact, memos included many more questions than expected regarding the potential benefits of crowdsourcing to the organization and helped to expose potential prejudices, as well as open new areas of inquiry.</td>
</tr>
</tbody>
</table>
6 The Principle of Multiple Interpretations
Because the interpretive researcher believes reality is socially constructed, this requires the researcher to actively seek out multiple perspectives and viewpoints. Additionally, the researcher must seek to understand the factors that may account for such differences.

Within each case, interviews were conducted with multiple individuals within the organization, at multiple levels of authority, and having varying roles related to the crowdsourcing initiative. Additionally, the influence of authority, processes, and structure were explicitly examined during analysis.

7 The Principle of Suspicion
Closely tied to principle 6 (multiple interpretations), the researcher must actively deconstruct the realities that have been portrayed to uncover what role interests or wishful thinking may have played in the account.

To manage the variety of different perspectives, analysis focused on themes that were present across two or more interviewees. That is, themes that appeared to be a result of posturing or exaggeration by participants were scrutinized at a more in-depth level.

### 3.7 Methodology Summary

This research study was designed to examine the emerging phenomenon of crowdsourcing within established organizations. Taking into account the current lack of empirical research and limited theory related to this new phenomenon, the research questions were designed to create a clearer understanding of the uses of the crowd by organizations, their motivations for reaching out to the crowd, and the facilitators of and barriers to implementing such initiatives. An interpretive epistemology was employed with the objective of building a more coherent picture of the uses of the crowd by organizations from the perspectives of individuals currently participating in the phenomenon (Trauth & Jessup, 2000). Grounded theory methods were employed with the purpose of building theory and knowledge. Current crowdsourcing literature was used as a source of data and was combined with case studies to build understanding. As described, data collection and analysis followed an iterative process moving from details to abstraction to concepts and themes until theory emerged (see Figure 3-4).
Figure 3-4. Visualization of Iterative Data Collection, Analysis, and Theory Building Process (adapted from Adolph, Hall, & Kruchten, 2012, p. 1271)

Because of the nature of the research questions and the current state of crowdsourcing research, theory building focused on early stages of theory building, specifically on Type I (descriptive) and Type II (explanatory) theory (Gregor, 2006). Extant literature was then used to situate emergent theory within current theory and understanding. Finally, throughout the data collection and analysis process, established criteria and principles for evaluating the trustworthiness and credibility of the findings were used.
Chapter 4

Case Studies

Chapter 4 provides details on each of the six cases conducted as part of this research. Each case is presented as follows. First, an overview of the organization and the data that was collected is provided. Next, the crowdsourcing initiative under study is described as reported by interviewees including details on the goals of the initiative, implementation, participants, tasks that were performed, and success metrics used. Findings that illustrate the impact of the initiative on the organization are then discussed. This is followed by an analysis of the facilitators and challenges associated with use and acceptance of the initiative. Each case ends with a discussion and summary of key themes that emerged during analysis.

4.1 Case Study A: Leveraging Employees to Generate Ideas for New Service Offerings

4.1.1 Overview of Auto Inc.: International Automotive Manufacturer

Auto Inc. is an established international automotive manufacturer employing over 500,000 people worldwide. While design and engineering functions are located at Auto Inc.’s European headquarters, the company has sales divisions and R&D labs located around the world. Similar to other large automobile manufacturers, Auto Inc. follows a traditional product development process (i.e., ideation, feasibility, proof of concept, go to market design, and rationalization planning). Within the industry, Auto Inc. has a reputation of being innovative when it comes to automotive design and marketing.
The focus of the case study was a new internal-crowdsourcing initiative designed to solicit ideas from employees regarding new service offerings. Specifically, the CIO of a U.S. sales division started the initiative in order to generate ideas for new offerings that would leverage technology to connect customers, employees, and vehicles to a wide variety of information. Under the leadership of this CIO, a new Innovation Group was created within the IT department of the U.S. sales division in which the CIO worked. This new group included a Director, who was handpicked by the CIO and who shared the CIO’s vision, four Portfolio Strategists tasked with managing ideas for five key connected areas, and seven support staff. At the time interviews began the Innovation Group was in the early stage of piloting the initiative.

4.1.2 Data Collection

A total of four interviews were conducted with individuals working within or closely with the Innovation Group. One phone interview was conducted with an intern in the Innovation Group responsible for managing the implementation of the ideation platform, monitoring inputs on the platform, and generating reports on contributions. A second phone interview was conducted with an IT manager at Auto Inc.’s European headquarters who was evaluating the potential of deploying the ideation platform on a global scale. After these two interviews, the CIO spearheading the initiative was reassigned to a new position within the company and a new CIO was brought in from European headquarters. The new CIO made the decision to cancel the initiative and disband the Innovation Group. Staff was reassigned to new positions within the organization, and the Director of the group left the organization.

After the cancellation of the initiative, two more interviews were conducted. One phone interview was conducted with the Director of the Innovation Group, and a second face-to-face interview was conducted with a Portfolio Strategist who had worked in the Innovation Group.
Finally, two follow up interviews were conducted seven months after initial interview; one with the intern who had managed the implementation and one with the Portfolio Strategist. In addition to interviews, documentation on the initiative including system requirements and rollout plans were also obtained.

While members of the Innovation Group were reassigned to new positions and the internal-crowdsourcing initiative was brought to a close during the data collection process, there are still rich information and insights to be extracted from the data collected. In fact, the ability to analyze a case where an initiative “failed” helped to solidify key themes related to internal-crowdsourcing. Additionally, comparing emergent themes from this case to other cases, facilitated the identification of themes that helped to better explain potential success factors associated with such initiatives. Next, details on the initiative are provided.

4.1.3 The Initiative

4.1.3.1 Goals: Generating Awareness and Opening Up the Innovation Process

Interviews with the Director of the Innovation Group revealed four key goals for the initiative. First, opening up the innovation process to others within the organization was seen as critical in generating awareness of the need for new connected service offerings. Second, an open ideation platform was viewed as optimal for encouraging cross-collaboration throughout the organization and facilitating a culture of innovation. Third, opening up the process to all employees would help in identifying and making better use of innovative employees who may have gone unnoticed because their jobs were not directly tied to innovation tasks. Finally, consolidating ideas in one central location would help in managing the day-to-day idea flow and streamlining the evaluation process.
4.1.3.2 Implementation: Developing a Proof of Concept

The internal ideation platform was intended to be a centralized location for all employees to propose, discuss, and learn about, potential new connected offerings. As a first step, the Director of the Innovation Group drafted business and system requirements for evaluating off-the-shelf ideation platforms. Next, he tasked members of the Innovation Group with collecting best practices from other companies currently leveraging internal ideation platforms. The group evaluated approximately 70 commercially available platforms against the written requirements and selected an off-the-shelf product that could be customization to fit Auto Inc.’s needs. One interviewee reported that the vendor’s extensive experience and expertise with large-scale crowdsourced ideation projects was a key factor in the selection of the platform.

After licensing the platform, a detailed implementation plan was created specifying milestone dates and processes for the initial pilot and subsequent rollout to the entire organization. The plan included processes for gathering, analyzing, and evaluating ideas, as well as addressing issues that might impact the success of the initiative based on best practices (e.g., too many ideas to manage). The group spent two months configuring and branding the site to meet the design specifications. In February 2011, the platform was rolled out to a small select group of participants and testing began. During this time, the Innovation Group held a series of information sessions designed to generate awareness about the goals of initiative, as well as to obtain feedback on functionality, benefits, incentives, and the look and feel of the site.

During this initial rollout, the pilot came to the attention of the Vice President (VP) of IT at Auto Inc.’s European headquarters. The VP shared the belief that new connected services would be critical to Auto Inc.’s future success and was interested in following the progress of the U.S. initiative. This VP assigned a Product Development Manager from within his group to monitor the initiative and provide periodic updates on its progress.
4.1.3.3 The Crowd: Employees

A total of 75 employees ranging in age from 20 to 60 years and holding positions from individual contributor to VP participated in the pilot. Of the 75 participants, 15 were employees within the Innovation Group who used the platform on a daily basis to manage the flow of ideas. The majority of the 60 participates outside the Innovation Group were recruited personally by members of the group. Interviewees described those who were recruited as “innovators” who were open to new ideas, who had the ability to influence others, and who could potentially help fund the initiative moving forward. In addition to this handpicked group, a number of managers who had heard about the initiative had also asked that their groups be included in the pilot.

4.1.3.4 Tasks: Ideation for New Service Offerings

Participants (i.e., employees) were asked to submit ideas for the next generation of connected vehicle. Additionally, they were asked to comment on others’ ideas, vote ideas “up” or “down,” and identify similar ideas that should be combined. Individuals who submitted and commented on ideas were identified by name, but voting was anonymous. During the pilot, no specific rewards were offered for participation. However, small monetary rewards designed to encourage participation were being considered for subsequent phases.

The Innovation Group monitored the platform on a daily basis to ensure contributions remained on topic and comments were constructive. During the pilot, the group also continued to discuss, test, and define incentives and processes. Portfolio Strategists managed idea flow and evaluated ideas in one of five different connected areas. According to documentation and one interviewee, ideas generated during the pilot were evaluated in two ways. First, potential valuable ideas were identified based on number of points received. Specifically, each idea received points
for number of views, comments, and votes (+1 for up vote, -1 for down). Second, Portfolio Strategists reviewed all ideas and hand selected ideas they felt were valuable even if they had failed to meet defined point criteria. The process of using both the crowd and Portfolio Strategists to identify potential valuable ideas was designed to prevent novel ideas from going unnoticed.

Strategists met on a regular basis to discuss ideas and select ideas that would move forward to a feasibility review. Ideas making it through the feasibility phase, moved to a proof of concept stage. Finally, ideas making it through the proof of concept stage were transferred outside the Innovation Group to a separate R&D group responsible for final testing and implementation.

4.1.3.5 Success Metrics: Gaining Support and Participation

During the pilot phase, the Innovation Group focused on “seeding” the platform with quality ideas, building participation, obtaining support from high-level executives, and addressing technical issues that might impact performance once rolled out to a larger number of employees. Key concerns included ensuring the platform would scale effectively, refining evaluation criteria, and determining now best to motivate employees to participate.

4.1.4 Impacts

While the initiative was in place for less than one year, interviewees reported a number of impacts, both positive and negative. Before the initiative was shut down, the ideation platform was used on a daily basis by individuals within the Innovation Group as well as by 60 employees and managers within the U.S. sales division. While the goals of initiative were primarily long-term in focus (i.e., developing the next generation of connected services, creating a culture of innovation), interviewees did report a number of benefits from the pilot, specifically: 1) reducing
barriers to participation in innovation tasks, 2) identifying potential issues with ideas earlier in the ideation process, and 3) identifying innovative employees who were not currently engaged in the innovation process. The few negative impacts that were reported were limited primarily to the IT Department and employees within the Innovation Group. A discussion of the findings related to these impacts is provided next.

4.1.4.1 Increasing Transparency: Reducing Barriers to Participation

Prior to the ideation platform, when an employee had an idea for a potential new offering, formal presentations were used to pitch and promote ideas to management. Moreover, these pitches were rarely seen outside the individual’s department. According to three interviewees, the ideation platform facilitated the informal sharing of ideas across departments and, as such, enabled an openness and transparency around the innovation process that was not present before. By creating a transparent, informal way to share ideas, the ideation platform reduced organizational barriers to participation and encouraged sharing. Removing requirements to produce formal presentations was seen as a key step in building a culture of innovation.

In addition, opening up the innovation process also helped to reduce personal barriers. For example, one interviewee who participated in the ideation process commented that the portal had helped to demystify the innovation process. According to this interviewee, the transparent and open structure helped him gain a better understanding of the innovation process. This resulted in him becoming more confident in his ability to participate in innovation tasks. Furthermore, it helped him to see that he was a creative person, a view he did not have before participating in the initiative. As such, he felt that a key barrier to participation had been removed.
4.1.4.2 Sharing Institutional Knowledge: Better Ideas and Earlier Identification of Potential Issues

Interviewees reported that comments on ideas provided by participants impacted ideation in two key ways. First, one interviewee reported that discussion on the portal resulted in more novel ideas. Because individuals at a variety of levels within different departments participated in shaping the ideas on the platform, the information and expertise of individuals from other departments was now more easily used to advance and critique ideas. As such, this interviewee reported that ideas were being put together in novel ways. Second, another interviewee reported that discussion on the ideation platform helped to identify potential issues with ideas earlier in the innovation process. This helped to avoid one group repeating mistakes made by another. In short, cross-department collaboration allowed institutional knowledge to be leveraged from across the organization thus allowing it to have a potentially greater impact on innovation.

4.1.4.3 Increasing Innovative Potential: Identifying Innovative Employees

The Director of the Innovation Group reported that the initiative facilitated the identification of employees who were “curious, engaged, and interested” in new ideas but who were not currently participating in innovation tasks. According to the Director, because the ideation platform opened up the ideation process, individuals who would not have had the opportunity to participate in innovation or new product ideation activities were now able to do so. As such, the ideation platform helped to identify innovative individuals throughout the organization and capture their energy and passion. By identifying these individuals and including them in the ideation process, the Director hoped to encourage and promote a culture of innovation. This was especially important in such a large organization, as innovative employees often remain unnoticed especially when their jobs were not connected to innovation tasks. The
ability to better identify innovative and passionate individuals and allow them to collaborate via the ideation platform was seen as a key to moving the business forward.

4.1.4.4 Cancellation of the Initiative: Reassignment and Loss of Employees

The cancellation of the initiative did have a direct impact on the members of the Innovation Group as each was reassigned to new duties within Auto Inc. Additionally, two employees, including the Director, left the organization after the initiative was cancelled. The Director, however, commented that little repercussions were felt outside his group. It should be noted, that while the internal-crowdsourcing initiative was cancelled, the exploration of new connected services continued.

4.1.5 Facilitators

A discussion of facilitators may seem out of place considering the initiative was discontinued and the Innovation Group disbanded. However, analysis revealed one key facilitator related to use and adoption of the initiative before its cancellation.

4.1.5.1 Initial Support and Funding

In its early stage, the initiative had support from a C-level executive who created a dedicated group to manage the initiative. Analysis revealed initial support by the CIO was a key facilitator in launching the initiative. One interviewer commented that the “biggest advantage we had was that we had budget.” The funding allowed the Director of the Innovation Group to purchase a robust off-the-shelf platform thereby avoiding the costs and time associated with
building an in-house solution. Furthermore, executive support resulted in the allocation of resources and funding to create a new dedicated group to manage implementation and on-going support.

4.1.6 Challenges

According to interviewees, launching a crowdsourced ideation platform with the goal of generating ideas for new service-oriented products presented a number of challenges for this product-focused organization. First, the initiative required a change in current ideation process from a guarded and siloed ideation process to an open and transparent one. Second, it required a change in innovation focus from a short-term focus on products to a longer-term focus on services. Third, it required a shift in organizational responsibilities with the Innovation Group sharing responsibility for innovation with established innovation groups at European headquarters. Forth, for the initiative to released worldwide, it required Auto Inc. address differences in country labor laws and intellectual property rights. Finally, and ultimately the biggest challenge, it required building support and buy-in with executives across the organization to ensure continued funding. Next, each of these challenges is discussed in detail.

4.1.6.1 Opening up the Innovation Process: A New Approach to Ideation

The ideation platform was designed to open up the ideation process and encourage collaboration at the early stages of ideation. Interviews revealed that such an approach was counter to the current organizational practices in three key ways. First, Auto Inc. was described by three interviewees as having a “very conservative environment” that was “extremely siloed” and “insular” to the point that managers typically did not look outside their own department for
ideas. While innovation was described as part of the daily work responsibilities of all employees, innovation tended to happen within defined groups with collaboration across groups being rare. The ideation platform was the first attempt to open up the process and centralize ideation. Three interviewees reported that managers and executives questioned whether an ideation platform was necessary or even the right approach for finding ideas. Moreover, because innovation was considered to be the responsibility of every employee, these individuals felt allocating funds and resources to encourage innovation was unnecessary.

Second, Auto Inc. was reported by interviewees to have a culture that valued precision and completeness. As such, employees often kept projects to themselves until they were well defined and planned. This approach was not compatible with the initiative’s objective of sharing ideas during the early stages of conception. That is, leveraging an open, centralized ideation platform required a change in thought processes around the generation of ideas that did not fit with the way Auto Inc. currently approached innovation.

Third, one interviewee commented that individuals, whose job titles were directly related to innovation, might feel threatened by the initiative and concerned that their jobs might be in jeopardy. In fact, managers who were in the position to fund and sponsor new ideas, were reported to be resistant to outsiders leading initiatives that would require involvement from the manager’s direct reports.

4.1.6.2 From Product-Based to Service-Based Offerings: A New Way of Thinking

The purpose of the ideation platform was to generate ideas for new connected services. While Auto Inc. had a reputation as an innovative automobile manufacturer, this reputation was based largely on its ability to quickly follow emerging trends. It was not based on its ability to lead new trends. Furthermore, expertise and processes within Auto Inc. were optimized for
evaluating and delivering tangible products. Finally, managers at Auto Inc. were described as reactive and focused primarily on immediate issues rather than longer-term strategies.

The new focus on connected services required a change in objectives from a short-term focus on products to a longer-term focus on services – a strategy with which few managers were familiar. Additionally, one interviewee reported that managers had limited experience evaluating new services; therefore, they found it “very hard to judge the value of an idea which [was] not product based.” In short, the success of the ideation platform was dependent on managers’ ability to focus on a longer-term strategy and their willingness to acquire the new skills required to evaluate the value of service-based ideas. Because the current culture was not based on such an approach, the Innovation Group faced challenges in changing both attitudes and behaviors.

4.1.6.3 Innovation Within IT: A Distraction and Shift from Primary Responsibilities

As mentioned, the Innovation Group was housed within the IT department of a U.S. sales division. This created three key concerns for managers within Auto Inc. First, two interviewees reported that the IT department was regarded as a support organization whose primary responsibility was to provide hardware and infrastructure support to employees. Therefore, placing an innovation group inside a support-oriented IT department was seen as being outside the charter and responsibilities of the department. This concern was further reinforced by an organizational structure that had clear boundaries regarding departmental responsibilities and an organizational culture that believed these boundaries should not overlap. As such, placing the Innovation Group inside the IT department blurred the lines between departmental responsibilities. One interviewee reported that even those inside the IT department, but outside the Innovation Group, shared the belief that the innovation group was misplaced.
Second, in addition to being outside the charter of the support-oriented IT department, one interviewee reported that there was a misconception that the Innovation Group would overextend IT resources, thereby limiting employees’ ability to receive assistance when needed. While the creation of the Innovation Group did not impact the availability of, or numbers of, IT resources available, this misconception was reinforced when executives encountered IT issues that were not resolved in a timely manner. As such, questions were building as to whether the Innovation Group was a distraction to the IT department’s primary responsibilities.

Finally, the U.S. sales division in which the Innovation Group was housed, was primary responsible for importing, distributing, marketing, and selling cars. Managers within the division were not rewarded for their innovative ideas. Instead, rewards and bonuses were based on each manager’s contribution to bottom line sales. Innovation was the responsibility of separate groups within European headquarters and R&D labs around the world. Housing the Innovation Group within a sales-focused division was seen as out of place and a distraction from its primary responsibilities. In addition, the managers who were being asked to participate in the pilot were currently being rewarded for non-innovation tasks. As such, this created issues in recruiting and motivating participation.

4.1.6.4 U.S. Versus Europe: Differences in Labor Laws and Intellectual Property Rights

As discussed, while the initiative began in the U.S., the VP of IT within Auto Inc.’s European headquarters was also interested in exploring the potential of open ideation. While the U.S. Innovation Group reported challenges in dealing with administrative policies and tax implications associated with providing monetary incentives, the European group faced many more obstacles related to country specific labor laws and intellectual property rights. Specifically, whereas in the U.S. employers typically own the rights to ideas created by salaried employees
while on the job, in parts of Europe, however, this is not the case. In fact, in some European countries, employees retain rights to their ideas even when generated at work as part of a paid position. Therefore, in Europe an employee could potentially claim ownership of an idea contributed to the platform even when that idea was brought to market through the efforts of the organization. This issue would become even more complicated when multiple employees collaborated on an idea. Before an ideation platform could be implemented on a global scale, Auto Inc. would have to successfully address its exposure related to potential ownership issues and compliance with specific country laws and regulations.

4.1.6.5 A Change in Leadership: Loss of Executive Support

As discussed, the pilot received initial support and funding from the original CIO in the U.S. After the initial pilot, the VP of IT within the European headquarters also assigned a member of his product development team to monitor the initiative. While the Director of the Innovation Group had not anticipated headquarters’ involvement at this early stage of testing, the interest by the VP was seen as encouraging. It was however, the change in leadership at the CIO level and at the VP level that resulted in the cancellation of the initiative and a re-formulation of Auto Inc.’s overall innovation strategy for connected services.

Specifically, approximately three months into the pilot, and just weeks before the scheduled rollout to the entire U.S. division, the current supportive CIO was reassigned and replaced by an executive from headquarters with fewer years of experience. This practice was not uncommon for Auto Inc., as executives from European headquarters were often brought in to serve as a CIO in the U.S. before moving on to other positions within the organization. However, according to two interviewees, the new CIO shared the concern that innovation initiatives were not a good fit within the operationally oriented IT group. Furthermore, because the new CIO
would likely only spend a short time in the position (typically three to five years), interviewees
believed that he would view the potential benefits of the initiative as too far in the future to make
an impact during his tenure. Shortly after his arrival, the crowdsourcing initiative was cancelled
and Innovation Group employees were assigned to new positions. While the new CIO
discontinued funding for the crowdsourcing initiative in the U.S., initially the European IT group
continued to examine the potential benefits and challenges associated with implementing a global
crowdsourcing platform. This project, however, was also cancelled after the European VP was
reassigned to a new position. As such, the Innovation Group did not have sufficient internal
support to survive the replacement of the two supportive executives.

4.1.7 Summary of Case

The slow staged approach to implementation, combined with the loss of support from the
original CIO, appear to be critical factors contributing to the cancellation of the initiative.
Because the initiative was relatively unknown within Auto Inc. and had a limited number of
participants, cancelling the initiative would have minimal, or no, immediate repercussions for the
new CIO. In fact, from the incoming CIO’s perspective, cancelling the initiative and disbanding
the Innovation Group would allow funds to be reallocated to other initiatives. Such a move would
address the concerns of vocal executives and managers who felt the initiative was a distraction to
IT’s primary responsibilities. In short, there was little downside and significant upside to such a
decision.

Because of the slow staged rollout, there was little impact on employees outside the
Innovation Group. While, some expressed concern over the loss of the ideation platform, there
was not sufficient support by other executives or pushback from employees to challenge the
cancellation of the initiative. Had more people been aware of and participating in the initiative
this might not have been the case, as opening up the innovation process and then not leveraging employee ideas has been found to create discontent and within the workforce (Mesaglio, 2010). In this case, however, so few employees were participating, that the risk of backlash from participants was minimal.

During a follow up interview, the Director of the Innovation Group commented that the group “underestimated the importance of speed” in launching the initiative. In hindsight, the notion that a large organization needed to move slowly may have been a critical misstep. Instead, of slowly exposing select individuals to the platform, the Director felt holding a shorter-term contest that was open to a larger group of employees may have garnered more interest and ultimately demonstrated more potential value to executives. This suggests that for those organizations wishing to implement new open approaches to innovation, or who wish to change the focus of innovation within their organizations, that widespread exposure may be more valuable than addressing potential technology issues such the ability to scale the platform.

4.2 Case Study B: Leveraging Employees as a Source of New Ideas

4.2.1 Overview of AdvanceTech: An Advanced Technologies Contractor

AdvanceTech is a global company specializing in the research, design, development, and integration of advanced technologies related to security, aerospace, and defense. Employing over 120,000 individuals worldwide, AdvanceTech markets products and services to the government, the military, and commercial customers. The company invests heavily in R&D to enhance current product offerings and to extend the use of technology to new environments and contexts. Because
of its large size, AdvanceTech had a well-defined hierarchical structure consisting of several core divisions comprised of multiple business units.

The focus of this case study was an online initiative designed to open up the ideation process to all employees. The initiative was spearheaded by an executive in charge of one of AdvanceTech’s core business units. As the VP and Chief Technology Officer (CTO) of the business unit, this executive was responsible for identifying, incubating, and maturing information technologies to the point where they could be commercialized and sold by other AdvanceTech divisions. Duties included identifying outside technologies that complemented and advanced current capabilities, managing investments in promising technology companies, overseeing mergers and acquisitions, and managing R&D efforts within the business unit. Approximately 11,000 individuals worked within the business unit, with roughly 100 dedicated to R&D.

4.2.2 Data Collection

A total of five interviews were conducted. Four were held face-to-face at AdvanceTech headquarters and included the VP/CTO in charge of the business unit, a manager in charge of ongoing support for the ideation platform, and two managers in a different department within the business unit, each who were responsible for identifying technologies to improve and innovate business processes. A fifth interview was conducted via phone with an R&D Manager whose group was using the ideation platform. Finally, two follow-up interviews were conducted via phone with each of the managers located in the different department.
4.2.3 The Initiative

Before providing details on the initiative, some background on prior ideation initiatives at AdvanceTech is necessary, as prior efforts directly impacted the goals of the new initiative. Prior to implementation of the ideation initiative under study, AdvanceTech had experimented with both online and face-to-face activities designed to facilitate ideation and innovation. Three different online efforts had been used: 1) a yearly email from a high-level executive asking employees to submit ideas to further the business, 2) the use of SharePoint sites to facilitate collaboration on solutions for specific problems, and 3) the development and implementation of a centralized portal for sharing ideas across a variety of topics. In addition to these online efforts, AdvanceTech also periodically flew individuals to a central location for training and brainstorming on new products or product improvements.

Three interviewees reported that such efforts did not generate the diversity of ideas expected. Specifically, yearly email calls for ideas did not facilitate collaboration and sharing as only the manager initiating the email had access to the proposed ideas. Online sites were reported to be difficult to use and manage, and face-to-face workshops were seen as inefficient and costly since only 100 individuals could participate each year. As such, AdvanceTech was evaluating the value, sustainability, and scalability of current approaches. With this background in place, the remainder of this section provides details on the crowdsourcing initiative under study.

4.2.3.1 Goals: Reducing Costs, Increasing Diversity, and Identifying Talent

A key goal of the initiative was identifying how information technology could be used to engage geographically dispersed employees at all levels within the organization in the innovation process. Information technology was seen as a more sustainable and scalable solution for opening
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up the innovation process. The ultimate goal of the initiative was to increase the quantity, quality, and variety of ideas generated. This included identifying improvements to existing product lines, generating ideas for new products, and identifying potential adjacent markets for both current and new products. Additionally, actively involving employees outside of R&D who were in direct contact with customers was seen as key in gaining better insight into customers’ needs. The ability to connect and collaborate with others, both inside and across business units, was viewed as critical to increasing the variety of ideas and reducing redundancy (i.e., multiple people unknowingly working on similar ideas). Lastly, the VP/CTO hoped the platform could be used to identify creative and innovative employees within the company. Such creative people often went unrecognized by executives because they held positions not commonly associated with innovation or because they worked at other facilities.

4.2.3.2 Implementation: Purchase a Platform, Pilot, Then Nurture Ideas

While AdvanceTech had experimented with building online ideation sites internally, three interviewees described these sites as difficult to setup, use, and manage. As such, the first step in the new initiative was to identify an off-the-shelf ideation platform that could be used to more easily facilitate and manage corporate-wide ideation. The VP/CTO tasked six to ten engineers who were knowledgeable in social media to conduct an analysis and make a recommendation. After purchasing the platform, a pilot was conducted during the spring of 2010. The pilot was rolled out to all 11,000 employees working in the VP/CTO’s business unit. During the pilot, the VP/CTO also recruited 100 to 150 AdvanceTech interns with social media experience to contribute one idea to the platform. Finally, a core team of eight to 10 employees, reporting directly to the VP/CTO, was assembled to manage implementation and on-going support. At the end of 2010, the platform was made available to all 35,000 employees within the
business unit’s division. In 2011, all corporate engineers across the company were given access to the platform.

With the ideation team in place, the focus shifted to encouraging participation and nurturing the ideation community. Ideation team members monitored the platform on a daily basis, rated ideas, and provided comments. The team also conducted periodic informal polls to identify the most active users and to obtain feedback on the process. The team also facilitated connections between idea contributors and others in the organization that could provide expertise to advance ideas, or funding to develop ideas. Finally, the ideation team evaluated ideas, each using their own criteria, and then met to select the most promising ideas. The best ideas were presented to upper management (i.e., executive and director level) who made final decisions regarding funding.

Around the same time the ideation platform was deployed, a company-wide Intranet site was also deployed to facilitate communications. This communication site allowed employees to share information, news, articles, and events across the organization. While separate from the ideation platform, the communications site was periodically used to create awareness of ideas on the ideation platform.

4.2.3.3 The Crowd: Employees

During the initial rollout, interviewees reported approximately half of the business unit’s 11,000 employees had participated. After rollout to the entire organization, it was estimated that approximately 40,000 individuals across the organization had participated. While any employee at any level could contribute to the ideation platform, the majority of users were described as engineers and technically skilled employees.
4.2.3.4 Tasks: Submit, Collaborate, and Promote New Ideas

The initiative included both open continuous ideation on any topic, as well as time-bound challenges to address specific problems. With open continuous ideation, there were no restrictions on the types of ideas that could be submitted. Ideas could include improvements to current offerings, application of existing technologies to new markets, or ideas for new product offerings. As discussed, ideas were continuously reviewed and evaluated by the ideation team, with the most promising ideas receiving funding to advance the idea to a more formalized stage. Time-bound challenges were used to generate ideas and solutions for specific problems. These challenges covered a variety of different topics and ranged in length from one week to 30 days. AdvanceTech ran approximately 20 such challenges each year. At the end of the specified time period, a dedicated team of judges would evaluate ideas, and the best ideas would receive funding.

For both open continuous ideation and time-bound challenges, employees could: 1) post new ideas, 2) comment on others’ ideas, 3) provide suggestions to advance ideas, 4) rate ideas on a one to five point scale, 5) assign keywords to ideas, and 7) promote ideas to others. All input was identifiable by employee name (i.e., there were no anonymous submissions). In addition to providing input, participants could search for ideas related to specific projects, challenges, or domains. Furthermore, user profiles allowed participants to specify areas of interest and describe their specific skills and expertise. Alerts were automatically set to users via email when new ideas or comments were posted related to specified area of interest or expertise. Profiles were also searchable allowing users to locate employees who shared similar interests or who had specific skills that could be used to advance ideas. Finally, integrated messaging allowed users to send messages directly to each other to request help in solving a problem or to alert others to ideas they might want to follow or fund.
4.2.3.5 Success Metrics: Participation and Quantity

The VP/CTO spearheading the initiative purposefully avoided attaching traditional return on investment (ROI) measures to the initiative, commenting that such an approach would result in “ending up in bean counters’ hell.” As such, success was not tied to quantifiable economic measures. Interviewees did, however, report three informal success metrics. First was increasing the number of employees participating in the ideation process with the goal of having 20 to 30 percent of the workforce participating on a monthly basis. Second was the objective of increasing the quantity and quality of ideas generated. To gauge the number of ideas generated, the ideation team tracked the number of ideas as well as their progress through the ideation process. Third was increasing cross-departmental collaboration. To gauge collaboration the ideation team monitored the number of connections they were able to facilitate.

4.2.4 Impacts

Analysis revealed six key impacts of the ideation initiative on AdvanceTech’s innovation processes: 1) the creation of a more inclusive and transparent ideation process, 2) an increase in output and efficiency related to ideation, 3) a lowering of the bar to entry for all employees, 4) the flattening of the organization, 5) the identification of hidden creative talent within the organization, and 6) a new appreciation for the value of creative thinkers.

4.2.4.1 Creating a More Inclusive and Transparent Process: Opening up the Ideation Process

Four interviewees commented that the ideation platform created a more transparent and open innovation process. The philosophy behind the ideation platform was one of sharing and discovery, therefore setting the expectation that ideas were no longer owned by specific groups or
individuals. With the centralized ideation platform, ideas were now seen by more than just the manager or executive requesting help. One interviewee reported that over 300 people could “read through” and “be involved” in an idea. Furthermore, employees could now more easily share ideas with others outside their immediate supervisor. Two interviewees reported that such cross-organizational collaboration helped to increase opportunities to find funding. One interviewee commented that such collaboration would never have taken place before the implementation of the ideation platform. Before the implementation of the ideation platform, if an idea was not selected for funding, then employees did not have the ability to solicit funding outside their current group. With the ideation platform, employees could now more easily promote and advocate for their ideas. While ideas were still vetted and approved by upper management, the initiative was described as “fundamentally chang[ing] the way ideas [were] created and matured.” The process of submitting and maturing ideas was reported to be more collaborative, transparent, and easier resulting in a “better place to get your ideas known.”

According to the R&D group Manager, the ability to connect with others and promote ideas had fundamentally changed how he conducted business. Specifically, this manager leveraged both the ideation platform and the new communications Intranet to search for information that would help his team promote their ideas to others and acquire funding. Prior to the implementation of these two online platforms, this manager reported that finding helpful information was much more challenging.

While interviewees reported that the ideation portal facilitated a more open and transparent process, there was some concern that there was limited collaboration between technical (i.e., engineers) and non-technical (e.g., business development or human resources) employees. As discussed, the majority of participants were described as highly technical engineers from across a variety of departments. Because engineers represented the majority of users, there were concerns that ideas submitted by less technically minded individuals working in
non-engineering capacities would not receive the attention needed to move them forward. In short, interviewees were concerned that technical engineers’ input would drown out non-technical engineers’ ideas.

4.2.4.2 Increasing Output and Efficiency: More Ideas, Better Ideas, Faster Movement to Market

The ability to open up the ideation process and connect with experts across multiple domains was credited with AdvanceTech’s ability to increase output and improve efficiency related to ideation. Specifically, interviewees reported an increase in AdvanceTech’s ability to: 1) generate more ideas, 2) identify better ideas, 3) bring ideas to market faster, and 4) reduce duplicate ideas.

All five interviewees reported that AdvanceTech was now able to generate a larger number of ideas within the same time period than they had with previous methods. In fact, one interviewee reported a 30-fold increase in the number of ideas generated. Moreover, executives who were participating in the initiative, were described as being “impressed with the number of ideas” they received in response to specific challenges. This increase in volume meant AdvanceTech had grown its ideation pipeline significantly.

In addition to increasing the number of ideas, all interviewees reported that the initiative increased the quality of ideas. Specifically, the centralized ideation platform facilitated increased collaboration and connection across departments. As such, AdvanceTech was able to apply a more diverse set of skills and expertise to the advancement of early stage ideas. As one interviewee put it, cross-organizational teams were now able to “bring technology and knowledge to challenges that would have otherwise never been discovered.” Interviewees reported seeing the application of existing products and technologies to new contexts, as well as the application of
solutions from different domains to problems within different fields. According to another interviewee, this resulted in “bigger leaps” in innovation than previously observed. In fact, a number of ideas from the ideation platform resulted in patent applications and additional sales in new markets.

Interestingly, for some, the open nature of the ideation platform was not viewed as positive. Specifically, for those in R&D functions, opening up of the ideation process now meant that everyone could see their ideas. The R&D Manager who was interviewed reported that should more ideas be funded from outside traditional R&D groups than from within, this might have a negative impact on R&D employees’ reputations. Because having a reputation as innovative researchers was important to this group, this manager commented that he encouraged his team to “try to push the envelope on things that we’re proposing.” As such, the open nature of the platform may also have had an impact of the quality of ideas generated by R&D staff.

Even though there were significantly more ideas to evaluate, two interviewees reported that ideas were moving more quickly through the evaluation and development process. The ability to more easily collaborate with others was seen as key to quickly identifying useful ideas and increasing the quality of ideas moving through the pipeline. According to one interviewee, “We can get a high number of things going…and can disposition them quickly.” The centralized location for ideas meant that individuals outside the idea generator’s group could more easily share experiences and lessons learned. Such collaboration facilitated discussions that helped to advance ideas in the right direction more quickly. Collaboration and knowledge sharing across the organization also resulted in the ability to identify similar ideas, and thus reduce duplication of efforts across departments.
4.2.4.3 Lowering the Bar to Entry: Removing Onerous Processes

The centralized ideation platform was also cited as helping to reduce onerous processes related to soliciting ideas from others and submitting ideas for consideration. Prior to implementation of the ideation platform, managers wanting to engage the larger employee base in problem solving or ideation either had to emailed requests to employees or set up an online space to collect ideas. While corporate-wide emails were relatively easy to send, the process of managing ideas was reported to be time-consuming and inefficient. Online sites were somewhat more collaborative, but creating these sites required both technical resources and time. As such, only those managers with technical resources were able to benefit from these sites. Additionally, online sites were reported to be difficult to use. With the new organization wide ideation platform, interviewees reported that the ideation platform made it significantly easier to solicit ideas from employees and manage the process.

Three interviewees reported that prior to the implementation of the ideation platform, the process of submitting ideas for funding required a significant amount of time and business knowledge. Specifically, before being considered, ideas had to be turned into formal business presentations. Formalized plans required significant time and business knowledge making it difficult for those not currently in R&D groups to advocate for ideas. Additionally, if an employee proposed an early stage idea to their managers and failed to follow through with a formalized plan, then this often reflected negatively on the employee. As one interviewee noted, “It was not the most inviting process for folks because you [had] to put together a seven chart package. It was a little intimidating especially if you’ve never engaged with the process before.” As such, prior to the implementation of the ideation platform, few ideas were submitted for funding from individuals outside dedicated R&D groups. With the implementation of the ideation
platform, employees could now submit an idea in any stage of development and more easily obtain help from others experienced in advancing ideas to a more formal stage.

**4.2.4.4 Giving People a Voice: Flattening the Organization**

All interviewees commented that the ideation platform resulted in a flattening of the organization. The ideation platform allowed non-managerial employees to more easily communicate directly with managers and executives opening up lines of communications and changing the flow of information. Additionally, managers and executives could reach across organizational boundaries to provide feedback or support for ideas generated outside their groups. One interviewee reported, that the initiative gave people a voice in an organization where many often felt they were not being heard. The ability to have a dialogue with leaders and to communicate with potential supporters directly through the platform was described as “empowering,” “amazing,” and an “inherent reward for the idea person.” One interviewee reported that opening up the process across the business “help[ed] us feel like a closer knit business especially given how big we are.”

**4.2.4.5 Finding Creative and Innovative Employees: Identifying Hidden Talent**

The flattening of the organization also resulted in the ability to more quickly and easily identify creative and innovative employees. Because AdvanceTech was a highly hierarchical organization employing over 120,000 people in thousands of locations across the world, interviewees reported that it was often difficult for creative and innovative people to be identified in the early stages of their careers. Two interviewees reported that the ideation platform resulted in the identification of creative employees who would not have been noticed before. According to
one interviewee, “we’ve found this whole group of people, hundreds and hundreds, maybe
thousands of folks that were really more on the creative side.” Because these individuals now had
exposure to upper management across multiple departments, there was more opportunity to
identify and leverage these individuals to add value to the company. For example, one
interviewee reported hearing an account in which a talented and creative employee who was close
to coming to the end of her contract was discovered because of the platform. According to this
interviewee, this individual posted an idea to the ideation platform that would have likely been
dismissed by management had she not had a more public forum in which to share her idea. With
the platform in place, this individual now had a voice and the ability to connect directly with
others outside her department without first obtaining approval from her direct supervisor. This
resulted in the talented employee obtaining funding from another source and continuing to be an
asset to AdvanceTech.

4.2.4.6 Shifting the Culture: Building a Culture That Values Creativity

While changing the culture of a company, especially one as large as AdvanceTech, is not
done quickly, three interviewees reported a number of signals that suggest a new and growing
appreciation for the value that creative thinkers bring to the innovation process. Specifically,
AdvanceTech’s culture was described as one that valued engineers who were perfectionists in
everything they did. According to one interviewee, engineers who might be more “disheveled in
their thinking” but more “creative” were seen as less valuable. Additionally, one interviewee
reported that AdvanceTech’s reward structure did not encourage failure or risk taking. As such,
more creative engineers were hesitant to put forth novel ideas that were in the early stages of
conceptualization. However, because the ideation platform encouraged ideas at any stage of
maturity, the talents of these creative engineers were beginning to be seen across the organization.
Additionally, because the ideation platform was seen as a place to vet and advance early stage ideas, there was less of an emphasis on success or failure. This created a safe place for individuals who were less focused on perfection and more focused on creativity to promote their ideas.

One interviewee reported being pleasantly surprised at the number of “blue sky” ideas that were being generated. This interviewee also reported seeing newfound acceptance of and appreciation for novel ideas by both management and employees. Prior to the open ideation platform, such ideas would often have been quickly dismissed. With the ideation platform, this interviewee felt that people were now asking questions “to help develop ideas as opposed to defeat ideas.” This resulted in a new advocacy and support for ideas at every stage of development. In short, this interviewee felt that individuals were beginning to be recognized for their creative endeavors even when such endeavors did not result in funded projects. Finally, another interviewee commented that she believed customers were beginning to perceive the company as more “innovative.” This was seen as especially important for such a large and established company.

4.2.5 Facilitators

Analysis of interviews revealed four facilitators to adoption and usage: 1) leveraging general business funds to support the initiative, 2) providing public recognition of participants, 3) reducing accounting requirements for tracking employees’ time, and 4) providing personal encouragement and mandates to encourage participation.
4.2.5.1 Leveraging General Business Funds: Avoiding Traditional Measures of Success

The VP/CTO spearheading the initiative reported that linking ROI measures to the ideation platform would be both inappropriate and impossible to measure. As such, he positioned the initiative as an integral part of employees’ daily activities. Positioning the initiative as part of daily activities allowed the VP/CTO to use general business funds to license the platform and fund a dedicated ideation team. Financing the initiative out of a general business fund was instrumental in ensuring resources were available, as well as allowing the ideation team sufficient time to refine processes, build an active ideation community, and demonstrate value to management. Furthermore, because the initiative was not tied to traditional ROI measures, tangible economic returns were not required to retain funding, thus allowing the team time to focus on the tangible goals of the initiative.

4.2.5.2 Active Support from Leadership: Evangelizing the Value of Open Ideation

Two interviewees reported that the VP/CTO played a key role in generating awareness by publically recognizing employees who had contributed novel ideas. This included inviting employees to executive meetings to share ideas, highlighting employees and their ideas in organization-wide emails, and occasionally awarding monetary bonuses. At the end of each year, the VP/CTO also highlighted four or five of the best ideas and then asked employees to vote on the one they believed had had the most impact. The employee responsible for the winning idea was publicly recognized for his or her contribution. This employee was also recruited to promote the value of the platform to others in the organization. By focusing on the quality and novelty of ideas being generated, two interviewees reported that these activities helped to generate awareness of the potential benefits of the platform. Furthermore, they helped generate awareness
that any employee, even one outside R&D, could contribute valuable ideas. Finally, such activities were an outward sign to other executives and employees across the organization that a high-level executive actively supported the initiative.

4.2.5.3 Reducing Accounting Requirements: Ideation as Part of Employees’ Everyday Activities

Three interviewees reported that eliminating the need for employees to account for the time they spent on the ideation platform was critical to the adoption and use of the platform. Specifically, for auditing purposes, all employees were required to allocate project time spent at work to individual budget categories (i.e., a project number was required to account for employee’s time). Due to recent events within the industry with businesses mischarging customers, employees were keenly aware of the need to accurately and properly record their time. Without clear instructions on how to allocate time spent on the platform, employees could not and would not participate. Being aware of this requirement, the VP/CTO spearheading the initiative reported being concerned that requiring employees to input time spent on ideation would “absolutely kill” the initiative. Because she had positioned the use of the ideation platform as part of the daily workflow, she was able to remove the requirement to specifically track and report time spent on the platform. Instead, time spent could be combined with other daily tasks such as checking email.

4.2.5.4 Personal Encouragement and Mandates: Changing Processes to Increase Participation

While resolving accounting issues removed a key barrier to participation, it did not guarantee participation. Four interviewees commented that the VP/CTO also made sure that practices were put in place to increase participation. Specifically, the VP/CTO tasked members of
the ideation team to personally meet one-on-one with key executives. During these meetings, the ideation team member provided personal tours of the platform including helping executives create an account and sign up for alerts. Moreover, team members let executives know their input was valued regardless of whether they added ideas, commented on others, or just followed the progress of ideas in the pipeline. This personal outreach helped to proactively address executives’ concerns and illustrated the value that such initiatives could bring to the organization. It was also an outward show of support by the VP/CTO helping to set expectations regarding participation.

In additional, to personal outreach to executives, to ensure participation of R&D staff, the VP/CTO required ideas be submitted to the ideation platform before they would be considered for funding. Prior to the ideation platform, employees and their managers would compete for funds via periodic calls for proposals. Ideas were submitted to the management team in charge of funds through a formal proposal process. After implementation of the platform, however, all ideas were required to be submitted through the ideation platform before they would be considered for funding. By linking funding to the use of the ideation platform, this policy was particularly powerful in ensuring the participation of individuals within innovation groups who were described as hesitate to share ideas on open platforms. This proactive approach to generating awareness and encouraging/mandating participation was reported by interviewees to be instrumental in the acceptance and use of the platform.

4.2.6 Challenges

Analysis of interviews revealed a number of challenges related to use and adoption of the ideation platform, specifically: 1) protecting sensitive information, 2) working within current accounting practices, 3) using an unstructured and new ideation process, 4) demonstrating value
to executives, 5) opening up siloed workflows, and 6) managing day-to-day use of the platform. Each of these challenges is detailed next.

4.2.6.1 Protecting Sensitive Information: Increasing Technical Challenges

According to four interviewees, a significant challenge in opening up the innovation process was the potential of releasing classified information. Because of the sensitive nature of AdvanceTech’s work, the organization was required to comply with export control regulations and client work disclosure agreements. This presented two unique challenges. First, sensitive information could not be made available or accessible outside AdvanceTech’s corporate facilities. This meant only those employees located within an AdvanceTech facility could access the ideation platform. Second, due to import/export regulations, employees located overseas could not access the ideation platform even when at an AdvanceTech facility. This meant that employees working in certain foreign countries, or those traveling and relying on mobile devices, would be precluded from participating.

This issue was further complicated by the fact that even within AdvanceTech’s facilities, different business units employed individuals with different levels of clearance. This required additional technical features to be integrated into the platform. Specifically, to ensure protection of sensitive or classified information, the platform needed to be configured to permit or deny access to certain information based on geographical location, device, and business unit. Working within these restrictions limited the number of employees who could participate, thereby creating concerns for the portal team that AdvanceTech would not be able to adequately harness the knowledge and expertise distributed across the organization.
4.2.6.2 Working Within Current Accounting Practices: Tracking Employee Time and Defining Ownership

Interviewees reported two key issues with in-house accounting practices that created significant barriers to implementation and adoption. First, as discussed, the VP/CTO’s ability to remove the need to account for specific time spent on the ideation portal was a key facilitator to adoption and use. However, this was a significant barrier to adoption and use during the early stages of implementation. In fact, two interviewees reported that had the VP/CTO not been able to address this issue, use of the ideation platform would be minimal. Second, two interviewees reported challenges related to accounting for the cost of the initiative. Specifically, there were significant questions regarding which business unit would “own” the initiative. Ownership was a critical factor as it determined who was financial responsibility for software licensing, hosting, and personnel. Complicating the issue of ownership was the fact that the ideation platform was designed for use across business units. This created additional issues in determining if, and how, other business units would be billed for usage of the platform. Currently different business units incurred different costs for infrastructure based on their overall usage. This meant that individual units paid a different rate for services, with some units paying significantly less for services than others. While the same model could be used for the ideation platform, the VP/CTO reported concerns with balancing the need to offset costs with creating a potential disincentive for use by other business units.

4.2.6.3 Moving to a More Unstructured Process: Resistance From a Precision and Performance Focused Culture

According to three interviewees, moving to an open ideation platform that encouraged submission and collaboration on any idea, no matter what stage of development, created a number
of challenges for AdvanceTech’s precision focused culture. AdvanceTech’s R&D staff was described by interviewees as engineers who valued and strived for precision in everything they did. These perfectionist engineers tended to adhere to defined processes and were resistant to change. In addition to valuing precision, AdvanceTech’s culture also valued performance excellence. One interviewee reported that non-engineers working outside R&D groups were expected to execute to schedule, delivering “what was asked for…nothing more…nothing less.” That is, employees were rewarded for getting the job done.

This focus on precision and performance was also valued and rewarded by AdvanceTech’s customers. Specifically, with concerns over shrinking budgets due to the recent economic downturn, one interviewee reported that customers were primarily focused on affordability and not on breakthrough innovation. Because both AdvanceTech and its customers valued performance excellence and rewarded precision and perfection on the job, AdvanceTech had built a reputation for delivering precisely what the customer requested. This resulted in a number of challenges with regard to ideation. Specifically, non-engineers who were tasked with delivering products to customers were hesitant to suggest ideas that were not directly tied to stated customer needs or current offerings. Moreover, engineers who were encouraged to focus on precision were hesitant to put forth ideas in early stages of conceptualization. In fact, many within AdvanceTech were uncomfortable with the ideation platform’s relatively unstructured and imprecise approach to ideation. In fact, two interviewees reported that time-bound challenges focusing on specific well-defined problems were designed to address this discomfort by providing engineers with more structured problems to address. As one interviewee described it, moving to a less structured process for presenting and advancing ideas required a “leap of faith” by both engineers and non-engineers and a break from current cultural values.
4.2.6.4 Demonstrating Value to Executives: Short-Term Versus Long-Term Perspectives

Four interviewees reported challenges with motivating tactically focused executives to participate in the initiative. In fact, the VP/CTO reported being disappointed in the relatively limited number of executives outside R&D groups who were actively involved. Even though all executives had received a personal request to participate as well as personal training on how to use the platform, many had not participated in or reviewed ideas. The VP/CTO reported that biggest resistance came from executives who were described as “tactical” versus “strategic,” spending their days “fighting fires” and “managing crises.” Another interviewee reported that many executives tended to focus on “last quarter’s results” versus on innovation that might be “five or ten years out.” As such, despite the VP/CTO’s attempts to highlight the value of novel ideas, some executives did not see the value in spending time on activities that would not produce immediate results. As one interviewee put it, “If you’re always fighting fires, you don’t ever have the time to actually start doing the strategic things that matter to your business.” Getting executives who were focused on identifying immediate solutions to current problems to participate in ideation for products and services addressing longer-term needs was a significant challenge for the VP/CTO and her ideation team.

4.2.6.5 Opening up Siloed Processes: Encouraging Collaboration Instead of Competition

As a large company, AdvanceTech had many different operating divisions focusing on different aspects of the business. Moreover, many of these divisions operated as profit centers. According to three interviewees, individuals within different business units were often protective of ideas and potential IP that was generated within their business unit. This created a focus on the individual business unit instead of on AdvanceTech as a whole. One interviewee remarked that
this focus resulted in “a culture of not sharing.” Employees tended to remain isolated within their own business units, typically not working with individuals outside their immediate group.

Additionally, the Manager of an R&D group within the business unit reported that individuals within his group were hesitant to post ideas to a company-wide site for fear that their ideas would be stolen or claimed by others. For those in R&D groups, ownership of ideas was important. As such, they tended to hold back ideas and advice so as to protect their reputation and status as innovative individuals. Furthermore, collaboration with others meant ideas were often advanced by inputs from multiple individuals. This made it difficult to identify who was really responsible for the idea and, therefore, who would receive credit. As such, according to the R&D Manager, researchers on his team saw the ideation platform as a distraction, participating only because posting ideas to the platform was required to receive funding.

4.2.6.6 Managing Day-to-Day Usage: Unruly Behavior, Increased Volume, and Ensuring Transparency

Four interviews reported a number of challenges related to the day-to-day management of the ideation platform. Two participants reported initial concerns by individuals outside the group of the potential for “unruly behavior” by participants. To ensure such behavior would be discouraged, the Legal Department required employees’ names to be visible for all submissions. Interestingly, across all interviewees, only one individual reported observing inappropriate behavior. A second interviewee reported a number of off-topic post that were more appropriate for the company-wide communications site but no inappropriate or unruly behavior. When such posts were identified, ideation portal team members would remove the post, notify the employee, and clarify that such topics were more appropriate for the communications Intranet site.
While inappropriate posts were uncommon, two interviewees within the ideation team did express concern over managing the volume of ideas generated. Because the ideation platform has significantly increased the number of ideas generated, portal team members were concerned with the growing time required to sort through and identify valuable ideas. Furthermore, because they wanted to encourage participation and create an open process, there were also concerns over finding the time to provide feedback to idea contributors regarding the status of their submissions. Providing feedback to participations was particularly important to the team, as current funding processes were not viewed as transparent and open. While the ideation team attempted to provide specific feedback on why ideas were not funded, this required significant time and resources especially when challenges generated upwards of 300 ideas.

4.2.7 Summary of Case

With regard to the current innovation process, the ideation platform impacted AdvanceTech’s innovation process in three key ways. First, it reduced barriers to entry especially related to sharing novel or early stage ideas. Second, it facilitated cross-departmental collaboration and knowledge sharing. Third, it opened up new opportunities for individuals outside R&D groups to acquire funding for their ideas. In short, the ideation initiative benefited the organization through its ability to nurture and advance early stage ideas. Once ideas moved past initial stages, the process of formalizing ideas remained relatively unchanged. While the ideation platform resulted in more ideas, better ideas, and faster movement through the pipeline, interviewees reported that the majority of ideas were of an incremental nature. It is unclear whether this is a function of the types of challenges being posted, a culture that values precision, or more novel ideas being unrecognized.
4.3 Case Study C: Leveraging Front-Line Field Employees to Improve Services

4.3.1 Overview of IAA: Governmental Agency

IAA is a U.S. governmental agency responsible for public safety. IAA employs over 50,000 individuals with approximately 90% of its workforce interacting with the public on a daily basis. Key to IAA’s mission is ensuring excellence in service delivery and a safe and productive workplace. Like many governmental agencies, IAA is highly structured with multiple divisions and underlying supporting units. Executive management and support staff are located in a central headquarters office, while field employees are geographically distributed across hundreds of field sites. Due to a strong military influence and with approximately one-third of its workforce having served in the military, IAA’s culture is one that adheres strictly to defined processes requiring approval by management before implementing new ideas or policies. Information typically flows upwards through the chain of command, with decisions flowing back down to all employees.

The focus of the case study was an employee-wide idea portal initiated by the head of IAA (i.e., the Director). The portal was intended to solicit innovative ideas on how to improve services to the public, as well as how to improve the workplace environment. At the time of interviews, the idea portal had been in place for four years and was available to all IAA employees. The initiative was supported and managed by a dedicated Program Director and three full-time staff members.

4.3.2 Data Collection

A total of four IAA employees were interviewed in face-to-face sessions. Two interviews were conducted with portal team members including the Program Director currently in charge of
the idea portal and an outreach manager responsible for monitoring daily activity on the portal. Two interviews were conducted with individuals outside the portal team and included a manager and a program analyst both responsible for managing the ideation process for their specific division. One follow-up interview was also conducted with the Program Director approximately nine months after initial interviews. Finally, in addition to interviews, public news stories featuring the portal, videos, and information on IAA’s web site regarding the initiative were also obtained.

4.3.3 The Initiative

4.3.3.1 Goals: Improving Services to the Public

Analysis revealed three key goals of the initiative. First, the primary goal was to share ideas and information across the organization to help IAA execute its mission. This included ideas for improving 1) the delivery of services to the public, 2) the working conditions of employees, and 3) current organizational processes and procedures. Because the majority of IAA employees worked with the public on a daily basis, the idea portal was seen as a way to better assess delivery of services and current working conditions. Second, creating a centralized portal for employees to submit ideas and share information was seen as a way to give employees a voice, provide better access to leadership, and improve the flow of information between the field to headquarters related to IAA’s mission. Third, the portal was seen as a way to facilitate collaboration and sharing across divisions and among geographically dispersed field sites.
4.3.3.2 Implementation: A Focus on Idea Generation, Evaluation, Then Implementation

The portal was launched in 2007 within six weeks of the idea being proposed by the Director of the agency. While off-the-shelf platforms were evaluated, none were identified that met IAA’s needs. As such, the decision was made to build the portal with internal resources. Because of the nature of IAA’s mission, ensuring that sensitive information could not be accessed outside IAA’s secure network was a key concern. Therefore, access to the idea portal was permitted only through an IAA-secured workstation. Employees located at headquarters could access the portal via their IAA desktop computers. Employees in the field could access the portal via a secure IAA employee workstation available on site. All employees accessed the idea portal through IAA’s Intranet. Because access to the Intranet required authentication, all submissions were automatically linked to the employee’s name (i.e., no anonymous submissions were permitted).

At launch, a full-time Program Director and one staff manager were assigned to manage the implementation and on-going use of the portal. During the initial phase, the portal team focused on generating awareness of the portal and increasing the number of ideas generated. Users could submit ideas, comment on ideas, and vote on ideas (i.e., assign one to five light bulbs). As ideas were submitted, users automatically received an email thanking them for their contribution. While ideas were not pre-screened (i.e., all submissions appeared without approval), rules were put in place regarding the posting of inappropriate or sensitive information. Inappropriate information was defined as obscene language, personal attacks, or use of the portal to broadcast personal information (e.g., selling electronics). Sensitive information, such as information regarding safety procedures or policies, was also prohibited. In the event that inappropriate or sensitive information was posted, any user could flag information, alerting portal team members to possible violations of policy. Portal team members would review flagged posts.
and remove inappropriate ones as necessary. The employee posting the information was sent a warning and reminded of the rules regarding sensitive or inappropriate information. Any employee receiving three warnings was prohibited from using the portal for two-months. While infrequent, one interviewee did report instances of employees being prohibited from participating.

While anyone could flag information, only portal team members were permitted to remove information or deny access to employees. This was seen as critical in ensuring the free flow of information from the field to headquarters. Moreover, it prohibited managers or executives from removing posts that might expose abusive or inappropriate behavior by others (e.g., requiring employees to work overtime but not paying them to do so).

Portal team members were also responsible for reviewing ideas on a daily basis, commenting on ideas, and working directly with users to advance vague or ill-formed ideas. Portal team members, however, had no authority to approve or implement ideas. For an idea to advance to the next stage, team members would share ideas with managers in other departments who had the authority to approve ideas for their division.

Over time, as the number of ideas grew, the portal team was expanded to include two additional staff. Focus also shifted from encouraging idea generation to facilitating the identification and evaluation of ideas. To facilitate the review process, features were added allowing that ranked ideas and allowed users to categorize ideas. Specifically, ideas were automatically ranked based on the number of comments and votes they received. This allowed reviewers to more quickly identify the most popular and active ideas. The portal team also created 17 predefined categories (e.g., emergency preparedness) to help users organize and filter ideas based on division responsibilities. Users could tag any idea with up to three predefined categories. Additional features were added allowing users to email an idea to a friend, mark an idea as a favorite, set up an email alert for specific ideas, search for and filter ideas. User profiles were also
expanded to include more information on personal interests and skills, and to provide statistics on idea submissions (i.e., number of ideas submitted, number of comments received, status of ideas).

As the time of interviews, portal team members were focused on facilitating the implementation of ideas. While portal team members had extensive experience in the field and with headquarter processes, many ideas often required deep subject matter expertise and collaboration across divisions. To provide such subject matter expertise and facilitate coordination across divisions, “liaisons” from each division were assigned to assist in the review and evaluation process. Each liaison reviewed ideas based on his or her division’s established procedures and workflow. Liaisons were responsible for working with others to evaluate the potential impact of ideas, presenting ideas to management, and managing the continued approval process up through the chain of command. To facilitate cross-division collaboration, a review board consisting of all liaisons and a representative from the portal team met monthly to discussed the merit of ideas, provide updates on the status of ideas under review, and obtain input from other liaisons on potential impacts and issues. Occasionally, during these meetings portal team members would advocate for ideas they felt were valuable even if they had not been highly ranked by the system. Liaisons, however, made final decisions on which ideas moved forward and which did not.

When ideas were approved by liaisons, portal team members would update the status of the idea in the system to “under review.” This alerted the employee that their idea had moved to a formalize approval process. When ideas were not selected, portal team members would also update the system, adding information on why the idea was not being implemented. While not all ideas made it to implementation, for those that did, the employee submitting the idea was often recognized for his or her contribution. Employee recognition varied but included certificates signed by the Director of IAA, public recognition by supervisors at the employee’s workplace,
agency-wide email announcements, and occasionally an all expenses paid trip to headquarters to participate in a recognition ceremony.

4.3.3.3 The Crowd: Employees in the Field

At launch, the idea portal was accessible by all employees within IAA. This included employees in the field, as well as those located at headquarters. At the time of interviews, approximately 12,000 to 15,000 of IAA’s 50,000 employees were accessing the system on a monthly basis. New users (i.e., those who had not signed on before) ranged from 1,500 to 4,000 each month. While both field and headquarter employees could access the portal, interviewees reported roughly ninety-nine percent of the ideas that were generated came from the field. This is not surprising, as approximately 90 percent of IAA employees are located in the field.

4.3.3.4 Tasks: Ideation to Improve Processes, Workplace Environment, and Services to the Public

Employees were asked to submit ideas that could be used to improve service to the public, improve the workplace environment, and improve processes. Ideas could be submitted on an on-going basis from any secure IAA workstation. Upon submission, users were asked to select up to three pre-defined categories that best represented the context or domain of the idea. In addition to on-going ideation, when a division wanted employees’ input on a specific problem or question, a specific “challenge” would be posted. While ideas could be submitted for open ideation at anytime, challenges varied in length from four weeks to six months and submission was closed after the time period has elapsed. In addition to submitting ideas, employees were asked to help advance and evaluate ideas. This included adding comments to ideas, voting on
ideas, emailing ideas to a friend, and adding ideas to their favorites list. Additionally, users could subscribe to other users’ submissions to receive email notification of new entries.

4.3.3.5 Success Metrics: Gaining Support and Participation

As discussed, liaisons were responsible for reviewing and evaluating ideas pertaining to their division’s key responsibilities, and then selecting potential valuable ideas to be reviewed by management. Both liaisons that were interviewed reported having no formalized metrics attached to evaluating the success of the initiative. On the other hand, the two portal team members who were interviewed, reported three defined measures of success. First, they assessed the total number of users accessing the system, including tracking the number of repeat users versus new users. Second, they monitored the total number of ideas submitted, with the objective of increasing numbers over time. Third, they assessed whether highly ranked ideas had been addressed by liaisons. To achieve this, they first tracked the total number of ideas implemented within each pre-defined category. Then, they compared which of the high-ranking ideas received comments from liaisons and which were ultimately implemented.

4.3.4 Impacts

Interviews revealed three key impacts. First was an improvement in communications between field personnel and headquarters. Second was gaining a better understanding of issues employees were encountering in the field. Third was an improvement in employee morale.
**4.3.4.1 Improving Communications: Facilitating the Flow of Information Between the Field and Headquarters**

Three interviewees reported that the portal had positively impacted the flow and speed of information moving between the field and headquarters. Two interviewees reported that the idea portal had become the key channel for communications across the organization. Both felt that the idea portal had helped to facilitate two-way communication between employees and management. While there were currently communications channels in place, such as daily briefs and an Intranet site, one interviewee reported that these channels were used primarily to push information down from the top and not as a vehicle for open communications. As such, the ideation portal became the central location for flow of information back and forth between headquarters and the field.

One interviewee commented that the portal had been helpful in clearing up misunderstandings and controlling the spread of false information. Because management was better able to monitor employee’s concerns and complaints, they were able to more quickly identify potential issues before escalating out of control. Additionally, this interviewee commented that because portal team members were constantly monitoring portal submissions, they were able to take negative submissions and reframe them in a more positive light. This often resulted in a more positive discussion around potentially sensitive issues.

Additionally, because of the open nature of the portal, one interviewee reported that it had helped to expose inappropriate behavior in the workplace. For example, one post from a field employee stated that he had been asked to work overtime but had not been paid accordingly. Because the ideation team monitored all posts, the issue was quickly escalated to management. The ideation team member interviewed referred to such posts as “whistle blower” posts and indicated that they accounted for approximately five percent of total submissions. Interestingly, this same portal team member reported receiving emails from managers implicated in such posts asking that she remove them from the site. Furthermore, some managers would attempt to
discredit the employee on the portal so as not to potentially avoid coming under investigation. However, because the portal team had a written policy staging that only sensitive information pertaining to its mission could be removed, all such posts remained on the site until a determination could be made as to whether the accusation was truthful or not. This helped to facilitate communications between the field and headquarters and ensure field employees had a venue for addressing grievances.

While these posts facilitated communications, they also changed the nature of the ideation portal from one that was primarily designed to solicit ideas to advance the mission of IAA to one that was acting as a primary means of communications and complaints. In fact, because a large number of posts were questions or complaints from the field, one interviewee felt that a separate communications tool was needed to address broader issues within IAA, as it would help to keep submissions on the portal relevant to improving services. Additionally, the amount of questions and complaints that were submitted required considerable attention on the part of the portal team, thus reducing the time available for promoting ideas that might benefit the mission of the organization.

4.3.4.2 Gaining a Better Understanding of Issues in the Field: Faster Recognition of Potential Issues

Input on the idea portal was also reported to be useful in better understanding field-specific issues. One interviewee reported that because many individuals located at headquarters had not spent time working in the field, they were not sensitive to the pressures, issues, and impact that work conditions had on an employee’s ability to perform his or her duties. This interviewee believed that the idea portal helped to educate individuals at headquarters and raise awareness regarding field-specific issues. For example, a number of employees had suggested
that conversations between field sites would be useful in helping to identify better processes and practices. Because this post received a number of comments from others, it alerted headquarters to the need to facilitate communications between field sites with similar characteristics (e.g., size). Additionally, another interviewee reported by monitoring the idea portal, her group could more quickly identify potential safety issues in the field that might prevent employees from doing their jobs. This was helpful for three reasons. First, it allowed the division to more proactively address potential hazards. Second, it helped to reduce the chances that an employee might become injured. Third, it allowed the division to better track how well contracted maintenance companies were maintaining IAA facilities. As such, the portal served as a bridge between headquarters and the field.

4.3.4.3 Improving Employee Morale: Feeling that Headquarters is Listening

Three interviewees reported that the idea portal had a positive impact on employee morale. In fact, a survey of IAA employees showed that 66 percent of employees felt the portal was a valuable tool. In addition, according to documentation, approximately 50 ideas were accepted each month for formal review. One interviewee reported that efforts by his department to recognize and reward employees who had contributed value ideas was key to boosting morale. Recognition included certificates, monetary bonuses, and invitations to headquarters to work one-on-one with managers implementing their ideas. Two interviewees reported that such recognition also helped to increase participation in the idea portal by giving employees a voice. Finally, a third interviewee commented that the idea portal helped to make field employees “feel that someone in headquarters is listening.”
4.3.5 Facilitators

Analysis revealed two key facilitators influencing adoption and use of the idea portal. First, the portal team included members who had extensive experience with working conditions in the field, IAA policy and regulations, and IAA processes. Second, portal team members and a number of liaisons were dedicated and passionate about giving employees their voice and following through on valuable ideas.

4.3.5.1 Portal Team Members with Institutional Knowledge: Increasing the Ability to Identify and Promote Valuable Ideas

As discussed, portal team members were responsible for reviewing ideas, monitoring comments, and working with liaisons on the overall submission and approval process. Two interviewees reported that personal experience working in the field was extremely useful in identifying valuable ideas. Additionally, because employees in the field respected this experience, they were more open to suggestions from portal members regarding modifying or revising ideas. This respect and openness was critical in allowing portal team members to work with field employees to advance ideas to a more formalized state where they would be more likely to be reviewed and promoted by liaisons.

In addition to portal team members’ field experience, one portal member had extensive knowledge of current IAA regulations, policies, acronyms, management structure, and operating procedures. This portal team member was reported to be extremely valuable in helping other team members understand the impact of ideas on the organization, clarifying unknown acronyms, identifying the appropriate people who should be included in the review process, and identifying potential roadblocks. In short, having portal team members with knowledge of both field
operations and headquarters procedures increased the likely that valuable submissions would be
recognized and the appropriate individuals would be consulted.

4.3.5.2 Passionate Individuals: Team Members and Liaisons Committed to Open Ideation

Both liaisons that were interviewed believed passionately that opening up the ideation
process and facilitating two-way communications with employees was critical to the mission of
IAA. While the idea portal was not part of their primary responsibilities, both consistently put in
extra effort to promote ideas within their divisions and reach out to other divisions to bring
attention to valuable ideas. For these liaisons, interest and passion was a function of the
individual liaison’s belief that the portal would add value to the organization, not a mandate from
his or her supervisor.

Additionally, the idea portal team members who were interviewed also shared this
passion. When other liaisons would dismiss highly ranked ideas because they felt employees were
“whining” or because there were spelling errors, one portal team member reported insisting that
the liaison bring the idea to their supervisor. That is, he insisted that the liaison look past spelling
errors, focusing instead on the number of people who believed the idea had merit, as was evident
by the number of comments and votes it received. This portal team member also personally
followed up with liaisons to ascertain the status of ideas in review. When liaisons did not respond
to multiple requests for information, he would email the liaison’s supervisor to create awareness
of the issue. In many cases, the supervisor would put pressure on the liaison to speed up the
process. Finally, when issues were seen as particularly time sensitive, this portal team member
would circumvent the established chain of command and reach out personally to the Director of
the division escalating the issue to help ensure it received the proper level of attention.
4.3.6 Challenges

Analysis revealed six key challenges to adoption and use of the idea portal, specifically: 1) the growing number of off-topic posts, 2) the poor quality of ideas submitted, 3) varying levels of support at all levels within the organization, 4) an unwillingness to collaborate across divisions, 5) onerous approval processes, and 6) issues with field employees’ access to the portal.

4.3.6.1 Off-Topic Posts: Complaints, Unconstructive Responses, and Repeat Questions

All interviewees reported issues with off-topic posts. Interviewees reported that responding to off-topics submissions required considerable time, thus distracting portal team members and liaisons from reviewing and processing ideas that could advance IAA’s mission. Specifically, two interviewees reported frustration over posts that were not ideas, but were instead complaints, suggestions, or questions related to employment contracts (e.g., salary and retirement). One interviewee reported a number of “rants” on the site regarding current policies or procedures. Because these submissions often had multiple comments and were of concern to many field employees, they often received high rankings in the system. This created a sense of urgency that, according to interviewees, demanded a response from headquarters. In addition, two interviewees reported similar questions were often posted multiple times. Because answers had already been provided, interviewees reported that responding to the same questions over and over was an inefficient use of their time. To help reduce repeat posts, questions that were deemed similar to previous questions were often combined into one post. Interviewees reported, however, that this approach lead to concerns by some employees that their questions were not being given the proper attention.
4.3.6.2 Poor Quality Ideas: Unstructured Ideas Lacking Actionable Suggestions

Analysis revealed that when ideas for improving services were posted, they were often ill-formed or of poor quality. Two interviewees reported frustrations over posts that were not viable ideas because they were too difficult to execute, did not adhere to IAA policies or regulations, or were outside the agency’s mission. Three interviewees reported that a majority of idea submissions raised good issues but did not include actionable suggestions for addressing the issues. That is, while employees identified potential areas for improvement, they failed to provide suggestions on how to improve them. As such, their submissions were often seen as simply complaints and not ideas that would benefit the organization at a broader level.

To help employees better present ideas, a new section of the site was created to provide employees with information on the types of ideas desired and the information to be included (i.e., a description of the idea, whom it would help, how it would help, and estimated cost). However, interviewees reported that quality issues still remained as instructions were often not followed. Because portal team members had considerable field and agency experience, they were often able to see potential value even with ill-formed ideas. As such, team members spent time working with employees to help advance ideas to a stage where they were more concrete and would be considered by liaisons. This one-on-one assistance required significant time and often occurred via other channels such as email (i.e., discussion between the team member and the employee were not public). One interviewee reported that because of limited resources, portal team members were unable to assist as many employees as needed in advancing their ideas.
4.3.6.3 Varying Levels of Support: Varied Interest and Attention at All Levels Within the Organization

While support from executive leadership had been instrumental in launching the portal, two interviewees reported that without continued support from leadership, the initiative would not be a top priority. One interviewee commented that while the Director and Deputy Director of IAA were very supportive of the initiative, support had not “filtered down through the layers of management to get the level of attention it really needed.” This resulted in varying degrees of support from Directors, mid-level management, liaisons, and other employees at headquarters.

Specifically, while the two liaisons that were interviewed were passionate about the value of the idea portal, this enthusiasm varied by division and liaison. For example, one liaison reported being asked every day by his Director about the progress of specific ideas. The other liaison, however, reported encountering significant issues regarding obtaining time and attention from her Director and supervisors. This liaison also reported that her supervisor assigned her the job of liaison because he found the job too “taxing and time consuming” and wanted to “get on to more important stuff.” Furthermore, this liaison held the opinion that upper-level managers often dismissed ideas from the field because field employees tended to have less formal education than headquarters’ employees. A third interviewee also reported having seen higher-level managers push down responsibilities for portal idea management to lower-level employees.

Two interviewees reported that differing levels of participation by directors and managers also impacted liaisons’ participation. For example, one interviewee reported that liaisons were often hesitant to bring ideas to their supervisors for fear of being admonished that the idea was not of significant importance. Two interviewees reported that liaisons often did not attend scheduled review board meetings. One of these interviewees also reported that individuals from his division assigned to monitor portal ideas had at times mocked or laughed at submissions. In short, because of the varied attention given to portal submissions by liaisons, their supervisor, and
division directors, even when employees created awareness of potential issues, liaisons were not always proactive in addressing them. Three interviewees commented that this issue could be addressed by attaching liaison responsibilities to formal employee performance reviews. However, two interviewees reported that attempts to do so had not been approved. Finally, because portal team members were unable to impact division director’s interest in the portal or individual liaison’s participation with the portal, two interviewees reported that the liaison review board had stopped meeting due to lack of participation across divisions.

4.3.6.4 Unwillingness to Collaborate: Resistance to Cross-Division Collaboration

In addition to varying interest within each division, IAA also faced challenges with cross-division collaboration; this created significant problems with implementation, as many ideas required cooperation and coordination from multiple divisions. Both liaisons interviewed reported that when help was needed from individuals within another division, they often met with resistance. One liaison commented that she was “surprised to see the lack of support from other areas” adding that she had “not found a way to successfully deal with it.” The other liaison reported multiple examples of divisions not being receptive to his suggestions. For example, when this liaison reached out to another department to promote an idea for a new piece of equipment, he was told to “stay in his own swim lane.” That is, because he did not work in the division responsible for providing equipment to the field, it was not his responsibility to make suggestions on new equipment needs. This lack of openness to ideas from outside the division significantly hindered the liaisons ability to advance potential valuable ideas that might have improved its ability to provide services to the public.
4.3.6.5 No Standardized Processes: Different Approaches from Different Divisions

As described, IAA was a highly structured organization with clearly established roles, responsibilities, and chain of command. As discussed, a key goal of the portal was to facilitate communications and collaboration across this chain of command, particularly between field employees and senior leadership. However, organizational processes were not in place to facilitate collaboration between liaisons and individuals inside and outside their specific groups. Instead, the Director of each group was responsible for putting in place processes for managing ideas. While one liaison reported active involvement from the Director of his division, the other reported challenges with getting the time and attention needed from senior leadership within her division. The latter described IAA’s culture as one requiring everybody to be involved in the decision making process “all the way up” the chain of command. Specifically, this liaison reported that during the three years she had been assigned to work on the portal, she had faced significant challenges with the decision making process. For example, before she could provide a response to an idea on the portal, her supervisor required her to receive approval from two layers of management (i.e., her immediate supervisor and her supervisor’s supervisor). Approval was required for any response regardless of whether it was a reaction to an idea, clarification of a policy, or a response to a request for more information. Additionally, if a duplicate question was posted, for which a response had already been approved, she was required to have the approved response re-approved. Moreover, this liaison reported that feedback from supervisors on her draft responses would often be delayed or overlooked. This resulted in long time periods between employees posting ideas and this liaison being able to post a response.

Obtaining two levels of approval for every comment required significant time both for her and her supervisors. This interviewee felt that the time spent obtaining approval for all responses would be better spent interacting with employees on the portal and advancing valuable
ideas. While this liaison understood that any response would be viewable by the entire IAA workforce, she felt requiring approval for all communications was “overkill.” She compared this chain of command approach to her experience in the private sector commenting that IAA’s culture was not focused on “trying to push down, delegate, and empower people.” Additionally, this liaison reported hearing similar issues within other divisions. Frustrated with the delay in obtaining feedback from her supervisors, she was finally able to integrate the review of responses into daily status meetings. While this reduced the time required to obtain approval, it did not remove the need to obtain two levels of approval for all responses.

4.3.6.6 Portal Access: Limited Equipment and Time in the Field

Access to the idea portal by field employees was also reported to be a significant challenge. IAA field employees, unlike employees at headquarters, were not assigned a secure workstation as part of their daily job responsibilities. While each field site had a workstation capable of accessing the portal, typically only one workstation was available for all employees at each location. In addition, the employee workstation was typically located in the employees’ break room and was shared by all employees at the location. As such, field employees only had access to the workstation before or after work, or on their break. Because breaks were relatively short, typically lasting 15 minutes, it was difficult for more than one employee to use the workstation. Moreover, break rooms were often located in different areas than where employees worked, requiring employees to walk long distances. Finally, logging onto the secure workstation required significant time reducing the time to post new ideas or view and comment on others’ ideas. These issues left little time for the employee to actually participate in the ideation portal. One interviewee reported that because field employees were paid hourly, there was also little incentive to arrive early or stay late in order to contribute to the portal.
4.3.7 Summary of Case

IAA’s chain of command culture and rigorous adherence to procedures created significant barriers senior leadership’s desire to open up communication to engage all employees in advancing IAA’s mission. Because employees now felt they had a way to express their concerns directly to headquarters without having to go through proper channels, questions and complaints not related to ideation were increasing. So as not to discourage participation, portal team members and liaisons spent time answering questions and addressing concerns even when not directly related to ideation and IAA’s mission. The increasing amount of complaints and questions likely played a role in diminishing the value of the portal to management. Because management was focused on the bigger picture, employee complaints were viewed as trivial and off-topic. As such, lower-level personnel were assigned to manage portal activity. Furthermore, because portal team member and liaison spent significant time on non-ideation posts, they also reduced the time available for moving potential valuable ideas forward.

4.4 Case Study D: Reaching Out to the Public for Strategic Planning

4.4.1 Overview of the Council: Volunteer Effort to Create Comprehensive Strategic Plan for Sustainability

The Council is a volunteer committee of employees acting on behalf of an institution of higher learning in a small rural U.S. town. The institution employs approximately 44,000 individuals which includes faculty and support staff. The purpose of the Council was to develop a college-wide strategic plan for sustainability. Commissioned by the leader of the college’s Sustainability Office, the goal of the Council was to create a plan that linked operations, curriculum, and administrative sustainability efforts into one coherent plan. The objective was to
facilitate a long-term focus on sustainability that included stewardship and responsible management of social, economic, and environmental ecosystems.

The focus of the case study was an initiative designed to obtain and integrate public feedback into the strategic plan. The Council leveraged both online and face-to-face channels to generate awareness about the planning process, as well as to gather input on how best to meet the plan’s goals. While it is difficult to draw definitive lines between the impacts and issues that resulted from face-to-face input channels versus online channels, this case focuses primarily on analysis of the Council’s online outreach efforts. Where appropriate, comparisons to the Council’s face-to-face outreach efforts are provided.

4.4.2 Data Collection

A total of six face-to-face interviews were held with members of the Council over a three-month period. This included interviews with the Council co-chairs, individual members responsible for writing the formal plan, managing communications, and managing the feedback process. In addition to interviews, news reports, press releases, and documentation of crowd input were also obtained.

4.4.3 The Initiative

4.4.3.1 Goals: Generating Awareness, Creating Transparency, and Garnering Buy-In

The Council felt public input should be gathered as part of the strategic planning process for three key reasons. First, the Council believed that the very nature of and ethics behind sustainability was a dedication to openness and transparency. With transparency as one of their
founding principles, the Council felt it was critical to open up the process to the public. By embracing accountability that comes with a transparent process, and providing the public with opportunities to provide feedback, the Council hoped the plan would ultimately be more actionable and defendable.

Second, opening up the process was seen as a way to educate the public about the need for sustainability and to build awareness and support for the strategic plan. Interviewees reported that the college had a reputation for being conservative and hierarchical in its approach, and as such, was not particularly open regarding its decision-making processes. One interviewee described the process of opening up comments to the public as a “radically different way” to create a more “permeable membrane.” Moreover, it would demonstrate the college’s commitment to a transparent process. Because cooperation and participation between the collegiate and local community would be critical to meeting sustainability goals, it was imperative to assess what the public was willing to do to help with this effort. That is, the Council wanted to ascertain what actionable tasks the public would recommend to reach the college’s sustainability goals.

Third, by asking the public to weigh in, the Council felt it could better gauge the community’s overall understanding and literacy with respect to sustainability. Such information would be instrumental in addressing the educational components of the plan. Public input would also be useful in gauging attitudes regarding the college’s current sustainability efforts and track record. In summary, the initiative was seen as a way to improve collaborative relationships with the community to facilitate action from and interest in future sustainability efforts.

4.4.3.2 Implementation: Working with Available Resources

During the first 18 months the Council was in session, a vision statement, a mission statement, and a working definition of sustainability was created. Key sustainability goals and
general strategies for creating and maintaining a culture of sustainability were also drafted. The Council’s vision, mission, and sustainability definition were posted on the college’s publicly accessible sustainability web site. Approximately 14 months after the information was made available on the site, news articles appeared in the local print newspaper and on the college’s online news site. Articles publicized the strategic planning process and the concurrent public discussion phase. Readers were invited to visit the web page to add their thoughts and comments regarding the Council’s proposed strategies.

During this time, visitors to the site could provide feedback via a single-field form, or they could send comments via email. Respondents had the option of identifying themselves or providing comments anonymously. All input was sent directly to the college’s Sustainability Office. A spreadsheet aggregating all public input was posted to the sustainability site and periodically forwarded to Council members. A total of 15 comments were collected during this 18 month time period, two of which were from Council members.

In the spring of the Council’s second year, a new member of the Council suggested that more could be done to integrate the public’s feedback into the plan. This individual worked with others on the Council to identify additional online channels that could be used to collect feedback and generate awareness of the initiative. Because the Council lacked both resources and time, the decision was made to focus efforts on the college’s current communication channels, specifically the college’s Facebook page, the Sustainability Office’s web site and Twitter account, and the college’s weekly student/faculty eNewsletters. With the exception of the Twitter account, which was relatively new, the other channels had been in use for a number of years. In addition to these existing online channels, the decision was also made to place articles in the local print newspaper to drive awareness across the broader geographical community.

Phase two of the public discussion portion of the planning process began in early summer and continued for approximately five months. First, information about the planning process and a
public request for feedback was posted to the college’s Facebook page. Individuals visiting the page could add comments, comment on others’ comments, or send comments to the Council via a posted email link. All comments on the Facebook page were publically visible; however, email comments were available only to Council members.

In the fall, once students and faculty had returned to campus, the Council began leveraging other online channels to generate awareness and collect input. Specifically, the college’s faculty and student eNewsletters were used to highlight individual goals and link readers to more information on the college’s online news site. On the news site, a complete story describing the goals of the public outreach was provided, as was a link to the input form on the college’s sustainability web site, along with an email address for comments. In addition to the Facebook page and the eNewsletters, the sustainability office’s Twitter account was occasionally used to drive awareness about the initiative and the public discussion phase.

All online input was summarized and categorized by a designated member of the Council. On a weekly basis, a cumulative report was emailed to Council members and the leader of the college’s Sustainability Office. Two hundred and ten comments were collected during this phase. In addition to the 15 comments collected during phase one, a total of 225 online posts and comments were collected. Within these 225 comments, 27 were from a member of the Council or individuals working within the Sustainability Office.

4.4.3.3 The Crowd: The Broader College and Geographical Community

Optimally, the Council wanted to collect input from students, faculty, administrators, the broader college community (e.g., alumni and corporate partners), and the broader geographical community surrounding the college (i.e., the town and surrounding suburbs). In the words of one interviewee, “we wanted to get feedback from the broadest number of people we could.”
Using both online (i.e., existing communication channels) and offline (i.e., newspaper and face-to-face meetings) channels, the Council leadership estimated that approximately five percent of the targeted crowd participated in the planning process. Those already associated with the college and its sustainability efforts represented an overwhelming majority of this group.

4.4.3.4 Tasks: Asking The Crowd to Pitch In

As described, the Council leveraged the college’s existing online communication channels to allow the public to weigh in on the planning process. An open process was seen as a way to create value and build a collective understanding of what the college and Council were trying to achieve. Specifically, the stories on the college’s news site invited readers to discuss the plan in its current form and provide feedback on each of the plan’s goals. On the college’s sustainability web site, individuals were invited to respond to the question, “How can a person like you help [the college] to achieve [the stated] goal?” On Facebook, readers were invited to respond to the question, “What are your best ideas to support this goal?” As discussed, participants could comment directly via Facebook, link to a form on the college’s sustainability web site, or send an email with their input.

4.4.3.5 Success Metrics: Generating Awareness and Building Support

When asked about success metrics related to crowdsourced input, one interviewee commented, “we didn’t have any measurable goals.” Instead, the Council focused on how best to generate awareness about the plan and create a transparent process that included reaching out to the public for their input. In short, while no specific metrics were defined, the ability to adapt the process to a more open and transparent one was seen by many as the true measure of success,
even more so than the potential input that might be collected. In fact, the leader of the Sustainability Office felt that creating a “bit of a mind shift” related to sustainability and motivating a critical mass that were interested in helping to carry out the plan would, in the end, be more valuable than the plan itself.

4.4.4 Impacts

The Council hoped that reaching out to the public would help to generate awareness regarding the college’s sustainability efforts and their desire to create an inclusive strategic plan. Due to a lack of resources, however, the Council was somewhat limited in its ability to reach its goals. Next, both positive and negative impacts of the initiative are discussed.

4.4.4.1 Demonstrating Transparency in the Planning Process: Practicing What You Preach

The primary goal of the initiative was to create an open and transparent process around the development of the strategic plan. By far the most important outcome of the initiative, as reported by the interviewees, was the ability to say that the process had been open and inclusive. As one interviewee commented, “We got a lot more people involved …the word got out…a lot more people feel like they [were] part of it.” Another commented that, “we can actually say everybody had an opportunity to, whether they did or didn’t, we can now say that [everyone had the opportunity to contribute].” As such, the process of reaching out to the public was considered of most value and helped to demonstrate the Council’s willingness to be transparent with regard to the planning process.
4.4.4.2 Limited Value from the Crowd: Low Expectations and Generic Wording

Interviewees reported being disappointed by both the amount and the quality of input received. Three interviewees expressed disappointment that the crowd was not more engaged in the process. That is, lack of feedback was interpreted as disinterest in the plan.

As noted previously, depending on the specific online communications channel used, the public was invited to share input and ideas on how community members could help the college achieve its five sustainability goals. One interviewee commented that the wording of the question elicited responses regarding the plan as it was, but it did not help to elicit novel or new ideas that the Council had not already considered. As such, she felt the wording was not appropriate to generate the level of detail desired. Of the input that was collected, interviewees reported that comments were used primarily to refine goal, but that goals did not dramatically change as part of the process. That is, input from the crowd had limited impact on the plan overall.

4.4.4.3 A Better Understanding of the Public’s Knowledge: The Need for Education

As discussed, while the input provided by the public was not particularly useful in shaping the strategic plan, it was helpful in identifying a need for public education on the topic of sustainability. One interviewee reported that input from the public helped the Council to realize that the public had a “limited understanding of the dimensionality of the concept of sustainability.” Moreover, they did not clearly understand what the Council was trying to accomplish by attempting to create a culture of sustainability as part of the strategic planning process. This led to the realization that the Council needed to first address the public’s understanding of sustainability before attempting to enlist its help. In short, because of the
public’s lack of understanding few were able to provide novel ideas and detailed input the Council desired.

4.4.4.4 Thinking Bigger: Generating a Richer and More Accessible Plan

Even though Council members reported that the majority of input was of limited use, two Council members reported that opening up the process to the crowd help motivated them to be more aspirational in their planning objectives. Two Council members reported that the diversity of the input collected resulted in a plan that was richer, more robust, and more inclusive. Moreover, based on comments, Council members believed that the final plan was written at a more accessible level. Specifically, changing the process had had an impact on Council members’ approach, which in turn helped to create a more accessible plan.

4.4.5 Facilitators

Two key themes were identified related to the Council’s stated goals. First, Council members, as well as the leadership of the Sustainability Office, shared the belief that an open and transparent process was desirable. Second, the Council was able to reduce time and costs by making use of the college’s existing communications channels to reach a key audience demographic.

4.4.5.1 A Shared Belief: Demonstrating Transparency in the Process

All interviewees commented that opening up the planning process was consistent with the mission of the Council and in line with sustainability efforts. In fact, prior to the creation of the
Council, the leader of the Sustainability Office had begun to solicit input from outsiders by holding meetings with corporate partners and other organizations working with the college. Furthermore, the leader of the Sustainability Office personally tasked the Council with obtaining input and engaging the broader community in the planning process. As such, there was agreement that the approach would be beneficial and support the goals of the college.

4.4.5.2 Reaching Out Via Current Communications Channels: Starting Where the Crowd Is

As discussed, the college currently used a number of online channels to provide information to the broader college community (i.e., students, faculty, staff, administrators, alumni, and corporate partners). Specifically, the college’s official Facebook page had more than 200,000 individuals who “liked” the page. In addition, weekly eNewsletters could be used to broadcast information to approximately 100,000 college students, faculty, administrators, and staff. While corporate partners would be less likely to monitor the college’s Facebook page or receive eNewsletters, it is reasonable to assume that these methods would reach a large segment of the Council’s intended audience (i.e., students, faculty, staff, administrators, and alumni). As such, these two existing online channels represented a cost-effective and efficient way to generate awareness and solicit feedback during the planning process with at least a portion of the intended audience. By leveraging these existing channels and their supporting infrastructure, the Council was able to quickly push out information to viewers/readers, as well as drive people to the sustainability web site.
4.4.6 Challenges

While Council members were in agreement regarding the need for an open and transparent process, they faced a number of challenges with regard to implementation and use. Specifically, the Council struggled with 1) how best to connect with the public, 2) exactly what input should be collected, 3) how best to ask for input, and 4) how best to manage potential negative impacts or comments. All these challenges were exacerbated by the fact that the Council was working with limited resources and against a short timeline.

4.4.6.1 Connecting with the Crowd: Disseminating a Consistent Message to a Diverse Audience

As discussed, the Council felt it was important to reach out to two key communities – the broader college community and the broader geographic community. The broader college community included students, faculty, staff, administrators, alumni, and corporate partners. The broader geographic community included individuals within the local township, as well as the surrounding geographical region. A key issue for the Council was identifying the proper communication channels with that could be used to effectively reach out to such a broad population. In the words of one interviewee, “how do [we] communicate the same message across that entire spectrum which not only includes educational differences but also different generational issues, [and] different cultures?”

While the ability to leverage existing channels was helpful in getting the word out, it provided access to only a subset of the desired audience (i.e., students, faculty, and alumni). Additionally, because outreach began during the summer months when students and faculty might not be focused on college communication channels, there were concerns that individuals were not paying attention to these channels, and as such there would be limited participation in
the initiative. Additionally, because many in the broader geographical community would not likely have access to computers, online channels would be ineffective in reaching this audience. While more traditional media outlets such as print newspaper were used to generate awareness, such channels did not provide the opportunity to collect feedback from this group also resulting in limited ability to gather input from this group.

4.4.6.2 Directing the Crowd: Determining What Input is Needed

The Council also faced challenges defining exactly the type of feedback was desired and how best to explain to the public the type of input that would be useful. One group of interviewees described desired input as general input from the public regarding the Council’s mission and approach to sustainability. Others described desired input as specific actionable suggestions for each of the five defined goals within the plan. While these two descriptions are consistent with the Council’s goals and mission, they required different calls to action, as well as different background information.

Council members also expressed different views regarding how best to phrase the call to action. That is, how to word questions or requests for feedback. Interviewees reported two different approaches, one that advocated the use of open-ended questions and the other that advocated the use of specific, or more closed questions. One interviewee reported remembering some level of conversation, albeit limited, regarding these two approaches. However, no interviewee reported the use of a formalized process for resolving the difference or coming to consensus. One interviewee commented that questions were kept general so as not lead the crowd in one specific direction. A second reported being concerned about the general nature of the questions, fearing that such general questions would result in feedback that would be too general
and therefore not actionable. In short, there was little agreement among members regarding exactly what input was desired and the best approach to soliciting feedback from the public.

4.4.6.3 Managing the Crowd: Dealing with Potential Negative Impacts of an Open Process

While the Council was in agreement regarding the need to engage the crowd in the planning process, there were a number of concerns regarding implementing a completely transparent process. In fact, one interviewee commented that bringing the public to the planning process required members of the Council to work “outside their comfort zone.” Specifically, the Council was concerned with how to manage a potential negative reaction to the plan should such a reaction occur. Others were concerned about with how best to integrate the crowd’s input into the process to ensure the public’s input was acted upon. These individuals worried that the college’s reputation might meet with negative impacts if the public’s input was not adequately integrated. If the public felt the Council was not listening to its ideas, then there were concerns that it would impact the public’s willingness to help carry out the sustainability goals.

4.4.6.4 Getting the Job Done: Lack of Resources and Limited Time

The lack of resources available to manage the initiative was reported as a significant challenge by all Council members. Specifically, the Council lacked the technical resources for creating an online presence, as well the manpower required to manage and evaluate the input that was received. Recognizing that resources might be an issue, the leadership of the Council reported tasking members with identifying the resources that would be needed to support the initiative. However, the Council was unable to locate a technical resource that could do more than edit the current form already on the college’s sustainability web site. As such, the Council was
limited to the skills of the technical resource and not what was optimal for meeting their goals. Two Council members expressed frustration over not being able to create a more collaborative online space. In fact, one interviewee reported the simple form was used because it required “a very low level of investment.” Another described it as “unprofessional.”

The lack of resources was exacerbated by the fact that the Council was working against a firm deadline for finalizing the plan. The Council had approximately three months from the time the online outreach began to collect, evaluate, and integrate input into the final plan. Pressure to bring the plan to closure, combined with the Council’s already busy schedule, cast doubts as to whether the group would be able to effectively manage the data collection process and absorb the input. Additionally, because no one on the Council had experience with the crowdsourcing process, it was difficult for the group to accurately gauge the time and resources that would be needed. While Council chairs expressed the hope that the Council would be introspective regarding input, Council members reported scanning inputs in an effort to quickly identify useful feedback. Even if quality ideas could be identified, there were concerns that there would not be sufficient time to adequately integrate new ideas in the plan, a key goal of the initiative. Finally, time pressures also raised questions regarding when to stop collecting and reviewing public feedback. In short, the Council faced challenges in balancing the desire to be inclusive with its ability to meet upcoming deadlines.

4.4.7 Summary of Case

While the Council was genuine in its effort to be inclusive and transparent, interviews revealed that the Council was not clear on how best to facilitate public engagement. The bulk of outreach efforts were dedicated to orchestrating and managing face-to-face outreach channels, specifically the town hall meetings held in different communities surrounding the college. A
similar effort was not undertaken with regard to online channels. The lack of experience in crowdsourced-based initiatives meant the Council was working with limited information regarding how best to engage the crowd online. As discussed, the Council struggled with issues regarding how best to word questions, exactly what input would be most useful, and how to evaluate and integrate the input collected. While the process was more inclusive than other planning processes had been in the past, the leadership recognized that the initiative had a number of flaws. In hindsight, the leadership of the sustainability effort commented that more time should have been carved out to ensure a wide breadth of feedback was collected. Leadership also commented that members should have been forced to reach out to a broader group for input and held accountable for doing so.

In conclusion, the Council underestimated the time and resources required to engage the crowd. Moreover, the key role that communications played in generating awareness was not recognized until well into the Council’s tenure. The entire process of awareness, engagement, collection, and evaluation of the crowd’s input was compressed into a three-month period. Perhaps most useful, however, was the realization that the public did not have the level of knowledge required to significantly impact the strategic plan as it provided insights that the Council had not had before. It also suggests that not all crowds are suited to completing all tasks.

4.5 Case Study E:
Leveraging the Crowd as an On-Demand Workforce

4.5.1 Overview of DocCorp: Multinational Document Management and Business Process Outsourcing Services Company

DocCorp is an established global document management and business process outsourcing (BPO) services company. Headquartered in the U.S. and employing approximately
100,000 individuals in more than 160 countries, DocCorp offers a wide variety of services including outsourced call centers, digital document management, and IT outsourcing. DocCorp currently hires employees and contracts with outsourced labor over seas. However, as workloads have increased, DocCorp is finding it increasingly more difficult to absorb the rising costs associated with hiring and retaining employees and managing outsourced contracts. Like many service providers, DocCorp formally defines terms of service with customers using service level agreements (SLAs). While SLAs vary from company to company, and at times customer to customer, they are used to stipulate performance standards and delivery times for specified services. Most SLAs also include penalties for failing to meet defined service levels. Penalties can include reductions in fees, refunds, and even monetary fines paid to the customer.

The focus of the case study was an R&D initiative designed to explore, develop, and incubate new innovative approaches to delivering digital document services and solutions for customers. A key focus of the initiative was conducting exploratory research to identify potential new markets, develop new technologies, and determine the economic impact that an on-demand crowdsourced service delivery model might have. To meet these goals, the R&D group was exploring a three specific sources of on-demand labor: 1) accessing the global talent pool via the Internet, 2) connecting with workers in emerging markets such as India via online channels, and 3) leveraging intermediaries who could provide access to the crowd.

### 4.5.2 Data Collection

A total of six interviews were conducted with seven individuals. All interviewees worked within the R&D group attempting to determine how a crowdsourced workforce could be used to reduce costs related to labor-intensive services. Interviewees represented DocCorp divisions in the U.S., Europe, and India and held positions at all levels within the group including Director,
research scientist, and postdoctoral researcher. Interviews were held over a two-day period in the fall of 2011. Four individuals were interviewed in one-on-one face-to-face sessions at DocCorp’s headquarters, and two were interviewed remotely via phone. Additionally, one follow-up interview was conducted via phone approximately one year after initial interviews.

4.5.3 The Initiative

4.5.3.1 Goals: Reducing Costs, Developing New Offerings, and Leveraging New Technologies

Analysis revealed three key goals. First was identifying new ways to reduce costs related to labor-intensive BPO services. Second was determining whether a crowdsourced service model could lead to new service offerings and entry into new markets. Third was identifying, or developing, new technologies that could be used to automate BPO services.

The primary objective of the initiative was to explore the use of alternative resources (e.g., the crowd, home-workers) to replace or supplement current more costly resources (i.e., full-time employees, contract employees, and off-shore outsourcing facilities) that were required to delivery BPO service to DocCorp customers. The ability to identify new resources outside meant DocCorp could potentially reduce long-term commits to individuals contractor and outsourcing organizations that might not be the best fit for the specific task to be completed.

Key to the implementation of a crowdsourced model was demonstrating that such a model could significantly reduce costs yet comply with quality and time commitments outlined in SLAs. Directly related to this goal was determining which resource (i.e., the crowd, employees, or outsourced labor) would be best suited to completing specific tasks at the desired quality. This required the R&D team to determine which individuals in the crowd would be optimal for getting work done at the quality required. Matching the right crowd to the right job would allow
DocCorp to better manage costs and assign the best resources to the task. In the words of one interviewee, “In the case of outsourcing we only have one organization. Instead, DocCorp could divvy up the jobs, giving the right job to the right crowd. Here we have a choice and we can select from them. That is the major difference.” In short, the goal was to identify a more flexible and cost-effective way to complete labor-intensive tasks for customers.

The R&D group was also attempting to identify promising new technologies that could be used to manage a crowdsourced workforce. As one interviewee explained, the goal was to be “ahead of the curve” in terms of advancement of technology to support the “next generation of work.” Depending on the task, the work could be automatically matched to the best resource for the job. For example, non-sensitive data requiring only basic skills could be completed by any one in the crowd. On the other hand, non-sensitive data requiring specialized skills, such as translation, could be pushed out to crowds with specialized language skills. Finally, highly sensitive data, regardless of the tasks to be performed, could be forwarded to an intermediary who could guarantee data security. Such a crowdsourcing business model could significantly reduce infrastructure and management costs associated with hiring and retaining employees, thus giving DocCorp a competitive advantage in the marketplace.

4.5.3.2 Implementation: Early Exploration to Assess the Potential of the Crowd

At the time of interviews, the R&D group was in the very early stages of examining the potential of using a crowdsourced services model; therefore, new crowdsourced business processes were not currently being integrated with current processes. Instead, the R&D team was presenting proposals and demos to targeted business groups with the objective of finding a sponsor for the research moving forward. Once a business unit expressed interest, the group would either obtain funds from stakeholders within the unit or receive funding from a general
research budget. The R&D group would then work to further the technology to meet the business needs of the sponsor by building prototypes, running pilots that linked to existing platforms, and running tests with existing customers. That is, the objective was to build business use cases that demonstrated measurable results.

To examine the potential of this new model, different researchers within the R&D group were focused on different aspects of the problem. Multiple efforts were under way to determine whether complex processes could be broken down into smaller parts that could be completed independently. Efforts included attempting to identify which parts of the process could be successfully crowdsourced and which could not. As part of this effort, researchers were taking advantage of current crowdsourcing Internet marketplaces\(^8\) to test models and determine how well the crowd could complete certain tasks. Mathematical models were also being created to assess compliance with quality and time demands outlined in SLAs, with the hope of identifying which crowdsourced resources were meeting which aspects of the SLA. Others were exploring models designed to identify whether specific parts of a task would be best completed by individuals with specific skills. Such an implementation would allow DocCorp to crowdsourc simple tasks to anyone in the crowd, saving specialized tasks for experts in the crowd who might demand higher compensation.

Still others were attempting to determine if experts were needed at all. Specifically, one researcher who was interviewed was examining whether complex tasks requiring some level of expertise could be completed by non-experts (e.g., leveraging the crowd to give you a medical diagnosis instead of a doctor). As this interviewee described it, he was looking to see if it was possible to break down complex problems into simpler parts and to program a crowd to follow

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\(^8\) Crowdsourcing or Internet marketplaces allow anyone to post work to be completed by the crowd. Workers are paid a fee, typically nominal, for successfully completing tasks. Common examples include Amazon’s Mechanical Turk and CrowdFlower.
instructions to complete a specific part of a bigger task. By combining all the parts, an acceptable solution could potentially be reached without the help of an expert.

4.5.3.3 The Crowd: An On-Demand Pool of Qualified Individuals

Interviewees described the crowd broadly as alternative resources and workforces. In fact, DocCorp was exploring both direct and indirect means of leveraging the crowd. Direct means included: 1) connecting directly with individuals working from home, 2) placing kiosks in areas where workers might not have computers in their homes but could travel to a centralized location, and 3) timesharing models where multiple individuals shared time on one computer. Indirect means included working with intermediaries such as rural BPOs and outsourcing satellite centers who would connect DocCorp to the crowd. Intermediaries were important as they provided not only a connection to the crowd but also allowed DocCorp some guarantee regarding security of data and delivery of services.

Depending on the nature of the task to be completed, the crowd could be anonymous or would need to be prequalified to ensure they had the necessary skills and knowledge to complete the work at the quality required. Furthermore, different tasks might require individuals in the crowd to have different knowledge and skills. For example, tasks such as verification of data (e.g., are these two numbers the same) would require only basic English and typing skills. Other tasks, however, such as translation of documents from one language to another, would require specialized language skills.

The use of online technologies meant that the crowd could be located potentially anywhere in the world, assuming there was access. As mentioned, DocCorp was focused on three primary resources: 1) the open global talent pool, 2) alternative home workers, and 3) rural BPOs in developing countries. One potential developing country that was seen as promising was India.
India was seen as a desirable because the government was taking steps to build a telecommunications infrastructure that reached out to rural areas. Additionally, the government was open to making investments in infrastructure to benefit rural populations. As such, India provided the opportunity for DocCorp to tap into the India’s large and growing talent pool.

4.5.3.4 Tasks: Completing and Verifying Time-Consuming Tasks

Because the R&D group was in the early stages of discovery, specific tasks to be completed by the crowd had yet to defined. However, as the primary goal was to reduce costs associated with BPO services, tasks under consideration were typically routine, time-consuming tasks that were difficult for computers but easy for humans. These tasks varied from simple verification of data across multiple documents (e.g., have numbers been transferred correctly) to more complex translation of documents from one language to another (e.g., from Spanish to English). Furthermore, tasks typically had a defined answer (e.g., the numbers match), or an acceptable range of answers (e.g., one of a number of appropriate words). Finally, the crowd might be asked to complete the entire task (e.g., translate this entire document), or smaller parts of a task (e.g., translate this paragraph). In addition to completing tasks such as translating a sentence, additional tasks might include verifying work completed by others, for example rating the accuracy of a translated sentence.

4.5.3.5 Success Metrics: Quantifiable Cost Savings

DocCorp was exploring the potential of a crowdsourced service model as a means of reducing costs associated with the completion of routine business processes such as transcription, data entry, and translation. At the time of interviews, however, the R&D group was only just
beginning to evaluate the potential of a crowdsourced services model. Therefore, quantifiable success metrics were too far on the horizon to be accurately measured. Ultimately, DocCorp would need to determine if potential savings would justify the costs of building and managing the necessary technology infrastructure. At the time of interviews, one interviewee reported the group was “optimistically apprehensive” that DocCorp could leverage the crowd to reduce costs associated with providing labor-intensive BPO services to its customers.

4.5.4 Impacts

Because the initiative was in the early stages of exploration, it is difficult to identify actual impacts. However, two themes were identified that point to potential impacts on DocCorp. First, the ability to dissect the problem helped to create a better understanding of the problem at hand. Second, assuming an acceptable solution could be found, the initiative had the potential to create new jobs for non-professional workers in developing countries.

4.5.4.1 Clarity: A Better Understanding of the Problem

All interviewees stressed the exploratory nature of current efforts. At this early stage of defining a relatively undefined process, it was unclear whether an acceptable solution could be put in place. In fact, one interviewee commented that he was “completely skeptical” about the potential of “getting cheap labor.” However, through the process of thinking about “how [we] were ever going to do that” he was able to gain clarity in terms of what needed to be done. Specifically, “Even though the challenges are now really big, because I’ve outlined them clearly and because I’ve discussed them with other people, then somehow they become addressable.” In short, the very the process of outlining and describing the issues surrounding such an endeavor
was instrumental in helping researchers understand what would be required. This helped to focus efforts on key challenges.

4.5.4.2 Social Good: Helping Non-Professional Workers Find Jobs

Assuming DocCorp was able to connect with workers in emerging markets, interviewees expressed the belief that such an initiative could also result in significant social benefits. First, a crowdsourcing model would help provide additional choices for workers in rural areas. Those with computers could work from home on a flexible schedule. Those without computers could travel daily to rural BPO centers, use timeshare computers, or kiosks. According to one interviewee, placing centers and kiosks in rural areas would reduce “massive migration into the cities where people live[d] quite a miserable life.” Rural BPOs and kiosks were also viewed as a potential way to help keep families together and reduce the numbers of people living in poverty in cities. In addition, distributing work to smaller towns could result in a better quality of life and additional revenue for their communities. Because systems have not yet been deployed, however, it is currently unclear whether such benefits would actually be realized.

4.5.5 Facilitators

Two key themes were identified that helped facilitate the R&D group’s goals. First was a corporate culture that was committed to R&D. Second was the role leadership played in supporting research that might not be fruitful for many years to come.
4.5.5.1 Commitment to R&D: Leveraging Existing Resources

During interviewees, all interviewees commented that current work was in the very early stages of identifying what tasks could be completed by which crowds. If a case could be made, implementation with actual customers was estimated to be three to five years in the future. Certainly the ability for R&D groups to focus on projects that might not yield business results in the near future is not unique to DocCorp. However, launching such an initiative was greatly enhanced by DocCorp’s corporate culture and structure.

From its conception, DocCorp has invested heavily in R&D and has established world-class R&D facilities across the globe. With over 10,000 patents, the role of R&D in supporting and driving new business opportunities was deeply ingrained in DocCorp’s culture. Furthermore, DocCorp currently had an R&D presence in India, and as such, this group was instrumental in facilitating key connections with the targeted crowd and potential intermediaries. The ability to take advantage of existing R&D management, staff, and facilities was a key facilitator in DocCorp’s ability to examine the potential of a crowdsourced service delivery model.

4.5.5.2 Visionary Leaders: A Belief in the Long-Term Benefits of the Crowd

While DocCorp’s R&D culture was certainly beneficial, interviewees reported that support from executives who were willing to invest in and get behind a long-term initiative was critical. Two of the seven individuals interviewed commented that support from leadership was key in allowing them to explore a crowdsourced model. Executives backing the initiative were described as “very visionary” and “thought leaders.” Moreover, they were described as being “enthusiastic” about the potential of a crowdsourced services model and comfortable with longer-term ROI. However, not all executives held the same beliefs in the potential of a
crowdsourced model. Longer-term goals of the initiative did not align with the shorter-term goals of some managers. Key to success was facilitating both long- and short-term goals so as to garner support from managers regardless of their focus. One interviewee reported that, overcoming manager’s objections was “going to be difficult…[but]…we have a good enough champion at the visionary level we should be able to overcome that.” In summary, support from high-level executives allowed the R&D group the freedom to explore a variety of different approaches to leveraging the crowd and provided them with the necessary time to build and test use cases.

4.5.6 Challenges

While only in the initial stages of research, the R&D group’s efforts do shed light on the challenges such a model might create for organizations. DocCorp viewed the problem of leveraging the crowd as an economic, technical, and social challenge. A crowdsourced on-demand workforce theoretically had the potential to lower costs associated with BPO service; however, it presented considerable challenges for DocCorp. By far the biggest challenge was identifying whether technology could be used to ensure the crowd met contractual obligations of SLAs. This included three key components: 1) security, 2) quality, and 3) turnaround time. Even assuming that these challenges could be successfully addressed, proof was required that such an approach would in fact be manageable. Finally, DocCorp faced challenges in ensuring that such a model would be sustainable.

4.5.6.1 Data Security: Ensuring the Crowd Can Be Trusted

Ensuring the security of sensitive data was seen as crucial to the success of a crowdsourced services model. In fact, interviewees reported that when approaching business units
about the potential of leveraging a crowdsourcing model, the first concern was typically the ability to guarantee that sensitive data would be protected. Currently, many of DocCorp’s customers required DocCorp to take steps to protect sensitive personal and corporate information. Additionally, depending on the nature of the work, data security was mandated by federal regulations and laws thus creating additional compliance issues. Therefore, the ability to ensure the safety of sensitive data was key to DocCorp’s ability to implement a crowdsourced services model. Because of the sensitive nature of the customer information, one interviewee reported that most managers held the belief that corporate processes could not be safely completed by an anonymous group of people.

While DocCorp currently had processes in place to ensure the security of their customers’ data, a virtual and unknown workforce presented new challenges. Under the current model, workers could be co-located in secure facilities. With physical processing centers, procedures could be put in place to ensure workers were who they said they were (i.e., photo ID badges, background checks). Furthermore, procedures could be implemented to ensure sensitive data would not be compromised (e.g., leaving bags at the door, taking nothing in or out). However, physical checks and balances were not possible with a virtual labor pool. As such, researchers were experimenting with technical ways to ensure security. While a number of options were under consideration, it was unclear whether these approaches would extend the time required to complete tasks and/or increase the resources needed to manage the process. Either could potentially impact potential cost savings.

Researchers were also examining whether existing companies with more controlled environments (e.g., intermediaries) might provide the needed security. Such companies could potentially connect DocCorp with the crowd, but also provide the required level of data security. These options, however, would likely be more costly than connecting directly with the crowd raising further questions as to whether such a model would be cost effective.
4.5.6.2 Quality: Ensuring the Crowd Meets Defined Standards

Interviewees reported that in addition to ensuring protecting of sensitive data, ensuring the quality of the work produced was critical to success and a significant challenge. Dealing with an unknown group of laborers, whose skills were also unknown, created concerns over the quality of the work that would be generated. Unlike employees or contracted labor, the crowd would be under no obligation to the company to complete the job on time or at a specified quality. In the words of one interviewee, “it’s hard to guarantee how fast or how good the work will be.”

Early experimentation with sample data on large publically Internet crowdsourcing marketplaces had produced varying results. While simple tasks, such as having the crowd create digital forms from images of scanned forms, yielded good quality outcomes, other more complex tasks, such as translation of documents from one language to another, resulted in unsatisfactory quality. In short, as tasks became more complex, quality decreased. While it was unclear whether poor quality was a result of the crowd not having the right skills, or the crowd not being reliable even when tasks were relatively easy, unless some level of quality could be guaranteed the crowd would not be an acceptable alternative. To address this issue, researchers were looking for potential ways to obtain some certainty that individuals working on tasks had the necessary level of skills. As with data security, options under consideration were being examined to determine if additional costs of implementation would out weight the potential costs savings.

4.5.6.3 Turnaround Time: Ensuring the Crowd Completes the Job When Needed

In addition to ensuring data security and quality, issues related to timely delivery of services were also a challenge. Assuming issues with security and quality could be overcome, this did not mean that the crowd would be willing and available to complete the work when it was
needed. Not only were there concerns about the crowd completing the job on time, there were also concerns that the crowd might not even take on the job.

Because customer SLAs often included contractual turnaround times, it was critical that DocCorp could ensure the crowd would get the job done in the time specified. In the words of one interviewee, “If I have to get these hundred thousand forms digitized and sent back to this customer today, I need to be able to make sure that somebody picks it up and delivers.” Even in cases where there were no contractual time requirements, DocCorp could not simply hope that the crowd would work on the job. According to one interviewee, “you [could] post a job, but nobody might pick it up because they simply don’t know.” A crowdsourced model meant that there were no guarantees that jobs would be completed at all, much less in a timely manner or at the desired quality.

Ensuring tasks would be completed within an acceptable amount of time was further complicated due to the fluid and changing nature of the crowd. This presented challenges regarding who would be available at any point in time to complete tasks. Even if crowd members could be pre-qualified, there was no guarantee that these individuals would return to take on additional work. As such, a key challenge was how to preserve and build relationships with the right individuals to keep them coming back. Additionally, because members of the crowd would not be stable over time, their interest, commitment, and motivations would also vary from day to day. This made it difficult to determine exactly how best to motive and reward participation.

4.5.6.4 Increased Workload: Managing the Crowd

Leveraging a crowdsourced workforce could also dramatically increase the potential labor pool and therefore the amount of work that could be completed. Such increases would create significant challenges with regard to workflow and workforce management. Because of the
potential for increased workloads, DocCorp researchers were looking at semi-automatic technical solutions to common supervisory and workflow issues such as organizing large teams of individuals who may know each other. While a number of business units had shown interest in the potential of leveraging technologies to support a crowdsourcing model, before any business unit would adopt or integrate the crowd into their processes, the R&D group needed to provide empirical proof supporting the benefits and feasibility of such a business model.

4.5.6.5 Satisfied Workforce: Ensuring the Crowd Comes Back

The key benefit of leveraging a crowdsourced workforce was the potential of reducing costs associated with overhead and management of workers. Additionally, some cost savings would be realized by connecting with individuals who would complete tasks at lower wages. While not the primary focus, the potential of paying the crowd less than current resources raised concerns with some interviewees in terms of ensuring that workers did not feel exploited. As such, some individuals within the R&D group also focused on how best to create a social and organizational model that would provide benefits to both workers and DocCorp. A key challenge to keeping the crowd coming back was ensuring the crowd believed that DocCorp was a fair employer and that they would provide some predictability of wages.

One interviewee also expressed concerns related to the application of labor laws. While online crowdsourcing is not currently subject to labor laws, this individual reported that the R&D group was also examining potential “minefields” around how to “manage things like minimum wage” when workers “aren’t employees.” Building a model based on current labor laws, only to have them significantly change, held the potential to increase costs and impact potential savings. As such, DocCorp was being proactive in addressing such challenges.
4.5.7 Summary of Case

In many ways, DocCorp’s approach to crowdsourcing blurs the distinctions among crowdsourcing, outsourcing, and contract labor. In fact, DocCorp was extending traditional notions of outsourcing to include both known and unknown workers. To DocCorp, the crowd was more than just the Internet crowd. Instead DocCorp was attempting to find the right combination of different crowds to complete a variety of tasks. This included both direct and indirect means of accessing on-demand labor. On-demand labor included connecting with the global workforce, tapping into home workers, and leveraging known entities that tapped into the crowd (i.e., intermediaries). In either case, DocCorp was attempting to take advantage of the sheer numbers in the crowd, but reduce risks associated with hiring anonymous workers.

A follow-up interview one year after the initial interviews revealed that DocCorp has generated a number of promising uses cases related to this new business model. In fact, for certain tasks such as digitization of forms, use cases have shown that workers on large crowdsourcing sites can deliver the quality needed at no more cost than currently incurred when hiring workers in lower wage countries (e.g., India). While only working with sample data, researchers were optimistic about the use of a crowdsourced based services model for delivery of simple routine tasks. With regard to more complex tasks, use cases continued to show that quality was an issue.
4.6 Case Study F:  
Leveraging Customers as a Source of Training Data

4.6.1 Overview of HealthCo: High-Tech Healthcare Service Provider

HealthCo is a venture-funded U.S. company specializing in software that automates the coding of medical records for insurance reimbursement and in-patient care delivery decisions. Offered using a software as a service (SaaS) delivery model, HealthCo’s products are in use by over 200 hospitals, clinics, physician’s offices, and physician groups. HealthCo has been in business for 10+ years, employs approximately 120 employees across the U.S., and is a recognized a leader in healthcare automation services.

The focus of the case was HealthCo’s practice of aggregating customers’ input as a source of training data to improve the accuracy of its underlying natural language processing (NLP) algorithms. Simply put, NLP algorithms were used to parse natural language and to identify key words and phrases representing specific medical procedures, treatments, or diagnosis. Identified words and phrases were then assigned specific medical codes used for medical reimbursement purposes. By leveraging the input of the crowd, HealthCo was able to create an extensive knowledge base from which to improve the accuracy and efficiency of its automated coding decisions.

4.6.2 Data Collection

Two interviews were held during the fall of 2011 with high-level executives within the company. One interviewee was responsible for corporate strategy while the other focused on product development and NLP related technologies. Both interviews were held in one-on-one,
face-to-face sessions at HealthCo’s corporate office. In addition to interviews, corporate product brochures and a whitepaper developed by HealthCo were also obtained.

4.6.3 The Initiative

4.6.3.1 Goals: Improving Accuracy and Efficiency

HealthCo’s goal was to automate the medical coding process to drive efficiency, reduce costs, and provide better information for healthcare professionals. Key to delivering on this goal was collecting and aggregating the knowledge of the crowd as a source of training data for underlying NLP algorithms. By aggregating the daily decisions of medical coders using HealthCo software, HealthCo was able to measure agreement rates among coders for specific identifiable phrases. Agreement rates were used to calculate a statistical level of confidence for automated coding decisions. For example, in some situations, HealthCo could illustrate that 95% of all coders assigned a specific code to a specific phrase. While percentages varied, as more and more coders assigned the same code to the same information, the level of confidence increased. As such, humans were critical for improving and validating the accuracy of automated coding decisions.

4.6.3.2 Implementation: Aggregating Crowdsourced Input to Train Algorithms

The ability to collect and aggregate crowdsourced data to train underlying NLP algorithms was built directly into HealthCo’s products. As such, the discussion here focuses on how the crowd used HealthCo’s software. Specifically, customers first uploaded medical records to HealthCo’s SaaS platform. Next, natural language and medical terms within these records were
automatically analyzed and where possible specific medical reimbursement codes were assigned. Professional coders employed at customer sites then verified codes, making changes as necessary. As codes were accepted or corrected, all input from coders was captured and added to HealthCo’s growing knowledge base. This aggregated knowledge base, built from expert input, was used as training data for HealthCo’s underlying NLP algorithms. The more data that was collected, the more data HealthCo’s had to calculate confidence levels of automated decisions.

Customers could also select different acceptable levels of confidence to speed up the coding process. For example, if a customer specified a confidence level of 95% as the lowest level acceptable, coding decisions that meet the defined level of confidence were automatically accepted and moved directly to the next stage of billing. Decisions that did not meet this threshold were flagged for human review. Professional coders would review all exceptions and either accept the assigned code or assign a new code. These revisions were also collected and added to HealthCo’s crowdsourced knowledge base. As agreement increased, underlying NLP algorithms would be modified to reflect the crowd’s consensus.

4.6.3.3 The Crowd: Professional Medical Coders

When asked to describe the crowd, one interviewee commented, “Our crowd is not the general public.” Instead, HealthCo relied on an external crowd of experts with specialized domain knowledge (i.e., professional medical coders employed by HealthCo customers). These professionals typically possessed extensive medical knowledge and expertise, many of them having been medical doctors. Expertise included in-depth knowledge of medical procedures, medical terms, diagnoses, and treatments. Such expertise was necessary to understand and interpret the contents of patients’ medical records. Many of these professionals also held certificates in specialized areas of professional coding categories (e.g., radiology or pathology).
4.6.3.4 Tasks: Part of the Crowd’s Job Responsibilities

As described, the crowd used HealthCo’s software to verify automated insurance codes that did not reach the specified level of confidence. While coders did have to learn how to use HealthCo software, once trained they were not required to complete tasks outside those carried out as part of their daily job responsibilities. Specifically, coders reviewed exceptions, accepting or modifying automated codes as appropriate. That is, the crowd was asked to do nothing more than use the software as part of their daily job responsibilities.

4.6.3.5 Success Metrics: Leveraging Expert Knowledge to Provide Superior Product Offerings

When asked how HealthCo measured the success of their crowdsourcing efforts, one interviewee commented that success was a function of the company’s ability to leverage their knowledge base to help customers “turn medical language into actionable data.” Specifically, success was seen as HealthCo’s ability to increase both the accuracy and speed at which medical records could be automatically coded. Success was also viewed as a measure of HealthCo’s ability to leverage its knowledge base to offer new coding products in different medical specialty areas more quickly. According to one interviewee, while it took six to eight years to obtain a reliable level of accuracy for radiology records, advancements based on improved algorithms allowed the company to reach the same level of accuracy for pathology in six to nine months. In short, HealthCo did not separate the success of its product from its ability to leverage crowdsourced data to improve product accuracy and drive cost reductions for customers. Fundamentally, success was directly tied to HealthCo’s ability to leverage the crowd as a source of training data. As such, success was measured in relatively traditional ways such as the
company’s ability to deliver superior products and its ability to offer new products to increase revenues.

4.6.4 Impacts

HealthCo’s extensive crowdsourced knowledge base ultimately became a competitive advantage in the industry and a key factor of HealthCo’s success. Interestingly, this knowledge repository also had impacts outside of HealthCo – specifically with regard to improving language contained in regulatory guidelines. Next, a discussion of these impacts is provided.

4.6.4.1 A Competitive Advantage: Building an Extensive Knowledge Base

HealthCo’s adoption of a crowdsourced data-training model proved to be critical to the company’s success. By integrating the knowledge of the crowd directly into the product development process, HealthCo carved out a unique differentiator within the medical coding industry.

With over 200 million records collected over 10+ years, HealthCo’s knowledge base was unmatched in the industry. Access to this knowledge base was a key differentiator within the industry and critical to the accuracy and efficiency of HealthCo’s offerings. By combining the crowd’s input as a source of training data with sophisticated NLP algorithms, HealthCo was able to significantly reduce the time required to code medical records, thus cutting costs for its customers. Its vast knowledge base meant that consensus could be measured to a level of statistical significance allowing customers to automatically process records meeting a defined level of confidence. In fact, customers reported a two-fold increase in speed, from an average of five records an hour to ten per hour.
As HealthCo’s knowledge base grew, it also opened up new opportunities to leverage data for new services. For example, customers could search their own records (i.e., not the entire knowledge base) to identify patterns and trends within their facilities. Such information allowed customers to more easily identify potential issues with inconsistency of care across multiple physicians or locations, to identify patients who might be subject to a medical device recall, and to identify patents with specific medical issues for which new treatments may be beneficial. In fact, the ability to collect, aggregate, and illustrate the value of its crowdsourced-based model resulted in HealthCo being acquired by a multinational company looking to expand such capabilities. Today, employees from HealthCo continue to improve automated coding as part of this new organization.

4.6.4.2 Impacting the Industry: Identifying Confusing or Vague Regulatory Instructions

Because employees at HealthCo continuously reviewed coders’ inputs to identify patterns related to coding of medical records, they were able to not only identify when there was consensus, but also where there was confusion. That is, HealthCo’s was able to identify situations where similar language was being assigned different codes. Interviewees reported that in some cases, this was a result of coders interpreting language differently; meanwhile, in other cases this was the result of vague or confusing instructions in regulatory guidelines. HealthCo was able to alert regulatory bodies regarding confusion with regard to regulatory standards and provide hard data to support its claims. One interviewee reported that such notifications resulted in these bodies “chang[ing] the system in some way to be clearer about how you’re supposed to do one thing or another.” In short, HealthCo’s crowdsourced knowledge base and supervised model was responsible for identifying and correcting potential issues within regulatory standards.
4.6.5 Facilitators

Three key facilitators emerged related to the success of HealthCo’s initiative. First, the belief in and commitment to a crowdsourced data collection model by HealthCo leadership ensured that new products incorporated crowd-based data collection methods. Second, HealthCo’s ability to access a crowd of experts directly through its customers helped reduce costs associated with building an extensive knowledge base. And third, HealthCo’s approach of integrating data collection directly into current processes streamlined the data collection process. A discussion of each of these facilitators is provided next.

4.6.5.1 Support from Leadership: Building Crowdsourcing into the Product Development Process

From the beginning, HealthCo’s executive leader realized that the combination of computer assisted coding and human coding would generate more accurate information than either could generate alone. As such, she believed the ability to capture and aggregate the input of the crowd (i.e., customers) would be a key competitive differentiator within the industry. With this vision in mind and supported by the work experts in linguistics, HealthCo products were built with a crowdsourced model in mind. Because the company was not attempting to implement new business processes or approaches to product innovation, no separate initiative was required to benefit from the crowd. The ability to integrate inputs from all its customers to create a vast knowledge base was part of the product development process from the start. As such, time and resources were not needed to convince internal teams that a new approach was need. Instead, HealthCo was able to focus on how best to leverage the crowd’s input during early product development phases.
4.6.5.2 A Ready-Made Crowd: Leveraging Customer’s Employees as a Source of Data

HealthCo’s crowd consisted of professional coders using HealthCo software as part of their daily job responsibilities. These coders possessed extensive expertise often specializing in one or more medical fields. Because HealthCo software was built to aggregate input, once a customer purchased HealthCo’s software, HealthCo had indirect access to these coding experts. As coders used HealthCo products, inputs were collected and aggregated to improve the efficiency and accuracy of its automated coding decisions. Additionally, because customers already had processes in place for identifying coders who did not have the proper skills or expertise, HealthCo did not have to expend resources to manage these resources. As such, some level of quality was maintained within the crowd at no cost to HealthCo. Time and resources were not required to identify or recruit participants. Instead, participation was automatic, allowing HealthCo to focus on how best to leverage input to drive value.

4.6.5.3 Streamlined Data Collection: Gathering Input Behind the Scenes

In addition to having access to a ready-made crowd, the crowd was not required to complete additional tasks outside their primary job responsibilities. As coders completed their daily tasks, HealthCo was able to capture their inputs adding to its knowledge base. While coders would require training on software, as would be the case with any automated system, they did not require additional training or instructions specifically related to the crowdsourcing initiative. With automated coding, coders verified or updated coding decisions made by the software. As such, the ability to leverage the crowd’s input was built directly into the current workflow. In fact, in many cases, the crowd would not even know their inputs were being collected. As more and more customers used HealthCo’s software, its knowledge base grew. This in turn increased
HealthCo’s ability to automate more records with increasing levels of confidence, thus driving revenue for HealthCo and value for its customers. Furthermore, because agreement levels could be mathematically calculated, integration of the crowd’s input was automatic and not labor intensive. Such processes streamlined the data collection process helping to reduce the time and effort often required to manage and evaluate crowd input.

4.6.6 Challenges

While HealthCo was able to take advantage of a captive crowd via streamlined processes, the company still faced a number of challenges. Three key themes related to challenges or barriers were identified. First were concerns by healthcare providers regarding the accuracy of automated decisions. Second were challenges with ambiguous language and potential fraud. Finally, there were concerns by many in the crowd that they would be replaced by the very product they were helping to make more accurate. Each of these challenges is discussed next.

4.6.6.1 Addressing Concerns in the Marketplace: Acceptance of a Crowdsourced Automated Model

Many in the healthcare industry were skeptical about the quality and accuracy of automated systems. While it is difficult to separate out concerns over automation as a whole, from HealthCo’s use of a crowdsourced knowledge base, one interviewee reported that customers were wary of placing key revenue generating activities in the hands of an unknown crowd. Specifically, potential customers were not convinced that software built on the agreement of an undefined group of coders would be as accurate as current hand-coding methods.

Moving to HealthCo products required customers to be comfortable with automated decisions that were informed by the crowd (i.e., statistical confidence levels based on the crowd’s
agreement). As such, adoption within the industry was relatively slow. Early customers were described by interviewees as “bleeding edge adopters,” while skeptics were described as just “not there yet.” One interviewee reported that only within the last 12 months were people beginning to accept that a computer could read and code medical records: a task that only humans could do before. Furthermore, skeptical customers required hard data as assurance of the software’s performances, but hard data required customers. This required HealthCo to invest time and money to hire expert coders to create baseline measures for automated decisions.

Interestingly, while skepticism still exists, the ability to automate the coding of medical records is currently becoming increasingly more urgent as hospitals and physicians struggle to deal with the increased amount of unstructured electronic information generated every day. Moreover, one interviewee reported that the move towards adoption of electronic medical records (EMR) was increasing the amount of information generated. As such, healthcare providers were expending significant costs and resources to manage this growing volume of information. Pressure to cut costs, combined with the expanding volume of data, was forcing providers to look for new ways to manage the reimbursement process, with automation being a key solution. As HealthCo was able to demonstrate the accuracy of its automated coding, the industry was beginning to accept and adopt automated products. However, even with growing pressure, interviewees reported that adoption of automated billing systems was still relatively low within the healthcare industry.

4.6.6.2 Ensuring Accuracy: Dealing with Ambiguous Language and Potential Fraud

While HealthCo was able to aggregate information from a crowd of experts, this did not guarantee the crowd’s decisions would be accurate or appropriate. Interviews revealed two specific issues directly tied to the crowdsourced data model. First, ambiguous language often
resulted in cases where coders did not agree on the right answers. In these instances, different codes were often assigned to the same procedures. Without consensus, HealthCo was unable to increase the confidence level of automated coding for these types of situations. Second, HealthCo faced challenges related to the potential for customers to knowingly enter incorrect codes in order to benefit from higher reimbursement rates. Because subtleties in coding similar procedures often resulted in differences in the amount of reimbursement provided, HealthCo needed to ensure that underlying algorithms were not being influenced by fraudulent coding decisions. Managing both these challenges required HealthCo to implement a “supervised model” for evaluating crowd input. Such efforts were critical to ensure that fraudulent or inexperienced coders’ decisions did not influence underlying statistical significance ratings.

In the case of ambiguous language, HealthCo first attempted to convene experts to come to some agreement. When no consensus could be reached, the software automatically identified such items for human review, thus ensuring that customers were aware of potential issues. To prevent the possibility of fraud impacting automated decisions, HealthCo periodically reviewed customer records looking for unusual patterns or trends. This supervised model required both time and expert resources. Expert resources were costly, as they were required to have extensive medical expertise in order to assess and identify inaccurate or incorrect codes.

4.6.6.3 Relying on the Crowd You May Replace: A Threat to Coders

Efficiencies in automation meant fewer coders could process more records in the same amount of time. As such, some coders were concerned about departments downsizing and the potential of being replaced by an automated system. This created challenges for HealthCo, as professional coders often downplayed the benefits of its products with their employers (i.e., HealthCo’s direct customers).
This was complicated by the fact that during the sales process, healthcare providers often turned to their in-house coders to provide feedback on HealthCo’s software offering. This created an interesting dynamic. When coders saw that employers were attempting to save costs and increase efficiencies by automating the coding process, they became concerned over potentially losing their jobs. Interviewees reported that these concerns occasionally resulted in coders speaking negatively regarding the accuracy of HealthCo’s offering. One interviewee reported that some coders had been known to work more slowly attempting to negate improvements in efficiency delivered by the software. Another interviewee reported that coders had attempted to sabotage the system to protect their jobs. Because the purchase of HealthCo software was often dependent on positive evaluations by current in-house coders, HealthCo faced a challenge in convincing coders that adoption of their product would be positive for them.

4.6.7 Summary of Case

Certainly, attempting to benefit from the crowd to improve products is not unique. However, HealthCo did not face many of the same challenges faced by traditional businesses attempting to integrate the crowd into current product development processes. As discussed, HealthCo’s leadership was on board from the beginning and, as such, HealthCo’s products were built on a crowdsourcing data model. Because a crowdsourced model was adopted from the beginning, there was no need to restructure current organizational processes or adopt new ones. Because HealthCo used a mathematical model to evaluate input, they did not face common issues associated with how best to evaluate the crowd’s input. This is not to say, however, that time and resources were not necessary to integrate input. Finally, HealthCo’s core values included applying radical innovation to revolutionize healthcare. As such, a crowdsourced-based model, while radical within the industry, was consistent with HealthCo’s innovative culture. Because
HealthCo’s culture embraced new innovative processes, leadership did not have to spend the time or energy to convince other executives of the potential value of a crowdsourced model. Rather time was spent determining how best to use the crowd’s input and build new products based on their knowledge.
Chapter 5

Findings and Discussion

Chapter 5 presents the findings from within case and across case analysis of the six case studies. First, unique themes that were identified within each case are highlighted and discussed in detail. Cases are then compared and contrasted and key findings across cases are presented. The chapter ends with a description of a model that illustrates the unique challenges associated with the use of internal-crowdsourcing specifically for product or service innovation.

5.1 Within Case Study Findings

Across the six cases in this research study, organizations were attempting to address a variety of different goals by supplementing or replacing current resources with crowdsourcing initiatives. Three organizations, Auto Inc., AdvanceTech, and IAA, were leveraging internal crowds (i.e., employees) for ideation related to new products and services. The Council opened up the strategic planning process to generate awareness and gather feedback from the public on its strategic sustainability plan. DocCorp was assessing the potential of external workers to reduce costs associated with the delivery of labor-intensive BPO services. Finally, HealthCo was capturing knowledge from experts in the crowd to improve the accuracy of its automated software coding decisions. For each case, a summary table of key findings and a discussion of the themes that emerged is presented next.
5.1.1 Auto Inc.: Opening Up Ideation to Employees Requires Cultural and Process Shifts

As described in Chapter 4, Auto Inc.’s crowdsourcing initiative was an internal ideation platform created with the goal of generating awareness of new connected services and soliciting ideas from employees for new connected product/service offerings (see Table 5-1).

Table 5-1: Overview of Auto Inc. Case Findings

<table>
<thead>
<tr>
<th>Crowd</th>
<th>Impacts</th>
<th>Facilitators</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>• Reducing barriers to participation</td>
<td>• Initial support and funding from CIO</td>
<td>• A new approach to ideation</td>
</tr>
<tr>
<td></td>
<td>• Better ideas/earlier identification of potential issues</td>
<td></td>
<td>• A new way of thinking</td>
</tr>
<tr>
<td></td>
<td>• Identifying innovative employees</td>
<td></td>
<td>• Distraction and shift from IT’s primary responsibilities</td>
</tr>
<tr>
<td></td>
<td>• Reassignment and loss of employees (due to cancellation of initiative)</td>
<td></td>
<td>• Labor laws and IP rights in Europe</td>
</tr>
</tbody>
</table>

5.1.1.1 Identified Themes and Discussion

The internal-crowdsourcing ideation platform was designed to generate awareness of and ideas for potential new offerings by opening up the ideation process to employees. However, the Innovation Group’s attempt to open up the innovation process was incongruent with Auto Inc.’s hierarchical structure and siloed processes. Two key themes help to explain why the initiative was cancelled. First was the incongruence between this new approach to innovation and the current organizational culture and structure. Second was the lack of awareness across the organization regarding the potential long-term benefits of such an approach. These two challenges combined with the loss of executive support created obstacles that the Innovation Group was unable to overcome. Next, both themes are discussed in greater detail.
Both the Director of the Innovation Group and the original CIO felt a new service-focused approach was required for Auto Inc. to remain competitive. As such, the initiative was directly tied to generating awareness of and ideas for the next-generation connected car. This view, however, was not consistent with the organization’s current short-term product-based innovation focus and its siloed organizational structure. This new business practice required executives, managers, and employees to think differently about innovation. Because of the nature of the ideas being solicited, a shift in focus to new service-oriented offerings was required. Open sharing of ideas across organizational boundaries also required managers to relinquish some control over their employees’ ideas and the ideation process. Furthermore, sharing ideas at the early stages of conception, attempting to grow ideas through cross-departmental discussion, and focusing on longer-term results was not consistent with current organizational structure and processes. Finally, locating the new Innovation Group within the IT department was inconsistent with current departmental responsibilities and the rigid boundaries that currently existed between departments. According to one interviewee, a strong contributing factor for the removal of the group was that it was seen as “a distraction of operational IT.” Continuing this initiative would require the incoming CIO to defend the expenditure of funds for the seemingly counter-culture initiative. In short, the new short-term CIO would have to share the long-term vision of the Director of the Innovation Group and the former CIO.

A second key theme related to the cancellation of the initiative was the decision to take a slow staged approach to integrating employees into the new ideation process. The Director of the Innovation Group viewed this approach as optimal for two key reasons. First, it allowed the Innovation Group to “seed” the platform with good ideas so as to demonstrate the value of an open approach to key stakeholders. By starting slowly, the Innovation Group hoped to build a repository of quality ideas with some level of vetting. Seeding the platform with quality ideas was seen as critical in helping managers to quickly recognize the potential of new service offerings.
Second, a slow approach allowed the Innovation Group to handpick and recruit individuals with status and power within the organization. Enlisting support from executives during the pilot was seen as the first step in generating buy-in from high-level managers and therefore critical to the long-term success of the initiative. Moreover, this slow staged approach was viewed as a way to create a safe environment to test and refine processes before releasing the platform to all employees. That is, the Innovation Group was attempting to “fly under the radar” so as not to draw attention to the initiative before issues and concerns could be adequately addressed. While the staged approach was seen as a way to test and hone the initiative, it also resulted in limited awareness and participation across the organization. In fact, even with a handpicked group of friendly participants, usage was oftentimes sporadic. Based on system reports, some individuals signed in daily, others signed in occasionally but did not contribute ideas or comments, and still others had yet to sign in.

While management did not provide a full explanation for why the initiative was cancelled, the Innovation Group was told that the approach was not consistent with headquarters’ vision. According to interviews, a key factor in discontinuing the initiative was the widely held belief that all employees should be innovating as part of their daily jobs. Such beliefs were incongruent with expending funds and resources to support a company-wide ideation tool. Additionally, the Innovation Group was seen as a distraction from the primary responsibilities of both the IT Department and the U.S. sales division. Because the incoming CIO did not share the vision of the outgoing CIO, and there was insufficient awareness and support for the initiative outside the Innovation Group, resources and funding were withdrawn.

As mentioned, at the time of interviews, a VP at the European headquarters was also interested in exploring the potential of an internal ideation platform. However, shortly after the cancellation of the U.S. initiative, the VP was reassigned to a new position and the initiative in Europe was also phased out. Interestingly, according to a follow up interview, before the VP was
reassigned he made sure that funding was provided to support progress towards new connected services. While Auto Inc. is not pursuing internal ideation as a means of identifying new ideas and technologies, they are utilizing a more traditional open innovation approach. Specifically, the U.S. regional CIO (a level above the CIO who cancelled the ideation initiative) was reported by one interviewee to be spearheading a global IT scouting effort designed to identify technologies that would allow Auto Inc. to offer new connected services. The shift in focus from internal to external sources of innovation was viewed as more in line with the organizational culture of Auto Inc. Additionally, such an approach would address country labor laws and issues related to ownership of ideas and resulting products.

5.1.2 AdvanceTech: Opening Up Ideation to Employees Requires Changes to Current Processes

As described in Chapter 4, AdvanceTech’s crowdsourcing initiative was an internal ideation platform designed to open up ideation to all employees and reduce costs associated with engaging geographically distributed employees in the ideation process. Specifically, the goal was to increase the quantity, quality, and variety of ideas generated for both new and existing offerings (see Table 5-2).
Table 5-2: Overview of AdvanceTech Case Findings

<table>
<thead>
<tr>
<th>Crowd</th>
<th>Impacts</th>
<th>Facilitators</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>• Opening up ideation process</td>
<td>• Avoiding traditional measures of success</td>
<td>• Protecting sensitive information</td>
</tr>
<tr>
<td></td>
<td>• Generating more ideas, better ideas, and faster movement to market</td>
<td>• Active support from leadership</td>
<td>• Working within current accounting practices</td>
</tr>
<tr>
<td></td>
<td>• Lowering bar to entry</td>
<td>• Reducing accounting requirements</td>
<td>• Resistance from precision and performance-based culture</td>
</tr>
<tr>
<td></td>
<td>• Flattening of organization</td>
<td>• Changing processes</td>
<td>• Demonstrating value to executives</td>
</tr>
<tr>
<td></td>
<td>• Identifying innovative employees</td>
<td></td>
<td>• Encouraging collaboration over competition</td>
</tr>
<tr>
<td></td>
<td>• Building a culture that values creativity</td>
<td></td>
<td>• Managing day-to-day usage</td>
</tr>
</tbody>
</table>

5.1.2.1 Identified Themes and Discussion

While the ideation platform resulted in opening up the innovation process to more employees, the VP/CTO spearheading the initiative faced a number of challenges with implementation, adoption, and usage. Challenges fell into two broad categories: 1) conflicts with current organizational processes and practices, and 2) conflicts with AdvanceTech’s organizational culture.

With regard to organizational processes and practices, the classified nature of AdvanceTech’s business created challenges with sharing information inside and outside the organization. Because of export control regulations and client work disclosure agreements, AdvanceTech was extremely limited in its ability to open up the ideation process outside its corporate boundaries. As such, the decision was made to leverage employees for ideation. However, because employees had different levels of clearance and worked in different countries, even opening up the ideation process to AdvanceTech employees created security issues. Second,
administrative procedures and processes, such as accounting for employees’ time, as well as the need to develop formal idea proposals, created initial barriers to use. Such barriers required executive leadership with status in the company to remove or change these processes.

With regard to organizational culture, AdvanceTech’s current organizational culture was reported to be incompatible with the organic nature of collaborative ideation. Because of the highly precision and performance focused culture, the ideation platform required engineers to adapt to a new way of proposing, advancing, and promoting ideas. Additionally, AdvanceTech’s hierarchical and siloed organizational structure did not lend itself to cross-organizational collaboration. Overcoming these challenges required active leadership from the executive in charge of the initiative. In fact, the key role that the VP/CTO played in the promotion and adoption of the ideation platform was a consistent theme across all interviews. Her ability to generate awareness of the potential value of an open approach, to create incentives that encouraged (or mandated) participation, and to secure funding was key to adoption and use of the platform. As a high-level executive with significant experience within the organization, she was able to use both her status and organizational knowledge to overcome barriers related to administrative processes. Additionally, she was able to put into place mandates to motivate R&D staff to contribute to the platform. While not all executives and employees saw the potential of this new ideation process, interviewees reported a number of changes with regard to organizational culture; specifically a flattening of the organization and a new appreciation for creative engineers.

In addition to the active leadership of the VP/CTO, technology also played a key role in facilitating collaboration and communications. While the desire to open up the innovation process was not new, the ability to cost effectively do so was problematic. While significant resources were still required to support and manage the ideation process, the ability to collect ideas and engage in cross-departmental collaboration on an on-going basis was now more user-friendly,
sustainable, and scalable. Additionally, the separate communications Intranet played a key role in helping employees to promote their ideas outside their individuals groups. By leveraging the communications Intranet, employees could socialize and expose their ideas to others who were not currently monitoring the ideation platform. Because the ideation platform was not likely a standard part of all employees’ day (as email would be), the ability to push ideas out both via the ideation platform and the communications Intranet allowed individuals to reach out to a larger number of people to advance their ideas.

5.1.3 IAA: Opening Up Ideation to Employees Requires Flexible, Cross-Departmental Collaboration

As described in Chapter 4, IAA’s crowdsourcing initiative was an internal ideation platform designed to solicit ideas from employees for improving delivery of services and working conditions. Additionally, it was designed to facilitate collaboration and sharing across divisions and geographically dispersed field sites (see Table 5-3).

Table 5-3: Overview of IAA Case Findings

<table>
<thead>
<tr>
<th>Crowd</th>
<th>Impacts</th>
<th>Facilitators</th>
<th>Challenges</th>
</tr>
</thead>
</table>
| Employees | • Improving flow of communications from field to headquarters  
• Faster recognition of potential issues  
• Improving employee morale | • Team members with institutional knowledge  
• Team members committed to open ideation | • Off-topic posts  
• Poor quality ideas  
• Varying levels of support  
• Resistance to cross-division collaboration  
• No standardized processes  
• Limited equipment and time in the field |
5.1.3.1 Identified Themes and Discussion

As previously discussed, opening up the flow of information between headquarters and the field via the idea portal helped headquarters gain a better understanding of issues in the field. Additionally, it helped many field employees feel that they now had a voice in the organization. However, because IAA’s culture valued adherence to defined processes and command structure, the portal had little impact on the ideation processes. Moreover, little collaboration was taking place on or off the portal with regard to evaluating and implementing ideas. Instead, portal team members and liaisons relied on their personal expertise and experiences to advance ideas to a stage where others could see value. Finally, the amount of complaints and noise in the system made it difficult for others to see the value the portal might bring to the agency.

With regard to processes, while the portal was designed to facilitate a connection between field employees and senior management, few senior managers were actively involved in evaluating ideas or participating in on-line discussions. In fact, while more ideas were flowing into headquarters, the process for evaluating and implementing ideas had not changed. Portal team members and liaisons could, and did, actively advocate for employee ideas, however, they were still required to follow the existing chain of command to obtain final approval. That is, information still trickled up through the ranks. While the portal had given field employees an open platform on which to voice opinions and make suggestions, it had not flattened the organization or significantly altered the flow of information within the existing command structure.

With regard to collaboration across divisions, all interviewees indicated that more cross-division and cross-functional collaboration was needed. As previously discussed, portal team members and liaisons played a key role in advancing ideas submitted to the portal. Because these individuals had substantial institutional knowledge, they were often able to shape and grow ideas
to a point where managers would considered them for implementation. While such deep institutional knowledge was certainly helpful, the portal team did not have the resources needed to give all ideas the same level of attention. In short, relying on the portal team and liaisons to advance ideas created a bottleneck that slowed down the ideation process. Furthermore, much of the work in advancing ideas was conducted one-on-one with employees either through individual messages or via other channels (e.g., email). As such, it was not made public. This limited the ability for others to learn from and contribute to the discussion. This approach created a significant burden on portal team members and liaisons to advance ideas through their own efforts.

Finally, while the goal of the portal was to solicit new ideas and share information that could be used to help IAA better achieve its mission, the bulk of submissions were questions or complaints from the field. As such, the idea portal functioned more as a communications tool and less as an ideation tool. Because of the amount of questions and off-topic submissions, portal team members and liaisons spent a significant percent of their time clarifying policy, answering similar questions, and managing misinformation. Over time, as questions and complaints increased the number of valuable ideas became harder to quickly identify. Additionally, over time the number of senior and mid-level managers engaged in the portal also decreased. Specifically, active engagement in public discussions from the Director of IAA had stopped, and many managers had delegated portal responsibilities to lower-level staff. This may suggest a connection between the amount of “noise” generated on the site and the lack of interest and support from management. As the noise level increased, the percentage of submissions that might help IAA to advance its mission decreased. As such, managers browsing submissions were required to sort through a significant number of questions or complaints in order to locate useful ideas. The number of complaints and off-topic posts may have reinforced the perception of many in headquarters that field employee input was not critical to IAA’s mission. While the Director of
IAA believed that soliciting ideas from employees was critical to IAA’s success, this belief was not shared across the management team. Interviewees reported that managers agreed that frontline employees were necessary to carrying out the mission of IAA. However, they also reported that submissions on the idea portal often seemed trivial compared to the overall mission of the agency. Such trivial comments made it difficult for managers to see the value of portal to the agency’s mission.

5.1.4 The Council: Demonstrating Transparency to the Public Requires Significant Resources and Expertise

As described in Chapter 4, the Council’s crowdsourcing initiative was undertaken to create transparency around the strategic-planning process. Specifically, the Council wished to solicit the public’s feedback on the goals and actions included in the sustainability plan and actively engage individual in the sustainability initiative (see Table 5-4).

Table 5-4: Overview of the Council Case Findings

<table>
<thead>
<tr>
<th>Crowd</th>
<th>Impacts</th>
<th>Facilitators</th>
<th>Challenges</th>
</tr>
</thead>
</table>
| Broader college and geographic community | • Demonstrating transparency  
• Limited value of input  
• Better understanding of public’s knowledge  
• Richer and more accessible plan | • Shared belief in transparency  
• Leveraging current communications channels | • Disseminating a consistent message to a diverse audience  
• Determining what input is desired  
• Dealing with potential negative impacts  
• Lack of resources and limited time |

5.1.4.1 Identified Themes and Discussion

A key goal for the Council was creating an open and transparent planning process. As such, the Council attempted to generate awareness with the public to solicit their input. While
Council members were committed to involving the public in the planning process, few had experience in this area. The Council lacked both the expertise on how best to engage the crowd in the process, and the resources to create and maintain an effective online presence. In the words of one interviewee, “We didn’t have the manpower to do everything. We didn’t have the time; not everybody had the expertise.” This resulted in four key challenges that impacted the Council’s ability to extract value from the initiative. First was the lack of public awareness regarding the initiative. Second was the lack of public understanding regarding sustainability. Third was the lack of defined processes for collecting, evaluating, and integrating online input. Fourth was the lack of interactive features for engaging the public and collecting their input. Next, each of these key issues is discussed in detail.

At the launch of the initiative, the Council underestimated the critical role communications would play in generating awareness. While the Council did provide a form to collect input on the college’s sustainability web site, no communications plan was put in place to alert the public to the availability of the form. Without outreach to the broader community, the ability to obtain feedback from a broad section of the community would remain limited. In fact, efforts to generate awareness of the initiative did not occur until 14 months after the start of the initiative. This resulted in the vast majority of comments coming from individuals who were either part of the sustainability efforts at the college, or who were already closely monitoring the sustainability web site.

As mentioned, the Council leveraged both online and offline channels to connect with the public. During the second year of the initiative, outreach efforts increased and included the use of Facebook, Twitter, and the college’s eNewsletters. However, broader outreach began with only three months remaining before the final plan was to be completed. As such, there was limited time to generate broad awareness. While interviewees reported limited value from online input, face-to-face sessions were described as extremely useful in generating awareness and collecting
actionable input from the public. It should be noted that significantly more time, resources, and attention were allocated for planning, advertising, and managing face-to-face meetings. While face-to-face sessions were more helpful, participants were primarily individuals working for the college. As such, there was limited input from the broader collegiate community, and especially the citizens of the town. Therefore, the goal of being inclusive and generating awareness of and support for the sustainability across the desired audience segment may have fallen short.

With regard to the input that was collected, interviewees reported that feedback showed a limited understanding of sustainability and the potential impacts on the community. Because of this limited understanding, novel inputs were rare. Useful feedback required an informed crowd, one with more than a superficial understanding of sustainability. While success was predicated on the Council’s ability to tap into the public for new ideas, the Council realized that not everyone in the crowd could generate the level of insight desired.

The lack of expertise and technical resources also created considerable challenges for the Council. Specifically, members were limited in their ability to build appropriate online forums with which to engage the public in meaningful discussions. While the decision to leverage existing communication channels (e.g., Facebook, Twitter, eNewsletters, and the college’s sustainability web site) streamlined efforts, these channels were not optimal for facilitating discussion or building on others’ ideas. Instead, they were primarily one-way channels, with information flowing out and in but not between. That is, there were few opportunities for online collaboration other than in short bursts that were difficult to string together. This severely limited the Council’s ability to engage the public via online channels. Additionally, it limited the opportunity for less knowledgeable individuals to learn from those with more expertise, and for more knowledgeable individuals to expand on others’ ideas.

The general wording used to solicit input also created challenges in collecting the desired level of input. The public was asked to provide input and comments on what might be done to
support stated goals, but they were not asked to comment on the appropriateness of the goal itself. As such, it is unlikely that the Council successfully achieved the goal of obtaining input on the plan as a whole. This is unfortunate as online channels had a significantly broader reach than face-to-face channels and provided an opportunity to connect with a broader segment of the public. This raises the question of whether a more collaborative forum with more targeted questions would have resulted in better quality feedback. This, of course, would require resources and expertise, both of which were in limited supply.

In contrast to online channels, interviewees reported that face-to-face input sessions were more interactive. In face-to-face sessions, three Council members reported being able to easily engage participants, ask multiple questions, and solicit more useful input. That is, they were able to create an interactive and collaborative environment. One could argue that this is likely because Council members at these sessions were comfortable and experienced with interacting in face-to-face sessions. Additionally, significantly more time, resources, and money were applied to the face-to-face meetings, than was the case for online channels.

Finally, a consistent theme across all interviews was the lack of defined processes for collecting, evaluating, and integrating crowdsourced input. As previously discussed, the Council struggled with how best to word questions, exactly what input would be most useful, and how to evaluate and integrate the input that was collected. One interviewee describe the entire process as “flying by the seat of our pants,” another as a “broad shot-gun approach,” and a third as “ad hoc and chaotic.” Pending deadlines also created challenges and resistance to collecting best practices from other organizations. Such efforts would create more work against an already tight deadline. When it came to evaluating the crowdsourced input, interviewees also reported no formalized processes or criteria for evaluating ideas. Instead, criteria were left up each Council member. Furthermore, while all input was made available to Council members, Council leadership reported that it was unclear who actually looked at the input. Finally, one interviewee reported
that some input appeared to have been missing from final reports. Had there been established, formalized processes based on current best practices, the group may have been better able to extract the type of information they desired via online channels. While collecting best practice would have required additional time and tasks, it may have helped to standardize and give structure to the process. Such processes would not however, address the public’s lack of understanding regarding sustainability.

5.1.5 DocCorp: Leveraging the Crowd to Reduce Costs Requires Significant Experimentation

As described in Chapter 4, DocCorp’s was in the early stages of examining whether a crowdsourced services model would help to reduce costs associated with labor-intensive BPO services while complying with quality and time commitments outlined in SLAs (see Table 5-5).

Table 5-5: Overview of DocCorp Case Findings

<table>
<thead>
<tr>
<th>Crowd</th>
<th>Impacts</th>
<th>Facilitators</th>
<th>Challenges</th>
</tr>
</thead>
</table>
| On-demand workforce accessible via the Internet | • A better understanding of problem  
• Helping non-professional workers find jobs | • Leveraging existing resources  
• Visionary leaders | • Data security  
• Ensuring quality  
• Turnaround times  
• Managing the crowd  
• Sustainability of model |

5.1.5.1 Identified Themes and Discussion

With a growing portion of DocCorp’s revenue coming from labor-intensive BPO services, DocCorp was looking for innovative ways to reduce costs associated with the completion of routine, time-consuming tasks. Specifically, the R&D group was looking to find the right mix of automation and human experts to complete routine tasks for DocCorp customers. In short, DocCorp was attempting to leverage the crowd as an on-demand workforce. The reach
of the Internet combined with new collaborative technologies opened up the potential for DocCorp to connect virtually with significantly more workers than their current model. In addition, it allowed DocCorp to provide 24x7 BPO services. By leveraging the economies of scale that the sheer numbers in the crowd would bring, DocCorp hoped to reduce costs and increase margins associated with the completion of routine labor-intensive processes such as transcription, data entry, translation, and digitization of paper forms. For DocCorp, crowdsourcing represented a potential process innovation designed to deliver quantifiable economic benefits.

Key to the R&D group’s mission was discovering new cutting-edge technologies, interfaces, and algorithms that could be used to identify the best worker(s) in the crowd, create a more efficient workflow, better manage the workflow process, ensure the quality of the work product, and protect sensitive data, all at reduced cost. While the R&D group was experimenting with the potential of a crowdsourced delivery model, before this new model would be considered or implemented, business unit managers needed to be confident that it would reduce costs without compromising SLAs. Because the nature of the tasks to be completed could be easily simulated, the R&D group was focused on creating use cases to test the quality of the crowd’s work as well as estimated costs. Specifically, the R&D group would have to identify the conditions under which alternative resources would reduce costs without increasing risk. In addition to evidence of cost reduction, researchers had to provide evidence that the work could be completed at the same quality and within the same timeframes as current resources, all while guaranteeing the protection of sensitive data. That is, implementation of a crowdsourced services model would be a business decision based on hard evidence.
5.1.6 HealthCo: Leveraging the Crowd for Their Knowledge Requires Streamlined Processes

As described in Chapter 4, HealthCo’s crowdsourcing initiative was designed to improve the accuracy of its software’s underlying NLP algorithms by leveraging users’ inputs as a source of training data (see Table 5-6).

Table 5-6: Overview of HealthCo Case Findings

<table>
<thead>
<tr>
<th>Crowd</th>
<th>Impacts</th>
<th>Facilitators</th>
<th>Challenges</th>
</tr>
</thead>
</table>
| Current users of software | • Build a competitive advantage  
• Identifying confusing or vague regulatory instructions | • Support from leadership  
• Leveraging current users as source of data  
• Streamlined data collection processes | • Acceptance of crowdsourced automated model  
• Ensuring accuracy  
• Relying on a crowd that you may replace |

5.1.6.1 Identified Themes and Discussion

HealthCo hoped to create a superior product and set itself apart from other automated billing companies by integrating the input of professional coders directly into its product development process. Key to HealthCo’s automated coding service was its ability to train sophisticated NLP algorithms with crowdsourced data. By aggregating the decisions of experts in the crowd, HealthCo was able to improve product performance and drive value for the company.

A number of themes emerged from this analysis. First, HealthCo did not have to expend time and resources to identify, recruit, or motivate the crowd to participate. Instead, as the numbers of customers grew, so did the crowd. As the crowd grew, so did HealthCo’s knowledge base. Moreover, HealthCo was able to extract value from the crowd without obtaining its buy-in (i.e., using the product was all that was required). This did not mean, however, that the crowd was on board with HealthCo’s objectives. HealthCo’s targeted crowd was professional medical coders hired for their domain expertise and ability to code complex medical records. These coders were
in the unusual position of giving away their expertise just by doing their jobs. The more customers that used HealthCo’s products, the more knowledge HealthCo was able to capture. This created concerns within the professional coding community that individuals might be replaced by automated system. In some instances, coders actually worked against adoption of HealthCo products. While contributions from the crowd are often voluntary (e.g., Dell’s IdeaStorm), in this case, coders could not hold back or refuse to share their knowledge. Poor performance on the job due to inadequate or inappropriate coding would also put their jobs in jeopardy.

5.2 Across Case Study Findings

While these cases cover a variety of uses of the crowd, similarities and differences among them did emerge. Next, a summary of these similarities and differences is provided.

5.2.1 Organizational Goals and Success Metrics: Tangible and Intangible, Immediate and Delayed

As these cases illustrate, organizations are experimenting with, testing hypotheses, and refining processes related to this new business practice. Consistent with the literature on crowdsourcing, organizations in this research study had mixed results (Allen et al., 2008; Huston & Sakkab, 2006; Jouret, 2009; Knuden & Morteusen, 2011). Each of these organizations expended significant time and resources implementing and managing their crowdsourcing initiatives. Each was also at different stages of defining and evaluating the success of these initiatives. For some, success metrics were tangible and directly tied to goals. For others, success was more closely tied to intangible benefits that would facilitate change within the organization (see Table 5-7).
Table 5-7: Across Case Comparison of Organization’s Success Metrics

<table>
<thead>
<tr>
<th>Case</th>
<th>Success Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tangible</td>
</tr>
<tr>
<td>Auto Inc.</td>
<td>✓</td>
</tr>
<tr>
<td>AdvanceTech</td>
<td>✓</td>
</tr>
<tr>
<td>IAA</td>
<td>✓</td>
</tr>
<tr>
<td>The Council</td>
<td>✓</td>
</tr>
<tr>
<td>DocCorp</td>
<td>✓</td>
</tr>
<tr>
<td>HealthCo</td>
<td>✓</td>
</tr>
</tbody>
</table>

✓ = Primary Success Metric  ✓ = Secondary Success Metric

For example, DocCorp clearly defined both their goals and their success metrics as reduction in costs without compromising quality. Their initiative was designed to generate use cases that would demonstrate tangible and quantifiable savings associated with delivery of BPO services at the defined standards stipulated within SLAs. Similarly, HealthCo’s goals centered on improving accuracy and efficiency of their automated coding decisions. Success metrics were directly tied to their ability to provide a statistical level of confidence in each coding decision. In these two cases, success was directly tied to quantifiable tangible metrics. However, while DocCorp was still testing whether the crowd could help them achieve desired results, HealthCo had proven metrics that crowdsourcing improved the accuracy of their coding decisions.

For the remaining organizations, however, success metrics and results were less clear. In fact, unlike DocCorp and HealthCo, the other organizations studied (i.e., Auto Inc., IAA, AdvanceTech, and the Council), were focused primarily on intangible goals for which quantifiable measures would be difficult if not impossible to generate. For example, Auto Inc., IAA, and AdvanceTech were each leveraging internal crowds to generate new ideas. While interviewees reported some measurable success metrics such as number of participants and number of ideas generated, primary goals were more closely aligned with intangible benefits such as creating a culture of innovation, allowing employees to feel they had a voice, and facilitating
cross-departmental cooperation and collaboration. In fact, in all three cases, leaders of these initiatives indicated they were attempting to do more than focus on raw numbers. Instead, they were hoping to facilitate cultural changes that would better serve the organization in the long term. In the case of Auto Inc., one of the reasons the initiative was cancelled was because results were seen as too far on the horizon and executives felt other methods would yield faster results. Finally, in the case of the Council, goals were also primarily intangible and difficult to measure (i.e., generating awareness with the public and creating a better more actionable plan).

While intangible benefits are difficult to measure, in all four cases, interviewees did provide numerous stories and examples of intangible value such as reduction in barriers to participation, employees feeling more empowered, a flattening of the organization related to the flow of information, and a better understanding of the crowd’s level of knowledge. In all cases, interviewees felt results were somewhat promising, however, considerably more work was still required to effect significant change. This is not surprising considering that significant time is required to generate awareness across a large population, alter attitudes, change culture, and replace processes (Tushman & O’Reilly, 2002). This is not to say that such goals are inappropriate. Instead, this sheds light on the fact that the value of the crowd in these cases was not easily quantified and would require significant time and resources to realize.

The fact that DocCorp and HealthCo were able to quantify success provided them with tangible opportunities to measure the value the crowd brought to the task at hand. Such measurable metrics allowed the groups implementing the crowdsourcing initiatives to clearly demonstrate its value to the organization. For the other cases in this study, a focus on intangible value created challenges in defending why resources and time should be allocated to such initiatives. As was illustrated with Auto Inc. and AdvanceTech, initiatives without quantifiable short-term success metrics may be difficult to defend within organizations that traditionally assess initiatives based on a quantifiable ROI measures. While these cases did include some quantifiable
measure (e.g., number of ideas generated, number of ideas implemented), one has to question whether such tangible measures might in fact distract organizations from realizing their primarily goals when goals are more intangible (e.g., creating a culture of innovation, locating innovative employees). This understanding, that some uses of the crowd may not produce tangible and immediate benefits, may be critical for organizations to assess before implementation. Those attempting to leverage crowdsourcing as a means of increasing innovative potential or generating awareness must be able to clearly articulate the benefits of intangible goals. This may be particularly difficult in large organizations with siloed departments and traditional ROI measures of success. Furthermore, while support of executives is important when attempting to institute new processes, such support appears to be even more critical when managers are focused on intangible goals and cultural shifts. In these cases, managers may want to prevent the use of tangible metrics to measure success, as such metrics do not address the intangible benefits that organizations may be seeking and may not allow groups the time needed to affect change.

5.2.2 Resources and Time Requirements: Crowdsourcing Can Be Labor Intensive

A reoccurring key theme across cases was the labor-intensive nature of crowdsourcing initiatives. Of key concern was the organization’s ability to manage and evaluate input from the crowd. While some organizations were able to leverage automation and technology to assist in evaluation of inputs, others had to rely on humans to evaluate inputs. (see Table 5-8).
Table 5-8: Across Case Comparison of Organization’s Evaluation Source

<table>
<thead>
<tr>
<th>Case</th>
<th>Evaluation Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Inc.</td>
<td>✓</td>
</tr>
<tr>
<td>AdvanceTech</td>
<td>✓</td>
</tr>
<tr>
<td>IAA</td>
<td>✓</td>
</tr>
<tr>
<td>The Council</td>
<td>✓</td>
</tr>
<tr>
<td>DocCorp</td>
<td>✓</td>
</tr>
<tr>
<td>HealthCo</td>
<td>✓</td>
</tr>
</tbody>
</table>

Specifically, AdvanceTech and IAA interviewees reported that significant time was needed to manage, monitor, and evaluate the input of the crowd. Common activities included ensuring comments stayed on topic, answering questions, and working with employees to help solidify and advance early stage ideas. Individuals working in the ideation teams at both AdvanceTech and IAA expressed concern that there was not enough time or resources to answer all questions and provide the desired level of feedback to participants. While Auto Inc.’s initiative was cancelled in the early stages of its pilot, one of the purposes of a slow staged rollout was to ensure the group and platform could handle large amounts of input, again suggesting that this group was concerned about handling the additional input that a global initiative would generate.

In the case of the Council, the lack of dedicated personnel to manage implementation and daily activities created a significant challenge for the group. The Council lacked both technical resources and personnel to manage the flow of information and drive interactions with the public. This lack of personnel impacted the ability of the Council to leverage online communication channels other than the established ones to connect with the public. In fact, the channels that were selected were done so not because they were the best options for generating awareness and engaging the public, but because they were the ones that required the minimal level of effort.

While DocCorp was only in the early stages of implementation, interviewees did express concerns over the additional resources that would be needed to manage the potential increase in
workflow and workers. To address these issues, DocCorp was seeking semi-automatic technical solutions to common supervisory and workflow issues.

Finally, HealthCo was able to automate the collecting and evaluation of input, therefore reducing the time for humans to monitor quality. Specifically, because of the nature of the data being captured, HealthCo was able to programmatically identify exceptions or unusual patterns in the data. Automated quality checks meant human resources were focused on managing exceptions rather than manually identifying poor quality inputs.

What is similar between DocCorp and HealthCo, is that automation provided a potential solution to evaluating input. Specifically, because both were attempting to hone in on a correct answer that was somewhat quantifiable, automated systems could be leveraged to reduce the resources needed to evaluate and verify quality inputs. With Auto, Inc., AdvanceTech, IAA, and the Council, however, the “correctness” of the input was not easily defined. Leveraging automated techniques to assess the quality of ideas was not feasible. This suggests that depending on the nature of the task to be completed, organizations should be aware of the labor-intensive aspects of crowdsourced ideation. In fact, there appears to be a relationship between the level of human verification needed in the evaluation process and the nature of the task to be completed (see Figure 5-1).
The matrix in Figure 5-1 illustrates the relationship between the level of human verification required and the nature of the task the crowd is being asked to complete. Depending on the task to be completed, the answer is either known or unknown and the input provided from the crowd can either be quantified or not quantified. These dimensions can be used to indicate the level of human verification required and as such the potential implications for resources needed.

Located at the bottom of the matrix are tasks for which organizations can use automation as the sole or primary means of verification and evaluation. For example, DocCorp’s task of matching numbers across multiple documents is a simple task for which there is a single known and quantifiable answer. Such a task could be verified using automated means. On the other hand, HealthCo’s task of coding medical records was a complex task with an unknown answer. However, input from the crowd could be quantified and aggregated, therefore, automated methods were the primary means of verification and evaluation. While automation was the
primary method of verification and evaluation, because of the unknown nature of the answer, some level of human verification was also required to ensure accuracy.

The top of the matrix illustrates tasks for which humans are the primary means of verification and evaluation. For example, DocCorp was attempting to leverage the crowd for more complex tasks such as translation of document into different languages. While there is a range of acceptable known answers for this task, quantifying such answers is problematic because the variation in the number of acceptable answers is dependent on the language structure and interpretation. While automation may provide a first pass at verification, such tasks are hard to fully automate thus requiring humans act as the primary means of verification and evaluation. Similarly, tasks such as coming up with the next great idea, as was the case with Auto Inc., AdvanceTech, and IAA, have no known answer and answers cannot be easily quantified. As such, verification and evaluation requires human review.

In the cases under study, many underestimated the resources required to implement and manage such initiatives. Depending on the type of input to be collected and whether accuracy can be assessed via automatic means, additional resources were required to identify valuable inputs. By examining the nature of the task as it relates to known/unknown answers and quantifiable/non-quantifiable inputs, the matrix described above can shed light on the level of human resources that may be required.

5.2.3 Internal Versus External Crowds: Balancing Added Value with Added Risks

When leveraging crowdsourcing, organizations also faced decisions regarding whether to turn to an internal or external crowd. Within the cases studied here, organizations leveraged both internal and external crowds as new sources of knowledge, productivity, creativity, and innovation. By turning to the crowd, these organizations opened up the potential to benefit from
increased diversity, distributed knowledge, and access to large numbers of workers (Bonabeau 2009; Chesbrough, 2003a, 2006; Jeppesen & Lakhani, 2010; Lakhani et al., 2007; Poetz & Prügl, 2010; Poetz & Schreier, 2012). Specifically, as diversity and distributed knowledge increase, so does the potential to generate novel ideas (Bonabeau, 2009; Lakhani et al., 2007; Poetz & Schreier, 2012). As numbers increase, the potential to complete jobs more quickly also increases, as does the possibility of finding an acceptable solution (Boudreau et al. 2011; Terwiesch & Xu, 2008). However, analysis of both literature and the cases conducted as part of this research, show that as organizations extend their reach they also face additional challenges and risks (Bonabeau, 2009; Jouret, 2009; Knuden & Morteusen, 2011). Specifically, additional reach brings with it challenges related to: 1) filtering out noise or inappropriate inputs, 2) loss of control over the work product, 3) leakage of sensitive data/information, 4) managing increased volume of input, and 5) ensuring the quality and accuracy of the final work product (see Figure 5-2).

Figure 5-2: Increased Value and Challenges of External Crowds
While different cases in this study encountered different risks, a common theme across all cases was concern over the quality of the input or work generated by the crowd. This was the case whether organizations were reaching out to an internal crowd (i.e., Auto Inc., IAA, and AdvanceTech) or whether they were reaching outside their corporate boundaries to an external crowd (i.e., the Council, HealthCo, and DocCorp). Additionally, quality was a concern when the crowd was working on tasks with a single or acceptable range of answers (i.e., DocCorp and HealthCo), or when they were working on tasks with no one right solution (i.e., Auto Inc., IAA, AdvanceTech, and the Council).

For example, DocCorp was attempting to reduce costs associated with labor-intensive BPO services. As such, turning to an external crowd was necessary to reduce costs associated with staffing, managing, and overhead of employees and contract services. DocCorp was expending considerable resources to ensure that an unknown crowd could produce quality work that would meet defined standards. Additionally, they faced challenges related to ensuring sensitive information was protected. Because there was no obligation from the crowd to complete tasks, DocCorp also struggled with loss of control over its ability to meet contracted SLA deadlines. Finally, increased volumes of work created concerns over DocCorp’s ability to manage the additional work. Before DocCorp would commit to a crowdsourced business model, the research group needed to prove that such challenges could be overcome. Without such assurances, a crowdsourced business model would not be implemented.

HealthCo also turned to an external crowd. Because their goal was to improve the accuracy of their automated coding decisions, they required massive amounts of training data, more so than could be produced from employees. Because inputs could be aggregated and HealthCo could automate the identification of irregular trends or patterns, they were able to reduce risks that poor quality inputs would be integrated into their products. This did, however, require additional resources and diligence on the part of HealthCo’s management.
In the case of The Council, the objective was to increase awareness with the broad community regarding its sustainability efforts, again, requiring an external crowd. While, the Council faced no issues with release of sensitive information, they did struggle with noise and off-topic posts. Even with the limited amount of data collected, sorting through low-quality input required additional time, as did evaluating the crowd’s input.

In the three other cases – Auto Inc., AdvanceTech, and IAA – because these organizations were attempting to generate new ideas and facilitate product/service innovation, they were able to limit participation to individuals inside the organization. This allowed them to reduce risks associated with potential leakage of IP and loss of competitive stance. In addition, it provided some level of control, as executives could put in place processes that ensured participation. Leveraging an internal crowd, however, did not reduce all challenges and risks. Each of these organizations faced significant cultural challenges with opening up the innovation process to individual outside traditional innovation teams, even when these individuals were employees. Employees hesitated to participate in order to protect personal interests, because there were uncomfortable or unfamiliar with new processes, and because they were unwillingness or unable to collaborate across departments. Additionally, each of these organizations reported the need for additional resources to monitor and evaluate input, promote cross-departmental collaboration, and help employees better formulate and advance ideas.

In summary, a key decision when considering crowdsourcing as a new business practice is whether to limit reach to reduce risks. However, as was seen in the cases presented here, the option of working only with an internal crowd is not always possible. Depending on the needs and goals of the organization and the tasks to be completed, external crowds may be required. Understanding the potential benefits, risks, and challenges both internal and external crowds may bring to an organization can facilitate informed decisions regarding the use of the crowd for specific organizational needs. As was seen in these six cases, managing risks and challenges
required additional time, resources, and expertise. Moreover, allocating additional resources did not eliminate all risks.

5.2.3.1 Quality of Inputs and Location of the Crowd

As discussed, quality was a key concern in all cases. In examining the six cases and focusing specifically on the quality of inputs in relation to the location of the crowd some interesting themes emerged. Because DocCorp had yet to determine whether they could overcome quality issues, and Auto Inc.’s did not have sufficient time to address potential quality issues before the initiative was canceled, analysis here focuses on the four remaining cases – AdvanceTech, IAA, The Council, and HealthCo.

Of the four remaining cases, two leveraged an internal crowd – IAA and AdvanceTech. However, IAA interviewees reported more issues with off-topic posts than did AdvanceTech interviewees. Specifically, IAA reported poor quality and off-topic inputs as a major distraction requiring additional resources to manage. As previously discussed, IAA interviewees reported that managing and responding to off-topic posts required more time than expected. Furthermore, a significant percentage of posts were described as complaints, suggestions, or questions regarding employment contracts. Interviewees reported that similar questions were asked multiple times by multiple employees. IAA portal team members spent considerable time answering questions and providing information, as these posts often received numerous comments and votes, ranking them as priorities in the system. Finally, interviewees were concerned that not providing answers in a timely manner might send the message that headquarters was not listening to employees’ concerns.

AdvanceTech, however, reported only minor issues with quality, many of which were easily addressed by the current staff. While AdvanceTech interviewees did make comments
regarding the quality of ideas, quality was a function of receiving ill formed or early stage ideas, not off-topic posts.

One key difference between these two cases was the fact that AdvanceTech had a separate employee communications Intranet for sharing information and asking questions. The communications site was used by upwards of 40,000 employees including both individual contributors and management. As such, there was a separate centralized location for asking question and soliciting information. While one interviewee at IAA reported that he thought there was an Intranet dedicated to internal communications, he also reported that it was not widely used or monitored. Because the IAA portal team was focused on creating an open and inclusive ideation site, employees appeared to view the site as a way to communicate with headquarters and have their voices heard. Because there was not another active venue for such discussion and inquiry, the ideation platform became the central location for all inter-organizational discussion. This resulted in the need for additional time to monitor and answer employee questions, and likely contributed to the fact that many managers felt the ideation portal was not providing valuable benefit related to the organization’s mission. In fact, during a follow-up interview with the head of the ideation group, he indicated that there was a need for a separate communications platform in order to reduce such off-topic posts.

This suggests that, a key differentiator between these two cases appears to be the ability of the ideation team to focus employees’ inputs on idea generation. Specifically, AdvanceTech employees were focused on idea generation and collaboration around potential ideas. IAA employees, on the other hand, were using the portal as a primary communications channel. Review of interviews suggests that the amount of noise generated on IAA’s portal was primarily a result of the number of non-ideation posts that appeared. This suggests that an organization’s ability to focus employees on the task at hand may contribute to the quality of the ideas produced.
Another explanation for the difference in quality of inputs may be differences in who participated. Participants on IAA’s platform were primarily field employees holding entry-level positions within the organization. While these individuals had intimate knowledge of issues in the field, they had limited experience with innovation and ideation. At AdvanceTech, participants were primarily engineers who had experience with both the generation and execution of ideas.

The remaining two cases – the Council and HealthCo – turned to individuals outside their organizations. As with IAA and AdvanceTech, there were significant variations in terms of the quality of inputs as reported. As discussed, the Council reported limited value from the crowd’s input, while HealthCo reported significant value. A key factor that may account for this difference is the level of knowledge/skills of participants. In fact, the Council realized that the public did not have sufficient knowledge of sustainability to be able to significantly contribute to the planning process. HealthCo’s crowd, however was comprised of experts in the field. As such, their inputs added significant value to the organization. This finding also supports the explanation put forth above regarding the relationship between knowledge/skills and quality of inputs.

While additional cases are needed to support these preliminary conclusions, data from cases analyzed as part of this research suggest that when turning to an internal crowd, the ability to focus employees on ideation may be key to quality. This suggests that organizations should take measures to ensure internal ideation sites remain focused on innovation and do not become outlets for corporate communications. Redirecting questions and comments not specifically focused on ideation and innovation to a separate communication channels, may be critical in reducing off-topic posts. Additionally, focusing inputs on innovation may help to reduce the time and resources needed to sort through such posts, freeing up staff to focus on advancing ideas that may add value to the organization. When turning to an external crowd, a key factor in generating quality inputs may be ensuring that the crowd has the necessary pre-requisite knowledge and
skills. This suggests that organizations may want to limit open calls and instead focus on identifying the key knowledge and skills that may be most useful in generating valuable inputs.

5.2.4 On-Going Versus Specific Ideation Challenges: Variations in Quality

Three cases, Auto Inc., IAA and AdvanceTech, leveraged internal-crowdsourcing for ideation. While Auto Inc. cancelled its initiative during the initial pilot, both IAA and AdvanceTech initiatives had been in place for multiple years. Additionally, both had experimented with the use of on-going open ideation and time-bound specific challenges. Across both cases, organizations reported that time-bound, specific challenges resulted in fewer ideas overall, but ideas of a better-perceived quality. Two key factors may account for this finding: 1) specificity and 2) perceived value.

With regard to specificity, these organizations used on-going open ideation to solicit ideas to improve existing products/services, for new products/services, and/or for the application of existing technology to new markets. To encourage novel and unique ideas, questions were open-ended with relatively little structure and defined boundaries. Specific, time-bound challenges, on the other hand, tended to focus on defined organizational needs. The wording of these challenges was typically more detailed and outlined the specific issue to be addressed. Therefore, inputs tended to be focused and easier to evaluate. That is, interviewees reported less off-topic posts and noise with specific challenges than with open ideation.

With regard to perceived value, with on-going open ideation, because of the open nature of the question, ideas were typically less well formed and in the early stages of conceptualization. As such, to determine the potential value of such ideas (i.e., potential revenue or savings) would be difficult at this early stage. Additionally, realizing value from such ideas would likely be delayed. Assuming that an ideas had merit, it would require time to mature, test, and implement.
For specific challenges, however, the organization was already encountering impacts, either from not fixing the problem or from missing a market opportunity. Because the ideas submitted represented a potential solution to a current organizational need, the value or benefit of finding a potential solution would likely have been better understood. These two factors – specificity and perceived value – may have accounted for the pool of ideas being views as of a higher quality. What is unclear, however, is whether there was indeed a higher percentage of “quality” answers or whether ideas were perceived to be of increased quality because there was less noise overall and evaluators had a clearer understanding of the potential value a solution would bring to the organization.

5.2.5 Unique Challenges Associated with Internal-Crowdsourcing for Product/Service Innovation

Three of the organizations participating in this study leveraged internal crowds for ideation, specifically: Auto Inc., AdvanceTech, and IAA. In each case, a new group was established to manage the implementation and on-going support of the internal ideation platform. During analysis, patterns and relationships emerged that were unique to these three cases. In all three cases, attempting to open up the innovation process to new individuals, even when within the organization, conflicted with established organizational hierarchy, current work practices, and established organizational processes. In fact, attempting to leverage an internal crowd for product/service innovation required a shift in current organizational values and practices. Similar issues did not emerge in the other cases. The remainder of this chapter describes these unique challenges and how such issues created barriers to the adoption and use of crowdsourcing initiatives for the organizations under study.
5.2.5.1 Organizational Perceptions of Value as Barriers to Internal-Crowdsourcing

Across these three cases, two themes related to the adoption of internal-crowdsourcing for product/service innovation were revealed. First, these initiatives are based on the premise that individuals outside sanctioned innovation groups could add value to the innovation process (referred to moving forward as “personal value”). Second, goals associated with such initiatives were both tangible and intangible, with intangible benefits such as creating a culture of innovation often being of primary importance (referred to moving forward as “innovation value”). In the cases under study, perceptions of personal value and innovation value acted as barriers to the use and adoption of internal-crowdsourcing initiatives (see Figure 5-3).

Figure 5-3: Organizational Perceptions of Value as Barriers to and Facilitators of Internal-Crowdsourcing
Personal Value: Contribution Versus Title

Opening up innovation to employees outside the currently sanctioned innovation group presupposes that all employees, regardless of position and training, can add value to the innovation process. In short, it presumes that an employee’s value is a function of his or her contribution and not the value a job title or job description implies. Across and within these cases however, all individuals did not always share this perception of personal value. In fact, while all leaders of these initiatives believed that anyone could contribute, other managers and employees within the organization felt that only individuals with specific skills could add value.

This attitude manifested itself in different ways. Interviewees reported that both managers and individuals currently charged with innovation duties felt threatened or failed to see the value outsiders brought to the process. Managers were often reluctant to consider ideas from outsiders as they were perceived to not understand the feasibility of bringing new ideas to market. Non-managers working in innovation groups were also skeptical of outside ideas, and on occasion actually mocked ideas generated outside their group. As such, perceptions of personal value as a function of job title or job responsibilities often acted as a litmus test for who was capable of coming up with innovative ideas. Because individuals without innovation titles participated in these initiatives, their ideas were often dismissed or perceived to have limited value to the organization.

Innovation Value: Tangible and Intangible

As discussed earlier in this chapter, these initiatives often focused on intangible goals such as empowering employees, creating a culture of innovation, and identifying the most innovative employees within the organization. Traditionally, however, innovation is measured in
terms of economic gains from price, patents, and IP within large organizations (Pisano & Teece, 2007; Sherry & Teece, 2004; Teece, 1986). As such, initiatives designed to improve or accelerate innovation are often measured against tangible benefits. However, cases revealed that focusing only on the tangible traditional measures of innovation diminished or de-valued the intangible benefits internal-crowdsourcing brought to the organization. In fact, because these initiatives typically resulted in early stage ideas, organization would not likely extract tangible economic value for months, if not years.

Furthermore, the organizations in this study reported many more intangible benefits than tangible ones (e.g., building a culture of innovation, increasing diversity, identifying talent). As was seen in the case of Auto Inc., the new CIO’s short-term focus on tangible benefits was viewed as a contributing factor in the cancellation of the initiative. However, at AdvanceTech, were success was reported, the executive in charge of the initiative did not attach quantifiable measures to the initiative because it was difficult, if not impossible, to quantify them. Because many in the organization associated tangible economic benefits with innovation, a focus on intangible benefits is often contrary to the perceived value that innovation brings to an organization.

5.2.5.2 Organizational Practices as Barriers to Internal-Crowdsourcing

In addition to the need to change perceptions of value, cases revealed that organizational practices also created barriers to acceptance and use. Specifically, organizations struggled with overcoming issues related to established or institutionalized structure and processes (see Figure 5-4).
Organizational Structure: Protecting Hierarchical Status

Barriers related to organizational structure were seen across all three cases. First, in the case of Auto Inc., the internal-crowdsourcing initiative originated from within the organization’s IT department. As discussed, this created friction and resistance from other groups who were concerned that the IT group was not fulfilling its designated duties. Managers voiced their concerns to the CIO in charge of the IT group, and this further called into question the IT group’s ability to meet management needs. At Auto Inc., innovation was seen as outside the purview of the operationally-focused IT department. That is, innovation and innovative ideas belonged to sanctioned innovation and R&D groups.

Similar issues emerged within IAA. At IAA, managers of innovation teams saw company-wide ideation initiatives as encroaching on job responsibilities and in conflict with the
established chain of command. As such, these managers often attempted to enforce established procedures by instituting onerous processes within their groups or denying support to those tasked with managing the ideation process. For example, one of the individuals tasked with monitoring the ideation site was instructed not to comment on or advance ideas without authorization from her immediate boss and her boss’s boss. As such, the Manager within the group could tightly control which ideas moved forward and which did not.

Finally, at AdvanceTech, potential issues related to the need to shift management practices from pyramidal structures to more cross-functional team-based structures were reported. In this case, individuals within the defined innovation group were hesitant to post ideas to company-wide sites for fear that their ideas would be stolen or claimed by others, thereby reducing their ability to personally benefit from them. Furthermore, these individuals did not collaborate with others online to advance proposed ideas, preferring instead to hold back ideas so as to maintain their unique status as innovative individuals within the organization. Only after a mandate was put in place requiring ideas to be submitted to the ideation platform in order to receive funding did the innovation group start participating in the initiative by posting their ideas.

Organizational Processes: Barriers to Entry

Current organizational practices also created hurdles for groups spearheading these initiatives and for employees wishing to contribute to the innovation process. For example, both AdvanceTech and IAA encountered barriers to participation due to policies and regulations designed to protect sensitive information. In both cases, this limited the number of individuals who could participate in the ideation initiative. Additionally, in the case of AdvanceTech, accounting policies that required employees to track their time also created barriers to use.
However, even in cases when employees were able to access ideation platforms, current innovation processes created additional barriers. For example, current procedures at both AdvanceTech and IAA, required individuals to submit formalized business presentations before their ideas would be considered. This necessitated significant time and business knowledge often not compatible with employee ideation. Additionally, at AdvanceTech when ideas were formalized but rejected by managers, it was often viewed as a “black mark” on the employee promoting the idea thus discouraging participation.

5.2.5.3 The Role of Proactive Leadership in Overcoming Organizational Barriers

In all three cases, a key theme emerged associated with an organization’s ability to overcome these barriers. Specifically organizations that had proactive executive leaders reported more successful outcomes than those who did not. In short, proactive executive leadership was critical in overcoming organizational barriers and increasing acceptance and use of internal ideation platforms. In the cases where participants reported successful outcomes, proactive leaders became personally involved in generating awareness of the initiative, helping other managers/executives to recognize the value of such initiatives, creating incentives for participation, and allocating resources to manage the day-to-day operation of internal ideation (see Figure 5-5).
Figure 5-5: Proactive Leadership Role in Actively Reduce Barriers to Use and Acceptance of Internal-Crowdsourcing

In addition, proactive leaders held the belief that personal value was a function of the contribution of the employee and not his or her job title. Furthermore, these executive leaders focused primarily on the intangible benefits that could be realized from internal ideation efforts. Finally, these leaders held sufficient status within the company to override or ward off challenges by others who did not share their beliefs. A discussion of each of these key success factors follows.

Generating Awareness

Generating awareness throughout the organization regarding the initiative and its potential value to the organization was a key success factor for internal ideation initiatives. For example, at AdvanceTech, the executive in charge of the initiative personally invited employees who had contributed breakthrough ideas to executive meetings. This helped generate awareness that any employee could contribute valuable input. Additionally, it shifted the focus to the quality of the ideas generated, reinforced the potential benefits of the initiative, and was an outward show of support to other executives and employees. This proactive executive also ensured that other executives had personal attention from ideation team members to address their concerns. Team
members demonstrated how the ideation platform functioned, helped managers understand the value such initiatives brought to the organization, and conveyed expectations regarding support of and contribution to the initiative.

Creating Incentives

Because internal-crowdsourcing initiatives may be met with resistance, proactive leaders also played a critical role in instituting incentives to encourage participation. For example, at IAA, individual employees could receive bonuses, certificates, and public recognition for their contributions, either via company-wide email or at company events. Executives also used negative incentives or mandates to increase participation, as was the case at AdvanceTech. In this case, submission of ideas to the company-wide ideation platform was required before funding would be considered. Linking required processes to ideation platforms to ensure its use was particularly powerful in ensuring the contributions of innovation groups who were often hesitate to share their best ideas on an open platform.

Allocating Resources

Finally, proactive leaders were instrumental in assembling the necessary resources to implement and sustain internal ideation platforms. As mentioned, in all three internal-crowdsourcing cases, dedicated groups were created to implement and manage the ideation platform. This required leaders to invest in both people and in technical infrastructure. Typically, leaders would seek out like-minded individuals who shared their beliefs regarding the potential of open ideation and assign them responsibility for managing the ideation team and the technical platform. At IAA and AdvanceTech, ideation team members also played an active role in
working with idea contributors to help shape their ideas into more acceptable forms and to promote ideas to others in the organization who could help advance or fund ideas. To create these new teams, leaders needed to have the ability to fund or find funding to support the building or purchase of the ideation platform. As such, they needed to have access to discretionary funds to invest in both people and technical infrastructure. This required a certain status and level of responsibility within the organization.

5.3 The Internal-Crowdsourcing Acceptance Model

Based on findings from case studies and literature, a model outlining the dynamics at play when attempting to integrate internal crowds into the product/service innovation processes has been created. The Internal-Crowdsourcing Acceptance Model (ICAM) was developed based on the view that internal-crowdsourcing for product or service innovation represents a new business practice that requires a shift in traditional organizational perceptions of value and organizational practices (Erickson et al., 2012c). Across the three cases in this study that leveraged internal crowds for ideation, organizations faced a number of unique challenges when attempting to open up the innovation process to employees. Specifically:

1. Overcoming resistance to ideas that were generated by individuals outside sanctioned innovation groups.
2. Re-aligning organizational perceptions of value.
3. Reducing barriers to entry created by established organizational structure and organizational processes.

Overcoming these challenges required proactive executive leadership to actively reduce barriers to entry by generating awareness, creating incentives, and allocating resources (see 5-6).
Across the three cases in this study, organizations that had proactive executive leadership were more likely to report success than those cases where leaders approved internal-crowdsourcing initiatives but did not actively generate awareness, create incentives, and allocate resources. When proactive executive leaders were able to circumvent established organizational practices and leverage resources to implement company-wide crowdsourcing ideation sites, participants reported a flattening of the organization and an empowerment of lower-level (i.e., non-managerial) employees. Additionally, more cross-functional departmental collaboration was observed.

The critical role of proactive executive leadership can be illustrated in two cases. First, while the Director of IAA initially showed outward support and active participation in the ideation portal, his role diminished over time. Moreover, within IAA there were varying levels of acceptance and use across divisions. Divisions with proactive leaders who were actively engaged in promoting and encouraging employee participation were more likely to report positive benefits from crowdsourcing initiatives. Those in groups where managers resisted or discouraged participation were more likely to report limited benefits even when others in the group recognized
the potential benefits of such initiatives and fought for consideration of ideas generated by outsiders. As can be seen in this example, when high-level executives are not actively involved, lower-level managers may exert their own control, thus limiting the acceptance and use of the idea portal. Finally, in the case of Auto Inc., the loss of executive support from the original CIO resulted in the cancellation of the initiative. The Director of the Innovation Group had neither the funds nor the status within the organization to challenge the new CIO’s decision.

5.3.1 Situating Emergent Theory in Extant Literature

As theory developed, extant literature was used as a means of situating emerging theory within a body of relevant work (Stern, 2007). Next, a review of relevant crowdsourcing and innovation literature related to ICAM is provided. The discussion that follows illustrates how the model is supported by and extends existing knowledge.

5.3.1.1 Internal-Crowdsourcing Literature

As discussed in Chapter 3, a corpus of 118 publications was identified. Within this body of literature, eight articles focused specifically on internal-crowdsourcing. Six of these articles used case study methods, one used survey methods, and one used interviews. Of the two non-case study papers, one provided a broad discussion of different information communications technologies and their use within organizations, one of which referenced the use of internal crowdsourcing for ideation (Awazy et al., 2009). The other discussed the benefits of internal versus external collaboration and the relation of each to increasing time to market and generating creative outputs (Johnson & Filippini, 2009). However, neither of these two studies discussed implications of such practices past the need to allocate additional resources.
Of the six case studies found in the literature, five discussed initiatives within single companies (Dahl et al., 2011; Gamlin et al., 2007; Ringo, 2007; Santos & Spann, 2011; Singh, 2009), and one discussed the use of wikis across four different companies (Standing & Kiniti, 2011). These papers focused primarily on discussing the overall benefits and potential value of internal crowds, providing only high-level guidance to practitioners (e.g., the need for diversity and selecting appropriate tools). The authors did not, however, elaborate on organizational challenges or barriers to success.

Two papers did provide slightly more in-depth guidance for practitioners, notably Santos & Spann (2011) and Dalh et al. (2011). Santos & Spann employ innovation and entrepreneurship theory to explore the use of internal ideation for breakthrough innovation. They propose a “collective entrepreneurship” model for evaluating the value that internal ideation initiatives bring to organizations. However, the primary focus of the model is the use of open ideation to identify high-potential employees and create high-impact small entrepreneurial teams. Suggestions include providing time off for employees to participate in innovation activities, as well as mentoring for promising employees. Findings do reinforce the need for executive champions committed to “bottoms-up” innovation, however, other than the need for mentoring, no specific managerial guidance is provided.

Dalh et al. (2011) bring a socio-technical focus to the use of technology to support internal innovation. Specifically, they examined the relationship between technological systems and human systems using participatory design with managers and employees during the development of internal ideation community. They found that internal collaboration did facilitate innovation and a culture of innovation, most notably as seen by changes in behavior of middle managers. They recommend four tenets for implementing technology for collaborative innovation: 1) start from your context, 2) design first, consider technology second, 3) plan for change, and 4) recognize and accept failures as learning opportunities (p. 26). Additionally, Dalh
et al.’s findings closely align with the findings here with respect to the critical role leadership plays in successfully implementing internal ideation initiatives.

As such, ICAM adds to the current body of literature specifically focused on internal-crowdsourcing for product and service innovation. It begins to build theory that outlines key dynamics at play when established, hierarchical organizations attempt to leverage this new business practice for ideation. Furthermore, it provides specific guidance to practitioners regarding the critical role that leadership plays in such initiatives and three key area of focus that may help to facilitate the successful outcomes of these initiatives.

5.3.1.2 Innovation Literature

While current literature on internal-crowdsourcing for ideation is limited, a review of the established corpus of literature related to open innovation revealed that many of the same challenges and barriers identified in this study are also found within the open innovation literature. Specifically, an abundance of research on open innovation reveals that success is dependent on a number of factors including, organizational culture, an organization’s ability to recognize the need for change, and its ability to adapt to new ways of collecting and utilizing knowledge (Chesbrough, 2006; Dodgson et. al., 2006; Gassmann & Enkel, 2004; Hafkesbrink & Schroll, 2010; Nambisan & Sawhney, 2008 ch 12; von Hippel, 2005). That is, open initiatives for innovation require both cultural and organization change and a break from the “not invented here” mind set.

Within the literature, organizational culture is most often discussed in terms of shared values, beliefs, philosophies, and processes that drive and define appropriate behavior within the organization (Glisson, 2000; Hurley & Hult, 1998; Martins & Terblanche, 2003; Tushman & O’Reilly, 2002, ch 4). Organizational culture has also been found to encourage and discourage
new approaches to innovation. The beliefs and values of leaders within the organization, as well as their interpersonal relationships with employees, can be a driving force or inhibitor of innovation. As such, organizational culture directly impacts whether innovation is encouraged within an organization and the amount of innovation that is generated (Martins & Terblanche, 2003). To reshape the organization requires constant attention to help move the organization in new directions that may not feel natural. Even companies that have experienced success at opening up the innovation process often return to old habits if leaders “ease up” (IBM Global Business Services, 2006, p 40.)

Additionally, there is a large body of literature that shows that the structure of the organization, its flexibility, and decision-making practices, as well as policies and incentives, can all support or discourage innovation (Fontana, Geuna, & Matt, 2003; Martins & Terblanche, 2003; Tushman & O’Reilly, 2002). Directly related to the flexibility of an organization is its age. As firms mature, they develop processes and structures to support business goals. As goals are achieved, these processes and structures become more embedded within the company making them difficult, time-consuming, and often costly to change (Tushman & O’Reilly, 2002, ch 2 p28). These processes become institutionalized and are accompanied by a “this is just how we do it here” mentality, making companies either resistant to change or unaware of the need for change (Avgerou, 2000; Oliver, 1997; Tolbert & Zucker, 1994; Tushman et al., 2003).

This “not invented here” (NIH) mentality is often strongest within R&D groups. In fact, these groups may tend to “hoard” knowledge and ideas (Desouza et al., 2009; Whelan, Parise, de Valk, & Aalbers, 2011). Additionally, because these groups are tasked with identifying and nurturing innovation that will drive profit and competitive advantage in the marketplace, they tend to have a defined status within the company. Thus, while these groups are certainly under pressure to perform, they often begin to believe they are the only group that can perform this critical task. As innovation groups coalesce, they tend to cut themselves off from others. In fact,
innovation teams that have worked together for relatively stable periods (typically more than 4-5 years), often become increasingly more isolated from critical information, evaluation, and feedback and increasingly more entrenched in the current established processes (Katz & Allen, 1988). Additionally, as average tenure within innovation groups increases, individuals are more likely to ignore outside sources of innovation, often resulting in negative impacts on their performance. In short, they dismiss the possibility that outsiders have the skills and expertise to achieve similar results.

With regard to the use of social media to facilitate innovation, as social media creates new avenues for organizations to lower procurement, processing, and information costs, organizations are turning to these new tools to facilitate change and increase competitive advantage (Prandelli et al., 2008). New business practices that open up the innovation process, such as crowdsourcing, are requiring “significant cultural change” in the organizations that adapt them (Dodgson et al., 2006, p. 343). In fact, cultural barriers, more so than technical barriers, are proving to be significant roadblocks to realizing the value that opening up the innovation process can bring to an organization (Mesaglio, 2010).

5.3.1.3 Building on Current Knowledge

ICAM builds on this body of knowledge in four key ways. First, researchers examining open innovation and the NIH phenomenon primarily focus on resources and knowledge outside the boundaries of the organization. This study illustrates similar dynamics at play when organizations attempt to leverage internal sources of knowledge and creativity. Second, ICAM builds on and extends the work on organizational culture and the critical role that leaders play in promoting specific values (i.e., personal value and innovation value). Third, ICAM builds on prior work related to institutional processes and their impact on the acceptance and use of internal
ideation initiatives by providing guidance on the impact of both organizational structure and practices. Furthermore, the shifts that are necessary when attempting to leverage internal crowds for ideation are identified. Fourth, ICAM extends current work on internal-crowdsourcing by explicitly defining key organizational facilitators and barriers and identifying three specific leadership actions linked to the success of such initiatives.

While the organizations highlighted here were leveraging internal resources, versus external resources (as is the case with open innovation), they were still attempting to integrate new sources of innovation into established practices. When organizational practices, specifically structure and processes, have been built on the personal value job titles bring, as well as the tangible economic value innovation brings, integrating employees into the innovation mix may conflict with existing values and practices. Acceptance and use of internal-crowdsourcing for ideation requires convincing others something new is needed and that the effort will result in better outcomes. Additionally, it requires the breaking down of established processes and the creation of new structures that may be perceived by individuals within the organization as both positive and negative.

In fact, it can be argued that internal-crowdsourcing may be more difficult for established organizations than when leveraging outside sources of innovation and knowledge. Organizations that turn to an internal crowd must be willing to open up the decision-making process outside sanctioned innovation groups and provide participants with a sense of ownership. This often runs contrary to traditional business practices. Innovation is no longer the domain of sanctioned scientists, engineers, and traditional product developers within the organization. For the organizations examined here, extracting value from this new business practice required a shift in perceived values of the organization, as well changes to organizational structure and processes. As such, the use of an internal crowd for ideation may represent a disruptive process innovation requiring significant change for traditional organizations.
Research in the field of innovation illustrates the role of leadership during times of change. Current research suggests that leaders play different roles depending on the type of change faced by organizations (Tushman, Newman, & Romanelli, 1988). During times of incremental change, organizations are typically attempting to drive efficiencies and fine-tune processes in line with the organization’s current strategy and mission. Because incremental change is typically compatible with current organizational mission, values, and practices, leaders primarily set the stage for change and empower lower-level managers to direct the change process. Leaders are instrumental in setting direction, but others within the organization are typically tasked with following through and directing change.

Alternatively, in times of disruptive or frame-breaking change, organizations are faced with implementing shifts in the organization’s strategy or mission. Such dramatic shifts are inherently risky and require shifts in organizational structure and processes (Tushman et al., 1988). Organizations entering periods of disruptive change, are often dealing with risky changes that challenge the status quo and require massive shifts in processes and structure. Shifts in strategy require a reformation of mission and core values, as well as changes in the current power structure. Some individuals and groups may experience an increase in power, while others experience a decrease in power. As such, resistance to these changes is common. In addition, new communication and interaction patterns emerge requiring changes to established practices and decision-making patterns. Because of the need for radical change, and the widespread impact of these changes on individuals (both positive and negative), during times of disruptive change leaders must become directly involved in all aspects of change (Tushman et al., 1988). Leaders play a critical role in reorienting organizations and managing change. To shift the organization, they must actively focus on issues related to strategy, structure, people, and organizational processes. These activities cannot be delegated to others, and in fact, success is often improved when new executives who share the leader’s vision are brought in from outside the organization.
In the cases analyzed here, many of the same issues seen with disruptive change were seen when organizations implemented internal-crowdsourced business practices to support innovation activities. However, these organizations were not undergoing wholesale business strategy shifts requiring changes to their mission. The overall mission and strategy of the organization remained relatively stable, yet internal-crowdsourcing represented a radical process upheaval when it came to established innovation practices. While the mission of the organization did not change, internal-crowdsourcing challenged the organization’s perceptions of value and its organizational practices. For these organizations, internal-crowdsourcing required significant change in current organizational perceptions of value, as well as organizational practices. As such, this new business practice was often met with resistance, especially from those groups and individuals who would either be impacted by the results of the initiative or who were required to change the most. Furthermore, current organizational practices often impeded employee’s abilities to participate in internal-crowdsourcing initiatives.

Of interest here are the similarities seen in the role of leadership within these three cases and the role of leadership during times of disruptive change. In the cases examined here, as is the case during times of disruptive change, visionary leaders recognized the need to take advantage of new opportunities. Instead of new technologies signaling the need for change (as is often the catalyst for disruptive change), new processes related to innovation were the catalysts for change. These leaders realized the potential benefits of opening up the innovation process to employees outside the current sanctioned innovation teams, but in doing so, they created a time of disruption for their organizations. Instituting crowdsourcing, even when leveraging individuals inside the organization, required changes in organizational perceptions of value and organizational structures. As is the case with disruptive change, successfully managing this transition required active leadership from high-level executives.
In the cases where outcomes were viewed as positive, successful leaders moved quickly to muster the resources to launch and implement employee ideation platforms. They then actively generated awareness of the value of such initiatives, and put incentives in place to motivate participation. The quick implementation of such initiatives appears to be a key factor in the ability to sustain ongoing internal-crowdsourcing initiatives. In fact, at Auto Inc., where the ideation platform was rolled out slowly and methodically, changes in leadership and resistance from other groups ultimately undermined the Innovation Group’s ability to successfully launch an organization-wide initiative. The group was disbanded, and the initiative was shut down before the team was able to demonstrate value and generate sufficient acceptance of this new disruptive business practice. This finding also supports the similarities between implementing new business practices and disruptive change. Specifically, as discussed, research indicates that longer periods of implementation increase uncertainty and instability creating more disruption within the organization. This, in turn, decreases the organization’s ability to realize the benefits of such change (Tushman et al., 1988). During times of disruptive change, leaders must move quickly to reduce the opportunity for individuals and for organizational inertia to undermine and stifle change.

5.3.2 Summary of Internal-Crowdsourcing Acceptance Model

This research sheds light on the changes required when attempting to open up the innovation process even within the confines of an organization. Internal-crowdsourcing may in fact be more than an alternative way to generate and advance novel ideas. Instead, it may be a disruptive process requiring significantly more organizational change than expected.

ICAM is based on the view that internal-crowdsourcing for product and service innovation represents a new disruptive business practice that requires a shift in traditional
organizational perceptions of value and organizational practices. As such, it has implications to organizations beyond potential financial or competitive outcomes. It also has implications for organizational culture, internal processes, and structure. With internal-crowdsourcing, proactive executive leaders must establish that employees in any group, at any level, with any level of skill can add value. Such beliefs may create resistance within innovation groups, as well as a fear of losing power and reputation within the organizations. After all, if an employee on the assembly line comes up with the next great idea, this may diminish the role of ideation within the innovation group. Internal ideation may in fact create new roles for innovation groups, moving them from primary idea generators to idea evaluators and mentors. Finally, if leadership can begin to shift perceptions of value to the contribution of the individuals (versus their job title), then they also hold the potential to increase the ability to nurture and facilitate ideation across the organization, resulting in both tangible and intangible benefits to the organization.

Chapter 6

Toward an Explanatory Theory of Crowdsourcing

Chapter 6 presents the explanatory theoretical framework that was developed based on the research findings. The chapter begins with a discussion of the four common uses of crowdsourcing by established organizations. An overview of each common use is provided followed by a detailed discussion of patterns and relationships among each common use.
6.1. Common Uses of the Crowd by Established Organizations

The explanatory framework identifies four common uses of the crowd by established organizations: 1) Marketing/Branding, 2) Cost Reduction/Productivity, 3) Product/Service Innovation, and 4) Knowledge Capture. Furthermore, it describes the specific organizational goals and desired outcomes for each (Erickson et al., 2012a, 2012b, 2012c). While these four uses have some overlaps, there are distinct differences in terms of organizational goals and desired outcomes (see Table 6-1.).
Table 6-1. Common Uses of Crowdsourcing by Established Organizations (adapted from Erickson et al., 2012a, p. 4)

<table>
<thead>
<tr>
<th>Organizational Goal</th>
<th>Marketing/Branding</th>
<th>Cost Reduction/Productivity</th>
<th>Product/Service Innovation</th>
<th>Knowledge Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>To increase awareness, brand affinity, and gain market insights by engaging customers to supplement current resources/processes</td>
<td>To reduce costs and/or time by replacing current resources/processes</td>
<td>To gain competitive advantage and increase innovative potential by supplementing current resources/processes</td>
<td>To advance understanding, or improve accuracy/usefulness by capturing distributed knowledge to create new resources/knowledge</td>
<td></td>
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<table>
<thead>
<tr>
<th>Desired Outcomes</th>
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</thead>
<tbody>
<tr>
<td>• Produce creative outputs</td>
</tr>
<tr>
<td>• Increase market exposure</td>
</tr>
<tr>
<td>• Gain new market insights</td>
</tr>
<tr>
<td>• Promote brand attributes</td>
</tr>
<tr>
<td>• Complete routine, time-consuming tasks, or tasks difficult to automate</td>
</tr>
<tr>
<td>• Access on-demand workforce</td>
</tr>
<tr>
<td>• Increase ideas in pipeline</td>
</tr>
<tr>
<td>• Identify evolutionary and/or revolutionary product/service opportunities</td>
</tr>
<tr>
<td>• Solve complex R&amp;D problems</td>
</tr>
<tr>
<td>• Accumulate knowledge in a central location</td>
</tr>
<tr>
<td>• Make more accurate predictions regarding future events</td>
</tr>
<tr>
<td>• Access additional sources of data for products/services</td>
</tr>
<tr>
<td>• Collect training data to improve automated processes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Illustrative Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The Council</td>
</tr>
<tr>
<td>• DocCorp</td>
</tr>
<tr>
<td>• Auto Inc.</td>
</tr>
<tr>
<td>• AdvanceTech</td>
</tr>
<tr>
<td>• IAA</td>
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<tr>
<td>• HealthCo</td>
</tr>
</tbody>
</table>

Next, examples from cases conducted as part of this research as well as examples from literature are provided for each use to help illustrate their unique attributes. Specifically, with regard to the cases in this research study, the Council is an illustrative use of the crowd for Marketing/Branding. DocCorp represents the use of the crowd for Cost Reduction/Productivity. Auto Inc., AdvanceTech, and IAA are examples of the use of crowdsourcing for Product/Service Innovation. Finally, HealthCo, is an example of Knowledge Capture use.

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9 Note, portions of this chapter have been previously published (Erickson, 2012; Erickson et al., 2012a, 2012b, 2012c).
6.1.1 Marketing/Branding Use

When organizations turn to the crowd for Marketing/Branding, the goal is to increase awareness, increase brand affinity, and/or gain market insights by engaging current or prospective customers directly in the marketing process. Desired outcomes include production of creative outputs, increased market exposure, new market insights, and promotion of brand attributes.

By leveraging the crowd to produce creative outputs, such as the design and development of advertising or market promotions, organizations are attempting to increase market exposure and take advantage of the passion and creativity within the crowd. In these cases, the crowd is used to supplement current in-house or outsourced processes (e.g., marketing resources, advertising agencies). Typical of this use is the crowdsourcing of commercials (Brabham, 2009b; Whitla, 2009). For example, since 2007 PepsiCo has invited the general public to create videos commercials for Dorito’s products. The winning submission is aired during halftime at the Super Bowl (Brabham, 2009b; PepsiCo, 2012).

Another example of Marketing/Branding use is the use of the crowd to gain market insights. This commonly includes answering specific questions, indicating a willingness to purchase new products or services, or collecting information on competitors (Brabham, 2009b, Howe, 2008; Whitla, 2009). While focus groups have been used by media, marketing, and public opinion researchers to connect with customers and tap into their thinking since the late 1940’s (Kidd & Parshall, 2000), with the reach of the Internet, organizations now have access to millions of people around the world, 24 hours a day, seven days a week.

Finally, as was illustrated in the case of the Council, organizations are also reaching out to the crowd to reinforce brand attributes such as openness and transparency. Reaching out to the crowd helps to reinforce these attributes and sends the message that the organization cares what customers think (Muniz & O’Guinn, 2001; Prandelli et al., 2008).
6.1.2 Cost Reduction/Productivity Use

Organizations looking reduce costs or increase productivity associated with the delivery of labor-intensive services are turning to the crowd to replace more costly in-house or outsourced resources. Desired outcomes include completion of routine time-consuming tasks or tasks difficult to automate, as well as providing access to an on-demand workforce. Typical of these initiatives is the use of the crowd to complete routine or time-consuming tasks such as document translation (as was seen with DocCorp) or tagging of images (Howe, 2008).

Other examples include the use of the crowd to reduce costs associated with labor-intensive customer support services. For example, Intuit uses the crowd to supplement customer support for its TurboTax and QuickBooks products. Individuals within the community answer 40% of the questions related to Intuit’s TurboTax product and 70% of the questions related to QuickBooks (Jana, 2009). Leveraging the crowd’s specialized knowledge of accounting and Intuit software helps Intuit to reduce costs associated with paying for and managing a customer support staff. Giffgaff, a UK mobile phone operator, also leverages its user community forums to handle customer support. However, in this case 100% of its customer support questions are pushed to the crowd thus significantly reducing the costs and overhead associated with service delivery (Lithium, 2012).

6.1.3 Product/Service Innovation Use

One of the most common uses of the crowd is to increase the innovative capacity of an organization in order to maintain or gain a competitive advantage in the market. In these cases, organizations are looking to the crowd to supplement current in-house innovation capabilities.
Desired outcomes include increasing the number of ideas in the pipeline, identifying evolutionary or revolutionary product/service opportunities, and solving complex R&D problems.

Typical of these crowdsourcing initiatives is the use of the crowd for ideation related to new product/service development (Howe, 2008; Jeppesen & Frederiksen, 2006; Jouret, 2009; Ringo, 2007). Most often the crowd is asked to generate ideas to improve current products/services. For example, Dell’s IdeaStorm site discussed in Chapter 2 is an illustrative example of an organization leveraging crowdsourcing for ideation (Di Gangi & Wasko, 2009; Howe, 2008). Three cases in this study, Auto Inc., AdvanceTech, and IAA, also illustrate examples of organizations leveraging internal crowds for ideation.

In addition to ideation, organizations are also leveraging crowdsourcing to develop products. For example, LEGO leverages its customers’ creativity but with the purpose of developing entirely new product offerings (Prandelli et al., 2008). Other organizations ask the crowd to develop complete products that are ready for sale (Cisco, n.d.; Nambisan & Sawhney, 2008). Finally, as previously mentioned, organizations are turning to sites such as InnoCentive to connect with the crowd for the purpose of solving complex R&D problems that internal teams have been unable to solve (Howe, 2008; Lakhani et al., 2007).

6.1.4 Knowledge Capture Use

The crowd is also used as a source of knowledge to help organizations advance understanding or improve the accuracy/usefulness of current products/services. Desired outcomes include the accumulation of knowledge in a central location, the ability to more accurately make predictions regarding future events, the ability to offer more data with products/services, and the collection of additional training data to improve automated processes.
For example, Cornell Lab of Ornithology and the National Audubon Society have joined together to leverage the collective knowledge of the crowd to accomplish a task they would never be able to do on their own. Through the website eBird.org, these organizations enlist the help of bird watchers across North America to document the presence or absence of specific species of bird (Wiggins & Crowston, 2011). In fact, in 2006, bird watchers submitted more than 4.3 million observations. By leveraging the interests of the crowd and providing them the ability to easily contribute to a shared cause, site sponsors are now able to accurately track bird populations more quickly and economically than would be possible with in-house or paid resources.

Additionally, organizations such as Google, Best Buy, General Electric, Intel, and Hewlett Packard are leveraging the crowd’s knowledge to make better predictions on future events such as quarterly sales projections, popularity of new product features, and inventory projections (Cowgill et al., 2009; Hopman, 2007). By tapping into the knowledge of individuals both inside and outside the organization, these companies are able to make more accurate predictions that drive hiring, manufacturing, and distribution.

Finally, HealthCo illustrated the use of the crowd as a source of training data. By integrating the crowd’s knowledge directly into its product offering, HealthCo was able to tap into a new source of training data to improve the accuracy of its underlying product algorithms.

6.1.5 Situating Common Uses in Extant Literature

The common uses described above provide an organizing framework from which to explore similarities and differences among the uses of the crowd by established organizations. The six case studies conducted as part of this research combined with examples found in the literature. Enfolding literature in this way helps to demonstrate the robustness and applicability of this framework across a broad range of industries (Eisenhardt, 1989). Table 6-2 expands on the
initial categorization of crowdsourcing tasks provided in Chapter 2 by organizing cases, literature, and examples of current crowdsourcing initiatives into the four common uses.

Table 6-2. Cases, Literature, and Examples of Organizational Crowdsourcing Use\textsuperscript{10} (from Erickson et al., 2012a)

<table>
<thead>
<tr>
<th>Use</th>
<th>Literature</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marketing/Branding</strong></td>
<td>Advertising/Promotion: Brabham, 2009b, 2009c; Howe, 2008; Kozinets et al., 2008; Murphy, 2009; Prandelli et al., 2008; Whitla, 2009</td>
<td>Case: The Council&lt;br&gt;Examples: PepsiCo’s Crash the Super Bowl, Coco-Cola’s Energizing Refreshment Contest, GM’s Tahoe Ad Campaign, Cisco’s The Connected Life Campaign</td>
</tr>
<tr>
<td></td>
<td>Market Research: Androile, 2010; Bonabeau, 2009; Kleemann et al., 2008; Prandelli et al., 2008</td>
<td>Examples: Intel’s CoolSW, Starbucks My Starbucks Ideas, Google’s Gmail Labs, Ducati Motors Design Forum</td>
</tr>
<tr>
<td><strong>Cost Reduction/Productivity</strong></td>
<td>Complex Software Development: Archak, 2010; Boudreau et al., 2011; Doan et al., 2011; Howe, 2008</td>
<td>Examples: TopCoder, Rent A Coder</td>
</tr>
<tr>
<td></td>
<td>Completion of Routine Tasks: Andrea &amp; Lorenzo, 2010; Doan et al., 2011; Karnin, Walach, &amp; Drory, 2010; Haythornthwaite, 2009; Howe, 2006b; McCreadie, Macdonald, &amp; Ounis, 2011; Stewart et al., 2009</td>
<td>Examples: Amazon’s Mechanical Turk, Elance, Freelance, oDesk</td>
</tr>
</tbody>
</table>

\textsuperscript{10} Note literature cited consists of case studies or exemplars describing the use of the crowd by an established organization. Frameworks and theoretical models are not included. Examples cited are those used by or sponsored by established organizations.
| **Product/Service Innovation** | Ideation and Filtration | Andriole, 2010; Awazy et. al., 2009; Bosch & Bosch-Sijtsema, 2011; Bretschneider, Rajagopalan, & Leimeister, 2012; Dahl et al., 2011; Di Gangi & Wasko 2009; Ebner et al., 2009; Gamlin et al., 2007; Howe, 2008; Hutter et al., 2011; Kleemann et al., 2008; Leimeister et al., 2009; Morgan & Wang, 2010; Phillips, 2011; Poetz & Schreier, 2012; Prandelli et al., 2008; Ringo, 2007; Santos & Spann, 2011; Schulze & Hoegl, 2008; Singh, 2009; Terwiesch & Xu, 2008; Whelan & Parise, 2011 | Cases: Auto Inc., AdvanceTech, IAA  
Examples: Dell’s IdeaStorm, Dell’s Storm Sessions, The Goldcorp Challenge, GE’s EcolImagination Challenge, Nescafe’s Reinvent Instant Coffee Contest, Google’s Demo Slam, Bosch Innovation Community, Huggies’ Mom Inspired Campaign, LEGO’s’ Mindstorms Community, IBM’s InnovationJam, IDEO’s OpenIDEO, BMW’s Customer Innovation Lab, Starbucks My Starbucks Ideas |
| Design and Product Development | Awazy et. al., 2009; Bergvall-Kåreborn, Howcroft, & Chincholle, 2010; Bertoni & Chirumalla, 2011; Dodgson et al., 2006; Howe, 2008; Huston & Sakkab, 2006; Hutter et al., 2011; Jeppesen & Frederiksen, 2006; Jeppesen & Laursen, 2009; Jouret, 2009; Kleemann et al., 2008; Lampel, Jha, & Bhalla, 2012; Piller & Walcher, 2006; Poetz & Schreier 2012; Prahalad & Ramaswamy, 2004; Prandelli et al., 2008; Wagner, 2011; Whitla, 2009 | Cases: Auto Inc., AdvanceTech  
Examples: Cisco’s iPrize, Cisco’s Think In the Box Challenge, Salesforce.com’s AppExchange, Netflix Prize, Nokia’s Calling All Innovators Contest, Propellerhead Software’s Toolkits |
| Multiple Stages of Innovation | Awazy et. al., 2009; Lindegaard, 2011; Lindič, Baloh, Ribière, & Desouza, 2011; Marchi, Giachetti, & de Gennaro, 2011; Piller et al., 2005; Pisano & Verganti, 2008; Prandelli et al., 2008; Ringo, 2007; Sawhney et al., 2005 | Case: AdvanceTech  
Examples: Procter & Gamble’s Connect & Develop, PepsiCo’s Dewmocracy, Audi’s Production Awards, Fiat Mio |
<table>
<thead>
<tr>
<th>Topic</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Capture</td>
<td>Allen et al., 2008; Androile, 2010; Annabi, et al., 2012; Awazy et. al., 2009; Bonabeau, 2009; Dickinson, Zuckerberg, &amp; Bonter, 2010; Füller et al., 2012; Ghafele, Gilbert, &amp; DiGiammarino, 2001; Hogue, 2011; Lindley, 2009; Moriarty, 2010; Normal et al., 2011; Prandelli et al., 2008; Standing &amp; Kiniti, 2011; Verona et al., 2006; Vitharana, King, &amp; Chapman, 2010; Wiggins, 2010; Wiggins &amp; Crowston, 2011; Yates &amp; Paquette, 2011</td>
</tr>
<tr>
<td>Prediction Markets</td>
<td>Arrow et al., 2008; Bichler et al., 2010; Bonabeau, 2009; Cowgill et al., 2009; Doan et al., 2011; Hellerstein &amp; Tennenhouse, 2011; Ivanov, 2009; Hopman, 2007; Howe, 2008; Kaufman-Scarborough &amp; Morrin, 2010; Soukhoroukova, Spann, &amp; Skiera, 2012; Surowiecki, 2004; Wolfers &amp; Zitzewitz, 2004</td>
</tr>
<tr>
<td>Additional Data Sources for Products/Services</td>
<td>Barrington et al., 2011; Chilton, 2009; Haklay &amp; Weber; Haythornthwaite, 2009; Howe, 2008; Wiggins, 2010</td>
</tr>
<tr>
<td>Centralized Knowledge Repository</td>
<td>Examples: Cornell Lab’s eBird.org, USPTO’s PeerToPatent</td>
</tr>
</tbody>
</table>
Next, a description of the patterns and relationships among common uses as well as identified themes that emerged during analysis are provided.

### 6.2 Building an Explanatory Framework: Linking Organizational Need to Crowd Characteristics and Organizational Impacts

During the early stages of data collection and analysis, common characteristics of crowdsourcing were identified and collapsed into eight themes (see Appendix G for detailed characteristics by theme):

1. Common tasks
2. Knowledge/skills of the crowd
3. Location of the crowd
4. Value of the crowd
5. Motivations of organizations for engaging with the crowd
6. Organizational goals
7. Organizational challenges
8. Outcomes

These eight themes were then grouped into three broad descriptive categories: 1) task characteristics, 2) crowd characteristics, and 3) organizational characteristics (Erickson, 2012; Erickson et al., 2012b). Furthermore, these themes were then linked to specific organizational uses resulting in an explanatory framework of crowdsourcing use by established organizations. The explanatory framework begins to explain: 1) how different organizational uses necessitate
different crowds with different skills, 2) the organizational impacts commonly associated with each use, and 3) the primary value the crowd brings to the organization (see Table 6-3).
Table 6-3. Explanatory Framework ofCrowdsourcing Use by Established Organizations (from Erickson et al., 2012a)

### Organizational Uses

<table>
<thead>
<tr>
<th>Organizational Goal</th>
<th>Marketing/Branding</th>
<th>Cost Reduction/Productivity</th>
<th>Product/Service Innovation</th>
<th>Knowledge Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>To increase awareness and brand affinity by engaging customers to supplement current resources/processes</td>
<td>To reduce costs and/or time by replacing current resources/processes</td>
<td>To gain competitive advantage and increase innovative potential by supplementing current resources/processes</td>
<td>To advance understanding or improve accuracy/usefulness by capturing distributed knowledge to create new resources/knowledge</td>
<td></td>
</tr>
</tbody>
</table>

### Desired Outcomes

<table>
<thead>
<tr>
<th>Desired Outcomes</th>
<th>Marketing/Branding</th>
<th>Cost Reduction/Productivity</th>
<th>Product/Service Innovation</th>
<th>Knowledge Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Produce creative outputs</td>
<td>Complete routine, time-consuming tasks, or tasks difficult to automate</td>
<td>Increase ideas in pipeline</td>
<td>Accumulate knowledge in a central location</td>
<td></td>
</tr>
<tr>
<td>Increase market exposure</td>
<td>Access on-demand workforce</td>
<td>Identify evolutionary and/or revolutionary product/service opportunities</td>
<td>Generate more accurate predictions regarding future events</td>
<td></td>
</tr>
<tr>
<td>Gain new market insights</td>
<td>Solve complex R&amp;D problems</td>
<td>Access additional sources of data for products/services</td>
<td>Collect training data to improve automated processes</td>
<td></td>
</tr>
<tr>
<td>Promote brand attributes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Desired Crowd Characteristics

<table>
<thead>
<tr>
<th>Ideal Crowd Knowledge/ Skills</th>
<th>Marketing/Branding</th>
<th>Cost Reduction/Productivity</th>
<th>Product/Service Innovation</th>
<th>Knowledge Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product/service</td>
<td>General</td>
<td>Product/Service</td>
<td>Product/Service</td>
<td></td>
</tr>
<tr>
<td>Specialized</td>
<td>Specialized</td>
<td>Specialized</td>
<td>Situational</td>
<td></td>
</tr>
<tr>
<td>Preferred Crowd Location</td>
<td>Internal</td>
<td>External</td>
<td>Domain Expertise</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
</tr>
<tr>
<td>External</td>
</tr>
</tbody>
</table>
## Organizational Impacts

<table>
<thead>
<tr>
<th>Marketing/Branding</th>
<th>Cost Reduction/ Productivity</th>
<th>Product/Service Innovation</th>
<th>Knowledge Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Challenges</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filtering out “noise” and poor quality inputs</td>
<td>Ensuring accuracy/ quality of work</td>
<td>Filtering out “noise” and poor quality inputs</td>
<td>Motivating the crowd to contribute</td>
</tr>
<tr>
<td>Evaluating the crowd’s input</td>
<td>Potential conflicts with labor laws/regulations</td>
<td>Evaluating the crowd’s input</td>
<td>Ensuring accuracy of data</td>
</tr>
<tr>
<td>Controlling the crowd</td>
<td>Managing increased workload</td>
<td>Potential conflicts with labor laws/regulations</td>
<td></td>
</tr>
<tr>
<td>Connecting with the crowd</td>
<td>Completing time sensitive tasks</td>
<td>Preventing IP leakage/loss of competitive advantage</td>
<td></td>
</tr>
<tr>
<td>Protecting sensitive data</td>
<td></td>
<td>Garnering internal acceptance/buy-in</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clearly articulating the task</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Integrating crowd input into current innovation processes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Managing increased volume of ideas</td>
<td></td>
</tr>
<tr>
<td><strong>Primary Value</strong></td>
<td>Increased Diversity</td>
<td></td>
<td>Access to Distributed Knowledge</td>
</tr>
<tr>
<td></td>
<td>Increased Numbers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access to Distributed Knowledge</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Next, details on desired crowd characteristics and organizational impacts associated with each defined use are provided. In line with grounded methods, extant literature has been incorporated into the discussion to situate emergent theory, support claims, and draw out unique findings as they relate to this research study.

6.2.1 Theorizing the Desired Crowd

The explanatory framework identifies two key crowd characteristics and their relation to each defined organizational use. Specifically, the two crowd characteristics include: 1) the ideal knowledge/skills required to complete tasks and 2) the preferred location of the crowd relative to the corporate boundaries of the organization.

6.2.1.1 Ideal Crowd Knowledge/Skills

Across the four identified uses, organizations are asking the crowd to perform a wide variety of tasks. As discussed, tasks can be routine and non-routine, simple and complex. To complete this wide variety of tasks requires a correspondingly wide variety of skills, knowledge, cognitive strategies, experiences, and problem-solving approaches (Mumford, 2003).

Specifically, data analysis revealed five types of crowd knowledge/skills: 1) general, 2) situational (e.g., time, place, event), 3) product/service (i.e., specific to the organization’s offerings), 4) specialized (e.g., programming), and 5) domain expertise (e.g., chemistry) (Erickson, 2012; Erickson et al. 2012a, 2010b). By examining the nature of the tasks associated with each common use, the explanatory framework begins to explain the idea knowledge/skills required for each use (see Table 6-4).
Table 6-4. Ideal Crowd Knowledge/Skills by Organizational Use (adapted from Erickson et al., 2012a, p. 6)

<table>
<thead>
<tr>
<th>Ideal Crowd Knowledge/ Skills</th>
<th>Marketing/ Branding</th>
<th>Cost Reduction/ Productivity</th>
<th>Product/Service Innovation</th>
<th>Knowledge Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Product/Service Specialized</td>
<td>• General Specialized</td>
<td>• Product/Service Specialized</td>
<td>• Domain expertise</td>
<td>• Product/Service Domain expertise</td>
</tr>
</tbody>
</table>

As discussed in Chapter 2, tasks can be broadly categorized as either routine or non-routine (Perrow, 1967). Routine tasks commonly require general or specialized skills to complete (Eckert et al., 2010). While, non-routine tasks commonly require a wider variety of knowledge and skills to complete (Perrow, 1967; Schenk & Guittard, 2011). Tying the nature of the task back to the explanatory framework, a number of examples illustrate the ideal knowledge/skills needed when attempting to leverage the crowd. For example, an organization attempting to reduce costs related to matching numbers between two documents requires the crowd only have basic level skills. However, organizations attempting to reduce costs associated with the translation of documents from English to Spanish require crowds with specialized language skills. Furthermore, an organization attempting to reduce costs and improve productivity related to development of complex applications requires a crowd with specialized knowledge/skills related to programming.

Certain tasks may also require the crowd to have more than one type of knowledge. For example, as has been demonstrated with the research on lead users (see Chapter 2), an organization attempting to increase innovative capacity by engaging the crowd in product development may be best served by crowds that bring with them knowledge of its products or similar products in the marketplace. Additionally, there is evidence to suggest that hobbyists and lead users with advanced knowledge may play a key role in crowdsourcing especially related to the development of high-tech products (Jeppesen & Frederiksen, 2006). However, users with
limited expertise were also found to possess critical knowledge that was beneficial for innovation (Poetz & Schreier, 2009; Reichwald et al., 2004). This suggests that ordinary users may play a different, yet valuable, role in the innovation process. Moreover, it suggests a relationship between the nature of the task and the knowledge or skill needed to complete the task.

While there is not a one-to-one connection between identified knowledge/skills and common use, patterns emerged that do illustrate ideal types of knowledge/skills associated with each use. For Marketing/Branding, when the goal is to generate advertising for products and services, some knowledge and passion for the product is optimal. As was seen in the case of the Council, when the crowd does not bring with it the necessary knowledge/skills, this often reduces the opportunity to realize value. Specifically, the Council’s attempt to leverage the public as a source of strategic input met with disappointment as the general public did not bring with it specialized knowledge regarding sustainability. As such, the ideas that were put forth were not viewed as particularly useful or novel.

When it comes to Cost Reduction/Productivity use, DocCorp was looking at ways to pre-qualify the crowd to ensure individuals were able to complete tasks at the desired level of quality. In fact, identifying individuals in the crowd with the prerequisite levels of either general knowledge/skills (when completing simple tasks) or specialized skills (when completing more complex tasks) was critical to the success of the initiative and DocCorp’s ability to leverage the crowd to reduce costs.

In the case of Product/Service Innovation, Auto Inc., AdvanceTech, and IAA, were each leveraging an internal crowd for ideation. These organizations found that a wide variety of skills and knowledge were helpful in identifying potential new ideas as well as new applications of existing technologies to new markets.

Finally, HealthCo, was leveraging the crowd for Knowledge Capture and as such required that the crowd bring with it deep domain expertise regarding the coding of medical
records for insurance purposes. However, unlike DocCorp and the Council, HealthCo had some assurances that the crowd possessed the ideal knowledge/skills required as use of the software required it.

6.2.1.2 Preferred Crowd Location

In addition to patterns associated with the ideal crowd knowledge/skills, a second key theme emerged pertaining to the preferred location of the crowd. Specifically, organizations are leveraging both external crowds of non-employees and internal crowds of employees only (see Table 6-5).

Table 6-5. Preferred Crowd Location by Organizational Use (adapted from Erickson et al., 2012a, p. 6)

<table>
<thead>
<tr>
<th>Preferred Crowd Location</th>
<th>Marketing/Branding</th>
<th>Cost Reduction/Productivity</th>
<th>Product/Service Innovation</th>
<th>Knowledge Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

External crowds are made up of non-employees and include communities of interest (Hogue, 2011), product communities (Di Gangi & Wasko, 2009; Jeppesen & Frederiksen, 2006), as well as the general public (Chilton, 2009; Haklay & Weber, 2008). Internal crowds consist of employees who are not typically assigned to complete the task (e.g., asking employees whose job description does not include product development to generate and collaborate on product ideas).

As discussed, organizations connect with external crowds both directly via company-sponsored initiatives (Jouret, 2009; Ringo, 2007; Piller, Schubert, Koch, & Möslein, 2005; Santos & Spann, 2011; Singh, 2009) and indirectly through intermediaries (Boudreau et al., 2011; Muhdi & Boutellier, 2011; Sawhney et al., 2003; Sieg et al., 2010; Verona et al., 2006) (see Figure 6-1).
In linking the preferred location of the crowd to common uses, a number of factors must be considered. When it comes to Marketing/Branding, because the organizational goal is to increase awareness, an external crowd is required. As was seen with the Council, because the goal of the organization was to generate awareness and educate the public regarding the need for sustainability, the Council needed to reach outside the boundaries of its organization to achieve its goal. Therefore, an external crowd was required.

In the case of Cost Reduction/Productivity, because these organizations are seeking to reduce costs by leveraging less expensive sources of labor, external crowds are also desired. As was seen with DocCorp, the ability to connect with labor in developing countries held the potential of significantly reducing costs associated with delivery of labor-intensive services to its customers.

For Product/Service Innovation and Knowledge Capture, organizations may engage both external and internal crowds depending on the specific circumstances. As discussed in Chapter 4, while external crowds are valued for their diversity and their size, reaching outside the boundaries of the organization creates issues regarding potential leakage of intellectual property and loss of competitive advantage in the marketplace. As such, depending on the organization’s tolerance for risk and need for diversity, an internal crowd may be more optimal than an external one.
(Andriole, 2010; Bonabeau, 2009; Johnson & Filippini, 2009; Knudsen & Mortensen, 2011). Of the three cases in this study that were leveraging crowdsourcing for Product/Service Innovation (i.e., Auto Inc., AdvanceTech, and IAA), all made the strategic decision to turn to an internal crowd for ideation. While an internal crowd may not be as diverse as an external one, interviews with CEOs, business executives, and public sector leaders reveal that employees are, in fact, a significant source of business ideas (42%), followed by business partners (36%), then customers (35%) (IBM Global Business Services, 2006).

When it comes to certain Knowledge Capture activities, both internal and external crowds may be desired depending on the nature of the knowledge to be accumulated. For example, organizations looking to capture expert domain knowledge cannot reasonably hire and support the number of individuals needed to adequately capture the desired knowledge (Lakhani & Panetta, 2007). Therefore, in order to extract value from Knowledge Capture activities, external crowds are preferred. An illustrative example of this is HealthCo. In order to capture the amount of data required to improve the accuracy of its algorithms and provide a statistical level of confidence in the automated decisions of its software product, HealthCo required massive amounts of data that could not be generated by an internal crowd. This was also the case with the eBird example mentioned earlier in this chapter. Without help from external resources, the eBird organization could never have accumulated the millions of data points provided by the crowd.

Internal crowds, however, can also add value related to Knowledge Capture and are desirable when the nature of the knowledge generated may be sensitive. For example, Intel has successfully leveraged internal crowds and prediction markets to increase the accuracy of its market forecasts for sales of products by as much as 20% (Hopman, 2007). Focusing on internal sources of knowledge also avoided issues with leakage of potentially useful competitive information.
6.2.2 Theorizing Organizational Impacts

Turning to the crowd to meet specific organizational needs is not without its challenges. Next, a review of findings related to common and unique challenges faced by organizations is provided (Erickson et al., 2012b) (see Table 6-6).

Table 6-6. Organizational Challenges by Organizational Use (adapted from Erickson et al., 2012b, p. 3)

<table>
<thead>
<tr>
<th>Marketing/Branding</th>
<th>Cost Reduction/Productivity</th>
<th>Product/Service Innovation</th>
<th>Knowledge Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Challenges</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Filtering out “noise” and poor quality inputs</td>
<td>• Ensuring accuracy/quality of work</td>
<td>• Filtering out “noise” and poor quality inputs</td>
<td>• Motivating the crowd to contribute</td>
</tr>
<tr>
<td>• Evaluating the crowd’s input</td>
<td>• Managing increased workload</td>
<td>• Evaluating the crowd’s input</td>
<td>• Ensuring accuracy of data</td>
</tr>
<tr>
<td>• Controlling the crowd</td>
<td>• Completing time sensitive tasks</td>
<td>• Potential conflicts with labor laws/regulations</td>
<td></td>
</tr>
<tr>
<td>• Connecting with the crowd</td>
<td>• Protecting sensitive data</td>
<td>• Preventing IP leakage/loss of competitive advantage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Potential conflicts with labor laws/regulations</td>
<td>• Garnering internal acceptance/buy-in</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Clearly articulating the task</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Integrating crowd input into current innovation processes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Managing increased volume of ideas</td>
<td></td>
</tr>
</tbody>
</table>

As can be seen from Table 6-6, different uses do share some challenges. For example, filtering out “noise” or poor quality inputs is a challenge when engaging the crowd for Marketing/Branding as well as Product/Service Innovation. This was especially true for complex tasks without a single correct or acceptable range of answers. For example, the Council, as well as all three of the cases leveraging crowdsourcing for ideation (Auto Inc., AdvanceTech, and
IAA), each reported challenges with sorting through off-topic, ill-formed, or uninformed responses. This in turn created issues with how best to evaluate the crowd’s input. Evaluation required organizations to define what would be considered quality and to create processes for measuring or assessing the quality of inputs. Additionally, as the volume of input increased so did the amount of noise. This results in the need for additional time and resources to manage. Therefore, as discussed in Chapter 2, as potential value increases so does the need for additional resources to manage, monitor, and administer the initiatives.

Another shared challenge was managing issues related to the open nature of the initiative. Specifically, both DocCorp and AdvanceTech faced challenges related to the potential leakage of sensitive information. While AdvanceTech addressed this challenge by limiting crowdsourced ideation to an internal crowd, DocCorp did not have that option as achieving its goal was directly tied to its ability to leverage an external crowd to reduce costs.

Finally, both the use of the crowd for Cost Reduction/Productivity and for Product/Service Innovation may create challenges related to country specific labor laws and regulations, although for different reasons. As was seen in the case of DocCorp, the organization was concerned that changes in labor laws or regulations regarding workers might create result in increased costs or the inability to leverage certain crowds as an on-demand workforce. In the case of Auto Inc., current labor and IP laws in Europe created immediate concerns regarding ownership of ideas generated by employees. This challenge highlights both a potential benefit and challenge with crowdsourcing. That is, because social media removes boundaries and barriers to participation for those who have access, organizations have the opportunity to benefit from extended reach, increased diversity, and distributed knowledge. However, this lack of clearly identified boundaries also creates issues with regard to regulation and law, as it is unclear which laws may apply.
While a number of challenges are shared across uses, challenges emerged that were unique to each common use. Next, a review of these challenges along with a discussion of potential impacts, both positive and negative, to the organization is provided.

6.2.2.1 Marketing/Branding Challenges and Impacts

Turning to the crowd for Marketing/Branding use brings with it the challenge of filtering out “noise” and poor quality inputs as previously discussed. However, it also creates challenges related to connecting with the crowd and controlling what the crowd produces.

In the case of the Council, the committee struggled with many of these challenges. Specifically, because the Council was attempting to connect with the surrounding geographical community, it was unclear exactly which channels would be optimal for generating awareness with the desired crowd. Furthermore, because the Council had limited resources and time, it was restricted in terms of what channels were available. Even when leveraging existing channels, the input that was collected was described as of “limited value.” Additionally, the group reported that they underestimated the time required to evaluate even the small amount of input that was collected.

A second challenge related to Marketing/Branding is the issue of losing control. This is especially risky when asking the crowd to produce creative outputs. While crowdsourced advertising campaigns may generate exposure and “buzz” for brands (Brabham, 2009b), not all these initiatives result in positive impacts. For example, in 2007, Chevrolet launched a crowdsourcing initiative to promote its Tahoe sports utility vehicle (SUV). Stock video clips of the vehicle, inspirational music tracks, and the ability to superimpose text over the images was provided to the crowd via Chevrolet’s corporate web site (Brabham, 2009b, 2009c). While a number of flattering commercials were created, the majority focused on the negative impacts of
SUV’s on the environment. These videos went viral on the Internet creating a public relations nightmare for Chevrolet.

### 6.2.2.2 Cost Reduction/Productivity Challenges and Impacts

As discussed, organizations that attempt to reduce costs or increase productivity through crowdsourcing face challenges related to country specific labor laws or regulations, as well as protection of sensitive data. In addition to these challenges, organizations also face challenges with ensuring accuracy of the work product and guaranteeing that the crowd will be available to complete the task when it is needed. These issues are particularly challenging and critical for organizations leveraging the crowd to provide services for customers. For example, DocCorp was attempting to determine if the crowd would be a more cost-effective means of providing BPO services to its customers. The ability to ensure the work was completed on time and at the quality specified was critical to maintaining customer SLA’s (Service Level Agreements). Without such assurances, DocCorp would not be able to leverage the crowd to provide these services. Furthermore, DocCorp faced challenges with regard to protecting sensitive or personal data.

Similar to Marketing/Branding challenges, the crowd may also increase the organization’s workload, thus requiring additional resources to monitor and manage the initiatives. For example, if the work to be completed by the crowd has a defined correct answer, or range of answers, quality of output can be automatically validated. If it is difficult or impossible to define the best or right answer, then resources are needed to review the crowd’s input for accuracy and quality. As such, a key challenge for organizations is balancing the potential reduction in costs and time with the potential increased costs associated with managing and monitoring such initiatives. While organizations can reduce resource demands by automating
quality evaluation, as discussed in Chapter 4, many organizations underestimate the time and costs associated with these initiatives.

### 6.2.2.3 Product/Service Innovation Challenges and Impacts

The use of the crowd for Product/Service Innovation encompasses many different tasks such as ideation, filtering, design, development, and complex problem solving. Because of the wide variety of tasks included in this category, there are also a number of different challenges. As discussed, country-specific laws and regulations may create challenges with regard to ownership. Additionally, organizations face challenges with preventing leakage of IP or loss of competitive advantage. As discussed, organizations that were unwilling to take such risks often turned to internal crowd (i.e., employees) for product/service innovation.

Another significant challenge for organizations is garnering internal acceptance and buy-in of this new business practice especially when leveraging an internal crowd. As discussed in Chapter 5, turning to others inside the organization not commonly associated with innovation requires shifts in organizational perceptions of value and changes to organizational practices. When opening up the innovation process to a large number of people, organizations struggle with how best to integrate the crowd’s input into current innovation processes. While organizations are able to significantly increase the number of ideas flowing into the pipeline, quality varies greatly requiring additional time and resources to filter out noise and identify potential valuable ideas. Furthermore, integrating the crowd’s input into current established innovation processes also presents new issues for organizations. Because ideas are often ill-formed, in the very early stages of conceptualization, or not clearly tied to organizational objectives, organizations struggle with how best to evaluate ideas and move them forward. Finally, as discussed, additional resources and time are typically required to manage the process.
Organizations in this study that were able to clearly articulate the problem or task to be addressed did report an increase in the number of quality ideas as well as the ability to more quickly identify issues, thereby moving ideas through the innovation process faster. Key to realizing this benefit was sharing institutional knowledge across the organization. While the objective of the organization was not to capture knowledge, the collection of information from across the organization may be a key secondary outcome of such initiatives. As the cases in this study illustrated, the centralized location of the idea platform and collaborative sharing of information supported the identification of potential valuable ideas. Moreover, two of these organizations reported an increased ability to easily identify innovative employees within the organization and better leverage their creative skills for innovation. However, because ideas were often in the early stages of conceptualization, benefits were often delayed and therefore difficult to quantify. Furthermore, not all employees were willing to participate as many felt they would not benefit from such initiatives. Specifically, employees responsible for innovation within the organization may fear loss of status or responsibilities when crowdsourced innovation initiatives are put into practice (Erickson, et al., 2012c). This often creates additional obstacles with regard to internal acceptance and buy-in.

6.2.2.4 Knowledge Capture Challenges and Impacts

With regard to Knowledge Capture, organizations face challenges in motivating the crowd to share information and ensure the accuracy of the information provided. Again, context plays a key role. When it comes to motivating the crowd to share, researchers have found that contributors to crowdsourcing sites may more often be hobbyists with an interest in the topic rather than professionals within the field (Brabham, 2008a, 2009a; Jeppesen & Frederiksen, 2006). For example, individuals who are passionate about bird watching and endangered species
may be more inclined to contribute to non-profit crowdsourcing knowledge initiative such as the aforementioned eBird.org. Other motivations may include protecting personal or organizational interests, as is likely the case with PeerToPatent.org. In this case, the organization benefited from the distributed knowledge in the crowd by opening up the patenting process to the public. However, as discussed in Chapter 2, leveraging the crowd to collaboratively create a product that is then owned by an organization and used for profit may create unique challenges for the organization (Trompette et al., 2009). Furthermore, crowdsourcing sites that rely on the knowledge contributions of the crowd may also require features that facilitate a sense of community before the crowd will join in (Haythornthwaite, 2011).

Interestingly, the HealthCo case discussed in Chapter 4 leveraged automated methods of collecting data via its SaaS platform. By automatically collecting input from the crowd, HealthCo was able to bypass issues related to motivation of the crowd as well as reduce the time and resources required to manage the data collection process. In this case, the contribution was not voluntary as was the case with the examples above. Instead, data was automatically collected as the crowd preformed its job. This, however, did not eliminate all costs associated with the initiative. HealthCo still expended significant time and resources building the underlying algorithms used to extract value from the crowd’s input, as well as expending funds to hire resources to ensure data accuracy. However, as with eBird, HealthCo was able to significantly improve the accuracy of its offerings due to the increased data flowing into the system.

6.2.3 Theorizing the Primary Value of the Crowd

Key to the use of the crowd by organizations is the organization’s ability to extract value from their efforts. Across the four defined uses, analysis revealed three primary benefits or potential value that the crowd may bring to the task at hand, specifically: 1) increased diversity,
increased numbers, and/or 3) access to distributed knowledge (Erickson et al., 2012a). As discussed, depending on how the task is completed, organizations can combine these three benefits to extract value (see Table 6-7).

Table 6-7. Primary Value by Organizational Use (adapted from Erickson et al., 2012a, p. 6)

<table>
<thead>
<tr>
<th>Primary Value</th>
<th>Marketing/Branding</th>
<th>Cost Reduction/Productivity</th>
<th>Product/Service Innovation</th>
<th>Knowledge Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased Diversity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased Numbers</td>
<td></td>
<td>Access to Distributed Knowledge</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When it comes to the value the crowd brings to a task, “diversity,” “collective intelligence,” “wisdom of the crowd,” “distributed knowledge” and the ability to connect with large pools of people are commonly cited in the literature (Bonabeau, 2009; Boudreau et al., 2011; Hong & Page, 2004; Howe, 2008; Terwiesch & Xu, 2008). While each of these concepts is interrelated, there are distinct differences and benefits. Across the literature reviewed, only one paper included a discussion of the nuances among these different theories as they relate to crowdsourcing (Schenk & Guittard, 2009). More, commonly, however these terms are often used to describe the value of crowd-based initiatives without differentiating among the conditions under which each can be realized (Bonabeau, 2009; Brabham, 2008a, 2009c; Noveck, 2006). Moreover, terms are often used interchangeably or inappropriately.

At this early stage of examining a new phenomenon, understanding the nuances that are involved in bringing value to organizations will help advance theory as well as application to practice (Bonabeau, 2009). Next, a discussion of the role that diversity and distributed knowledge play in theories of collective intelligence and the wisdom of the crowd is provided. This is followed by the description of a new concept called “the wisdom of the one” that addresses the value that a single individual in the crowd may bring.
6.2.3.1 Diversity and the Crowd

A key benefit of turning to the crowd is the increase in diversity that a large group of individuals bring to the task. A diverse group of individuals will approach a problem in both traditional and non-traditional ways. As such, diversity increases the opportunities to apply novel and/or different approaches to completing tasks. In fact, it is often those who approach a problem from a different viewpoint who come up with the breakthrough solution (Lakhani et al., 2007). Recent research into problem solving has shown that individuals who attempt to independently solve problems outside their specific domains are often more successful than those who are closely associated with the domain. This suggests that diverse groups may in fact yield better, more creative results than more homogeneous ones even when working in isolation.

Incorporating a variety of different viewpoints also helps to reduce the biases and self-serving beliefs that many bring to the problem solving process (Bonabeau, 2009). Furthermore, ideas for new products generated by individuals outside the organization have been found to score higher in terms of novelty, customer benefit, and overall quality (Poetz & Schreier, 2012). In addition to a wide variety of approaches, a diverse group of individuals also brings with them a wide variety of knowledge, expertise, and experiences. It is this wide variety of experiences, knowledge, and viewpoints the crowd brings to the task that allows them to potentially outperform experts within the field (Hong & Page, 2004).

However, the benefits a diverse crowd brings to problem solving and innovation is not new to crowdsourcing. Scholars from a wide number of disciplines have theorized about the benefits of diversity well before the introduction of the Internet. As far back as 1945, scholars were theorizing the benefits that diversity brings to organizations. Specifically, the theory of “local knowledge” proposed by von Hayek (1945) posits that economic problems in society stem from organizational challenges in adapting to the constant small changes required to continuously
deliver goods and services. Hayek theorized that the knowledge needed to manage these small changes was not contained within the organization but instead decentralized within the marketplace. To succeed, he theorized that companies must work to aggregate this distributed knowledge to their advantage. Key to this theory is the viewpoint that individuals hold some unique form of knowledge or “private information” based on their experiences. As such, von Hayek’s theory posits that organizations should focus their efforts on collecting existing information that is dispersed across individuals and not on attempting to generate new knowledge. Turning to the crowd for problem solving is an extension of von Hayekian economics in action.

Granovetter (1973) brought a sociological perspective to the benefits of diversity. Granovetter posited that individuals with whom we are loosely connected (e.g., “weak ties”) allow us to take advantage of a wider array of resources and knowledge than those with whom we are closely tied. Because weak tie connections typically have different and more diverse backgrounds than strong tie connections, they widen exposure to knowledge and information (Putnam, 2000; Williams, 2006). By extending its reach to individuals outside the organization (i.e., increasing weak tie relationships), organizations can take advantage of diversity and distributed knowledge embedded within new networks thus increasing their opportunities to innovate.

The benefits of diversity have also been illustrated mathematically using computer simulations of problem solving agents. The Diversity Trumps Ability Theorem (Hong & Page, 2004) proves that a randomly selected group of problem solvers will typically outperform a group of the best problem solvers. Again, the key is diversity. Those who have exceptional problem solving skills tend to apply similar techniques to the issue at hand. This knowledge may make them better at solving problems that are best suited to their techniques, but when it comes to
problems requiring solutions outside these specialized techniques they are no better than the crowd at large.

Finally, researchers within organizational science have also recognized the benefit of diversity. Similar to von Hayek’s theory of local knowledge, Burt’s (1992) theory of “structural holes” incorporates Granovetter’s weak ties theory to outline the benefits that diversity brings to an organization. Burt posits that in the competitive arena in addition to an individual’s financial capital (i.e., access to money or credit) and human capital (i.e., charm, intelligence, presence), an individual’s structural capital (i.e., who they know and how they are connected to them) may be key to competitive advantage. Organizations that are willing to open up the innovation process to others become more “porous” and as such can better manage “structural holes” through the flow of information in and out at different stages of the innovation process (Dodgson et al., 2006). These connections allow companies to benefit from the knowledge contained within others’ networks. The more connections, the more opportunities an organization has the more opportunities it has to benefit from others’ knowledge.

However, different approaches to leveraging diversity result in different outcomes depending on whether the crowd works collaboratively or independently, and whether inputs are aggregated or remain independent. Next, an exploration of diversity in relation to the potential value of crowdsourcing is provided. This is followed by a discussion of the primary value identified for each common use within the explanatory framework.

### 6.2.3.2 Collective Intelligence Versus the Wisdom of the Crowd

As mentioned earlier, the theories of collective intelligence and the wisdom of the crowd are often cited as benefits to crowdsourced initiatives. While both rely on diversity to add value, there are unique differences between the two. Specifically, collective intelligence is a shared
intelligence that results from a diverse group of people collaborating to solve a problem or come to a mutual decision (Levy, 1997). According to the theory of collective intelligence, the crowd must be sufficiently large to ensure a diversity of local knowledge and individuals within the crowd must have some expertise in relation to the problem to be solved (Bonabeau, 2009; Hong & Page, 2004). Furthermore, there must be some way to combine or filter the collective contributions of all individuals to reach an agreed upon decision.

Similar to collective intelligence, benefiting from the wisdom of the crowd also requires a large and diverse group of people. However, with the wisdom of the crowd independent inputs, versus collaborative ones, are aggregated to yield a final answer/solution (Surowiecki, 2004). Key to harnessing the wisdom of the crowd is statistically aggregating information from many individuals – each providing a “bit” of knowledge. When combined and averaged, the collective input provides a more accurate answer than any one individual would likely come up with on his or her own. This requires two specific conditions to be met. First, the wisdom of the crowd relies on independent inputs from individuals, where input from one does not impact input from another (Surowiecki, 2004). That is, the crowd is not trying to collectively and collaboratively come up with the best solution. Second, the aggregation of information requires tasks for which inputs can be defined and quantifiable such as guessing the number of jellybeans in a jar.

While both collective intelligence and the wisdom of the crowd rely on the diversity within the crowd, one requires collective inputs while the other requires independent inputs. Examples of crowdsourcing initiatives that leverage collective intelligence include ideation sites where the crowd can vote and comment on individual ideas for new product improvements or new product offerings (Di Gangi & Wasko, 2009; Jouret, 2009). In these cases, the crowd is working collaboratively, or at least has access to the inputs of others. As such, inputs from one can influence inputs from others. In contrast to collective intelligence, crowdsourced examples of the wisdom of the crowd include predictive or information markets. Predictive markets aggregate
the knowledge of the crowd to make predictions regarding unknown future events. Individuals buy shares or make guesses about unknown future events. Individuals’ predictions are then aggregated to identify the best or most likely outcome as defined by the crowd. Here, individuals are not working collaboratively to come to a decision, as is the case with collective intelligence. Instead, with the wisdom of the crowd organizations are benefitting from the aggregation of distributed knowledge across a diverse set of individuals. Next, a discussion of a third value that crowds may bring is provided.

6.2.3.3 The “Wisdom of the One”

While collective intelligence and the wisdom of the crowd are most often cited within literature regarding the benefits of crowdsourcing, organizations also benefit from diversity even when there is no collaboration among participants or aggregation of input. Benefits also can be realized as the number of individuals participating increases. Specifically, as numbers increase, so do the chances of finding a good, or best solution, often referred to as an “extreme-value outcomes” (Boudreau et al. 2011; Terwiesch & Xu, 2008). This approach relies on what can be called the “wisdom of the one.”

The wisdom of the one does not harness collective intelligence because there is no collaboration. Instead, participants independently submit ideas or answers. Moreover, it does not harness the wisdom of the crowd, because even though inputs are independent there is no aggregation of inputs to come to a combined solution. A crowdsourced example of the wisdom of the one is the problem-solving site InnoCentive.com (A market for ideas, 2009; Bonabeau, 2009; Brabham, 2008b; Dodgson et al., 2006; Howe, 2008; Kleemann et al., 2008; Lakhani & Panetta, 2007; Lakhani et al., 2007; Sawhney et al., 2005). As previously discussed, InnoCentive allows organizations to push out their toughest R&D challenges to the crowd. Individuals work
independently and submit their best answers for consideration by the sponsoring company. Even while no collaboration or aggregation of inputs takes place, expanding the number of individuals working on the problem also increases the diversity with which the problem is approached. As such, the chance of finding a solution increases, allowing organizations to benefit from the wisdom of the one.

As can be seen, large groups of individuals bring with them both diversity and distributed knowledge. Furthermore, regardless of whether individuals collaborate with each other, inputs are aggregated, or individuals work independently, as the size of the crowd increases so does diversity, distributed knowledge, and the possibility of finding a solution. Depending on whether input is independent or collaborative, aggregated or not aggregated, organizations may benefit from the wisdom of the one, wisdom of the crowd, or collective intelligence (see Figure 6-2).

Figure 6-2: The Potential Value within the Crowd
With this background in mind, next the potential value the crowd brings to the organization for each common use of crowdsourcing as identified in the explanatory framework is provided.

6.2.3.4 Linking Crowd Value to Organizational Use

Organizations turning to the crowd to assist with creative outputs related to Marketing/Branding are most likely to benefit from the value that a diverse crowd brings to the creative process. Individuals within the crowd may work together in teams or alone and as such organizations may benefit from both collective intelligence and the wisdom of the one, respectively. However, as was illustrated in the case of the Council, in order to benefit from collective intelligence the crowd must have some knowledge of the subject (e.g., sustainability). Because the general public did not have an adequate knowledge of sustainability, the Council was not able to benefit from the collective intelligence of the crowd. Here we see how crowd characteristics (i.e., ideal knowledge/skills) interact with potential crowd value as they relate to specific organizational needs. In addition to the ability to generate awareness and increase market exposure, reaching out to the crowd to gain market insights is also a relatively low cost and efficient way of collecting market research and gaining market insights (Murphy, 2009; Whitla, 2009). Therefore, such use of the crowd may bring with it tangible benefits. Intangible benefits include increased brand affinity and customer loyalty, both difficult to measure. Finally, realizing such value may be immediate, as is the case in gaining better market insights, or delayed, as is the case in building brand affinity.

When it comes to Cost Reduction/Productivity, depending on the nature and structure of the task, organizations benefit from both the sheer numbers in the crowd as well as its diversity. When the goal is the completion of simple, routine tasks such as image recognition, large
numbers are optimal for reducing time. For example, for complex, non-routine tasks such as programming, increasing both the diversity and the numbers in the crowd may yield more novel or unique approaches to task completion and ensure a suitable solution is found. On the other hand, DocCorp was attempting to leverage the sheer numbers in the crowd to reduce costs with labor-intensive BPO services. However, in this case, diversity was not desired. In fact, to ensure the crowd could complete the task at the quality required, DocCorp was attempting to identify a homogeneous crowd with a similar level of skills and knowledge (i.e., foreign language and typing skills).

Crowdsourcing initiatives designed for Product/Service Innovation benefit from diversity, large numbers, and distributed knowledge. While diversity may be instrumental in coming up with novel solutions or new ideas for products and services, distributed knowledge is key when tackling difficult problems and generating revolutionary innovation. For example, when attempting to solve difficult R&D problems, the diversity of the crowd increases the likelihood of finding a novel solution and benefiting from collective intelligence when the crowd collaborates and builds on each other’s ideas. Additionally, the more diverse the crowd, the more distributed knowledge that can be applied to the task. Furthermore, increasing the number of individuals who attempt to solve a problem increases the likelihood of benefiting from the wisdom of the one. Therefore for complex problems solving related to innovation, a crowd that is both large and diverse may be most beneficial.

Auto Inc., AdvanceTech, and IAA, all leveraged internal employees for ideation. While the crowd was not likely as diverse as an external crowd would be, by including individuals within the organization from all departments and at multiple levels, these organizations did increased the potential to benefit from diversity. In two of these cases, Auto Inc. and AdvanceTech, organizations were also able to benefit from the distributed knowledge within the
organization by leveraging the cross-departmental knowledge to identify issues earlier in the innovation cycle.

Finally, organizations wishing to advance understanding through Knowledge Capture extract value by capturing the distributed knowledge within the crowd. Even when organizations leverage an internal crowd, they are aggregating knowledge distributed throughout the organization. This may be particularly relevant to large organizations with distributed workforces. The case of HealthCo illustrated an organization benefiting from the knowledge capture of external crowds (i.e., professional health record coders). By aggregating independent quantifiable inputs from experts in the crowd, HealthCo was able significantly improve the accuracy of its underlying algorithms therefore benefiting from the wisdom of the crowd.

6.2.4 Summary of Explanatory Theoretical Framework

The explanatory framework links organizational goals and desired outcomes to the key crowd characteristics of ideal knowledge/skills and desired location. Additionally, it specifies key organizational challenges associated with each use. An integrated summary of the characteristics in the explanatory framework is provided next for each use. As has been shown, different organizational needs necessitate the completion of different tasks that in turn require different crowds with different skills and knowledge. Crowds can be both internal and external and bring with them a variety of different potential values. Furthermore, different uses of the crowd create different challenges for the organizations that engage in such initiatives. As such, it can be described as explanatory or Type II theory (Gregor, 2006) as discussed in Chapter 3. Next, a summary of each category of use is provided.
6.2.4.1 The Marketing/Branding Crowd

Organizations leveraging the crowd for Marketing/Branding benefit from the value that a diverse crowd brings to the creative process. Ideally, the crowd should have some knowledge of the product/service being promoted and an affinity for the brand. Because the objective of the initiative is to increase profits, external crowds (i.e., non-employees) versus internal crowds (i.e., employees) are necessary. Finally, organizations must be prepared to face issues and challenges associated with connecting, motivating, and controlling the crowd, as well as dedicating the time and resources to evaluate the crowd’s input and filter out noise.

6.2.4.2 The Cost Reduction/Productivity Crowd

When it comes to leveraging the crowd for Cost Reduction/Productivity, both the sheer numbers in the crowd and its diversity are beneficial. For simple routine tasks, large numbers of individuals with generalized knowledge/skills are typically desired. However, when the goal is completion of more complex tasks, identifying a diverse group of individuals with specialized skills may yield more novel or unique outcomes. Regardless of the task to be completed, because the organization is attempting to reduce costs or increase productivity by replacing current resources, external crowds are preferred. However, organizations should not underestimate the challenges and resources required to manage an on-demand crowdsourced workforce. Common challenges include ensuring the accuracy and quality of work as well as the completion of work in a timely manner. When dealing with sensitive information, protecting data in crowdsourcing marketplaces may bring with it considerable risk. Finally, organizations must ensure that they are not in violation of local or country labor laws and that they are viewed as a trusted source of work; otherwise, the very crowd on which they rely may refuse to participate.
6.2.4.3 The Product/Service Innovation Crowd

Organizations turning to the crowd to increase their innovative potential may benefit from many potential crowd values. Diversity can be instrumental in generating novel solutions or new ideas for products and services. Distributed knowledge is useful when tackling difficult problems and generating revolutionary innovation. Access to large numbers of individuals increases the chances of finding the right or best solution. In addition, because tasks vary from a focus on one or more stages of innovation to complex problem solving, the ideal knowledge/skills also varies greatly. When asking the crowd to weigh in on current products/services, knowledge of those products/services is ideal. However, when asking the crowd to contribute to product design and development specialized knowledge of materials used in the manufacturing process may be most beneficial. Finally, for complex R&D problems some domain level expertise may be desirable, albeit as discussed not always from the domain in which the problem resides.

Organizations that turn to the crowd for innovation must overcome issues related to leakage of IP and loss of competitive advantage. As such, the choice to use internal crowds versus external crowds is generally a function of the risk perceived by the organization. Additionally, even when leveraging internal crowd, organizations face challenges related to garnering internal acceptance and buy-in, clearly articulating the task to be completed, and allocating the time and resources to manage, evaluate, and sort through crowd input.

6.2.4.4 The Knowledge Capture Crowd

Finally, organizations wishing to advance understanding through Knowledge Capture extract value from the distributed knowledge in the crowd. By aggregating knowledge from across the crowd, organizations can create new sources of knowledge that improve understanding
or accuracy of current products and services. Typically, these organizations are looking for advanced domain expertise or situational knowledge within the crowd. Domain expertise may be related to industries such as pharmaceuticals or chemistry. Situational knowledge includes knowledge related to specific events, times, or places (e.g., crowdsourcing information related to current market trends or geographic locations). In regard to the location of the crowd, both internal and external crowds may be appropriate for knowledge capture. However, external crowds have the potential to bring more value to the organization. Because knowledge is often power and may increase competitive advantage, organizations face challenges related to motivating the crowd to share their knowledge as well as ensuring the accuracy of the information provided.
Chapter 7

Conclusions

This final chapter summarizes the research findings and its contributions to both theory and practice. The chapter ends with a discussion of research limitations and recommendations for future research directions.

7.1 Contributions of the Research

The reach of the Internet combined with collaborative social media tools have opened up new possibilities for managing and increasing an organization’s innovative potential. These tools allow organizations to connect with large groups of people, both inside and outside the organization, to complete a variety of different tasks. Using grounded theory methods and qualitative data from both literature and case studies, the goal in this research was to advance our understanding of this new business practice by exploring the motivations of organizations that leverage crowdsourcing, the facilitators of and barriers to acceptance and use, and the success metrics used to evaluate such initiatives. Because of the emergent nature of crowdsourcing and the lack of substantive theory related to this new phenomenon, theory building focused on early stage theory and specifically the development of explanatory, or Type II, theory (Gregor, 2006). The theory developed as a result of this research makes two major contributions

The first major contribution is the development of an explanatory theoretical framework that helps to explain something that was “poorly or imperfectly understood beforehand” (Gregor, 2006, p. 625). The explanatory theoretical framework advances our knowledge in three key ways. First, it defines four common organizational uses of crowdsourcing: 1) Marketing/Branding, 2)
Cost Reduction/Productivity, 3) Product/Service Innovation, and 4) Knowledge Capture. This finding provides a new understanding of common uses of crowdsourcing by established organizations and links common uses of the crowd to specific organizational goals and desired outcomes. Second, the framework ties key characteristics of the crowd to each identified use. As such, it establishes that different organizational needs necessitate the completion of different tasks that in turn require different crowds with different skills and knowledge. Third, the framework advances our theoretical understanding of the dynamics that present themselves when organizations attempt to integrate new resources into current business practices. Specifically, the framework identifies characteristics of the crowd that may be best suited to meeting specific organizational needs. The framework serves as a foundation from which researchers can expand theory related to this emergent phenomenon. The theory also provides guidance to practitioners on which crowds, challenges, impacts, and values are associated with specific use of crowdsourcing. Such knowledge may prove useful in helping practitioners to match the right crowd to the right job.

The second major contribution of this research is the development of the Internal-Crowdsourcing Acceptance Model (ICAM). The model advances our theoretical understanding of the use of internal crowds for Product/Service Innovation and the critical role that proactive executive leaders play in reducing barriers to use and acceptance. Specifically, it provides two key contributions. First, it establishes that internal-crowdsourcing for Product/Service Innovation may be a disruptive business practice that has implications for organizational culture, internal processes, and structure. This understanding builds theory related to the role leadership plays in facilitating this new business practice. Second, it provides guidance to practitioners on how to address specific challenges and barriers to use and acceptance, thereby increasing opportunities to extract value from such initiatives.
7.2 Limitations and Future Research Directions

There are several limitations of this research that are worth noting. While a broad sampling of different uses of the crowd was desirable at this early stage of theory building (Patton, 2002), the number of cases is relatively limited. Although all organizations studied were leveraging social media to connect with large numbers of people to meet an organizational need, it is currently unclear what role characteristics such as industry, technology platform, outside market and economic pressures, and prior experimentation with crowdsourcing may have had on the initiative and its outcomes. Furthermore, the initiatives under study ranged from ones that had been in place for less than one year to those that had been in place for more than 10 years. In fact, in four of the six cases, the initiatives had been in place for less than two years. It is difficult, therefore, to adequately assess the long-term impact of such initiatives on the organization. Finally, the limited number of cases, combined with the variety of different contexts and potential confounding factors limits cross-case comparison and validation. As such, caution should be taken in generalizing findings to other contexts (Klein & Myers, 1999; Lee & Baskerville, 2003).

To advance theory and increase generalizability, a number of future research directions are suggested. With respect to the explanatory theoretical framework, future research should focus on theoretical replication across cases. Specifically, additional empirical work is needed that focuses explicitly on each of the four common uses (i.e. Marketing/Branding, Cost Reduction/Productivity, Product/Service Innovation, and Knowledge Capture). This should include examining similarities and differences among organizations within the same industry, as well as across a wide spectrum of industries. Comparing and contrasting similar uses within an industry and similar uses across industries will advance our understanding of the distinctive characteristics that may be uniquely tied to specific industries or markets, thus helping to build more substantive theory (Gregor, 2006).
More work is also needed to explore patterns and relationships between specific tasks to be performed and desired characteristics of the crowd. A key area of investigation is to examine the relationship between common uses of crowdsourcing and type of knowledge needed to complete associated tasks. Studies should look at how best to identify individuals in the crowd who possess the desired knowledge/skills to complete the task, as well as the difference in outcomes when individuals in the crowd collaborate and when they work independently on the same task. Such studies will help to advance both theory and practice related to the type of knowledge and degree of collaboration that may be optimal for completing certain tasks and obtaining desired results.

Because extracting value from such initiatives is key to success within organizational settings, additional work is needed to better assess the value that crowdsourcing may bring to an organization. This is especially important, as many benefits are often intangible and difficult to measure. More work is needed that sheds light on how best to capture intangible change and demonstrate the benefits such change brings to the organization. Longitudinal studies should document shifts in process, structure, and culture over time and examine the role that crowdsourcing initiatives may play in facilitating organizational change.

With regard to the ICAM model, additional work is needed that specifically examines the impact of organizational processes, structure, and culture on the use and acceptance of internal ideation. By gaining a better understanding of the underlying conditions and relationships, theory can move to a more predictive level (Gregor, 2006). As relationships are better defined, theory can be advanced to include causal explanations and verifiable statements that increase predictability. Such exploration should seek to clarify the relationship between the specific actions taken by proactive leaders and the acceptance and use of internal ideation platforms. Furthermore, studies should evaluate the impact of internal-crowdsourcing within and across multiple industries, as well as compare and contrast the use of internal versus external crowds. Of
specific note here would be attempting to better gauge the risks and benefits of internal versus external crowds in order to provide guidance to practitioners on how best to make this strategic decision. Studies should also explicitly compare crowdsourcing initiatives focused on product innovation and those focused on service innovation, as it is currently unclear the differences and similarities between them. Finally, a promising area that is also gaining attention within the literature is comparing and contrasting time-bound challenges to on-going open ideation. Key areas of study should focus on evaluating the factors that may influence the quality of the ideas generated, the difference in the resources needed to manage these initiatives, and the processes and procedures for evaluating input.
References


Füller, J., Müller, J., Hutter, K., Matzler, K., & Hautz, J. (2012). Virtual worlds as collaborative innovation and knowledge platform. Proceedings from the 45th *Hawaii International Conference on System Science*, 1003-1012.


Myers, M. D. (2009). *Qualitative research in business & management.* SAGE.


Appendix A

Initial Interview Questions

1. Are you currently using social media to reach out to people for product innovation purposes?
2. What is the goal of the project?
3. Who are you targeting or reaching out to?
4. How long have you been doing this?
5. Is this for a new product or an existing one?
6. Do you currently have product development processes in place?
Appendix B

Case Study Interview Questions

Company Background

*Demographics (for executive interviewees only)*

1. How long has [company] been in business?
2. How did it come into being?
3. How many individuals are currently employed at this company?
4. Do you have more than one location in the US? If so, where and about how many people work at this location?
5. Are there locations outside the US? If so, where and about how many people work at this location?
6. What type of turnover rate do you have in each of your locations?

*About the company*

7. Briefly, what is the mission/purpose of this company?
8. What products or services do you provide?
9. Who is your target customer?

*Company culture*

10. How would you describe the culture of this company?
11. How would you describe the leadership style of the CEO/President?
12. Does [company] use social media either internally with employees or with others – things like Facebook, wikis, chat, online knowledge bases? If so, what are you doing? If not, why not?
Marketplace

13. How would you describe the competitive marketplace in your industry?
14. What are the biggest pressures you face in the marketplace?
15. What, if any, changes are you seeing?

Innovation

16. How would you describe your innovation processes? Are they documented?
17. Is innovation centralized within one department or decentralized across multiple departments, units, or facilities?
18. Are you familiar with the concept of open innovation? If so, how would you describe it?
19. Have you participated in any open innovation initiatives either here at this company or with other companies? If so, can you tell me about them? Other companies? Universities?
20. Did you find them successful? If so, why? If not, why not?
21. What do you think the main benefit or risks of such initiatives are?
22. Do you feel open innovation would be right for this company? If so, why? If not, why not?

Crowdsourcing

23. I know you are currently leveraging social media to [fill in company specific use], have you done other similar types of outreach before? If so, for what purpose? If not, why not?
24. When did you first become aware of the concept of leveraging the crowd for product innovation?

Current initiative

25. Tell me about your current initiative? What is the objective of this initiative?
26. What are you asking the crowd to do? What kind of information are you collecting from the crowd?
27. How did you decide what features/process you would use? Did you have to adapt what you wanted based on resources or cost?

28. Are you providing an incentive for participation? If so, what? If not, why not?

29. How long has this initiative been in place?

30. What types of resources are needed to maintain/monitor this initiative?

31. How did you go about making the crowd aware of the site?

32. About how many contributions have you had so far?

33. Do you have an idea of the type of people who are contributing? What do you know about them?

34. Do you have a timeline in mind in terms of keeping this going?

Launching/Barriers/Facilitator

35. What was the reaction of others in the company to this initiative? Were they on board? Were there any concerns?

36. What were your initial thoughts in terms of using crowdsourcing within this company? Did you think it was a good fit, not a good fit, or were you unsure?

37. Did you have any specific concerns? If so, what were they?

38. What type of preparation did the company do before starting this initiative?

39. What process did you go through to make this happen? What resources did you use?

40. What type of questions came up during this process that you didn’t expect?

41. Was setting up this initiative what you expected? Why or why not?

42. How are you managing the information that you gather? Was it what you expected? Did you have specific conventions in place for dealing with the information created by the crowd?

43. How are you handling ownership issues related to input from outside the company?

44. Have you made changes from your initial plans? If so what and why?
Success metrics

45. How are you determining success?

46. Has this turned out like you expected? If not, what surprised you or what was different than you expected?

47. What would you say were the downsides to this approach?

48. What is the upside?

Impacts

Organizational structure

49. How has this initiative impacted the company?

50. Has it changed what people do?

51. Has it created or removed certain tasks or jobs?

Innovation processes

52. Has it changed the way you think about innovation?

53. Has it changed how the company innovates?

Competitive advantage

54. Are you aware of competitors who are using similar initiatives?

55. How do you think this initiative impacted your competitiveness in the market?
Appendix C

Informed and Implied Consent Forms

Informed Consent Form for Social Science Research
The Pennsylvania State University

Title of Project: Leveraging the crowd for product innovation: The use of crowdsourcing in US companies

Purpose of the Study: The purpose of this research study is to expand our current understanding of how the crowd is being used to supplement or replace current innovation practices.

Procedures to be followed: You will be asked to participate in interviews regarding current innovation practices at your company. Interviews will be recorded for data analysis purposes only. Recordings will be transcribed by the Principal Investigator (PI) and no identifying information will be associated with the transcription. Recordings will be archived in a secure location and only the PI will have access. Recordings will be destroyed after completion of the PI’s dissertation (expected completion date May, 2012). Additionally, you may be observed during company meetings related to product innovation initiatives or product planning sessions.

Discomforts and Risks: There are no risks in participating in this research beyond those experienced in everyday life.

Benefits: The benefits to you include gaining insights on industry trends, business models, success metrics, and potential organizational impacts of crowdsourcing for product innovation. The benefits to society include building a more in-depth understanding of the strategic use of the crowd by companies for product innovation as it relates to the nation’s ability to remain competitive in today’s global economy.

Duration/Time: Interviews will take between 60 – 90 minutes to complete. It is anticipated you will be asked to participate in no more than three interviews.

Statement of Confidentiality: Your participation in this research is confidential. The data will be stored and secured at 330B IST Building, University Park, PA 16802 on a password-protected computer. The Pennsylvania State University’s Office for Research Protections, the Institutional Review Board and the Office for Human Research Protections in the Department of Health and Human Services may review records related to this research study. In the event of a publication or presentation resulting from the research, no personally identifiable information will be shared.
**Right to Ask Questions:** Please contact Lee Erickson at (703) 625-7966 with questions, complaints or concerns about this research. You can also call this number if you feel this study has harmed you. If you have any questions, concerns, problems about your rights as a research participant or would like to offer input, please contact The Pennsylvania State University’s Office for Research Protections (ORP) at (814) 865-1775. The ORP cannot answer questions about research procedures. Questions about research procedures can be answered by the research team.

**Voluntary Participation:** Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer. Refusal to take part in or withdrawing from this study will involve no penalty or loss of benefits you would receive otherwise.

You must be 18 years of age or older to consent to take part in this research study. If you agree to take part in this research study and the information outlined above, please sign your name and indicate the date below.

You will be given a copy of this consent form for your records.

_____________________________  __________________________
Participant Signature          Date

_____________________________  __________________________
Person Obtaining Consent        Date
Implied Consent Form for Social Science Research
The Pennsylvania State University

Title of Project: Leveraging the crowd for product innovation: The use of crowdsourcing in US companies

Purpose of the Study: The purpose of this research study is to expand our current understanding of how the crowd is being used to supplement or replace current innovation practices.

Procedures to be followed: You will be asked to participate in interviews regarding current innovation practices at your company. Interviews will be recorded for data analysis purposes only. Recordings will be transcribed by the Principal Investigator (PI) and no identifying information will be associated with the transcription. Recordings will be archived in a secure location and only the PI will have access. Recordings will be destroyed after completion of the PI’s dissertation (expected completion date May, 2012). Additionally, you may be observed during company meetings related to product innovation initiatives or product planning sessions.

Discomforts and Risks: There are no risks in participating in this research beyond those experienced in everyday life.

Benefits: The benefits to you include gaining insights on industry trends, business models, success metrics, and potential organizational impacts of crowdsourcing for product innovation. The benefits to society include building a more in-depth understanding of the strategic use of the crowd by companies for product innovation as it relates to the nation’s ability to remain competitive in today’s global economy.

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Voluntary Participation: Your decision to be in this research is voluntary. You can stop at any time. You do not have to answer any questions you do not want to answer. Refusal to take part in
or withdrawing from this study will involve no penalty or loss of benefits you would receive otherwise.

You must be 18 years of age or older to consent to take part in this research study. Participation in the phone interview implies you have read the information in this form and consent to take part in the research. Please keep this form for your records or future reference.
Appendix D

Coding Guide

Definitions

This category is intended to capture definitions of a variety of different open models including OI, CS, OSS, mass customization, and other models referenced in relation to CS. Additionally, it is intended to capture definitions related to crowd benefits such as diversity, collective intelligence, and distributed knowledge.

<table>
<thead>
<tr>
<th>Code</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEF</td>
<td>Definitions</td>
</tr>
<tr>
<td>DEF-CS</td>
<td>Definitions of CS</td>
</tr>
<tr>
<td>DEF-OI</td>
<td>Definitions of OI</td>
</tr>
<tr>
<td>DEF-CO</td>
<td>Definitions of co-creation</td>
</tr>
<tr>
<td>DEF-MASS</td>
<td>Definitions of mass customization</td>
</tr>
<tr>
<td>DEF-OSS</td>
<td>Definitions of open sources software</td>
</tr>
<tr>
<td>TRM-OTHR</td>
<td>Other terms that are used in relation to open models</td>
</tr>
<tr>
<td>DEF-COLL</td>
<td>Definitions of collective intelligence</td>
</tr>
<tr>
<td>DEF-DIV</td>
<td>Definitions of diversity</td>
</tr>
<tr>
<td>DEF-DISKNOW</td>
<td>Definitions of distributed knowledge</td>
</tr>
<tr>
<td>DEF-WIS</td>
<td>Definitions of wisdom of the crowd</td>
</tr>
<tr>
<td>DEF-OTHR</td>
<td>Other terms associated with CS</td>
</tr>
</tbody>
</table>

Organizational Characteristics

What are the common uses and objectives behind crowdsourcing initiatives, why do companies turn to the crowd and what are the outcomes in terms of current resources/processes?

Goal/Motivation

<table>
<thead>
<tr>
<th>Code</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORG-GOAL</td>
<td>Organizational Goal</td>
</tr>
</tbody>
</table>
### Use

<table>
<thead>
<tr>
<th>ORG-USE</th>
<th>Use of the crowd</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORG-USE-MRK</td>
<td>Marketing/Branding</td>
</tr>
<tr>
<td>ORG-USE-KNW</td>
<td>Knowledge</td>
</tr>
<tr>
<td>ORG-USE-PRO</td>
<td>Productivity</td>
</tr>
<tr>
<td>ORG-USE-INNO-PRO</td>
<td>Innovation, product</td>
</tr>
<tr>
<td>ORG-USE-INNO-SRV</td>
<td>Innovation, service</td>
</tr>
<tr>
<td>ORG-USE-OTHR</td>
<td>Other</td>
</tr>
</tbody>
</table>

### Desired Outcome

The outcome the organization is striving to achieve by turning to the crowd.

<table>
<thead>
<tr>
<th>ORG-OUT</th>
<th>Outcome of the initiative related to current resources/processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORG-OUT-REP</td>
<td>Replace current resources/processes</td>
</tr>
<tr>
<td>ORG-OUT-SUP</td>
<td>Supplement current resources/process</td>
</tr>
<tr>
<td>ORG-OUT-CRE</td>
<td>Create new resources/processes</td>
</tr>
<tr>
<td>ORG-OUT-OTHR</td>
<td>Other</td>
</tr>
</tbody>
</table>

### Initiative

<table>
<thead>
<tr>
<th>INIT</th>
<th>Specifics related to the crowdsourcing initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td>INIT-END</td>
<td>Time sensitive will end on specific date</td>
</tr>
<tr>
<td>INIT-ONGO</td>
<td>Ongoing, not end date</td>
</tr>
<tr>
<td>INIT-INCENT</td>
<td>Incentives for participation (e.g., money)</td>
</tr>
<tr>
<td>INIT-FEAT</td>
<td>Features, what the crowd can do</td>
</tr>
</tbody>
</table>

### Challenges/Barriers

Because the nature of the research is within the context of the organization, it is important to understand the risks, issues, and benefits to the organization.

<table>
<thead>
<tr>
<th>ORG-CHAL</th>
<th>Challenges faced by organizations leveraging the crowd</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORG-CHAL-ACC</td>
<td>Accuracy of work product</td>
</tr>
<tr>
<td>ORG-CHAL-AVAL</td>
<td>Availability of the crowd (will they be there when I need them)</td>
</tr>
<tr>
<td>ORG-CHAL-IP</td>
<td>IP Leakage or loss of competitive advantage</td>
</tr>
<tr>
<td>ORG-CHAL-CLR</td>
<td>Clear articulation of the task</td>
</tr>
<tr>
<td>ORG-CHAL-BUYIN</td>
<td>Buy-in from others in the organization</td>
</tr>
<tr>
<td>ORG-CHAL-CUL</td>
<td>Organizational culture or current practices</td>
</tr>
<tr>
<td>ORG-CHAL-MOT</td>
<td>Motivating the crowd to participate</td>
</tr>
<tr>
<td>ORG-CHAL-CNTRL</td>
<td>Loss of control</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td>ORG-CHAL-AMNT</td>
<td>Amount of information to evaluate</td>
</tr>
<tr>
<td>ORG-CHAL-INTGR</td>
<td>Integrating crowd’s input into current processes</td>
</tr>
<tr>
<td>ORG-CHAL-OTHR</td>
<td>Other</td>
</tr>
</tbody>
</table>

**Value Capture**

<table>
<thead>
<tr>
<th>ORG-VAL</th>
<th>The value that is captured by the organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORG-VAL-NOW</td>
<td>Immediate realization of value to the organization (e.g., cost savings)</td>
</tr>
<tr>
<td>ORG-VAL-LATR</td>
<td>Delayed realization of value to the organization</td>
</tr>
<tr>
<td>ORG-VAL-TAN</td>
<td>Value is tangible (e.g., cost savings)</td>
</tr>
<tr>
<td>ORG-VAL-INTAN</td>
<td>Value is intangible (e.g., innovative culture, increased sales, opening of new markets)</td>
</tr>
</tbody>
</table>

**Task Characteristics**

**Common Task**

One major category that revealed itself was characteristics associate with the nature of the task to be completed by the crowd.

<table>
<thead>
<tr>
<th>TSK</th>
<th>Tasks performed by the crowd</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSK-HIT</td>
<td>Human intelligence/computation tasks</td>
</tr>
<tr>
<td>TSK-DATA</td>
<td>Data collection</td>
</tr>
<tr>
<td>TSK-KNW</td>
<td>Knowledge sharing (is this a separate category also a USE?)</td>
</tr>
<tr>
<td>TSK-MKT</td>
<td>Marketing</td>
</tr>
<tr>
<td>TSK-IDEA</td>
<td>Ideation</td>
</tr>
<tr>
<td>TSK-DSGN</td>
<td>Design</td>
</tr>
<tr>
<td>TSK-DEV</td>
<td>Development</td>
</tr>
<tr>
<td>TSK-FLTR</td>
<td>Filtration</td>
</tr>
<tr>
<td>TSK-EVAL</td>
<td>Evaluation</td>
</tr>
<tr>
<td>TSK-PRB</td>
<td>Complex problem solving</td>
</tr>
<tr>
<td>TSK-OTHR</td>
<td>Other</td>
</tr>
</tbody>
</table>

**Crowd Characteristics**

Who is the crowd, what knowledge do they bring, where do they come from, and what motivates them.

**Location**
### Location of the Crowd

<table>
<thead>
<tr>
<th>CRW-LOC</th>
<th>Location of the crowd</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRW-LOC-INT</td>
<td>Internal to the organization, (employees)</td>
</tr>
<tr>
<td>CRW-LOC-EX</td>
<td>External to the organization</td>
</tr>
<tr>
<td>CRW-LOC-EX-PRT</td>
<td>External partners</td>
</tr>
<tr>
<td>CRW-LOC-EX-CUS</td>
<td>External customers</td>
</tr>
<tr>
<td>CRW-LOC-EX-PUB</td>
<td>General public</td>
</tr>
<tr>
<td>CRW-LOC-EX-ORG</td>
<td>Other established organizations or companies (e.g., technology company, university)</td>
</tr>
<tr>
<td>CRW-LOC-EX-COM</td>
<td>Communities of practice/science</td>
</tr>
</tbody>
</table>

### Knowledge

<table>
<thead>
<tr>
<th>CRW-KNW</th>
<th>What skill sets or knowledge is required to complete the task?</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRW-KNW-GEN</td>
<td>General knowledge</td>
</tr>
<tr>
<td>CRW-KNW-SIT</td>
<td>Situational knowledge (e.g., an event such as the Canadian Hockey riots)</td>
</tr>
<tr>
<td>CRW-KNW-PROD</td>
<td>Product/service knowledge</td>
</tr>
<tr>
<td>CRW-KNW-SPEC</td>
<td>Specialized knowledge (e.g., design, programming)</td>
</tr>
<tr>
<td>CRW-KNW-DOM</td>
<td>Domain expertise (e.g., chemistry,</td>
</tr>
<tr>
<td>CRW-KNW-OTH</td>
<td>Other</td>
</tr>
</tbody>
</table>

### Value

<table>
<thead>
<tr>
<th>CRW-VAL</th>
<th>Value of turning to the crowd</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRW-VAL-DIV</td>
<td>Diversity in the crowd</td>
</tr>
<tr>
<td>CRW-VAL-KNW</td>
<td>Distributed knowledge in the crowd</td>
</tr>
<tr>
<td>CRW-VAL-NUM</td>
<td>Sheer numbers in the crowd</td>
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</table>
Model Constructs

Emergent characteristics related to internal-crowdsourcing for ideation.

Leadership

<table>
<thead>
<tr>
<th>LDR</th>
<th>Leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDR-AWAR</td>
<td>Generating awareness of benefits and expectations</td>
</tr>
<tr>
<td>LDR-INC</td>
<td>Creating incentives to participate</td>
</tr>
<tr>
<td>LDR-RES</td>
<td>Allocating resources</td>
</tr>
<tr>
<td>LDR-OTHR</td>
<td>Other</td>
</tr>
</tbody>
</table>

Organizational Perceptions of Value

<table>
<thead>
<tr>
<th>PVAL</th>
<th>Perceptions of value</th>
</tr>
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<tbody>
<tr>
<td>PVAL-PER</td>
<td>Personal value</td>
</tr>
<tr>
<td>PVAL-INNO</td>
<td>Innovation value</td>
</tr>
<tr>
<td>PVAL-OTHR</td>
<td>Other</td>
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Organizational Practices

<table>
<thead>
<tr>
<th>PRAC</th>
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<tbody>
<tr>
<td>PRAC-STR</td>
<td>Structural</td>
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<tr>
<td>PRAC-PRO</td>
<td>Process</td>
</tr>
<tr>
<td>PRAC-OTHR</td>
<td>Other</td>
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</tbody>
</table>
## Appendix E

### Example of Within Case Annotated Coding

<table>
<thead>
<tr>
<th>Case ID</th>
<th>Category</th>
<th>Sub-category</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>AMOUNT</td>
<td>need process to seed platform, &quot;it doesn’t happen by itself&quot;</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>BUYIN</td>
<td>anticipated - concern that people would be &quot;unruly&quot; and there would be &quot;bad behavior&quot;</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>BUYIN</td>
<td>even though went to every executive personally, very few are contributing - believes this is do to a tactical, fighting fires mentality</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>CULTURE</td>
<td>executives not seeing value in initiative</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>DETAILS</td>
<td>some individuals feel future is not a problem to be addressed, more tactical in their approach</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>IP</td>
<td>people don’t understand how to move an idea to a credible business opportunity, need to teach how to think in terms of business models.</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>LAW</td>
<td>need to protect IP</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>LAW</td>
<td>because of export controls could not allow employees overseas to access system</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>LAW</td>
<td>had to find way to account for time within accounting rules</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>LAW</td>
<td>issue with export controls and technology transfer with government</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>PROCESSES</td>
<td>identifying where the initiative fits within the structure of the organization, how to account for costs in system, who will pay for costs associated with initiative</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>TIME</td>
<td>business folk (who he would like to participate) are too caught up on meeting deadlines and fighting fires to have time to contribute</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>TIME</td>
<td>executive perceive this as requiring more time that they don’t have, unable to convene them that will actually help them because ideas and conversations are centralized</td>
</tr>
<tr>
<td>B</td>
<td>CHALLENGE</td>
<td>TIME</td>
<td>not enough time to take on one more thing so don’t participate</td>
</tr>
<tr>
<td>B</td>
<td>CROWD</td>
<td>CHAR</td>
<td>primarily R&amp;D people and engineers from across the company</td>
</tr>
<tr>
<td>B</td>
<td>CROWD</td>
<td>CUSTOMERS</td>
<td>will not include because do not want to expose “messy” process to customers (specific to government and politics that may impact ability to get job done)</td>
</tr>
<tr>
<td>B</td>
<td>DEF</td>
<td>CI</td>
<td>&quot;company goes out and publishes something that says everybody come help me with my problem&quot;</td>
</tr>
<tr>
<td>B</td>
<td>DEF</td>
<td>CI</td>
<td>opening up hard issues unable to solve and providing financial reward to anyone who can solve it</td>
</tr>
<tr>
<td>B</td>
<td>FACILITATOR</td>
<td>CULTURE</td>
<td>some individuals feel future is a problem to be addressed, more strategic in their approach</td>
</tr>
<tr>
<td>B</td>
<td>FACILITATOR</td>
<td>LEADERS</td>
<td>they had &quot;enlightened&quot; leaders who understood that ROI hard to calculate on social media because hard to specifically link its use to specific R&amp;D project or product that end up making money</td>
</tr>
<tr>
<td>B</td>
<td>FACILITATOR</td>
<td>PROCESSES</td>
<td>making it easy to account for time spent on ideation platform</td>
</tr>
<tr>
<td>B</td>
<td>FACILITATOR</td>
<td>RESOURCES</td>
<td>leader had both bodies and money to put towards the initiative, was able to get is approved in part because funding for the initiative was coming from his budget and didn’t have to come from other’s budget</td>
</tr>
<tr>
<td>B</td>
<td>IMPACT</td>
<td>CROSS</td>
<td>collaboration across large groups of people, adjacent market activity ability to identify creative and innovative people who would typically go unnoticed within such a large organization (upwards of 1000’s of new sources of creative input)</td>
</tr>
</tbody>
</table>
| B       | IMPACT   | ORG          | }
Appendix F

Example of Across Case Annotated Coding

| A | 7 | IMPACT | CROSSCASE | discussion allows for identification of problems at early stage of ideation |
| A | 7 | IMPACT | CROSSCASE | allows for individuals across organization to participate in innovation |
| A | 17 | IMPACT | CROSSCASE | new ways of putting ideas together |
| A | 28 | IMPACT | CROSSCASE | adds across slice and hierarchy |
| A | 29 | IMPACT | CROSSCASE | opens up innovation across global boundaries which may allow for some project in US not possible in Europe due to current laws |
| B | 22 | IMPACT | CROSSCASE | collaboration across large groups of people, adjacent market activity |
| B | 23 | IMPACT | CROSSCASE | collaboration across large groups of people on a specific idea |
| B | 23 | IMPACT | CROSSCASE | ability to build and maintain connections easily to others to build out ideas |
| B | 24 | IMPACT | CROSSCASE | getting solutions to specific challenges that are from outside that domain |
| B | 24 | IMPACT | CROSSCASE | getting people with customer insights and insights from other sources together to collaborate (diversity of experiences among their offerings) |
| B | 25 | IMPACT | CROSSCASE | cross organizational collaboration that brings new knowledge and expertise to solving problems |
| B | 33 | IMPACT | CROSSCASE | increased motivation and commenting on ideas that uncovered value you might not have seen with prior smaller convolution team |
| B | 33 | IMPACT | CROSSCASE | information helps to connect different ideas and people not possible before |
| B | 33 | IMPACT | CROSSCASE | connecting people with similar ideas so they can make them different, not duplicative efforts |
| B | 33 | IMPACT | CROSSCASE | easier to make connections across a large organization, connecting people with similar ideas that would benefit from talking (she doesn’t say collaborate but talk) |
| C | 30 | IMPACT | CROSSCASE | collaborating with individuals in other business units, however this is often stifled by upper management who do not support suggestion/idea |
| F | 1 | IMPACT | CUSTOMERS | giving clients the ability to search through large pools of information to identify trends and patterns, this can lead to changes in behavior of staff and doctors |
| F | 2 | IMPACT | CUSTOMERS | increased accuracy due to large pool of data - “network effect” - what is the “agreed upon” answer |
| F | 2 | IMPACT | CUSTOMERS | speeding up the coding process - from 8 bits/hr to 10 |
| F | 2 | IMPACT | CUSTOMERS | better feedback to the physician, speed, better documentation of procedures |
| F | doc | IMPACT | CUSTOMERS | speeding up the coding process, provides more complete information |
| F | doc | IMPACT | CUSTOMERS | leverage statistical analysis to identify best choices |
| F | doc | IMPACT | CUSTOMERS | increased accuracy due to large pool of data - “network effect” - what is the “agreed upon” answer |
| F | doc | IMPACT | CUSTOMERS | speeding up the coding process, provides more complete information |
| G | 5 | IMPACT | CUSTOMERS | come up with new products |
| G | 5 | IMPACT | CUSTOMERS | 50% of what gets is considered “new” from a “fresh” perspective |
| G | 5 | IMPACT | CUSTOMERS | leverage data to either explore a new area or continue down same one (basically market research they are getting) |
| G | 5 | IMPACT | CUSTOMERS | feel like they have thoroughly explored the idea or potential idea |
| C | 32 | IMPACT | EMPLOYEE | because issues may be ongoing, individuals can see on a daily basis when their “ideas” have not been addressed |
| C | 32 | IMPACT | EMPLOYEE | site is empowering employees (although managers still have final say) |
| C | 29 | IMPACT | EMPLOYEE | if ideas are hanging out too long on the idea platform and not being addressed a “diservice” to the employee and may cause frustration |
| C | 30 | IMPACT | EMPLOYEE | recognition for a good idea |
| C | 30 | IMPACT | EMPLOYEE | while mostly minor issues that are brought to awareness through the platform, they create satisfaction in the workplace when addressed |
| C | 30 | IMPACT | EMPLOYEE | employees have a mechanism to make suggestions and that management is interested in what you have to say |
| C | 30 | IMPACT | EMPLOYEE | employees get frustrated when their idea is combined with another person who has a similar idea |
| C | 31 | IMPACT | EMPLOYEE | employees report feeling that idea group is “there for them”, that someone in HQ is listening even though still feel that overall HQ is not listening |
| C | 31 | IMPACT | EMPLOYEE | gives frontline employees a voice |
| D | doc | IMPACT | FEATURE | anonymous input allowed |
| F | 2 | IMPACT | INDUSTRY | have reached out to regulatory boards to let them know about vague instructions leading to mistakes to encourage them to tighten them up |
| D | 3 | IMPACT | LEARN | organization realized that the public did not clearly understand the nature of what they were trying to do |
| D | 3 | IMPACT | LEARN | realized that the public was not as aware of the organization’s efforts as expected |
| D | 3 | IMPACT | LEARN | organization realized that the public was not well informed on the issues they were attempting to address, they needed to educate the public in order to get helpful input (otherwise too low, level or off topic) |
| D | 3 | IMPACT | LEARN | organization realized that a smaller portion of the public than expected were active in helping to meet the organization’s mission |
Appendix G

Emergent Characteristics of Crowdsourcing

The following table has been adapted from Erickson, 2012.

<table>
<thead>
<tr>
<th><strong>Organizational Characteristics</strong></th>
<th><strong>Motivations</strong></th>
<th><strong>Goals</strong></th>
<th><strong>Challenges</strong></th>
<th><strong>Value</strong></th>
<th><strong>Outcomes</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Gaining/Retaining a competitive advantage</td>
<td>• To supplement current processes/resources</td>
<td>• Accuracy/Quality of work</td>
<td>• Diversity</td>
<td>• Tangible (e.g., financial)</td>
</tr>
<tr>
<td></td>
<td>o Enhancing existing products</td>
<td>• To replace current processes/resources</td>
<td>• Availability of the crowd</td>
<td>• Large Numbers</td>
<td>• Intangible (e.g., awareness)</td>
</tr>
<tr>
<td></td>
<td>o Extending product line</td>
<td>• To create new processes/resources</td>
<td>• IP leakage/Loss of competitive advantage/data security</td>
<td>• Distributed Knowledge</td>
<td>• Immediate (e.g., cost savings)</td>
</tr>
<tr>
<td></td>
<td>o Developing new products</td>
<td>• Clear articulation of the task</td>
<td>• Siloed organizational structure and processes</td>
<td></td>
<td>• Delayed (e.g., after commercialization of ideas)</td>
</tr>
<tr>
<td></td>
<td>o Seeding new markets</td>
<td>• Motivating the crowd to participate</td>
<td>• Motivating the crowd to participate</td>
<td></td>
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<tr>
<td></td>
<td>• Creating an innovative culture</td>
<td>• Connecting with the right crowd</td>
<td>• Connecting with the right crowd</td>
<td></td>
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<tr>
<td></td>
<td>• Opening up the innovation process</td>
<td>• Loss of control</td>
<td>• Loss of control</td>
<td></td>
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<td></td>
<td>• Projecting an image of transparency and inclusion</td>
<td>• Adherence to existing policies, regulations, and/or laws</td>
<td>• Adherence to existing policies, regulations, and/or laws</td>
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<tr>
<td></td>
<td>• Generating awareness</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>• Garnering support and buy-in</td>
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<tr>
<td></td>
<td>• Reducing costs/time</td>
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<tr>
<td>Task Characteristics</td>
<td>Common Tasks</td>
<td></td>
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<td>---------------------</td>
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<tr>
<td></td>
<td>• Completion of routine time-consuming tasks</td>
<td></td>
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<tr>
<td></td>
<td>• Data Collection</td>
<td></td>
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<tr>
<td></td>
<td>• Knowledge sharing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Generating awareness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ideation</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Filtration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Development</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Complex problem solving</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Crowd Characteristics</th>
<th>Knowledge/ Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• General</td>
</tr>
<tr>
<td></td>
<td>• Situational (e.g., time, place, event)</td>
</tr>
<tr>
<td></td>
<td>• Product/Service (i.e., specific to the sponsoring firm’s offering)</td>
</tr>
<tr>
<td></td>
<td>• Specialized (e.g., graphic design, programming)</td>
</tr>
<tr>
<td></td>
<td>• Domain expertise (e.g., chemistry, medical)</td>
</tr>
<tr>
<td></td>
<td>Location</td>
</tr>
<tr>
<td></td>
<td>• External (e.g., trusted partners, communities of interest/practice/science, customers, general public)</td>
</tr>
<tr>
<td></td>
<td>• Internal (i.e., employees)</td>
</tr>
</tbody>
</table>
Appendix H

Glossary

Crowd: Individuals who would not typically participate in such activities and could consist of individuals inside the organization (i.e., employees), outside the organization (e.g., customers), or a combination of both.

Crowdsourcing: “…the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also often undertaken by sole individuals [sic]. The crucial prerequisite is the use of the open call format and the large network of potential laborers” (Howe, 2006a, para. 4).

Ideation: The process of generating, developing, and communicating ideas.

Initiative: An established project within an organization for which resources have been allocated.

Innovation: New ideas or solutions to problems that lead to improvements or advancements for the organization within their marketplace. It includes both incremental or breakthrough innovation that may result in reduced costs, improved productivity, or entry into new unexplored markets (Baregheh et al., 2009).

Intermediary: A third-party that connects two or more entities together for a common purpose.

Social media: Online, interactive tools designed to facilitate two-way interactions among people.

Theory: Descriptions, models, frameworks, explanations, or predictions regarding observed or experienced phenomena (Gioia & Pitre, 1990; Gregor, 2006).
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Referred Conference Papers and Presentations
- Erickson, L. B. (2011). Social media, social capital, and seniors: The impact of Facebook on bonding and bridging social capital of individuals over 65. Proceedings of Seventeenth Americas Conference on Information Systems, Detroit, MI.

Referred Book Chapters