PENSERRA

Crowdsourcing

A paradigm shift in business:
leveraging the power of many

-George Schmilinsky

Table of contents

Section 1

Section 2

Section 1

I. Overview

Purpose of this white paper

This white paper will introduce the many forms of crowdsourcing, how these forms have transformed business and why crowdsourcing will continue to grow in its use and functionality.

Definition — for the purpose of this white paper, crowdsourcing is defined as the aggregation (through technological means) of many human resources (workers) for the purpose of achieving a common goal. This paper will not include the concept of crowdfunding, although some consider it a form of crowdsourcing.

Introduction

The term "crowdsourcing" is an aptly named portmanteau introduced by *Wired* magazine in a 2006 article titled "The Rise of Crowdsourcing," in which the author, Jeff Howe, combined the words *outsourcing* and *crowd*. Companies using crowdsourcing do, in fact, outsource their work. However, instead of outsourcing only one project to one company, crowdsourcing often involves outsourcing many different tasks to many independent people.

Another portmanteau term that could have been applied is cloudsourcing, since crowdsourcing is also similar to cloud computing, in that resources are used on demand:

Crowdsourcing is a model for leveraging a virtual labor pool, conveniently available on demand, to perform tasks or projects

Pay per usage (utility model)

Rapid scalability

Available on demand

Pooled resources
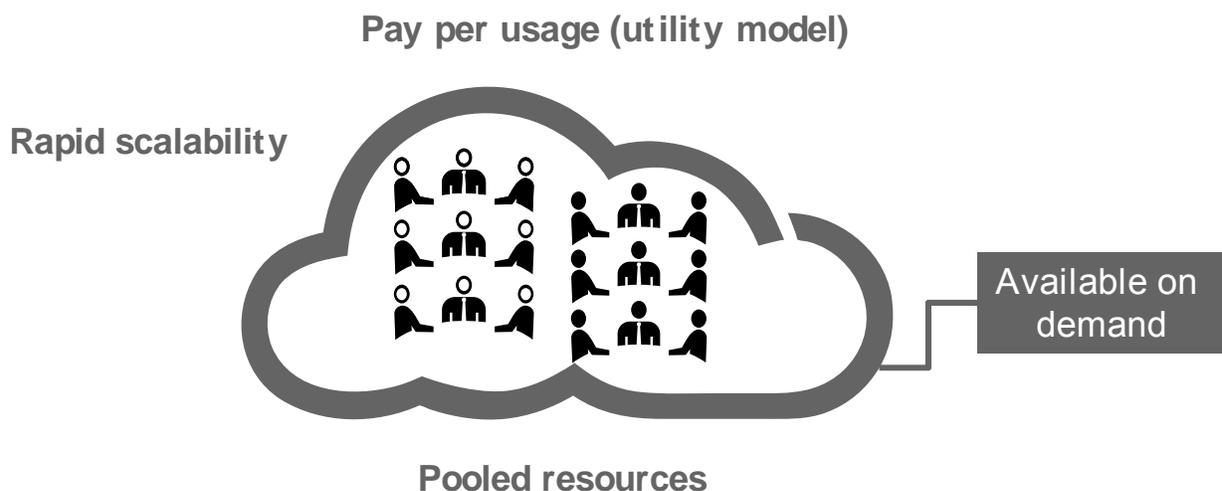
Although crowdsourcing is still a burgeoning industry, millions, if not billions, of people have benefited from its use. Wikipedia is a popular example. It has many different contributors to its encyclopedia content through its web platform; in other words, it uses a crowdsourcing model. Here are a few other examples:

> Yelp, YouTube, Bleacher Report, iStockPhoto/Getty Images, Flickr, Google Images, Google Maps Traffic, Napster, ODesk, Elance, Freelancer.com, TaskRabbit, Quri, Amazon Mechanical Turk, CrowdFlower, CloudCrowd, 99designs.com, CrowdSPRING, Kaggle and Tailor Research.

As the above companies show, crowdsourcing can be categorized in several different areas. Each category has its benefits and shortcomings, so understanding the reasons to choose a particular method and how to use it are beneficial. Here are some categories that will be explored in greater detail further in this white paper:

1. A *public* crowd that creates, updates and improves a product **for free** while sometimes also verifying the product's content with other peer reviewers:

   Examples: Wikipedia, Google Maps Traffic and Youtube.com

2. A *specialized* crowd that creates, updates and improves products through peer reviews **with no initial payment for services**:

   Examples: Bleacher Report, many free blog sites and Joomla (think open source)

3. A *specialized* crowd of **paid** workers that creates, updates and improves products through a platform that connects labor demand to supply:

   Examples: oDesk, Elance and Freelancer.com

4. A *public* crowd of **paid** workers that do *tasks* through a platform that connects labor demand to supply:

   Examples: Amazon Mechanical Turk, CrowdFlower.com, Quri and TaskRabbit.com

5. A *specialized* crowd that competes to win a prize through a platform that connects labor demand to supply:

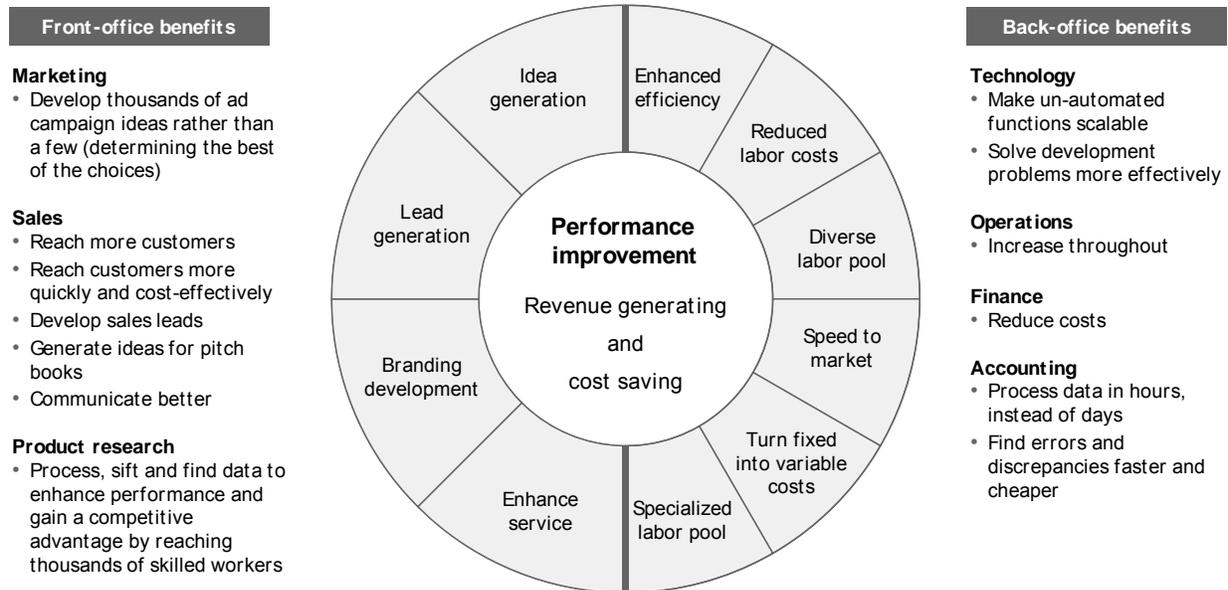   Examples: 99Designs.com, CrowdSPRING, Rewarder and Kaggle

Public and private crowds

In addition to the different crowdsourcing models, there are also different types of crowds, most notably, **public** and **private** crowds and, as noted above, specialized and general crowds. These concepts will be explained in greater detail later in this document.

II. Why is crowdsourcing so important to commerce?

Crowdsourcing has many applications and benefits that can help businesses not only reduce expenses in the back-office by lowering the cost-per-unit of production, but also increase revenue in the front-office. Most of the benefits center on increasing ideas that generate income (ideation) and eliminating inefficiency (speed, cost or general productivity) by identifying the most efficient resources/solutions.

Here are some front- and back-office benefits:

Front-office benefits		**Back-office benefits**
Marketing • Develop thousands of ad campaign ideas rather than a few (determining the best of the choices) **Sales** • Reach more customers • Reach customers more quickly and cost-effectively • Develop sales leads • Generate ideas for pitch books • Communicate better **Product research** • Process, sift and find data to enhance performance and gain a competitive advantage by reaching thousands of skilled workers	Idea generation Lead generation Branding development Enhance service **Performance improvement** Revenue generating and cost saving Enhanced efficiency Reduced labor costs Diverse labor pool Speed to market Turn fixed into variable costs Specialized labor pool	**Technology** • Make un-automated functions scalable • Solve development problems more effectively **Operations** • Increase throughout **Finance** • Reduce costs **Accounting** • Process data in hours, instead of days • Find errors and discrepancies faster and cheaper

Statistics on unproduction

One of the biggest reasons why firms use crowdsourcing is to eliminate many of the inefficiencies inherent with work production. Although many workers are efficient, the statistics around inefficiency in the workplace can be disturbing. Crowdsourcing solutions can help improve the simple but important production ratio: production/compensation.

• Time-off and distractions

  • Internet surfing, breaks (lunch, bathroom, etc.) and forms of socializing may be appropriate but unproductive. Based on several surveys, we estimate 2 hours a day or 25% of compensation.

• Vacation and sick time

  • Approximately 80 out of 2,000 hours, or 4%

- Benefits and taxes

    - Benefits and employer taxes are approximately 30%, which include employer social security and disability tax.

- Idle time

    - Employees have difficulty resolving sophisticated problems in many industries and positions. Many of these problems can be solved through crowdsourced expert networks (e.g., Kaggle.com) (5%).

Unproduction does not necessarily mean that an employee is inefficient. Factors that influence un-production are high labor costs and low output due to various factors that include: company vacation policies, local distractions or events, supporting infrastructure, local and federal taxes, a highly sophisticated industry causing higher idle times when finding solutions to problems, and more. In each case, crowdsourcing can serve to mitigate some of the negative effects to production.

For many service industries, unproduction or inefficiency in service output can affect profitability tremendously. Compensation usually represents the highest percentage of total costs in many service industries, such as the investment industry.

III. Challenges to crowdsourcing

Implementing crowdsourcing solutions presents many difficult challenges.

1. **Security and privacy**
    - Crowdsourcing can bring additional risks since services are often outsourced or indirectly managed.

2. **Integration**
    - Connecting to crowdsourcing platforms can be expensive, not only because of the system integration costs but also the change in policies, procedures and controls.

3. **Identification**
    - Identifying the optimal crowdsourcing opportunities can often be difficult.

4. **Public crowds**
    - Lack of visibility into public resource can raise security issues.
    - There is a lack of clarity regarding regulatory requirements associated with crowdsourcing.
    - There is a lack of mature crowd vendor certifications.

5. **Private crowds**

    - There are greater implementation times and higher initial costs.

    - Companies are still responsible for managing complex IT infrastructure versus focusing on their core businesses.

Section 2

I. Outline

1. Ideation

Definition in this white paper — ideation is the process of generating new ideas for a greater business purpose, such as increasing customer satisfaction or improving product development. Ideation is very similar to brainstorming but uses a more structured process than traditionally thought of when envisioning brainstorming.

Ideation using crowdsourcing can take many forms. For example, ideation can be used to develop a new product for customers using the firm's internal social media platform. Or, it can be used to find new investment ideas for an investment manager using a crowd platform that gathers investment research analysts. Ideation can even include solving complex science or business problems (e.g., Kaggle), although ideation is usually used in the marketing life cycle (e.g., 99Designs, CrowdSource.com).

Benefits to ideation

The concept of "two heads are better than one" has been known since biblical times. The benefits of ideation are similar to that concept and almost equally as old. In fact, during the French Revolution the French Government awarded Montyon Prizes to reward members of a "crowd" who solved difficult science problems. This "crowd" reward system for solving problems is similar to modern day crowdsourcing companies, such as 99designs and Kaggle.

The rising popularity of crowdsourcing stems from its many benefits. Research has shown that when multiple people contribute to a solution, the efficacy of that solution is greatly increased.[1] However, the key to benefiting is in having good communication, where each contributor can benefit from the other's insights.

Crowdsourcing uses technology to create a communication conduit, whereby each crowd member's work is summarized and the recipient/consumer benefits.

Eric Von Hippel, an MIT professor who is well known for his research on customer-led product innovation, has argued that companies that use their customers to innovate enjoy higher revenue. Eric Ries, a Silicon Valley entrepreneur, and Steve Blank, a professor at Columbia and Stanford University, have argued that start-ups that iterate with a select crowd of customers to ultimately define their products have a higher survival rate.

These types of research concepts and findings have led to a revolution in customer ideation, which crowdsourcing uniquely solves.

Use in industry

Two companies publicly known for using crowdsourcing for ideation are Fidelity Investments and State Street Corporation,[2] which both use proprietary internal social media sites to gather opinions from employees on certain product offerings. Each of their programs has largely been successful despite the expected normal challenges along the way.

Some other companies using crowdsourcing for ideation: Coca-Cola (marketing campaign), Microsoft (product design), GE (product design), McDonalds (product/burger design), Samsung (product design), Yahoo (logo design), Ford (product design), CafePress (product design), Minted.com (product design), Royal Bank of Scotland (product improvement), Commonwealth Bank (product improvement), Barclays

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[1] Asher Koriat, "When Are Two Heads Better than One Why?", *Science*, 20 April 2012, Vol. 336, no. 6079, pp.360-362; as well as Bahador Bahrami et al, "Optimally Interacting Minds," *Science*, 27 August 2010, Vol. 329, no. 5995, pp. 1081-1085.

[2] NICSA *Crowd Sourcing and Online Collaboration Webinar,* presented by Tim McHugh (Fidelity Investments) and Jeff Graves (State Street Corporation), September 12, 2012.

Bank (credit card product improvement), World Bank (product design and improvement), Allstate (product design), American Express (general ideation)

Why are so many companies using crowdsourcing for ideation? Eric Von Hippel, Professor in MIT's Sloan School of Business, estimates that consumers are 2-3 times more innovative than industry professionals.

Challenges to customer ideation

Customer ideation is beneficial but it creates many unique challenges. For example, it is often difficult to reach customers en masse, to process and prioritize the sheer amount of data coming from customers and to facilitate the process without either appearing directionless or giving competitors product insight. These challenges are ultimately outweighed by the benefits of having customers iterate the product life cycle, which thereby pinpoints their needs.

2. Public vs private crowds

Public crowds

Public crowds, as defined in this paper, are crowds of workers who work on tasks or projects for one or more companies; they are formed through public (open) websites. Usually, a public crowdworker has not been through any formal interview process, but rather uses a shortened question-and-answer exchange through the crowd platform. In addition, the crowdworker supplies a public profile or description on the platform.

To account for the lack of visibility around each worker's quality, most public crowd platforms have a rating system for each of their workers. In this system, a person who has hired a worker is invited to participate in an online survey regarding the effectiveness of that worker. These ratings are saved on the crowd platform and summarized, along with the number of projects a worker has done, the number of total hours worked, the type of work done and other data that varies on the crowdsourcing platform. In addition, sites such as ODesk, TaskRabbit, Quri, Elance and freelance.com have tests for certain skill sets to measure the expertise of a worker.

Public crowdsourcing sites include: Amazon Mechanical Turk, CrowdFlower.com, cloudCrowd.com, TaskRabbit.com, 99Designs.com, CrowdSPRING, Rewarder and Kaggle.

Private crowds

Private crowds, as defined in this paper, are crowds of workers that have been brought through some kind of onboarding process. For example, private crowd workers can have any of the following, or more, activities conducted during the onboarding process:

- Interview

- Security check

- Vetted with hiring firm or outside employment agency

- Trained in company procedures or for particular tasks/projects

- Signed non-disclosure agreements (NDAs)

- Signed non-compete agreements

Private crowds may be more expensive than public crowds, but when security or training is an important issue, private crowds may be more suitable.

Private crowds can be used for very specific purposes. For example, a crowd of marketers can be gathered to think of a unique but secret ad campaign; a crowd of accountants can be assembled to do forensic testing; scientists can be gathered to solve research and development problems. The more specialized the crowd is, the more expensive and difficult the crowd can be to procure, but it is often beneficial.

3. Public free crowd with peer review

Crowd workers opt in to a technology platform without remuneration for many different reasons. Sometimes it is because they have knowledge they want to share. The scientific community has been collaborative for many years because they have learned to benefit from one another. In other words, a collaborative culture has been proven beneficial to all. As mentioned on page 6, research has shown that collaboration is great when one learns from the other. An example of collaborative public free crowd with peer review is Wikipedia. Many people offer their knowledge or research to Wikipedia's platform, and benefit from the site itself and from being "credentialized" or recognized as thought leaders. Peer review ensures the content from these public sources is suitable and accurate.

Sometimes users join these crowd platforms because they want to get data from the platform, but are unaware that they themselves are a participant. For example, Google Traffic uses people who are logged into the application to determine traffic. So users are both benefiting from and contributing to the application at the same time. Many other mobile applications share this function.

Peer review

Peer review often plays an important role in crowdsourcing. Often, companies will use their own websites to build social media functions that help them understand their customers better. An issue that quickly arises is inappropriate content. To prevent this, peer users can report on such users by selecting a "report abuse" button. This self-policing strategy is used by many popular sites, such as Facebook, Twitter, YouTube, Instagram and Google+.

Examples of peer review include:

Yelp/Citysearch — reviews are submitted by users (paying for reviews violates Yelp's terms of use), which peers evaluate and tag as either useful, funny or cool; review tags reward reviewers and rank reviewers higher when a consumer searches for the business.

Wikipedia — both moderators and users create forums for specific content. Users add their contributions, which are reviewed by accredited contributors before being published. Moderators encourage users to validate or substantiate unverified information published by other users.

Get Satisfaction — users provide feedback to businesses which the tool aggregates with other feedback and searches for commonality. If similar feedback has already been submitted, the tool encourages the user to add to the earlier feedback received.

Risks/rewards

Benefits

An advantage of free public crowdsourcing sites (besides the free pricing) is the organic and dynamic way in which the content evolves. Many sites built without a crowd or social media functionality are static, only changing on release dates. This typical web development and content development cycle makes change a long, slow and, ultimately, costly process. Crowd provides collaboration to minimize facilitation burden.

Potential issues

Possible concerns that can arise include:

- Unique content can potentially be removed

- Contributor bias to provide negative feedback can create hostile crowds

- Motivation to contribute is linked to perceived value of contributions; not publishing content publicly will likely reduce contributor base

Ideal situations

Public crowds with peer review are terrific mechanisms for:

- Brainstorm/ideation phases of any change program, blending public crowds with private (internal) reviewers

- Promoting exciting dialogue with customers to elicit valuable feedback using less-intrusive means (e.g., a formal survey or phone call)

- Facilitating competition with a clear objective identified

Use in industry

Companies that use this form of crowdsourcing include: Linux (Open Source Operating System), Yahoo (Yahoo Answers), and many companies that have social media components to their websites and use the data to inform or enhance the company.

4. A public crowd of paid workers with sponsor review

Perhaps the area that people most associate with crowdsourcing is a public crowd of paid workers with sponsor review. Another name for this aspect of crowdsourcing is microtask crowdsourcing.

This area of crowdsourcing involves a technology platform with thousands, or even hundreds of thousands, of people willing to do small tasks for very little money — sometimes less than a penny (with multiple "jobs" making pennies whole).

The workers in the crowd are not necessarily trained and the ability to interact with any one crowd worker is limited at best. Most crowd platforms offer a sponsor-review process, whereby when a crowd worker

does a job, and is paid, the worker is rated by the sponsor/employer according to how well the job was done. Many platforms also track:

- How many hours a worker has completed

- The country where the worker is located

- The percentage of sponsors who rated the worker high, along with the rating

Many microtask crowdsourcing platforms perform a "value-added" service by working with the sponsor to find specialized workers more apt to excel in the job and to ensure the work product is as expected. These type of crowdsourcing providers are thought of as crowdsourcers 2.0. Examples are CrowdFlower.com and CrowdCloud.com. Crowdsourcing 1.0 examples are Amazon Mechanical Turk, with their legion of "Turk" workers.

There are benefits to both models of microtask crowdsource providers. The 2.0 version is easier to set up and using this type of service gets the sponsor out of the business of understanding crowd-sourcing and all the unique jargon, which can be complicated. However, with this extra benefit comes a cost. Typically, 2.0 providers charge a set-up fee, which can be too large for firms, as well as the usual per-task fee but at a higher rate.

Almost all microtask providers offer an application programming interface (API) where firms can interface their systems with the crowdsourcing provider. This creates a unique scalable workforce solution for simple tasks. More importantly, it allows a firm to positively shift its labor force cost curve. Global outsourcing that typically is the lowest cost provider becomes the second lowest, and those resources can now be used for more sophisticated tasks.

Types of work microtasked

Microtask crowdsourcers began by providing workers who could offer opinions on web designs. Then, language translation became popular. For example, a bank has a change to an advertisement that needs to be translated in several languages. Crowdsourcing is a quick and inexpensive solution for this problem, particularly when using 2.0 providers of microtasking. Now, microtask providers offer very sophisticated solutions that include work done in middle- and back-offices of large, global banks.

Other recent developments in microtask areas include:[3]

Data cleansing: This can include determining if fields are missing in an application form; finding or resolving simple form errors; rapid proofreading where a document is parsed out to several crowd workers and each proofreads their section; finding syntax errors, such as using "their" instead of "there"; or simple accounting functions such as verifying sums or reconciling numbers.

Data de-duplication and matching: This involves removing duplicate information. Many large databases have several duplicate names with small changes to spelling. For example, John Doe may be the same person as Jonathan Doe. It is difficult to get reconciliation programs to identify all the people who can be matched and consolidated into one record. For example, a person is very apt to recognize that Jonathan

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[3] CrowdFlower, Inc., "Crowdsourcing Data Quality — Shift Data Maintenance to the Crowd for a Fractional Cost of Traditional Methods," June 14, 2013.

Doe at 413 Evan Street, Alamo, Massachusetts, is the same person as Jon Doe at 413 Evan St., Alamo, MA.

Data enrichment: This involves enhancing information to improve business. For example, with web and social media sites such as LinkedIn, information on people is often readily available. Profile data could be useful for CRM systems that salespeople use to understand the client. Crowdworkers may be given business card information that can be used to find their public LinkedIn profile and to ultimately improve a salesperson's knowledge when interacting with an account. Many other forms of this concept are used, with the general web being the source for the crowdworker's job.

Data categorization and hierarchy: This process adds identifier information about a business, such as a North American Industry Classification (NAIC) code to denote business type, and subsidiaries or relationship to a parent company. NAIC codes are typically used to target industries in sales and marketing initiatives. Understanding subsidiaries helps sales teams find new opportunities with related entities, or avoid wasting time selling to a subsidiary when the parent company already has an enterprise purchasing agreement, for example. A similar process can be contemplated for Data Universal Numbering System (DUNS) identifiers.

Testing: This process involves using a large number of independent crowd workers who are using many different hardware and software systems to find problems in websites and other customer-facings systems by using these systems. The advantage of crowdsource testing involves the sheer difference in the crowd in geography, systems tools, perception and more instead of a limited means to test.

Other uses: Microtask providers can also serve as internet searchers. For example, a business that is looking for qualified leads by searching the internet can use crowdworkers to qualify each internet search find.

Crowdsourcing can also be used to verify physical advertisements. For example, Quri uses a crowd of workers to help businesses verify that their signage is as desired and optimal, among other things. The value of this function is to improve retail execution and sales.

Also, microtask providers can be "watch dogs" that scour internal and external social media sites for inappropriate posts .

Often, 2.0 providers use two crowdsource workers on one task. The first does the original task and the second repeats the process. Then, the crowdsourcing platform verifies the results before submitting the final answer to the sponsoring firm. This method is an effective means to increase the quality of the work product and can be very cost-effective.

How it works: Sponsors/employers publish microtasks on the crowd platform and set delivery deadlines, task specifications and submission instructions.

Resolving security issues: Often, a concern of this public model of crowdsourcing is how to keep client data safe. Crowdsourcing companies have many different ways to address this issue, but the following are very common:

- Remove sensitive data and parse out the remaining data in a way that allows a crowdworker to see only one element (e.g., an address) rather than a collection of data

- Limit the number of jobs a crowdworker can do per client

- Provide robust security systems and protocols

- Pre-screen crowdworkers

- Have select crowdworkers sign NDAs and provide some privacy training (this is usually provided by 2.0 providers)

Use in industry

Notable firms using this model of crowdsourcing are AOL (evaluating its webpages for content), Google (image identification), Autodesk, Unilever, eBay, Skout, Apple, Ask, Expedia, Facebook, Groupon, The Home Depot, Lowe's, LinkedIn, Mint.com, Toshiba, USC, Walmart, YouTube, and Yahoo.

5. Specialized, paid and public crowd model with sponsor review

Probably the second most popular type of crowdsourcing is a specialized, paid and public crowd-sourcing model. Another name for this is freelance technology platforms. As the name implies, these types of crowdsourcing platforms aggregate a group of specialized workers (or freelancers) who are willing to work on projects for any company.

The freelancing platforms usually have on-line tests for different work specialties. The tests are graded and available to see on a crowdworker's profile, acting as a differentiator for those participating test-takers. Hours worked, user ratings and geographic location are also found on the typical profile.

In addition, crowdworkers can show examples of their work on the platform itself. For example, web designers can show examples of their web pages, or freelance writers can show examples of their writing.

Unlike microtasking, freelance crowdsourcing typically involves project-type work rather than micro-tasks. With the extra-length assignments comes extra attention that must be paid during the hiring process. Most sponsors take the time to carefully review the profiles and use the sort criteria given by each platform.

Typical types of freelancers:

- Application developers: all types of application developers who can program in all the different languages

- Web designers

- Technical writers

- Financial and accounting experts

- Mathematicians, statisticians and financial engineers

- Excel experts

- Advertising designers

Firms: oDesk.com, Freelancer.com, elance.com, guru.com, Skillbridge.com

Less common crowd platforms for freelancing include:

- Acting, singing or entertainment coaches

- Writing coaches

- Business mentors

- Parenting mentors

Firms: Maestromarket.com

What is unique to the freelance crowd platforms, as well as the microtask platforms, is that employer taxes/1099s are mitigated by the crowdsourcing firm itself rather than the sponsoring firm. This means the price paid for crowdworkers already includes any tax effects in hiring the project.

How it works: Sponsors/employers publish the project on the crowd platform and set delivery deadlines, project specifications and submission instructions. Sponsors may to choose for a job or on an hourly basis. Work for certain disciplines, such as software development, is measured by the platform itself and often daily activity reports are available.

oDesk announced that clients have spent over $1 billion for their services, that they have more than 4 million freelancers who have taken over 2.6 million technical tests.

Use in industry

Although small and start-up companies are the primary users of this type of crowdsourcing, many larger firms have recently made use. One company using this model of crowdsourcing is IBM, which according to Reuters planned to lay-off thousands of employees in Germany for the lower cost associated with this type of crowdsourcing.

Some of the most known software companies that use this type of crowdsourcing, include: eBay, Facebook, Google, Microsoft, Amazon, careerbuilder.com

Also non software companies include: Harvard and ESPN

6. Winner-take-all crowd model with sponsor review

Winner-take-all crowdsourcers offer a unique business model to sponsors. Multiple workers are "hired" at the same time to do the same job, but unlike other models, the sponsor only pays for the very best provider, in their view. This allows the sponsor to truly leverage a large crowd without having to pay for all of them.

Ideal situations

Winner-take-all with sponsor review model is terrific for:

- Conducting an RFP for any task that has multiple "right" answers (e.g., creative design, producing content)

- Public crowds where investment from non-winners does not result in under-utilization cost from sponsor

Winner-take-all models are often for one-time or infrequent problems that are very difficult to solve or where creativity is a main component to solving the problem. Advertising campaigns take a lot of creativity so often this form of crowdsourcing is used. Also, science companies with problems that are not being solved by their own resources use sites such as Kaggle to reach out to the larger community. Users often claim that the benefit of sites like these is that you never know who is going to have that "aha" moment that solves the problem.

How service works

- Sponsors publish task/microtask and set delivery deadlines, task specifications and submission instructions (similar to formal RFP process).

  - Sponsors may request finished products, samples, quotes, etc.

- Contributors opt in to participate (bid) on the task/microtask requested.

- Sponsors review all submissions privately and select the "winner" from the crowd.

- The winner is awarded a "prize" for submission and all other contributions are rejected.

Examples:

- 99designs — sponsors publish design requests and contributors submit draft designs with quotes for completion for sponsors to review. One winner is selected from the crowd, awarded the task and paid for the project.

- Kaggle.com — this site focuses on scientists and PhD-type workers who are highly specialized and have expensive skills. The site is often used by sponsors who have a very difficult problem, which a limited number of highly skilled workers would have the ability to solve. Many view Kaggle as a service used to reach a number of highly skilled workers that would normally be unobtainable due to cost.

- Rewarder.com — this site has a generally lower-skilled workforce which is used to solve more indiscrete challenges.

Risks/rewards

Benefits

- Easy, scalable mechanism to conduct RFP for creative or remedial tasks

- Enables creative solutions that a sponsor may not have considered independently

- Provides a large quantity of submissions but only costs the sponsor one "prize"

- Bias toward those with "availability to compete" may result in lower-quality submissions

- Review "burden" falls on sponsor

Use in industry

Large government and defense focused behemoths using this model of crowdsourcing are NASA and Lawrence Livermore National Laboratory, who have used the scientist from Kaggle to develop interesting solutions.

Other notable companies using this model of crowdsourcing: MasterCard, Pfizer, Allstate, Facebook, NASA, GE

7. Specialized, free and public crowd with sponsor review

Specialized crowdworkers are people who usually identify themselves as having unique skills and join a crowd platform that aggregates such specialized resources. Many "workers" join these specialized sites to be known for the specific area of the site, or if the site has multiple skill-sets, to be known for one particular skill-set.

Often, workers apprentice their skills with these sites or even validate their sites without going through the rigors of getting a difficult and unique position; consequently, writing and acting are common themes in this area of crowdsourcing.

How the service works

- Contributors self-identify as "sufficiently specialized" to contribute

- Opt in by initial contributors and peer reviewers; this works because:

  - Contributors want to create their own brand/"credentialize" as thought leaders

  - Contributors feel professional obligation to add value to a specific network

- Thread/topic moves through multiple channels:

  - Moderator/sponsor creates forum relevant to consumers and contributors

- Content is either "living" or "static"

  - Living content is approved by the sponsor initially and after any subsequent edit from the crowd, which maintains/evolves content at the crowd's discretion.

  - Static content is approved by the sponsor, then "locked" (or task is removed) to prevent further revisions.

Examples:

- — has a community of sports writers who craft articles on their local sports teams. The sports articles are then sold through traditional web sources, such as online news companies and sports sites, or even mega media sites such as Yahoo.

- Skillshare — experts volunteer to share their knowledge regarding any topic they want to teach, either online or locally. Skillshare reviews the online course content before launching the course.

- LinkedIn groups — moderated groups enable discussions within specialized communities, where a sponsor(s) either initiates and/or moderates a discussion.

Risks/rewards

Benefits

- Specialized groups are more likely to correctly complete highly technical microtasks that financial services businesses require.

- Crowd participation requires familiarity with content, reducing the potential for unlearned contributions.

Potential issues

- Specialized focus reduces contributor-base and may reduce participation for fear of tarnishing "professional brand" and/or disseminating trade secrets.

- Specialized tasks often generate income for participants; specialized, free crowdsourcing models may support contributors without reputation for excellence.

Use in industry

Most of the open source application software companies employ this model for developing their software language. Java is one of the more common examples.

Another way to think of this business model is Apple's iPhone App Store marketplace. The phone itself has many different and advantageous features but its applications are often given as the reason for its competitive advantage. Apple developed a platform for specialized resources, and for Apple the services and benefits they provide are free.

Summary of crowdsourcing

Only a few years ago crowdsourcing was mostly an unproven business model, but recently it has transcended into becoming a model that could easily revolutionize the way enterprises do business. Several advantages are factors: financial savings, revenue generation, risk reduction. These advantages provide compelling reasons for crowdsourcing to become commonplace.

Although crowdsourcing requires more controls, the benefits are substantial

- ► Crowdsourced workers get paid based on results rather than hours worked, therefore speed of delivery and efficacy are important

- ► Crowdsourcing does not have overhead or marketing/sales costs

- ► Crowdsourced workers can be multi-location based and specialized rather than based on the available resources of a particular off-shoring company.

- ► Crowdsourcing is a competitive marketplace for talent and ideas rather than fixed and determined by a particular company

- ► Crowdsourcing does not have one point of failure like off-shoring can have

Who people are employed by has also changed a lot in the past decade. From the industrial age to the information age, workers primarily worked for companies but recently that trend has been changing. Employees have sought autonomy and independence more frequently, and freelancing (through a technology platform) provides a means and method.

The combination of companies seeking the advantages of crowdsourcing, and workers wanting to be more independent, are further evidence that crowdsourcing is a business-model that will continue to grow.

The empirical evidence is there as well. While only a few companies and institutions were using crowdsourcing a decade ago, now hundreds use it today. Searching the following corporate names in a search engine with the word "Crowdsourcing" will show some interesting examples of how crowdsourcing is applied in business today:

LinkedIn, Amazon, Ford, AOL, MasterCard, Pfizer, Yahoo, Google, the World Bank, Fidelity, State Street Bank, Microsoft, ESPN, careerbuilder.com, Bleacher Report, Allstate, Wikipedia, Harvard, NASA, Lawrence Livermore National Laboratory, DARPA, Radbound University, Article One Partners, Cisco, Democratic National Committee, Dell, Lego, Digital Globe, University of Iowa, FCC, Southwestern University, GE, Rockefeller Foundation, Library of Congress, Flickr, L'Oreal, Lucky Rentals, Netflix, Pepsi, Skillshare, Autodesk, Unilever, Skout, Apple, Ask, Expedia, Facebook, Groupon, The Home Depot, Lowe's, Mint.com, Minted.com, Toshiba, USC, Walmart, Twitter, YouTube, Instagram, Yelp, Joomla, Penserra Securities, CrowdFlower.com, cloudCrowd.com, TaskRabbit.com, 99Designs.com, CrowdSpring, Rewarder, Kaggle, Freelance. SurveyMonkey, American Express, First Republic Bank

Many companies have waited until the *innovators* and *early adopter* phase of crowd-sourcing has matured into the *early majority* phase of adoption. The list above demonstrates that the early adopter phase is indeed quickly maturing into a majority phase. Firms that choose to wait may face competitive disadvantages as their competitors use these tools and models to drive their business.