A PROJECT REPORT ON
SURVEY ON CROWD SOURCING TECHNOLOGIES

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DECLARATION

I hereby declare that the report of the B.Tech Major Project Work entitled **"A Survey on Crowdsourcing Technologies-Initial Experiences"** which is being submitted to Rajiv Gandhi University of Knowledge Technologies, R.K Valley, in partial fulfilment of the requirements for the award of Degree of Bachelor of Technology in Computer Science and Engineering, is a bonafide report of the work carried out by us. The material contained in this report has not been submitted to any university or institution for award of any degree.

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CERTIFICATE OF PROJECT COMPLETION

This is certified that the project entitled "**A Survey on Crowdsourcing Technologies -Initial Experiences**" submitted by S Fyrose(R170339), SK Tanheera(R171216), D Swetha(R170338) under our guidance and supervision for the partial fulfilment for the degree Bachelor of Technology in Computer Science and Engineering during the academic semester-2 2022-2023 at **RGUKT, RK VALLEY.** To the best of my knowledge, the results embodied in this dissertation work has not been submitted to any University or Institute for the award of any degree or diploma.

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ABSTRACT

Crowd sourcing is a collaboration model enabled by people-centric web technologies to solve individual, organizational, and societal problems using a dynamically formed crowd of people who respond to an open call for participation. We report on a literature survey of crowd sourcing research, focusing on top journals and conferences in the Information Systems (IS) field. To our knowledge, ours is the first effort of this type in the IS discipline. Contributions include providing a synopsis of crowd sourcing research to date, a common definition for crowd sourcing, and a conceptual model for guiding future studies of crowd sourcing. We show how existing IS literature applies to the elements of that conceptual model: Problem, People (Problem Owner, Individual, and Crowd), Governance, Process, Technology, and Outcome. We close with suggestions for future research.

i) INTRODUCTION:

Crowd Sourcing is the act of collecting services, ideas, or content through the contributions of a large group of people.

Among the different features, activities and processes included in this new collaborating economy the concept of crowdsourcing can be found, which identifies the participation of the "crowd" as a resource involved in one or more parts of the company business processes. This is an activity that leads to remote ownership and access to stages of the process shared between companies and people outside them.

A. Background Information On Crowd Sourcing Technologies:

Crowdsourcing involves obtaining work, information, or opinions from a large group of people who submit their data via the Internet, social media and smartphone apps.

People involved in crowdsourcing sometimes work as paid freelancer while others perform small tasks voluntarily. For example, traffic apps like Waze encourage drivers to self-report accidents and other roadway incidents to provide real-time, updated information to app users.

Crowdsourcing is becoming a popular method to raise capital for special projects. As an alternative to traditional financing options, crowdsourcing taps into the shared interest of a group, bypassing the conventional gatekeepers and intermediaries required to raise capital.

Crowdsourcing usually involves taking a large job and breaking it into many smaller jobs that a crowd of people can work on separately.Regardless, while the term is fairly new, the idea is not. Breaking a project into smaller pieces and distributing them to independent workers has been a creative approach to getting work done for centuries.

The benefits of crowdsourcing include the ability to improve quality, solve complex problems faster, and lower the cost of a project by leveraging the skills of a vast group of people. Major companies such as Starbucks, McDonald's, General Mills, Samsung, and Airbnb have used this technique for various purposes, including naming products, developing and deciding on new flavours for foods, and collecting images and videos that can be used to promote the brand.

B.Purpose and Objectives of the Report:

The main objective of this report is to provide information on crowd sourcing. This report contains:

- Defination of CrowdSourcing

- History and Evolution of CrowdSourcing

- Advantages and disadvantages of CrowdSourcing

- Types of CrowdSourcing

- Key players and Platforms in the CrowdSourcing Industry

- Trends and Developments in the field of CrowdSourcing

- Overview of the Technology

- Application of CrowdSourcing Technology in various industries

- Evaluation of the technology based on its features,benefits and limitations

- Comparison with traditional and other outsourcing methods

- Case studies and examples of successful CrowdSourcing projects

- Emerging trends and technologies on the field

- Future growth and market potential

- Challenges and Opportunities in the industry

- Predictions and recommendations for the future of crowdsourcing

- Conclusion

- References

C.Methodology used in the report

we used several websites which provide the content regarding Crowdsourcing and some research thesis on crowdsourcing technology.In selecting these websites we were guided by following criteria.

a)All the websites used must provide their services in English language.

ii) Literature Preview

A.Defination of CrowdSourcing

Crowdsourcing is the collection of information, opinions, or work from a group of people, usually sourced via the Internet.Crowdsourcing work allows companies to save time and money while tapping into people with different skills or thoughts from all over the world.

Crowdsourcing is a web based business pattern,which make best use of individuals on the internet,through open call and finally get innovative solutions.In a word,crowdsourcing is a distributed problem solving pattern.

Characteristics of Crowdsourcing

It is clearly from the definition of crowdsourcing, that it is similar with outsourcing, but they also have differences. In thefollowing, we try to highlight the characteristics ofcrowdsourcing, by comparing the similarities and differences between the two. Similarities between the two:

First, break the boundary of organization. Both crowdsourcing and outsourcing make possible the complement of tasks breakthrough the boundary of organizations, and extends to the contractor or public outside the organizations.

Secondly, they are both the products of communication technology development, especially the internet. Space and time barriers were be broken and high-quality resources and labors all over the world can be accepted and used conveniently. Price difference became one of thefundamental driving forces for the two business models.Difference between crowdsourcing and outsourcing:Firstly, their philosophy and orientation are different.Outsourcing reflects pure employment relationship, while the core of crowdsourcing is advocate value together with the users.

For example, product design once led by the manufactures has been shifted to consumers, for only end users have accurate understanding of their needs. Secondly, their contractors are difference. Outsourcing is contracting the task to the fixed professional organizations or individuals, and it is the inevitable result of social specialization. However,crowdsourcing is release the tasks to uncertain public people, mostly are not professionals. It emphasizes the innovative potential brought by diversification and differentiation.

B)History and Evolution of Crowdsourcing

Crowdsourcing (crowd + outsourcing) is the hiring method in which a task is posted publicly instead of given to a specialist within the company. The goal is to find a better solution—or at least a cheaper one—by reaching out to more people. As Wired'sJeff Howe eloquently describedin 2010:

The term "crowdsourcing" didn't appear until about 2005, where it's attributed to Mark Robinson and the aforementioned Jeff Howe. But the practice of crowdsourcing has been around for centuries, likely even longer.

In its primitive form, crowdsourcing took the shape of contests, like the **1714 Longitude prize** where the British government offered monetary rewards for whomever discovered a way to determine a ship's longitude at sea. This came on the heels of similar "contests" offered by Spain in 1567 and the Netherlands shortly after.

Emergence of Crowdsourcing:

Before the digital age, virtually every type of work required one's physical presence at the workplace itself. Modern technology allows project managers to assemble a worldwide team of freelancers to tackle problems that would previously have been all but unmanageable.

The beginning of the modern history of crowdsourcing can be traced to the early 2000s, coinciding with the birth of "open innovation," a business concept postulating that organizations should combine both internal and external souces sources of knowledge and expertise to advance the development of new products and technologies. Along with co-creation and web scouting, crowdsourcing represents a practical open innovation tool that organizations can use to meet their strategic innovation objectives.

The appreciation of the value that crowdsourcing can bring to the marketplace was helped by the appearance of first commercial crowdsourcing platforms. It took a few more years, however, to fully realize that crowdsourcing can only be effective if careful consideration is given to identifying and formulating problems to be crowdsourced as well as to precise matching of these problems with the most suited crowds.

C)Advantages and Disadvantages of Crowdsourcing

Advantage 1: Crowdsourcing offers high probability of success

Market research is elementary in all lifecycle phases of a product or technology. If you use open innovation for this purpose, you receive valuable input from the masses. Digital crowdsourcing platforms guarantee that people can work on your project at any place and at any time. An important advantage!

Advantage 2: Gain brand ambassadors - or even employees

If a company manages to inspire people with its innovation as part of its crowdsourcing project, participants can quickly become brand ambassadors.

Example: An outdoor company provides 100 new types of functional shirts for a product test. The product testers are then out and about - and act as brand ambassadors along the way.

Open innovation can also be used for employee scouting. Either openly communicated, by offering an invitation to a job interview as a reward for participation. Or unspoken, by actively approaching particularly qualified feedback providers.

Advantage 3: Unexpected solutions to tough problems

The most significant benefit of using crowdsourcing is the ability to find unexpected solutions.

When a business or organization considers problems internally, it's easy to fall into existing modes of thinking. After all, if a company has been doing something a certain way for a long time, it can be hard to break out of this habit.

This kind of status quo inertia is a major problem for all kinds of businesses. It's one of the reasons why innovation geniuses like Steve jobs place such a high priority on bringing in experts from outside the business to challenge conventional thinking.

This is why crowdsourcing provides such a huge advantage. By involving a broader group of people in solving a problem, a company can gain access to hundreds or even thousands of different approaches to problem solving.

A great example of the benefit of crowdsourcing is Unilever's Open innovation portal. Here, the company asks experts around the world to contribute out-of-the-box

solutions to tough problems like sustainable packaging and product cooling technologies, with unexpected results.

Advantage 4: A reduced management burden

The management aspect of crowdsourcing isn't something that's as well-understood as the other benefits, but it's a significant advantage.

When businesses innovate internally, there's often a significant management burden placed on whoever is leading and organizing a project. Thinkers and designers need to be reminded to contribute their ideas, and sometimes need to be encouraged along the way.

With crowdsourcing, a business or organization just sets clear terms and conditions for the exercise, then lets the ideas roll in. This hands-off approach takes less time than traditional ideation processes and can free people up to focus on other more exciting things.

However, this also means there's less control over the ideation process - more on this to come.

Advantage 5: A rich source of customer data

Finally, crowdsourcing also offers businesses and organizations a detailed window into their most dedicated fans and customers.

For companies like Starbucks, with its My Starbucks idea portal, crowdsourcing is much more than just a way to get great new ideas. By collecting and analyzing information about participants, Starbucks can also gather extremely valuable customer profile information.

For example, what are the core demographics of those submitting? Which communication mediums are best for connecting with these individuals? And what do the responses themselves tell you about the tastes and preferences of the company's most dedicated fans?

This shows that the benefits of crowdsourcing extend beyond just the solutions themselves. Done correctly, crowdsourcing can also generate compelling customer insights.

Advantage 6: Hands-off approach

CEOs and company managers may have lots of resources at their disposal, but time is typically not one of them. When conducting a traditional R&D project, the manager needs to constantly supervise the project and ensure the team is working efficiently and meeting deadlines.

When relying on crowdsourcing, all the management team has to do is create the challenge and then sit back while the worldwide innovators do their thing. No need to check in on individuals during the process.

Advantage 7: New hires

Most companies find it quite difficult to recruit creative and innovative employees to work for them. Participating in crowdsourcing challenges gives people an opportunity to showcase their talents, which in turn allows companies to provide job offers to the winners if they so choose.

If you're impressed by the solutions that the winners come up with, you might invite them to join your team. Their problem-solving skills could be a huge asset to your company again and again. After all, there are some projects that can't be crowdsourced due to confidentiality or other concerns.

Advantage 8: Fresh perspective

Unlike your employees, the crowd does not have a bias towards your company. They can bring a new perspective to the problems your team has been struggling with for ages. Sometimes all it takes is a new pair of eyes to find the missing piece you've been looking for all along.

One of the huge benefits of the crowd is their diverse backgrounds. They come from different countries, different socioeconomic statuses, different experiences, and different worldviews. When you look to the crowd, you're inviting an extremely diverse group to take a seat at your table and consider the challenge from a variety of perspectives. It only makes sense that one of them would discover an innovative solution.

Disadvantage 1: Confidentiality and intellectual property

While turning the question over to external parties creates a lot of benefits, it also has intellectual property implications.

If a participant submits a valuable idea, and the company puts this idea to use, both parties need to be absolutely clear as to who owns the idea, and who should benefit from it.

There's also the question of confidentiality. When asking people for their solutions, a company may need to share sensitive information to get a solution that will actually work.

For example, if a company is seeking solutions to a product packaging problem, this can be a signal that there is some deficiency in the company's existing packaging systems.

If a project relies on commercially sensitive information, it may not be appropriate for crowdsourcing. In this case, you're best to stick with old-fashioned internal ideation.

Disadvantage 2: Less control over the process

As we mentioned earlier, crowdsourcing involves less of a management burden for companies.

While this can be a good thing, it also means that crowdsourcing projects aren't as easy to manage and control as traditional internal projects. That's because a company can't control the behavior of every participant in the process.

For a hilarious example of how this can go wrong, check out the New Zealand government's attempts to seek public submissions on the design of its new flag, including the classic lazer-eyed kiwi.

Disadvantage 3: Risk of inconsistent outcomes

Crowdsourcing can result in some amazing off-the-wall suggestions. Sometimes these are useful, but sometimes they can be simply inconsistent with the desired outcome.

For example, let's say a car brand hosted a competition to crowdsource suggestions for a new model of electric car. Without providing clear instructions for the exercise, the company could end up with proposals that were impossible to manufacture. That wouldn't be much use at all.

That's why it's so important for businesses and organizations to set out in clear and specific terms what they expect from participants, and what participants can expect from them in return. This gives everyone certainty about the crowdsourcing exercise.

Disadvantage 4: Poor quality entries.

Crowdsourcing contestants normally submit whatever comes to them off the top of their heads. They may not know much about your industry and don't take the time to learn about it. They often ignore any naming criteria you stated, so you have to wade through a ton of wildly off-target suggestions. They don't think carefully about all aspects of your naming challenge the way professional name consultants would.

Disadvantage 5: Hidden costs.

Culling through 50,000 submissions takes vastly more time than considering the top 5, 10 or 25 suggestions offered by a professional naming company. Since the legal risks of intellectual property infringement are high with crowdsourcing, legal expenses can mount, too, especially when the process goes awry or hasn't been set up properly to start with.

Disadvantage 6: Plagiarism

With crowdsourcing, there's always the possibility that a few bad apples try to play the system by plagiarizing someone else's work or ideas in order to win the prize. Some may even plagiarize unintentionally. For example, if a company is looking for help designing a new logo, a challenge participant may suggest a logo that already belongs to another company without realizing it.

For this reason, it's extremely important to check all entries (or at least the top 10) for possible plagiarism before making your final decision, using legal help in certain cases. Of course, this issue is not unique to crowdsourcing and may happen inadvertently on a team within your company as well.

Disadvantage 7: Potential for failure

Most organizations have this concern. What if you put lots of time and effort into conducting a crowdsourcing challenge and then end up with nothing to show for it? That would be devastating, especially if the problem is time-sensitive and you're out of options.

Fortunately, HeroX has an amazing success rate, with 90% of our challenges finding a winning solution. Because we have solvers in over 180 countries, including some of the brightest minds in the world, it's very rare for a challenge to go unsolved. Maximize your impact by choosing HeroX to host your crowdsourcing challenge. You'll have lots of help from our challenge experts every step of the way.

Disadvantage 8: Amateurs

It may seem like crowdsourcing mostly relies on amateurs, and that is partially true. There are many amateurs who participate in crowdsourcing challenges, but there are experts as well. This begs the question: what drives people to participate in challenges that result in someone else using their ideas?

Usually, it's not about the money (though that certainly doesn't hurt). People long to contribute something that will make a difference in the world, and many support the causes and companies behind the contests they choose to participate in. And let's face it, it's pretty cool to be able to say something like, "I helped NASA fix one of the biggest challenges facing space travel." The crowd is full of both amateurs and experts who are looking to share their innovative ideas with the world.

D) Types of crowdingsourcing

There are four main types of crowdsourcing.

1.Wisdom of the crowd: It's a collective opinion of different individuals gathered in a group. This type is used for decision-making since it allows one to find the best solution for problems. Many brands pay attention to the collective opinion of their customers because they help bring their businesses new ways of thinking, ideas, and strategies. As a result, the overall performance of a company improves.

2.Crowd creation: This type involves a company asking its customers to help with new products. This way, companies get brand new ideas and thoughts that help a business stand out. For instance, McDonald's is open to new ideas from its consumers. The famous fast food company asked customers to create their perfect burgers and submit their ideas to the brand. The company released winners' burgers each week, including the creator's short bio.

3.Crowd voting: It's a type of crowdsourcing where customers are allowed to choose a winner. They can vote to decide which of the options is the best for them. This type can be applied to different situations. Consumers can choose one of the options provided by experts or products created by consumers. For instance, if a brand asks its consumers to create a new taste, package, or design of a product, other consumers vote to identify the best one.

4.Crowdfunding: It's when people collect money and ask for investments for charities, projects, and startups without planning to return the money to the owners. People do it voluntarily. Often, companies gather money to help individuals and families suffering from natural disasters, poverty, social problems, etc.

E)Key players and platforms in the crowdsourcing industry

1.Innocentive

Innocentive is a leading global open innovation platform that solves complex business, social and scientific problems for innovators worldwide.

We help organisations in every industry harness the power of crowdsourcing to accelerate innovation and deliver breakthrough solutions.

Innocentive's more than 300 clients include market leaders like GE, Johnson & Johnson, Monsanto, Bosch, Nestlé and Eli Lilly; small and medium enterprises (SMEs) in the technology, energy and chemicals sectors; non-profits dedicated to addressing global challenges; and leading universities seeking industry collaboration to fund their research.

2.Amazon Mechanical Turk

This could include anything from conducting simple data validation and research to more subjective tasks like survey participation, content moderation, etc.

MTurk enables companies to harness the collective intelligence, skills, and insights from a global workforce to streamline business processes, augment data collection and analysis, and accelerate machine learning development.

Anyone can sign up as a Worker in the Amazon Mechanical Turk marketplace by following the directions.

After submitting your Worker registration request, it can take up to 24 hours for activation; we will send you an email once your registration has been confirmed.

Once your account is activated and approved, you can start completing HITs (Human Intelligence Tasks).

3. Crowdspring

Crowdspring is a community of more than 200,000 talented, creative people from 195 countries. You can get work done on Logo Designing, Business Names, Business Card Designing, Website Designing, Product Designing, Packaging Designing, and much more.

The platform offers transparent, flexible pricing and a 100% money-back guarantee, in case you are not satisfied with the results.

4.Designhill

Designhill is recommended as one of the best crowdsourcing websites. This leading platform allows you to find designers for the creative needs of your business.

They also offer templates that can be used to build movies, wedding invitations, and more. More than 1 million businesses from all over the world trust Designhill for their graphic design requirements.

5.CrowdSource

CrowdSource is a OneSpace company that offers you scalable workforce solutions in the field of copywriting, data tasks, moderation, transcription, marketing, and more.The workers/freelancers can work as per their suitable timings.

6.DesignCrowd

Trusted by more than 100,000+ businesses, DesignCrowd has 4.9 out of 5-star ratings, up from 3,060 customer reviews. 27.8 Million designs have been uploaded to DesignCrowd to date. The platform is known for delivering budget-friendly designs in a very short span of time.

7.MicroWorkers

MicroWorkers is a highly recommended platform for those who want to work and earn or those who have a job to offer.The platform offers some nice features like auto refilling positions, task rating, position visibility delay feature, and more.

8.Openideo

Openideo is a crowdsourcing platform that works to develop collective ideas and accelerate social innovation. The website is a source of ideas for tackling problems

 like food waste, girl education, and much more. Openideo is a company of 10-50 employees and the idea behind the platform is beneficial for the whole world.

F)Trends and developments in the field of crowdsourcing

Crowdsourcing is currently being used by the industry as an effective method to acquire any type of resources such as labor, influence, capital, assets or data. At its core, Crowdsourcing is a process that can be applied to many fields.

The following classifications includes task-based grouping of crowdsourcing initiatives used in industry via a variety of platforms and channels:

Crowdcasting: This contest-like crowdsourcing is when an organization proposes to a crowd a problem or a specific task to be done and the first or the best solutions receives the reward. The challenge is often performed individually by experts in their field. For example, Prize4Life is an organisation that was initially created after his founder got diagnosed with ALS. The organization seeks to accelerate research towards a cure by funding prize-based competition. A neurologist called Dr. Seward Ruthkove was awarded a $1M prize by Prize4Life for his development of an approach to more rapidly assess disease progression.

Crowdcollaboration: This is a problem-solving approach where the crowd shares its knowledge and works collaboratively, whereas the crowdsourcer doesn't get too involved.

Usually, there is no financial reward. There are two subtypes:

1.Crowdstorming:

This is a massive online brainstorming session, in which different ideas are proposed and the crowd can support them with their comments and votes. A great exemple of Crowdstorming would be LEGO with their Cuusoo platform where an idea must garner 10000 votes by the community before it will be reviewed by the LEGO team.

2.Crowdsupport:

This initiative has customers themselves solve the doubt and problems of other customers without the need of the official customer support. A good example of Crowdsupport would be an online support forum that is maintained by a user community.

Crowdcontent: The crowd shares their labor and knowledge to create or find content of various types. It is not a competition, but everyone works individually and assemble the end results.

There are three subtypes.

1.Crowdproduction:

The crowd produces content, either collaboratively such as Wikipedia or individually when translating short pieces of text.

2.Crowdsearching:

The crowd is tasked with searching for content on the internet for specific purposes.

3.Crowdanalysing:

This approach is similar crowdsearching, but, instead of the internet, the crowd analyses multimedia documents such as images or videos.

Crowdfunding: In this initiative, an individual or an organization may obtain financial resources from the crowd to carry out any kind of project such as launching a start-up. The will to participate usually comes from a reward system usually in the form of money, merchandise, shares or products such as Kickstarter. There are other forms of crowdsourcing where the crowd donates money to a charity project expecting no reward in return. A great example of that would be GoFundMe.

Crowdopinion: The goal of this approach is to get topic or product feedback from the users through votes, comments, or even sales of shares. The crowdsourcers obtain information about their potential market acceptance. Some companies are using Crowdopinion to collect feedback on upcoming products before releasing them officially.

iii.Main Findings of Survey:

Overview of the technology

crowdsourcing, a framework that brings together a large and decentralized group of people for gathering data, solving a problem, or addressing a challenge. It typically occurs via digital platforms—including smartphone apps, social media, commercial software, and connected devices that are part of the Internet of Things(IoT)—that enable interaction and data collection.

In many cases, participants are volunteers; in others, they may be paid for their services or receive a prize. The concept of crowdsourcing is based on the idea that a diverse group of participants can often achieve better results, more efficiently, than a smaller and more homogenous pool of contributors.

Applications of crowdsourcing technology in various industries

Application of Crowdsourcing in Education:

Bow and colleagues reported using crowdsourcing with their pre-clinical medicine students at Johns Hopkins University to create flashcards to improve studying. The professors had questions and respective answers after lectures available on GoogleDrive, which was shared with the class. Students were able to add to questions, add new questions and add to answers. The questions were changed to flashcards using Java, to assist students as study aids. The students' grades improved in comparison with students from the previous year . Another study stated that crowdsourcing could help educators grade students' assignments more fairly, but did not elaborate.

Application of Crowdsourcing in Genetics:

In genetics, crowdsourcing has been used for challenges in genetic research, for matching genes to mutations, to identify novel hypotheses through crowdsourced data, and it was proposed as a solution for incidental findings in genomics studies.
Sage and Dream are two organisations that heavily use crowdsourcing in genetics research. Plenge et al. report on one of their challenges, which was to develop genetic predictors of a response to immunosuppressive therapy in rheumatoid arthritis, using genome-wide association study (GWAS) data. The challenge was team-based, collaborative and open to both public and private contributors.

The team that produced the best predictive model would win the challenge . Ewing and colleagues reported on another Dream challenge, which aimed to identify somatic mutations in cancer genomes. The data for this challenge was distributed via GoogleCloud, and the challenge employed a Leaderboard for a competitive aspect. There were 248 submissions by 21 teams in 157 days .

Application of Crowdsourcing in Business:

Crowdsourcing is the collection of information, opinions, or work from a group of people, usually sourced via the Internet. It work allows companies to save time and money while tapping into people with different skills or thoughts from all over the world.

Case Studies and examples of successful crowdsourcing projects

Case Study 1. AI Training

The annotations need to be as detailed as possible so that eventually the algorithm learns not only to recognise objects without human super-vision but can also predict how vehicles or people will behave in traffic. The reliability of the predictive machine-learning models is directly de-pendent on the precision of the training data and the production of this data can only partly be automated. A full semantic segmentation of an image can take a human up to two hours to complete, so for the auto-motive companies who need this data in bulk, fast and with high preci-sion, this work can quickly get very expensive, especially if done in-house.

Case Study 2. Domino's Pizza:

This feedback was incredibly important for Domino's survival as business, as it provided an opportunity to reconnect with its customer base and show that the brand really was listening to its customers. When the feedback was negative, Domino's took the criticism seriously enough to completely redesign its product from the crust up. At this point, Domino's launched its "Pizza Turnaround" campaign, which focused on being open with consumers and encouraging them to try the newly designed Domino's pizza. The campaign resulted in increasing revenues by 14.3% in the first quarter of 2010.

Case Study 3.Ben & Jerry's:

Ben & Jerry's developed the global "Do the World a Flavour" campaign that used crowdsourcing as a way to both promote the organization's values and generate ideas for new ice cream flavours and product designs. Ben & Jerry's ran a contest across seventeen countries that challenged consumers to go to the brand's website and invent their own variety of ice cream. Winners would have their ice cream made into an official Ben & Jerry's flavour and receive a trip to the Dominican Republic to seefirst-hand where the Fair-Trade ingredients used in Ben & Jerry's ice cream is grown.Ben & Jerry's used crowdsourcing to harness the passion of its fans in order to promote the brand in a positive way, generating deeper interaction with consumers along with a slew of new ice cream flavours. With 10,000 new flavour suggestions in the US alone (including iconic hits like "Cherry Garcia" and "Chunky Monkey"), Ben & Jerry's "Do the World a Flavour" campaign was a resounding success.

IV.Future Scope of the Work

Crowdsourcing Will Become an Essential Component of the Future of Work

In a recent Gallup study of U.S. workers published by the New York times,34 percent of respondents held multiple jobs or had income from one or more self-employment arrangements. What used to be considered an "alternative" employment is rapidly becoming a norm. We're witnessing the dawn of the future of work in which open talent strategies and horizontal cross-functional teams will be replacing traditional vertical hierarchies and siloed organizational models.

Crowdsourcing will become an essential component of this structure. Organizations will be using their own employees to perform the "core" activities. But for the tasks they lack internal resources or expertise for, crowds of independent on-demand contributors will be assembled. Many organizations will start nurturing their own crowds which will be repeatedly used for similar projects and tasks. The future competition will become competition for the quality of the crowds each organization can rapidly assemble to perform an urgent job.

Crowdsourcing Will Finally Become a Mainstream Open Innovation Tool

In recent years, crowdsourcing has become a popular topic in business publications and social media. Yet, its acceptance as a practical problem-solving tool has been slow. One of the major factors slowing down the acceptance of crowdsourcing is widespread, often completely paralyzing, uncertainty over which technical or business problem can (or can't) be solved by this approach. In addition, the expansive use of the term "crowdsourcing" has blurred the borders between it and other problem-solving techniques, such as brainstorming. As a result, crowdsourcing is often used in the wrong way, and when the outcome proves disappointing, it is crowdsourcing itself that gets the blame for being "ineffective."

I predict that in 10 years, academics, business writers, and crowdsourcing practitioners will have finally found efficient ways to educate corporate innovation leaders on the very basics of crowdsourcing ("Crowdsourcing101," so to speak): definition, typology, infrastructure, processes, success metrics, and incentives for crowds. Crowdsourcing will become "simple" so that organizations will be capable of practicing it in an intuitive and sustainable way.

Crowdsourcing Will Be Streamlined by AI/ML Algorithms

Crowdsourcing of the future will be assisted by advancements in technology, of which using AI/ML tools will be the most obvious development. First, large datasets will be available on both successful and failed crowdsourcing campaigns. Analyzing the data will help identify types of problems most amenable to solving by applying the wisdom of crowds. Moreover, it'll be possible to design algorithms allowing users to translate their technical or business challenges into specific problem statements with the highest expected levels of success. The same algorithms will tell the users which kind of information they should be ready to provide to the crowd to maximize the odds for the problem to be solved.

Second, algorithms will exist allowing to match a specific problem to a "perfect" crowdsourcing platform. By analyzing a set of problems each platform has dealt with in the past, the reported solution rate, and the size and the composition of the crowd behind the platform, it'll be eventually possible to automatically generate a list of the most promising platforms to tackle any particular problem. Finally, AI/ML tools allowing rapid creation of sufficiently large and diverse crowds ("crowds-on-demand") are expected to be developed, too.

Crowdsourcing Will "Invade" Medicine and Law

Although crowdsourcing has been successfully used in many disciplines and professional areas, there are some "islands of resistance" where the progress in the adoption of crowdsourcing has been especially slow. Two such areas are medicine and law, the professional fields dominated by highly-educated and -trained experts, who are often scornful of the thought that a "bunch of amateurs" can solve a problem that they couldn't.

Some positive signs of change have already been spotted in the form of crowdsourcing platforms providing medical help and legal information. Examples are CrowdMed, a crowdsourcing platform providing patients with the online medical diagnosis, and Casetext, a crowdsourced online database of legal information.

I expect this trend to continue. However, the "invasion" of crowdsourcing into medicine and law will require a deep cultural shift on the part of doctors and lawyers. They will have to understand that like any tool, crowdsourcing is not going to "replace" them. Instead, it will make their work more meaningful by taking away routine and repeatable task

The Marketplace of Crowdsourcing Platforms Will Be Consolidated

Complicating the efforts of many organizations to run effective crowdsourcing campaigns is a huge number of different crowdsourcing platforms available in the marketplace, with some experts putting this number at 1,000 worldwide. Obviously, navigating such an ocean of different options is challenging, to say the very least, especially for the organizations new to crowdsourcing. Mistakes are quite often in matching problems organizations want to crowdsource to platforms best suited to deal with each specific problem.

And yet, there has been almost no M&A activity in this space. Fortunately, we're seeing signs of improvements in this area, too. Last December, HeroX signed a strategic partnership agreement with Ideanco to launch two challenges focused on climate change and food security. In February, the crowdsourcing platform InnoCentive signed a major paternshipwith the UK idea management company Wazoku.

The trend of consolidating available crowdsourcing services, even at the level of "partnerships," looks promising. I expect that in 10 years, a few large crowdsourcing platforms will emerge, each specializing in solving different types of technical and business problems. At the same time, I have no doubts that new entrants to the crowdsourcing space will keep appearing.

New Forms of Assembling Crowds Will Emerge

As any experienced crowdsourcing practitioner would tell you, crowdsourcing is at its best when it's applied to a limited-scope problem or task, usually being handled by a single individual or a small team. But in this simplicity lies one of the crowdsourcing's major limitations: its inability to tackle problems or tasks requiring larger groups of workers, especially if the task on hand cannot be completely defined in advance.

A few years ago, a group of researchers at Stanford proposed a concept of a "flash organization" an approach and software to structure crowds like organizations, which allows them to achieve complex and open-ended goals. As far as I know, there are no published examples of organizations using the concept of "flash organizations" to run real-life crowdsourcing projects. I have no doubt that such examples will appear within the next 10 years. No do I have any doubts that new ways of making crowds more agile and effective will emerge.

Crowdsourcing is here to stay. I'd like to finish this piece with another quote "The best way to predict the future is to create it." By perfecting the way crowdsourcing is being used by organizations, HeroX is helping to shape the future of this powerful open innovation tool.

V. CONCLUSION

Our research shows that crowdsourcing has been credited with helping to create amazing acts of journalism. It has transformed newsgathering by opening up unprecedented opportunities for attracting sources with new voices and information, allowed news organizations to unlock stories that otherwise might not have surfaced, and created opportunities for them to experiment with the possibilities of engagement just for the fun of it.

In short, it has done just what the pundits predicted a decade ago: helped turn journalism into more of a conversation than a one-way megaphone.

Crowdsourcing is also credited with shaping journalism into more of an iterative process: as data or stories come in from contributors, reporters see new possibilities for their journalism—and news organizations see opportunities to incrementally publish those contributions in ways that tease out more.

Moreover, once communities of sources are built, they can be retained forever—if news organizations take care to maintain them with updates and ongoing conversation.

But crowdsourcing can be high-touch and high-energy, and not all projects work the first time.

For all its potential, crowdsourcing's promise is widespread and systemic at just a few big news organizations—ProPublica, WNYC, and *The Guardian*, for example. At other mainstream news organizations, like CNN Digital and *The New York Times*, only a handful of reporters and editors—and not the institutions themselves—are the standard bearers.

To be sure, crowdsourcing businesses are flourishing outside of journalism. But within the news industry, wider systemic adoption may await more than enthusiasm from experienced practitioners and accolades from sources who welcome contact.

We would like to see more research and evidence exploring whether crowdsourcing can foster increased support for journalism. That support might take the form of audience engagement, such as attention, loyalty, time spent on a site, repeat visits, or contributing personal stories. Or it might involve financial support from members or donors, from advertisers who want to be associated with the practice, or from funders who want to support it.

Also to be explored is whether crowdsourced stories have more real-world impact, such as prompting legislative change, than other types of journalism do.Until this data is available and a better suite of tools and practices is developed, some news organizations may be wary of joining the ranks of long-time practitioners and investing the time and resources needed to support crowdsourcing projects.

However, newsrooms that do support crowdsourcing are pushing it in new and interesting directions. One hallmark of this more experienced version of crowdsourcing is the idea that better crowdsourcing involves earlier integrations of community contributions, said *The Guardian*'s Pilhofer. "This is where I think crowdsourcing and journalism meet. The results can be powerful.

Having discussed and analyzed the recent marketing phenomenon of crowdsourcing, we believe that its prominence in our society today can be largely attributed to its appeal to the consumer's intrinsic values, in addition to growing environmental trends. Marketers take hold of the mentality that consumers are often affected by group influence, as well as the need of an outlet for creativity. With the surge of crowd product development and crowdmarketing, these contests and marketing schemes definitely work to the advantage of increasing brand loyalty and awareness. From our analysis of relevant consumer behaviours present in crowdsourcing, we do believe that this marketing phenomenon can be long-lived, due to a number of reasons. Firstly, the continuous increase in the usage of digital and social media platforms will always be advantageous to crowdsourcing. Consumers are constantly engaged with their mobile devices that enable greater sharing of information at an unprecedented rate. Secondly, crowdsourcing challenges the traditional methods of giving. By providing small donations, one person can make a difference by having an impact on the aggregate whole. Coupled with recent trends in microfinancing, it is ingrained in today's generation that small actions can lead to profound change. This trend will continue to prove popular for marketers as they can leverage consumers' creativity to market their products. It's a win-win situation for marketers and consumers alike.

VI. REFERENCES

[1] F. T. Piller and D. Walcher, "Toolkits for Idea Competitions: A Novel Method to Integrate Users in New Product Development", R&D Management, 2006, 36(3), pp.307-318.

[2] J. Howe, Crowdsourcing: A definition. Crowdsourcing: Why the Power of the Crowd is Driving the Future of Business 拢 Weblog, 2 June at http://crowdsourcing.typepad.com/cs/2006/06 /crowdsourcing_a.html accessed 11 March 2010.

[3] S. Ogawa and T. F. Piller, "Reducing the Risks of New Product Development", MIT Sloan Management Review, 2006, 47(2), pp.65-71.

[4] Coar, K., The Open Source Definition. 2006, http://opensource.org/docs/osd, accessed 6 April 2008.

[5] A. Bonaccorsi and C. Rossi, "Altruistic Individuals, Selfish Firms? The Structure of Motivation in Open Source Software", First Monday, 2004, 9(1), pp.1-5.

[6] A. Hars and S. S. Ou, "Working For Free? Motivations for Participating in Open Source Projects", International Journal of Electronic Commerce, 2002, 6(3), pp.25-39.

[7] T. L. Friedman, The World Is Flat, 3rd ed., Picador USA, 2007.

[8] F. Liu, "Analysis of WitKey Business Model", Beijing: Graduate University of Chinese Academy of Science, 2006.5.

[9] H. W. Chesbrough, Open Innovation: The New Imperative for Creating and Profiting from Technology, Cambridge: Harvard Business School Press, 2003.