

USING CROWDSOURCING FOR PROJECT MANAGEMENT

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Abstrak

Crowdsourcing is coined first by Jeff Howe and become more popular in recent years. It is concept of outsourcing in the crowd. Crowdsourcing can be useful to project managers when they need to perform tasks with low budget, massive participants, multi-disciplinary, expert or non-experts. Using 10 rules from Howe will help a project manager manage the crowd and achieve their project objective. By addressing some questions such as why should a project manager use crowdsourcing? What the benefits and risks of crowdsourcing. This articles explain the contribution of crowdsourcing in project and change management.

Keywords : Crowdsourcing, benefits, risks, project management

INTRODUCTION

Crowdsourcing is one of method that can be used to build a comprehensive projects. It is non-boundaries resources especially when project teams need to be conduct based on multi-disciplinary, experts or non-experts (Brabham, 2008). Instead of old-fashion notion, crowdsourcing fits the advanced criteria design today: distributed, plural, collaborative (Mau and Leonard, 2004). The idea of crowdsourcing coined by Jeff Howe (2006) has attracted remarkable attention from academics and experts and it has become popular in the recent years. Crowdsourcing is a distributed problem-solving model (Brabham, 2008, Hossain, 2012, Zhang and Zhang, 2011). The problems are broadcasted online through open calls, people (crowd) are invited to participate in solving the problems or tender based on project manager requirements whether they have to improve or develop new solution, innovative technology, or design a new information. The result will be owned by the one who offer the task (Hossain, 2012, Zhang and Zhang, 2011). This article will explain about crowdsourcing using in project management, how crowdsourcing contributes and what is the benefits and risks that project manager should know before using crowdsourcing as problem solving.

METHODOLOGY

In this research, researcher focus on central research question: (1) As the project manager, do you manage the unknown individual or group who has agreed to perform a project task for you as a variant form of outsourcing or as part of your (virtual) project team member(s)? Why? (2) As the project manager, what benefits and risks are important to consider before you decide to use crowdsourcing? Explain the key benefits and risks in the project and change management context. (3) How to sustain their morality and responsibility as a team work? In order to answer those questions, I used systematic accumulates of relevant literature and three methods which recommended by Webster and Watson (2002) to conclude material for review, (1) The major contributions are likely to be in the leading journals. (2). *Go backward* by reviewing the citations for the articles identified in step 1 to determine prior articles you should consider. (3) *Go forward* to identify articles citing the key articles identified in the previous steps.

The articles related to this research were collected from 5 major academic databases such as Scopus, IEEE, Springer, Web of Science and AIS. The method based on Webster and Watson (2002) recommendation. First, using “crowdsourcing” as the relevant primary keyword and (“benefit” and “risks”) as the secondary keyword. I used additional secondary

keyword such as “case study” and “project management”. For the year, I limited the publication year from 2004 to 2014 and choose Journal Article and Conference Publications as the content type. Second, I took 10 highly cited articles from each databases. Then, reviewing those articles from the abstract and selected 12 articles for further analysis which is related to research question. Two case studies will be discuss in this articles.

articles and conference papers across five major academic databases.

In summary, Figure 1 presents a bar graph for an overall articles available for “Crowdsourcing” over eight years from 2007 to 2014. The bar graphs shows a number of articles published over five major academic databases. It can be seen that the highest published articles is Springer with 405 articles, followed by AIS (319), Scopus (163), Web of Science (23) and the last is IEEE (15) articles.

LITERATURE REVIEW

From Methodology above by using secondary keyword (“case study”), I identified 925 journal

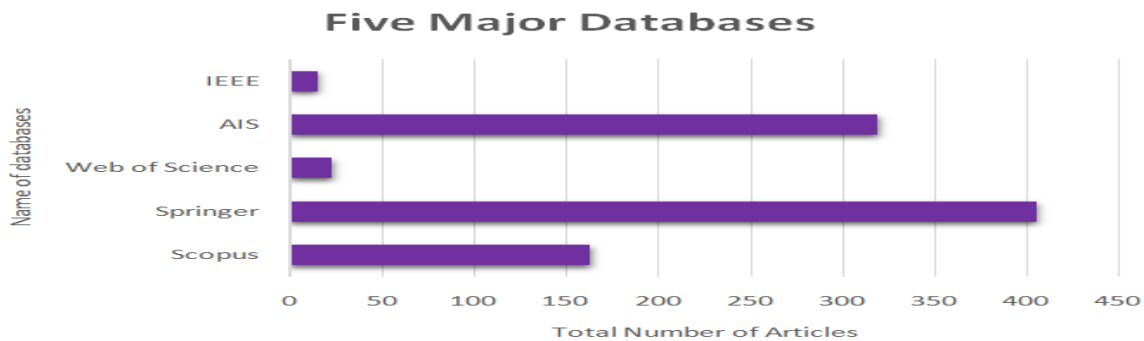


Figure 1: Total articles published by five major databases

On contrary, Figure 2 shows trends of publishing articles for crowdsourcing between 2007 and 2014. Overall, the line graph shows that the number of research interest in Crowdsourcing are dramatically increase from

2007 to 2013. However, in the last period there is a slightly decrease in number of publishing. Springer leads the total number of articles following by AIS and Scopus.

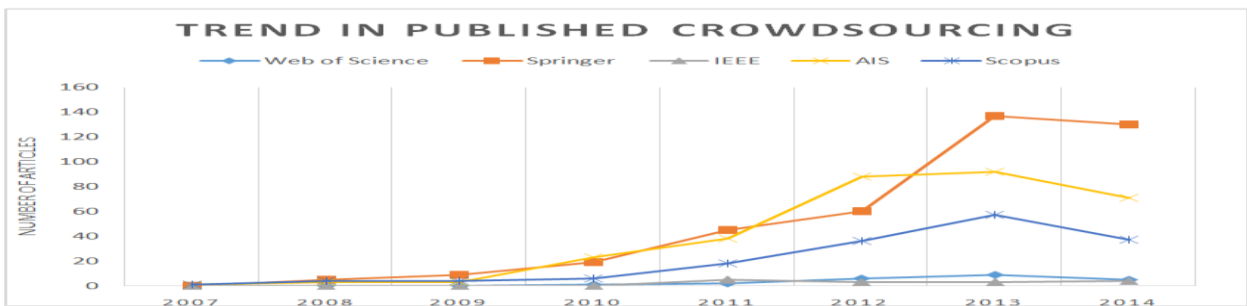


Figure 2: Yearly trend in published Crowdsourcing studies: 2007-2014

Table 1. Summary of Case Studies

Keyword	(Schenk and Guittard, 2009)	(Poetz and Schreier, 2012)	(Kajino et al., 2014)	(Selzer and Mahmoudi, 2013)	(Leimeister et al., 2009)	(Brabham, 2008)	(Zhao and Zhu, 2012)	(Brabham, 2009)	Zhang and Zhang (2011)
Crowdsourcing creativity task	X								
Crowdsourcing complex task	X								
Crowdsourcing routine task	X								
Outsourcing	X								
Open innovation	X			X	X				
User innovation	X								
Open source	X								
Leaking worker commitment									
Non-expert		X	X					X	
Privacy			X						
Poor task design			X						
Citizen/public participation				X	X			X	X
Planning practice				X					
Planning teoty				X					
Application / technique				X					
Motivation incentives					X				X
Threadless		X				X			X
istockphoto		X				X			X
innocentive						X			X
Crowd wisdom						X			
Submit, validate, reward							X		
Quality control			X				X		
Cost saving	X		X						
Efficient									X

Finally, Table 1 lists the key crowdsourcing key point discussed in the literature on case studies of Crowdsourcing in project and change management.

Crowdsourcing

What is crowdsourcing? The term of crowdsourcing is compound of word crowd and outsourcing. Therefore its means outsourcing to the crowd (Schenk and Guittard, 2009). However, crowdsourcing are different with outsourcing (Zhang and Zhang, 2011).The definition of crowdsourcing first coined by Howe (2006) :

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

Although the word crowdsourcing coined by Howe, the event of crowdsourcing concept were exist long before the advent of the Internet. For example, in 1715 there was a contest held in

Great Britain called “Longitude prize” to find navigation solution. People at that time, knew how to calculate the latitude but did not know how to calculate the longitude. This solution was given by unknown people to calculate longitude in navigation. The Oxford dictionary, in 18th century, was crowdsourced by volunteers which was providing definition word in paper slips (Hossain, 2012).

The process of crowdsourcing is a company or organization publish a problem or project via online, public are invited to offer more powerful solutions to the problems or ideas, the winning are awarded with some prize can be money or goods while company have the full right to mass produces the idea or used it for own organization (Brabham, 2008, Dombowsky, 2014). For example, Netflix choose to crowdsourced the job by broadcasting it to crowd, rather than hire professional scientists or contract developer to create an algorithm to foster develop its movie recommendation system (Afuah and Tucci, 2012).

Crowdsourcing vs Outsourcing

Zhang and Zhang (2011) compared the similarities and differences between crowdsourcing and outsourcing.

The similarities: First, break the frontier of organization. They make possibility extends to contractor or public to involve in organization and breakthrough the boundary of organizations. Second, crowdsourcing and outsourcing are outcome of communication technology improvement, especially the Internet. No boundaries, space and time for labors all over the world with high quality resources can be accepted and used conveniently. Price difference is one of the major influential forces for the two business models.

The differences from both crowdsourcing and outsourcing: First, they have different

philosophy and orientation. Outsourcing shows pure employment relationship, while crowdsourcing core is support value together with the users. Second, they have different in contracting. Outsourcing is contracting the job to the permanent professional individuals or organizations base on their social specialization. However, the task in crowdsourcing is release to unknown public people, mostly are non-experts. It highlights the innovative potential conveyed by variation and diversity.

Crowdsourcing is not directed to other companies but to the crowd as seen in figure 1.

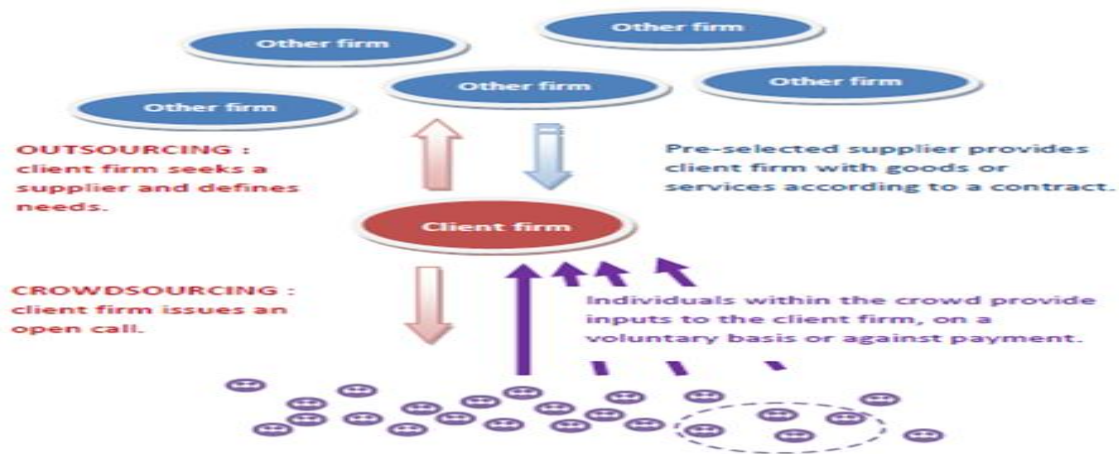


Figure 3: Crowdsourcing vs Outsourcing (Schenk and Guittard, 2009)

The scope using of crowdsourcing has been significant increase in the recent years as can be seen in Figure 2.

Case	Purpose	Launch	Remuneration
OpenStreetMap	Geographic content	University College London, 2004	None
ReCaptcha	Digitize archives	Carnegie Mellon University, 2008	None
Mechanical Turk (MTurk)	Content analysis and artificial intelligence	Amazon, 2005	Micro-paiements (< 1\$)
Humangrid	Data analysis	Start-up, 2005	Remunerated (approx. €10/H)
Designenlassen.de	Graphical design	Start-up, 2007	Remunerated (€150-300)
Wilogo	Graphical design	Start-up, 2006	Remunerated (approx. €300)
Atizo	Innovative concepts	Start-up, 2007	Remunerated (> CHF2000)
InnoCentive	Problem solving and innovation projects	Eli Lilly, 2001	Remunerated (\$1 000-1 000 000)

Figure 4: List of crowdsourcing case (Schenk and Guittard, 2009)

Project management

According to Gido and Clement (2012) in their book, project is an effort to complete a specific goal through a unique set of interconnected tasks and the effective use of resources. They also explained that in order to be successful in project management, project objective should be constrained by 6 factors which are scope, quality, schedule, budget, resources, risks, and customer satisfaction.

The project scope is all the task must be completed and satisfy the costumers requirements or agreement criteria and achieve the project goal.

Quality of output should be outlined from the beginning of the project. The project scope have to follow the requirement and finish in the quality of manner.

The schedule of project must be clear for each task when the activity will start and finish.

The budget should be estimated base on cost and the amount of budget will be pay by the sponsor or customer when the project meet the acceptance. The budget includes the salaries, materials and supplies, facilities, equipment etc.

Various resources include people, equipment, facilities, people are need to run the project task and complete the achievement.

Risk should be anticipated since it can affect finishing the project objective.

Customer satisfaction is important where a project manager have to make sure the project objective meet customer satisfaction.

DISCUSSION

This section will discuss the contribution of crowdsourcing in project management, the advantages and disadvantages and the case study of crowdsourcing.

Why crowdsourcing?

As a project manager, using crowdsourcing causes many questions. Why a project manager utilize crowdsourcing rather than professional firms? How attractive user through crowdsourcing generate a new product compared with new product ideas produced by a firm' professional (Poetz and Schreier, 2012).

How about their skills? How reliable they on finishing product based on schedule? What about their quality of output? (Schenk and Guittard, 2009).

Afuah and Tucci (2012) argued that under certain situations, crowdsourcing may be a better instrument than internal sourcing or designated contracting for solving problem. They explained that high possibility that crowdsourcing will be used by a focal agent (individual, group or company) when (1) the problem is simple, easy to define and publish to the crowd, (2) the knowledge needed to tackle the problem falls outside the focal agent's knowledge zone. (3) the crowd is a large community and some members are knowledgeable and motivated to choose and solve the problem, (4) The focal agent's easily to asses and integrate the final solution to the value chain, (5) The cost of information technologies are low and universal that contains the focal agent and the crowd.

Poetz and Schreier (2012) found this area of research has shown strong arguments that users (crowd) may also own sufficient capability to arise with commercially charming new product ideas. Although it is hard to find studies that endeavor to make a direct comparison between users and a firm's professionals. Nevertheless, some studies conducted by (Ogawa and Piller, 2006) found that user concepts produced in the course of a crowdsourcing practice might also possessed commercial capability. They reported, some product in Japanese manufacture developed by using basis ideas offered by users. Therefore, users able to produce a new product idea that may possibly compete with the product ideas made by company professional (Poetz and Schreier, 2012).

As Poetz and Schreier mention before that users (crowd) may able to produce better ideas or more skilled. However, there is still a gap between those who have computers, computer skills and Internet access and who do not (Brabham, 2009). Nonetheless, for some cases or problems, only users who have the suitable skills are likely to be interested to solve the problems. A project manager can selected user by seen their profile such as references, skill-set, certification level and salary expectations (Zhao and Zhu, 2012, Hoßfeld et al., 2011). Meanwhile participation get more chances to be noticed,

improve their creative skills, boost a sense of community.

In order to complete within the schedule, a project manager will need to achieve project objective in diverse ways. Since everyone is busy (Howe, 2009), the useful crowd involvement will be the outcome of a collection of techniques and opportunities in a scheduling process, not a single form or moment in time. Crowdsourcing make process of planning and decision making more wide-ranging and knowledgeable in the end and not make it more disorganized (Seltzer and Mahmoudi, 2012). The better planning and distribution can make crowdsourcing more valuable. By following project management process that involves planning the task and then running the plan (Gibo and Clement, 2012).

How to manage people in crowd?

A project manager needs to understand how to create a useful crowdsourcing actions. Howe (2009) describe "ten rules" for crowdsourcing action:

1. Pick up the right model. A project management must know which crowdsourcing will be used. Whether collective intelligence/crowd wisdom (...), crowd creation, crowd voting, crowdfunding or combination among other. This is for perform their project objective.
2. Pick up the right crowd. Stewarding, supporting, sustaining the crowd is important. Crowdsourcing needs iterative contribution to obtain a judicious solution, not a one-shot activity.
3. Present the right incentives. Provide budget for better payment.
4. Keep employing people. Do not think a crowd as cheap worker. You still need them to accomplish tasks the way the need to be completed. A project manager need to keep the crowd by engaging them in a continuing conversation.
5. A project manager need to act as benevolent dictator to keep the project on schedule.
6. Keep the things simple. Since the crowd is open call a project need to be straightforward. Everything should be clear.

The easy way is to split the jobs into bite-size chunks.

7. Be prepared for rubbish. If you invite the crowd, be ready to receive fluff things because mistakes from individual members in a group will be irrelevant in the scope and scale (Surowiecki, 2009)
8. A project management should encourage their team in the crowd because only 1 percent from 10 act is more useful.
9. The community's is always right. A project management should try to guide and act like decider to the community. Using persuasive and moral not absolute power.
10. Give the crowd something. A project manager does not ask them what they can do, but ask them what you can do. They will work and participate well if a project manager gives them something they want.

If a project manager can apply the rules, it will help to manage and deal with the crowd. When deal with the crowd, project manager should pay attention with project life cycle effort which are: initiating phase, planning phase, performing phase and closing the project (Gibo and Clement, 2012).

The risk of crowdsourcing

Privacy

Kajino et al. (2014) argue that it is necessary to deliver the privacy issue. They said in project management, when using paid crowdsourcing services, protecting the privacy of users (or keeping them anonymous) may decrease the quality or products because they will not motivate to perform high-quality results, but it is different when working with non-paid crowdsourcing services. The definition of privacy workers is strongly related to the definition of employed privacy in query auditing (Nabar et al., 2008).

Intellectual property

From this perspective, using the intelligence of a crowd possibility can provide a massive, low-cost, acquiring new ideas, problem solving, or new products. However, intellectual property

can cause risk when companies or project manager do not have protected by intellectual property law. The level of risk related with utilizing the user work product or ideas increase based on the source of work product (Lieberstein and Tucker, 2014). It is important to protect the project objective with law and deal with the users.

Quality control

In the recent years, crowdsourcing has achieved huge success. However, there is no guaranteed that it achieve high quality results. It may varies in some cases. The problem with quality related with the task design is poor or the workers may not be skilled (Kajino et al., 2014). Project manager also may have difficulties in manage and control the participant as they do not have an employer-employee relationship. On the other hand, participant interest may be harmed for not endorsed any written contract or agreements with the organization ((Zhang and Zhang, 2011). This issues can affected quality of project objective.

Benefit of crowdsourcing for projectmanagement

Brabham (2009) found that public participation in crowd involve the treasuring of non-skill knowledge caused the creative problem solving progress of planning which useful to achieve project objective. In project cost perspective, using crowdsourcing services for conducting a project are cheaper, more flexible, faster, more sufficient skilled and if possible all of these things even the top minds in the fields (Holtgrewe, 2014, Brabham, 2008). Using crowdsourcing in gathering data for project management from different location is more efficient (Crump et al., 2013, Vuculescu and Bergenholtz, 2013, Afuah and Tucci, 2012).

CONCLUSION

Crowdsourcing enable project manager complete their goals. By using right method and handling with the crowd wisely, a project management can gain collective intellect and creative solutions or ideas from the crowd. Giving what the crowd want and pick up the

right model and crowd will help project management organized project run as planning. Although crowdsourcing can be more efficient, a project management must keep the quality of project objective meet the costumer's satisfaction.

REFERENCES

- <Crowdsourcing as a Model for problem solving.pdf>.
- AFUAH, A. & TUCCI, C. L. 2012. Crowdsourcing as a solution to distant search. *Academy of Management Review*, 37, 355-375.
- BRABHAM, D. C. 2008. Crowdsourcing as a model for problem solving an introduction and cases. *Convergence: the international journal of research into new media technologies*, 14, 75-90.
- BRABHAM, D. C. 2009. Crowdsourcing the public participation process for planning projects. *Planning Theory*, 8, 242-262.
- CRUMP, M. J., MCDONNELL, J. V. & GURECKIS, T. M. 2013. Evaluating Amazon's Mechanical Turk as a tool for experimental behavioral research. *PloS one*, 8, e57410.
- HOLTGREWE, U. 2014. New new technologies: The future and the present of work in information and communication technology. *New Technology, Work and Employment*, 29, 9-24.
- HOSSAIN, M. Crowdsourcing: Activities, incentives and users' motivations to participate. Innovation Management and Technology Research (ICIMTR), 2012 International Conference on, 21-22 May 2012 2012. 501-506.
- HOBFELD, T., HIRTH, M. & TRAN-GIA, P. Modeling of crowdsourcing platforms and granularity of work organization in future internet. Proceedings of the 23rd International Teletraffic Congress, 2011. International Teletraffic Congress, 142-149.
- KAJINO, H., ARAI, H. & KASHIMA, H. 2014. Preserving worker privacy in crowdsourcing. *Data Mining and Knowledge Discovery*, 1-22.

- LEIMEISTER, J. M., HUBER, M.,
BRETSCHNEIDER, U. & KRCCMAR,
H. 2009. Leveraging crowdsourcing:
activation-supporting components for
IT-based ideas competition. *Journal of
management information systems*, 26,
197-224.
- MAU, B. & LEONARD, J. 2004. The Institute
Without Boundaries. 2004. *Massive
change*.
- NABAR, S. U., KENTHAPADI, K., MISHRA,
N. & MOTWANI, R. 2008. A survey of
query auditing techniques for data
privacy. *Privacy-Preserving Data
Mining*. Springer.
- OGAWA, S. & PILLER, F. T. 2006. Reducing
the risks of new product development.
MIT Sloan management review, 47, 65.
- POETZ, M. K. & SCHREIER, M. 2012. The
value of crowdsourcing: Can users
really compete with professionals in
generating new product ideas? *Journal
of Product Innovation Management*, 29,
245-256.
- SCHENK, E. & GUITTARD, C.
Crowdsourcing: What can be
Outsourced to the Crowd, and Why.
Workshop on Open Source Innovation,
Strasbourg, France, 2009.
- SELTZER, E. & MAHMOUDI, D. 2012.
Citizen participation, open innovation,
and crowdsourcing: Challenges and
opportunities for planning. *Journal of
Planning Literature*,
0885412212469112.
- VUCULESCU, O. & BERGENHOLTZ, C.
How to solve problems with crowds: A
computer-based simulation model.
Academy of Management Proceedings,
2013. Academy of Management, 16479.
- ZHANG, L. & ZHANG, H. Research of
crowdsourcing model based on case
study. Service Systems and Service
Management (ICSSSM), 2011 8th
International Conference on, 25-27 June
2011 2011. 1-5.
- ZHAO, Y. & ZHU, Q. 2012. Evaluation on
crowdsourcing research: Current status
and future direction. *Information
Systems Frontiers*, 1-18.