



Crowdsourcing: A new way of employing non-employees?

Robert C. Ford^{a,*}, Brendan Richard^a, Michael P. Ciuchta^b

^a College of Business Administration, University of Central Florida, 4000 Central Florida Blvd., P.O. Box 161991, Orlando, FL 32816-1991, U.S.A.

^b Robert J. Manning School of Business, University of Massachusetts—Lowell, One University Avenue, Lowell, MA 01854, U.S.A.

KEYWORDS

Crowdsourcing;
Outsourcing;
Innovation;
Managerial challenges;
Human resource management;
Problem solving;
Labor pool

Abstract Interest in and enthusiasm for crowdsourcing is growing tremendously. But should organizations contemplating the use of crowdsourcing view it as simply another means of outsourcing to non-employees, or as something unique that has special requirements for success? This article addresses that issue. After reviewing the various ways organizations employ non-employees to overcome human resource limitations, we suggest areas in which they are similar and areas in which they are different. We then focus on crowdsourcing as a novel source of external labor. Presenting key questions that every organization considering the use of crowdsourcing must address, we offer specific recommendations for those organizations that choose to employ a crowd to meet their needs. These recommendations are based on an extensive review of both the research literature and the practitioner literature, and include additional insights gleaned from transcripts of sales calls with prospective customers conducted by a large crowdsourcing intermediary.

© 2015 Kelley School of Business, Indiana University. Published by Elsevier Inc. All rights reserved.

1. Employing non-employees

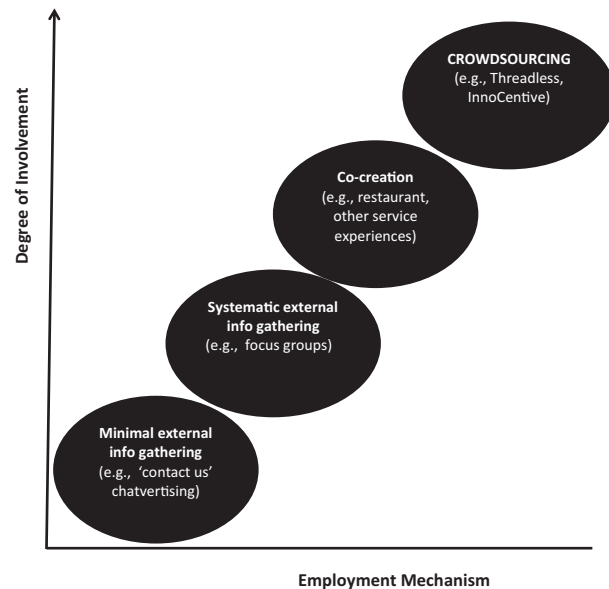
Managing people who are not employees while they participate in various organizational roles is a major challenge for all organizations. Whether

the participation involves performing a simple role like a customer buying a product on Amazon or a complex role like an expert crowd discovering the best food to take on lengthy space voyages for NASA, the organizational challenges of managing these external intrusions into internal systems and processes are similar. Organizations must determine how best to use the resources and capabilities that non-employees provide without compromising any intellectual or human capital that represents their own strategic advantage. This article addresses the

* Corresponding author

E-mail addresses: rford@bus.ucf.edu (R.C. Ford), brendan.richard@ucf.edu (B. Richard), michael_ciuchta@uml.edu (M.P. Ciuchta)

Figure 1. Degrees of employing non-employees in organizational processes



challenge of finding the best balance between opening up the organization to external participation and closing off access to outsiders that might compromise the firm's competitive position. Figure 1 provides a visual representation of the many ways an organization can incorporate external involvement of non-employees along a continuum, ranging from little to considerable involvement.

1.1. Minimal involvement

To the farthest left in Figure 1 are situations representing limited involvement of non-employees, such as 'contact us' links on webpages via which visitors are invited to share feedback with the organization regarding their thoughts, ideas, and questions. In these situations, non-employees have a minimal level of external involvement in the organization, and it generally takes few organizational resources to manage them. Nonetheless, employing non-employees in this way can serve as an important wellspring of information; for example, from a problem-solving standpoint, contact links can be useful sources of problem identification and solution alternatives. Complaint blogs (e.g., complaintsboard.com, pissedconsumer.com) and consumer review aggregators (e.g., TripAdvisor, Yelp, Urban Spoon) are also examples of external sources of information.

1.2. Moderate involvement

In the next higher degree of employing non-employees, organizations systematically collect

external information about themselves and their products or services. At the lower end of these intrusions are organizational solicitations of feedback through customer focus groups, surveys, and interviews. Among the many options available for gathering marketing-related data, this degree of external participation also includes, at the upper end, the employment of external labor for specific task performance. Thus, we have consultants and outsourced capabilities firms that augment internal employee knowledge by bringing unique and otherwise unavailable expertise or knowledge resources for problem solving, such as IT and payroll processors. In addition, this category includes onshore and offshore labor contractors who can augment internal employee capabilities by supplying a labor pool for tasks like coding, data entry, or even crop harvesting. All of these non-employees are paid to provide mostly short term, but sometimes longer term, labor to perform a specific task for a finite period of time.

1.3. Substantial involvement

In the next greater degree of external involvement, the organization has non-employees co-produce tasks and co-create value (Mahr, Lievens, & Blazevic, 2014). These situations are often found in the service sector where an organization providing a service experience to a customer requires that the customer do something to obtain the service. Situations such as ordering from a restaurant menu, telling the doctor where it hurts, and taking an academic class all require some degree of non-employee co-production for the service experience to have value. Obviously, you can't eat what isn't ever ordered, get well if the doctor can't figure out what hurts, or become educated if you don't study the material and participate in class.

1.4. Extensive involvement

Finally, crowdsourcing represents the greatest degree to which non-employees are employed by organizations. The term *crowdsourcing*, generally attributed to Jeff Howe (2006), is defined as taking a function that is traditionally performed inside an organization by employees and outsourcing it to a crowd of non-employees. For example, by presenting their problem to a talented worldwide community of potential contributors, organizations can seek innovative solutions that are not available from any single outsourced provider or existing internal employee group. This exponential increase in access to both expertise and a labor pool is enabled by the rise of the networked information economy (Benkler

& Nissenbaum, 2006) and the interactive participation-based facets of Web 2.0 (O'Reilly, 2005).

Since there is a multitude of extant literature available to guide managers on strategies for successfully employing non-employees in the lesser degrees of external involvement presented in Figure 1, we will focus here on the most extensive and intrusive: crowdsourcing. Thus, in the remainder of this article we first present the opportunities and challenges of crowdsourcing as a way to employ non-employees, and second detail the requirements for an organization to successfully use this new strategy. We suggest that organizations can use these requirements as a test to determine if they are ready, willing, and able to utilize crowdsourcing to meet their needs. In addition, these requirements can help managers decide when crowdsourcing makes sense and when other options should be pursued.

2. Bring on the crowd

Organizations have long sought ways to garner non-employees' help in solving problems and overcoming resource limitations. In one of the earliest examples of solving a funding problem for the Statue of Liberty's construction, Joseph Pulitzer raised money through an open public request in his newspaper, *The New York World*. While seeking help from non-employees has been a strategy used for some time, the advent of the Internet has made widespread appeals to non-employees more productive. For example:

- A gold mining company in Canada got help from a group of strangers in Australia on how to more efficiently search for gold;
- A company with outdated and undocumented software used expert programmers to update its software;
- A t-shirt company invited people to contribute new t-shirt designs; and
- Budding entrepreneurs have invited strangers to contribute financial capital to finance their innovative ideas.

Crowdsourcing is a new type of outsourcing strategy. It enables organizations to enhance research and development budgets, invent innovative solutions for existing problems, relieve overwhelmed in-house employees, or complement limited employee talent and expertise to successfully find

technologically complex solutions. The Internet, online communities, and mass-collaboration technologies have all enabled a diverse and dispersed crowd of strangers to work together toward a common goal. By crowdsourcing a need, firms can outsource it for resolution to anyone in the world with a computer and Internet access.

2.1. Benefits of the crowd

Crowdsourcing offers an important new way to overcome organizational limitations in either human resources or employee capabilities. Crowdsourcing allows access to large numbers of people to benefit from the wisdom of crowds (Surowiecki, 2005); that is, the collective knowledge of a number of people is greater than that of any one contributor or consultant. Thus, an organization needing help in accessing new knowledge to solve novel problems can find it in a crowd of knowledgeable people. This requires only a platform for knowledgeable people to discover an organization's problem and a motivating process to engage them in solving it. Many large corporations such as Microsoft, GE, AT&T, eBay, IBM, Apple, and Sun (West, 2003) and government agencies such as NASA (Lakhani, 2013) are increasing investment in crowdsourced solutions to both drive cost efficiencies and overcome resource constraints, thereby gaining the potential value of crowdsourcing as an open innovation platform.

In a 2008 survey of 100 top marketing executives (Fisher, 2009), senior executives rated crowdsourcing to be as effective as internal R&D for developing new ideas. Over the past 10 years, its use has expanded to offering enterprise-level solutions to firms in the areas of research and development, planning and forecasting, engineering and design, information technology, and programming, among others.

2.2. The many faces of the crowd

As an extension of traditional outsourcing, crowdsourcing enables organizations to solve problems through the Web by exponentially expanding access to a pool of non-employee capabilities that the organization neither has nor wishes to permanently employ. But, as categorizations of crowdsourcing show, it is more than this (e.g., Geiger, Seedorf, Schulze, Nickerson, & Schader, 2011; Richard, 2013; Saxton, Oh, & Kishore, 2013). Crowdsourcing applications can range from open-sourced collections of knowledge (e.g., Wikipedia, iStockphoto) to websites that access people for routine work (e.g., Elance, eVirtualServices) to locations where

marketers can engage their customers in co-creating marketable ideas or products (e.g., Threadless, Netflix's million dollar challenge) to sites that invite people to solve complex problems or offer innovative approaches to novel challenges (e.g., Brightidea.com, Academy of Ideas, InnoCentive). Currently, there are over 2,000 sites indexed on crowdsourcing.org.

As illustrated by the matrix shown in Figure 2, we can generally conceptualize the different types of crowdsourcing applications according to the degree to which the crowd has access to information within the organization and the degree of knowledge intensity required. In the upper-left quadrant (low involvement, low intensity) are 'opinion aggregators,' where organizations monitor sites such as TripAdvisor to collect information volunteered by outsiders. In the lower-left quadrant (high involvement, low intensity) are 'task performers,' where organizations seek non-employees to do large quantities of routine work for pay, like coding or data entry. In the upper-right quadrant (low involvement, high intensity) are organizations seeking to expand their creative capacity through 'innovation generators' such as NASA's Keep Food Fresh in Space competition. While solving the presented problem requires significant scientific knowledge, the problem itself requires minimal integration into NASA's internal operations. Finally, in the lower-right quadrant (high involvement, high intensity) are organizations seeking 'solution booster' help, such as those that sponsor software competitions to write new program code. These require both high levels of expertise from the crowd and significant integration efforts by the company adopting any resulting solution.

In all applications, an organization seeks supplemental capabilities of some kind from people external to the organization (non-employees) who

are willing and able to supply that help, and a platform—typically provided through Internet 2.0—to connect the organization with these non-employees. The platforms, organizations, and crowds may change to fit the particular organizational need, but all applications have these three components. The challenge in using crowdsourcing then is to ensure that the application fits the organization's need, the platform, and the crowd.

3. Is the crowd right for you?

Evaluating whether or not to use crowdsourcing to employ non-employees is a complex decision. In reaching a conclusion, the organization should consider the following criteria:

1. Do we have or wish to acquire the expertise or number of employees needed for a specific project?
2. Can we engage external help without compromising our own competitive advantage?
3. Do we have the available expertise to define the project in ways that people unfamiliar with our organization can be successfully engaged?
4. Do we have the capability to utilize the crowd's contribution?
5. Does the project have sufficient benefit to outweigh the costs?
6. Can we find and engage the appropriate crowd either on our own or through some intermediary?

3.1. Can you solve it internally?

An organization must first decide whether it has the capability or interest to resolve the application internally. This decision rests on two key factors. First, does the organization have the necessary employees to do the work that needs to be done or the capabilities to solve the problems that need solving? If the organization does not currently have in its employment staff members with the necessary capabilities or a sufficient number of qualified workers to address the problem, crowdsourcing offers an attractive option. Netflix, for example, decided it should use crowdsourcing to access the knowledge of leading scientists to create an improved recommendation algorithm rather than try to accomplish this via its own employees. The second key factor is employee motivation. Employees, particularly

Figure 2. Knowledge intensity / crowd involvement matrix

Crowd Involvement	Knowledge Intensity	
	Low	High
Low	<p>OPINION AGGREGATORS</p> <p>(e.g., TripAdvisor)</p>	<p>INNOVATION GENERATORS</p> <p>(e.g., NASA Keeping Food Fresh In Space)</p>
High	<p>TASK PERFORMERS</p> <p>(e.g., outsourced call centers)</p>	<p>SOLUTION BOOSTERS</p> <p>(e.g., software design)</p>

highly skilled ones, can get bored with routine and welcome new challenges. If the organization has a need both to perform routine tasks such as updating program code and to investigate new applications of existing programs, it may decide to outsource the routine work to enable its employees to do the more interesting and challenging investigative work.

3.2. Will it undermine your competitive advantage?

An organization must then decide whether it can engage external help without compromising its competitive advantage (Lerner & Tirole, 2002). Every organization should consider intellectual property rights as regards sharing its trade secrets or opening its software architecture to people who haven't signed a confidentiality agreement. There is risk every time an organization shares proprietary knowledge with those who are not bound to protect it through employment or some contractual constraint. However, crowdsourcing applications can be crafted to diminish this risk. The easiest way is to only crowdsource tasks or problems that are generic in nature. No organization, for example, is likely to put its competitive advantage at risk when outsourcing routine data entry. While some data entry tasks do involve sensitive information, most can be disguised sufficiently to minimize the risk of non-employees discovering anything confidential. The second way to reduce the risk is to break up the tasks into opaque components. For example, in the Netflix competition, the recommendation algorithm is a very discrete task and did not require access to the organization's confidential information. This, incidentally, is where intermediary companies whose business is providing access to crowds can add value. They have considerable experience creating contests and tournaments that enable crowds to solve software problems in generic chunks without ever knowing the whole problem. Consequently, the intellectual property of the final program produced is completely protected.

3.3. Can you communicate with the crowd?

Third, the organization must decide whether it has the expertise or time to frame the issue for an external crowd. Even if the task is routine, it will take an employee's time to mount it on a platform that will be discovered and assessed by an appropriate external group, assess the capabilities and motivation of the group to perform the task, supervise the quality of the work, and handle the human resource issues external employees will have. As

exemplified by Dell's pioneering use of the crowdsourcing website Ideastorm (Bayus, 2013), these employees—or 'champions'—are critical in motivating the rest of the company toward overcoming any resistance to changes caused by adopting externally created innovations. By better using these champions to manage this externally driven change process, organizations can enhance the successful and quicker adoption of open innovation solutions within organizations (Lichtenthaler & Ernst, 2009).

For routine tasks, non-employee personnel issues will resemble those involved with employing any part-time or temporary workforce. However, these issues will be compounded by the fact that the crowd can be anyone, anywhere, at any time. For complex tasks such as innovating new solutions to problems or solving complicated problems, the amount of required management time and expertise to structure the problem, oversee the crowd's progress, and assess the quality of potential solutions grows exponentially. Besides these HR issues are the technical problems associated with enabling external people with access to internal systems. Thus, a manager electing to use crowdsourcing will need to devise a way by which these external contributors can access the information they need to understand the problem to be solved or task to be performed without compromising data security. External contributors will also typically but not always require access to each other's input so they can share knowledge or the output of their contributions. Finally, the organization will have to allocate managerial time to oversee the work product, evaluate its quality, and implement the results. In other words, even when an intermediary provides the platform and crowd, using crowdsourcing is not without significant resource commitment from the organization. Evaluating the cost-benefit tradeoff between using this tool and other available options is, in itself, a time-consuming task.

3.4. Can you handle the solution?

As a fourth consideration, the organization must decide whether it has the ability to utilize whatever output the crowdsourcing application generates. While this is easily determined in most routine tasks such as data entry or coding, it is more difficult to assess in problem-solving or innovation applications. An organization may need to build up its absorptive capacity (Cohen & Levinthal, 1990) regarding the use of externally sourced knowledge in order to fully maximize the potential value obtained from crowdsourcing (West & Bogers, 2013).

A related issue is internal resistance to external ideas. The NIH (not invented here) attitude is

commonly found in any organization introducing externally generated solutions (Burcharth, Knudsen, & Søndergaard, 2014; Katz & Allen, 1982). Whether the external solution comes from a consultant, a competitor, or a crowd, internal employees have a tendency to dismiss it as unrelated to their problems, not applicable to their organization's unique circumstances, or fatally flawed in some way. While evidence suggests that many employees are willing to accept open innovation practices (Chesbrough, 2003; von Hippel, 1988), managers should be prepared to allocate time and energy toward managing the inevitable conflicts caused by externally sourced change (Burcharth et al., 2014).

Implementing any solution to address an organizational need requires the successful management of change. While extant literature to guide managers on managing change is plentiful (e.g., Battilana & Casciaro, 2013; Kotter, 2012; Thomas, Sargent, & Hardy, 2011), it is important to recognize the managerial time commitment necessary for ensuring that any changes evolving from a crowd-based solution are addressed and resolved. Getting an internal group of dedicated employees to swallow a crowd-sourced solution to a problem can be a bitter pill. This can be especially true regarding problems for which employee expertise is thought to be uniquely qualified to discover the best solution. Hansen and Nohria (2004) suggest changes such as removing hierarchical structures, reducing reliance on internal employees, and increasing intellectual property protection to improve the likelihood of success in the decision to undertake and then implement solutions from crowdsourced problems.

3.5. Is it really worth it?

The fifth decision to be made is whether the benefits of using crowdsourcing are worth the costs. A study by Lakhani, Garvin, and Lonstein (2010) of an established crowdsourcing intermediary found that the company's clients not only gained better ideas of high quality more quickly, but also obtained significant cost savings. Indeed, one client reported that it cost only half as much for a solution as it would have if the firm had outsourced the work to a consulting firm.

While cost calculations can be straightforward in some applications—such as the costs of hiring temporary coders, consultants, or an intermediary for access to its platform and crowd—calculating benefits is not as simple. What, for example, is an innovative solution worth to NASA for the problem of feeding people on long-duration space travel, or the value to an organization seeking to modify outdated code on a key program? Conducting a

cost-benefit analysis in itself imposes a real cost to the organization.

Making the decision to use crowdsourcing or any external expertise is partly an economic decision, but also an opportunity cost decision. The organization should, in the same way it assesses any long-range commitment of its scarce resources, weigh the benefits of using an external crowd to discover new solutions to an old problem or perhaps find new problems for old solutions. Again, the good news is that this process is well established and the expert advice is easily accessed. No matter the perceived benefits of engaging a crowd of non-employees, if their output can't be integrated into the organization, then the effort isn't worth undertaking.

3.6. If you build it, will they come?

For the sixth and final consideration, an organization must decide whether it can find and engage the appropriate crowd. Finding a consultant to outsource a problem or an external employment agency to handle a task is relatively straightforward because there are agents and listings that supply contact information and even evaluations of these providers. Identifying a crowd that contains people with the necessary expertise is more challenging. It requires creating a platform via which they can access the organization and a mechanism for them to be rewarded for participation (e.g., contests and tournaments); it also requires an ability to communicate the availability of the problem, the platform, and the rewards to all who might be ready, willing, and able to participate. This is where intermediary organizations are valuable because they have existing platforms, crowds, and mechanisms to engage the crowd with a problem and ways to reward non-employees for their work.

4. Finding a crowd to employ

4.1. The platform

Generally speaking, an organization has two options for accessing a crowd of non-employees: it can establish its own platform or use an intermediary (Rosen, 2011). If it uses its own platform, the firm must be prepared for the expense of creating, operating, and managing it. For complex problem-solving issues or innovation generation requiring access to a particular crowd and expertise, this can be expensive; however, for simpler issues such as a one-time data conversion task or soliciting new product ideas from customers on an existing

website, it may be less so. It is, though, always worth careful calculation to ensure that the value of creating a platform is at least equal to its cost.

Some firms build their own crowdsourcing platforms because they believe that, regardless of cost, no other available extant platforms fit their needs. However, Randy Corke, founder of GoodCrowds.com and a crowdsourcing consultant, warns that most firms that made the decision to build later regretted it due to time and budget overruns and unmet expectations. He offers the following advice to those firms considering building their own crowdsourcing platform (Corke, 2014):

- Unless you have experience in crowdsourcing, it will be difficult to develop a comprehensive list of requirements for a platform.
- Plan for the devil in the details: Most firms don't spend the necessary time to plan how they will communicate with, incentivize, and motivate the crowd, and how they will store, organize, and select the winning submissions.
- Prepare for the future: Most in-house platforms lack flexibility—the ability to grow and adapt to the changing needs of the firm.

Because of the challenges inherent to building one's own platform, most organizations use an intermediary of some kind for their crowdsourcing applications. Whether it is a large specialized provider or a supplier picked from a list on an aggregator site, there are many intermediaries available that provide a platform via which an organization can reach a desired crowd. Intermediaries are available to assist with innovation processes (e.g., Innovation Exchange, InnoCentive), idea generation (e.g., Spigit, IdeaScale), product development or testing (e.g., InnoCentive, CrowdSpirit), or support functions (e.g., Mechanical Turk) (Dawson & Bynghall, 2012).

Kaganer, Carmel, Hirschheim, and Olsen (2013) posit four types of platforms that can be found in the 'cloud' to gather crowds: the facilitator (to facilitate matching buyers of labor with sellers, like oDesk and Freelancer), the arbitrator (to create competitions for ideas like crowdSPRING and Witmark) the aggregator (to combine tasks for crowd performance, like Mechanical Turk and CloudFactory), and the governor (to oversee project performance and certify quality, like Appirio and uTest). All of these are optional intermediaries to access a specific crowd to perform a specific category of tasks.

Although there are examples of successful internally developed crowd platforms by very large organizations with multiple applications, such as IBM's alphaWorks or Dell's IdeaStorm, whether or not an organization should incur the expense of building its own platform or use intermediaries is an important choice.

4.2. The crowd

Regardless of whether an organization chooses to build its own platform or employ an intermediary, success of the crowdsourcing application will depend on the ability to attract and motivate a crowd that is ready, willing, and able to develop solutions to the firm's challenges.

4.2.1. Ready

Finding a crowd that is ready to help the organization meet its needs is a challenge. Even so, as previously noted in the discussion of platforms, there are several ways of identifying ready participants. Whether the need is for problem solving, innovating, or adding to the labor pool, available paths (e.g., intermediaries, existing customers, large-scale advertising to targeted markets) exist to reach the right potential participants.

4.2.2. Willing

Once the right crowd is found, getting it interested in solving the problem will depend on the incentives available. Some crowd members work for fun, others work for payments associated with winning contests and tournaments or piecework, and still others work for the prestige of successful authorship of a solution or for getting credited for an innovation. Research has identified further reasons people participate in crowdsourcing, such as self-advancement, cultivating talent, reputation, curiosity, altruism, and the chance to benefit society (Heylighen, 2007; Rogstadius et al., 2011).

4.2.3. Able

Once a crowd is found and a process is developed to incentivize participation, the last step is to ensure that the identified participants are able to contribute to solving that problem. Different tasks require different bundles of capabilities in the crowd. Routine tasks commonly require lower-level and more general skills than non-routine tasks (Erickson, Petrick, & Trauth, 2012). A crowd needs more than a stable platform with desired incentives to maximize the quantity and quality of its contributions: it should create a sense of community and long-term participation in addition to recognizing, promoting,

and protecting individual members (Kazman & Chen, 2009).

5. Recommendations for organizations considering crowdsourcing

Yogi Berra, the New York Yankee Hall-of-Famer famous for his malapropisms, was quoted as saying: “You can hear a lot by listening.” Besides reviewing a large volume of practitioner literature that provides experience-based advice on what to do to successfully implement crowdsourcing, we had the opportunity to listen in on sales calls made by a large software-oriented intermediary with a platform reaching over a half million names in its crowd. The types of challenges the firm solves are technically complex and require a deep understanding of programming languages and logic.

We heard a lot by listening. Next, we summarize what we learned from the literature and our listening into the following key requirements for organizations that seek to successfully use crowdsourcing.

5.1. Select the right champion

Finding a champion is necessary, but finding the *right* champion is critical (Pollock & Leuttgens, 2014). Being a champion of anything that involves change requires commitment and passion for a goal. This is especially true when introducing something to an organization that is novel and innovative. Most organizations have little knowledge of crowdsourcing or how it can benefit them; therefore, many questions will be asked and much learning will occur, especially in the initial stages of use. The person who will lead the introduction of crowdsourcing has to know how to effectively communicate, to upper management and to interested employees, what changes this will create and why it is worth doing. This requires not only good communication skills but also knowledge of both managing change and crowdsourcing.

Managing a crowdsourcing solution is almost always a project. It will entail steps requiring someone to plan, organize, and monitor progress just as with any other organizational project team. The only difference in most cases is that the project team consists entirely of external non-employees; however, the project management skills will be the same. Therefore, companies should select a leader with project management experience.

Our interviews reinforced the importance of this skill. Prospective firms frequently inquired about the amount of time and energy required to manage the crowd and the development of a solution. These

concerns transcended mere interest, and were at times used by the prospect to question whether or not the tradeoff between solution quality and deliverable speed were worth the increased level of time required to manage a project. The initial discussions in the sales calls we heard were focused on educating and alleviating these project management concerns of prospective clients, and were seen as a crucial first step in the process by which the company would decide whether or not to try crowdsourcing. In most cases, the senior project manager was a senior IT manager with budget and performance responsibilities. However, project champions could also be selected from subordinates of the senior IT manager, depending upon the scope and breadth of the application. In Figure 2, for example, solutions that involve low knowledge complexity and limited integration within the organization would typically require a lower-level champion. On the other hand, complex projects that involve significant integration would typically require a higher-level champion.

5.2. Ensure the right champion has the right resources

Having a champion with project management experience and knowledge of crowdsourcing is a necessary but insufficient condition for a successful crowdsourcing effort; to succeed, that person must also have the backing of the organization and necessary resources to interface with a crowd (Pollock & Leuttgens, 2014). If there are no resources to create or access a platform that reaches a crowd with the necessary capabilities and expertise, the solution will inevitably be inadequate. Even if the right crowd can be accessed, potential contributors won't participate if incentives are not available. The project champion will require buy-in from not only organizational leaders but also key support staff in procurement and legal departments. Leadership support provides access to funding and helps identify projects that best fit crowdsourcing; procurement ensures that company protocols are followed for crowdsourced projects; and legal provides guidance on intellectual property, proprietary information rules, and required approvals. Finally, like any successful project manager, the champion must be able to work with individual contributors in order to communicate a solid understanding of the problem, thereby improving the likelihood of success.

5.3. Prepare for resistance

The champion must be prepared for pushbacks from those in the organization as it relates to accessing

crowds of non-employees. Based on the literature and our interviews, we next categorize these key areas of potential pushbacks.

5.3.1. Intellectual property concerns

The first and one of the most frequent concerns that we heard involved intellectual property (IP), specifically issues of its ownership and protection. An oft-heard remark was, "Who owns the actual IP?" This concern about IP ownership focused on who would own the intellectual property created by the crowd: the content creator (participant), the content facilitator (the crowdsourcing platform), the client, or some combination of all three.

Prospective firms also questioned who would control IP content that was generated as part of the competition but was not part of the winning solution. Contractual terms regarding IP vary across crowdsourcing platform providers, but the underlying nature of problem-solving contests used to create crowdsourcing solutions remains the same: there is one winner and a crowdfull of losers. Moreover, there are high-quality solutions and lesser-quality solutions. When organizations posit problems they incent crowds to solve, they are interested in retaining any and all IP generated as a result of the contest. The crowdsourcing intermediary told prospective clients that it would be able to acquire the IP not only from the contest winner but also from all other participants.

Prospective firms were further concerned with protecting themselves from disclosing any IP that would jeopardize a competitive advantage. Here, we heard customers ask about how to tell the crowd enough to understand the problem without giving away anything important. The salespeople responded to this concern by explaining how 'chunking' or subdividing a problem into smaller, more manageable parts works. Chunking not only increases the odds that each part will be successfully completed in the desired timeframe, but also increases the likelihood that the task will be of interest to a larger proportion of the crowd. Subdividing also serves to minimize the likelihood that the crowd will be able to discover any secrets or proprietary information associated with the overall project. In other words, by giving the crowd trees to work on, they are unlikely to be able to see the forest. The sales team went on to say that over the course of 10+ years of company history and thousands of successfully completed competitions, not once had it encountered an issue with security concerns related to competitors. The platform company could even provide a crowd that had security clearances or was approved to work on classified projects.

5.3.2. Know the platform

The second most common concern centers on the mechanics of how the platform generates solutions. Most organizational members are mystified about how a crowd with the right qualifications is found. While everyone has heard about YouTube videos that went viral, few know how this happens or, in the context of their own organization, how to advance their problem to a crowd of experts on the Web.

In the interviews, potential customers questioned their role in setting up competitions. One important value of the intermediary is the ability to access the right crowd with the right array of skills to solve a problem. In addition, prospective clients wanted details on exactly what their role and responsibilities were at every stage of the project. Once a competition was launched on the platform, their concerns focused on their role in managing the crowd during the competition. Overall, clients we listened to were concerned with the total amount of project management time that would be required in order to obtain crowdsourced solutions to their problems.

Firms considering crowdsourcing should remember that while cost, quality, and time to delivery are all potential benefits, the project management component still requires attention. While working with an intermediary with an established platform and crowd will minimize the amount of project management, it is still a cost component in a cost-benefit analysis.

5.3.3. Prepare for NIH resistance

Change is always difficult, and introducing change from an external group may prove particularly challenging. The NIH reaction can cause pushback to any solution generated by a crowd, and the champion project leader should anticipate and prepare for this resistance. According to our interviews with the general manager of the intermediary platform provider, his company has learned that it is typically the clients' executives who have heard about crowdsourcing at industry conferences, and they are the ones interested in trying it. On the other hand, the company has also learned that its potential customers' middle managers are a key point of resistance, as these people fear pushback from lower-level employees who worry about having their jobs replaced by the crowd.

One way to overcome NIH reactions to utilizing the crowd is for the project champion to emphasize how crowdsourcing can improve employee effectiveness and workplace satisfaction. By outsourcing to the crowd those tasks that are tedious and repetitive, employees can focus more of their efforts on higher-level, more knowledge-intensive and

interesting challenges. The general manager of the intermediary noted that company salespersons include in their presentations strategies for dealing with these points of resistance. The key, he stressed, is to show the project champions how they can be seen as heroes within their organizations.

5.3.4. Demonstrate value

One of the biggest pushbacks we heard from prospective customers was cost. There are, as discussed previously, costs to planning and organizing a crowdsourcing effort, costs to employing a crowd of non-employees, and costs to managing and following up on the changes required to implement a solution. In both our interviews and the literature are discussions of these costs and how the benefits must outweigh these costs to convince an organization's decision makers of crowdsourcing's value. Calculating these costs versus benefits is not always simple, as the value of any innovative solution to a problem may not be known for years, and costs may only reveal themselves later. On the other hand, no decision gets made without some compelling argument for it, and the compelling argument typically rests on establishing value by some metric.

The sales team proactively addressed the cost issue in its conversations by comparing crowdsourcing costs versus the costs of traditional outsourcing. One additional cost saving provided by the crowd is its availability to operate on a case-by-case basis, as it is called upon only when needed. Furthermore, only the most valuable solutions are considered by the firm, so the company avoids spending time and money evaluating contributions from underperforming members. The intermediary's general manager saw this as an especially appealing feature of crowdsourcing, as it enables organizations to eliminate unproductive employees, work hours, and less-than-superior solutions while gaining multiple alternative solutions.

Prospective clients also wanted information about the potential benefits of crowdsourcing. Many saw time to market as a potential differentiator, noting how attractive it was that building and testing things out in smaller chunks could ultimately get them to market sooner. To many, the benefit of speed was as important as cost. Another anticipated benefit was improved quality of the solutions; having been burned in the past by traditional outsourcing, prospective customers were excited to have access to a large group of talented individuals competing to provide the best solution. Moreover, unlike outsourcing, the competition would also yield some very good alternative solutions worth considering.

5.4. Know the crowd

Like employees, crowds vary in their knowledge, skills, and abilities. They differ in their interest in a particular problem, and their desired incentives for participation. In other words, the same human resource management issues that pertain to employees also pertain to non-employees. Relatedly, the nature of the platform is a critical piece of information for the successful use of crowdsourcing. As previously noted, there are many commercial intermediaries that sell access to their platforms. These often include experienced 'shepherds' who can guide users through the process of defining the problem, engaging the right crowd for that problem, and managing the generation of alternatives that can lead to a solution. Inexperienced users need help figuring out how to best posit their problem, how to create an attractive array of incentives to engage the right crowd, and how to assess when a solution is found. Intermediaries can do these tasks. Intermediaries are also a good solution for organizations that do not wish to allocate their resources to create a permanent internal capability to interface with crowds, either because their usage is too limited or their size is too small.

In the interviews we listened to, we heard many affirmations of these points from prospective clients. They asked about what specific problems the crowd could solve for the firm, if the crowd had experience with their industry and/or area of expertise, and what challenges the platform itself could accommodate. Potential users were also interested in knowing whether or not there were individuals within the crowd that had specific skillsets, such as programming languages. Finally, these prospective clients were interested in the capabilities of the platform, querying the firm on the extent of its functionality and the breadth and scope of the solutions it could provide. Oftentimes, the salespersons calling the clients anticipated questions about the competencies of its crowd by highlighting its size, diversity, and variety of skillsets.

5.5. Start small

As is the case with many new technologies, one of the biggest hurdles facing crowdsourcing entails getting prospective firms to try it. The general manager of the intermediary platform acknowledged this hurdle and said: "I think the key to making this successful for any organization is to start with small wins with high probabilities of success, and then get [the individual contributors] plenty of accolades." He noted that once employees experienced the positive buzz of a successful pilot

test, it was significantly easier for the champion to convince top management and the rest of the company to sign on to crowdsourcing additional problems. The intermediary's general manager revealed that in his experience, 80% of potential customers are neither for nor against crowdsourcing, but 100% are risk averse. His sales team always suggests starting small, as small wins go a long way toward overcoming this bias. Moreover, not only is starting small recommended, but starting simple is also desirable as a way to experiment with finding the right crowd for different levels of problem complexity and contest prizes. Starting simple makes it possible to iron out the wrinkles on routine tasks before crowdsourcing more complex problems and applications.

5.6. Prepare for and learn from failure

In addition to the capabilities of the platform and how a problem should be presented to the crowd, prospective customers were concerned about whether the crowd could generate solutions to their problems. A crowdsourced platform provider cannot guarantee that the crowd will generate high-quality solutions. Therefore, project champions must prepare for the possibility that the crowd might not produce a good, or even any, solution from a particular tournament or contest. However, they can use failures as a learning opportunity that will better prepare the organization in its next attempt. Finally, it is critical that specific metrics of success are established so organizations and project champions can evaluate crowdsourcing outcomes.

5.7. Celebrate success

If we have learned anything from the extensive research on change management, it is that successful change agents celebrate success. They recognize milestones, even the smallest victories, so all parties feel positive progress is being made. As noted earlier, the intermediary general manager felt that celebrating success was a powerful tool for gaining acceptance of crowdsourcing and its solutions.

Based on the research and our interviews, these seven requirements (sections 5.1. through 5.7.) are key to the successful use of crowdsourcing. Organizations that find and empower an experienced project manager—one who knows what crowdsourcing is, can explain how it helps solve problems, and has the passion and communication skills of an internal champion of change—are likely to use crowdsourcing in ways whereby the benefits gained will outweigh the costs. Crowdsourcing is not free or even inexpensive, although it is often less

costly than hiring new permanent employees or traditional outsourcing. But when the organization needs to overcome an internal limitation in either human resources or employee expertise, it is an effective means to obtain help and expertise from non-employees.

6. Join the crowd

Crowdsourcing is a rapidly emerging solution to overcoming organizational limitations in employee capabilities. Whether the need is for solutions to specific problems, new innovations, or additional labor capacity, the availability of a workforce accessed through the World Wide Web offers new and exciting opportunities for surmounting restrictions. While it is important to use a platform that reaches the targeted crowd and to find ways to access and manage that crowd, the possibilities for employing non-employees to help solve organizational needs have grown exponentially over the past several years and are likely to continue growing as more people find additional ways to work on the Web.

Based on our observations and the literature, managers hoping to gain the benefits of this important new resource can learn lessons from other organizations. Satisfying the requirements detailed above can make the difference between success and failure in employing non-employees to overcome organizational limitations.

References

- Battilana, J., & Casciaro, T. (2013). *Overcoming resistance to organizational change: Strong ties and affective cooptation*. *Management Science*, *59*(4), 819–836.
- Bayus, B. L. (2013). *Crowdsourcing new product ideas over time: An analysis of the Dell Ideastorm community*. *Management Science*, *59*(1), 226–244.
- Benkler, Y., & Nissenbaum, H. (2006). *Commons-based peer production and virtue*. *The Journal of Political Philosophy*, *14*(4), 394–419.
- Burcharth, A. L. A., Knudsen, M. P., & Søndergaard, H. A. (2014). *Neither invented nor shared here: The impact and management of attitudes for the adoption of open innovation practices*. *Technovation*, *34*(3), 149–161.
- Chesbrough, H. W. (2003). *Open innovation: The new imperative for creating and profiting from technology*. Boston: Harvard Business Press.
- Cohen, W. M., & Levinthal, D. A. (1990). *Absorptive capacity: A new perspective on learning and innovation*. *Administrative Science Quarterly*, *35*(1), 128–152.
- Corke, R. (2014, March 21). *Crowdsourcing platforms—Should you build or buy?* [Web log post]. Retrieved September 1, 2014, from <http://goodcrowds.com/crowdsourcing-platforms-build-buy/>
- Dawson, R., & Bynghall, S. (2012). *Getting results from crowds*. San Francisco: Advanced Human Technologies.

- Erickson, L., Petrick, I., & Trauth, E. (2012). *Hanging with the right crowd: Matching crowdsourcing need to crowd characteristics*. In *Proceedings of the Eighteenth American Conference on Information Systems* (pp. 1–9). Seattle, WA: ICIS.
- Fisher, S. (2009, March 7). *Crowdsourcing: Innovate or die* [Web log post]. Retrieved September 2, 2014, from <http://microengagement.blogspot.com/2009/03/crowdsourcing-innovate-or-die.html>
- Geiger, D., Seedorf, S., Schulze, T., Nickerson, R. C., & Schader, M. (2011). *Managing the crowd: Towards a taxonomy of crowdsourcing processes*. Presented at the 17th Americas Conference on Information Systems, Detroit, MI.
- Hansen, M. T., & Nohria, N. (2004). *How to build collaborative advantage*. *Sloan Management Review*, 46(1), 22–30.
- Heylighen, F. (2007). *Why is open access development so successful? Stigmergic organization and the economies of information*. In B. Lutterbeck, M. Bärwolff, & R. A. Gehring (Eds.), *Open source jahrbuch* (pp. 165–180). Berlin: Lehmanns Media.
- Howe, J. (2006). *The rise of crowdsourcing*. *Wired Magazine*, 14(6), 1–4.
- Kaganer, E., Carmel, E., Hirschheim, R., & Olsen, T. (2013). *Managing the human cloud*. *MIT Sloan Management Review*, 54(2), 23–32.
- Katz, R., & Allen, T. J. (1982). *Investigating the Not Invented Here (NIH) syndrome: A look at the performance, tenure, and communication patterns of 50 R&D project groups*. *R&D Management*, 12(1), 7–20.
- Kazman, R., & Chen, H. (2009). *The metropolis model: A new logic for development of crowdsourced systems*. *Communications of the ACM*, 52(7), 76–84.
- Kotter, J. P. (2012). *Leading change*. Cambridge, MA: Harvard Business Press.
- Lakhani, K. (2013). *The crowd as an innovation partner: Lessons from NASA, Harvard Medical School, and beyond*. Presentation at the TopCoder Roadshow, Johnson Space Center, Houston, TX.
- Lakhani, K., Garvin, D., & Lonstein, E. (2010). *Topcoder (A): Developing software through crowdsourcing* (case study 610-032). Boston: Harvard Business School Publishing.
- Lerner, J., & Tirole, J. (2002). *Some simple economics of open source*. *The Journal of Industrial Economics*, 50(2), 197–234.
- Lichtenthaler, U., & Ernst, H. (2009). *The role of champions in the external commercialization of knowledge*. *Journal of Product Innovation Management*, 26(4), 371–387.
- Mahr, D., Lievens, A., & Blazevic, V. (2014). *The value of customer cocreated knowledge during the innovation process*. *Journal of Product Innovation Management*, 31(3), 599–615.
- O'Reilly, T. (2005, September 30). *Design patterns and business models for the next generation of software*. Retrieved February 25, 2013, from <http://oreilly.com/web2/archive/what-is-web-20.html>
- Pollock, P., & Leuttgens, D. (2014). *Why some firms are better able to collaborate with innovation intermediaries than others*. *Academy of Management Proceedings*, 2014(1), 17680.
- Richard, B. (2013). *Cheap solutions: Managing a co-producing crowd of strangers to solve your problems*. In B. Ran (Ed.), *Contemporary perspectives on technical innovation, management, and policy* (pp. 261–287). Charlotte, NC: Information Age Publishing.
- Rogstadius, J., Kostakos, V., Kittur, A., Smus, B., Laredo, J., & Vukovic, M. (2011). *An assessment of intrinsic and extrinsic motivation on task performance in crowdsourcing markets*. *Proceedings of the Fifth International AAAI Conference on Weblogs and Social Media* (pp. 321–328). Barcelona: AAAI.
- Rosen, P. (2011). *Crowdsourcing lessons for organizations*. *Journal of Decision Systems*, 20(3), 12–40.
- Saxton, G. D., Oh, O., & Kishore, R. (2013). *Rules of crowdsourcing: Models, issues, and systems of control*. *Information Systems Management*, 30(1), 2–20.
- Surowiecki, J. (2005). *The wisdom of crowds*. New York: Anchor.
- Thomas, R., Sargent, L. D., & Hardy, C. (2011). *Managing organizational change: Negotiating meaning and power-resistance relations*. *Organization Science*, 22(1), 22–41.
- von Hippel, E. (1988). *The sources of innovation*. New York: Oxford University Press.
- West, J. (2003). *How open is open enough? Melding proprietary and open source platform strategies*. *Research Policy*, 32(7), 1259–1285.
- West, J., & Bogers, M. (2013). *Leveraging external sources of innovation: A review of research on open innovation*. *Journal of Product Innovation Management*, 31(4), 1–18.