Crowdsourcing for Ideas: A Review of Motivational Factors and Challenges in Open Innovation Communities

Ahmad, R.*, Virgiyanti, W., Mahmod, M., Habbal, A. and Chit, S. C.

School of Computing, Universiti Utara Malaysia, 06010, Sintok, Malaysia

ABSTRACT

Crowdsourcing introduces new perspectives in innovation, allowing for new products and services to shift away from the traditional manufacture-centric model to a more user-centric one. In order for businesses to reap the benefits of open innovation, it is necessary to understand the factors that motivate ideators to contribute valuable ideas. Equally, there is an urgency to identify the challenges faced by ideators in crowdsourcing for open innovation to retain the participants of crowdsourcing communities. This paper presents a structured review to address the aforementioned issues. Our findings reveal that the intrinsic factors that drive participation in open innovation are related to the learning experience that results from sharing ideas. Extrinsic factors like social motivation are frequently mentioned in different studies. This study also highlights the need for organisations to develop strategies for interacting with their contributors in order to sustain their participation and idea contribution. In conclusion, this paper can serve as a guideline for practitioners to improve crowdsourcing platforms with the inclusion of important motivational features. It can also serve as reference for organisations for formulating policies to regulate idea contribution.

Keywords: Crowdsourcing, open innovation, motivational factors, crowdsourcing challenges

INTRODUCTION

Traditional businesses and institutions have relied primarily on their internal R&D department to innovate and sustain innovations. However, the exponential and rapid development of information and communication technology, as well as the emergence of Web 2.0 have pushed businesses to seek innovative ways to design and develop their products and services (Geiger, Seedorf, Schulze, Nickerson, & Schader, 2011). Today,

businesses leverage on the power of the Internet as well as the skills and knowledge of a large number of voluntary external contributors to perform tasks traditionally carried out internally. This concept, aptly dubbed 'crowdsourcing', has changed how businesses are run.

The term 'crowdsourcing' was first coined in 1998 and can be defined as the act of outsourcing a task, previously performed internally in an organisation, to individuals or a pool of people through an open call commonly via the Internet (Schenk & Guittard, 2011). The tasks in crowdsourcing could be tasks that require basic computing skills such as data entry or more complex tasks such as product design.

Crowdsourcing also introduces new perspectives into innovation where products and services are a shift away from the traditional manufacture-centric model to a more user-centric one, better satisfying user requirements (Schweisfurth, Raasch, & Herstatt, 2011). These ongoing crowdsourcing communities attract the attention of companies because consumers are presumably aware of their own problems with existing products, and they are intrinsically motivated to freely share their ideas about the expected products features (Hippel, 2005; Füller, 2010; Zhao & Zhu, 2014). This can only be done under the right conditions and platforms from which ideators generate valuable ideas for an organisation to implement (Kavadias & Sommer 2009; Magnusson, 2009; Poetz & Schreier, 2012).

User innovation community, an open business model, is gaining attention. It is a community in which ideators participate with an organisation` in research and development efforts. The possible benefits from these ongoing communities include direct contact with customers as well as consumer input into the innovation process that is better, faster and cheaper than traditional market research (Boutin, 2006; Howe, 2008).

Ideators spend time and effort submitting and responding to ideas, wanting to engage with product development. Therefore, communicating with them requires a concerted effort from an organisation as the organisation has to understand the ideas contributed, identify the best ones and develop communication strategies that align with the new role customers play within the organisation's innovation process. The purpose of this article is to identify the main factors that encourage ideators to contribute the types of ideas, an organisation desires to implement. Furthermore, we discuss the key challenges faced by ideators in these crowdsourcing communities.

METHOD

This paper presents a structured review of recently published literature relating to the topic of crowdsourcing for ideas in open innovation context. Papers were retrieved from Scopus and Google Scholar using keywords like 'Crowdsourcing for Ideas', 'Open Innovation', and 'Motivation for Crowdsourcing and Challenges for Crowdsourcing'. These keywords shown in the left column of Table 1, were then searched using Boolean search queries. Papers with more than 10 citations (higher impact) were included for analysis.

Table 1

Keywords used to retrieve papers related to the topic of crowdsourcing for ideas in open innovation

Search Term	No. of Papers	Publication Type (No. per type)
Open innovation	10	Conference papers (0)
		Journal articles (9)
		Book chapters (1)
Crowdsourcing for ideas	6	Conference papers (1)
		Journal articles (5)
		Book chapters (0)
Challenges for open innovation	6	Conference papers (2)
		Journal articles (4)
		Book chapters (0)
Motivation for crowdsourcing	8	Conference papers (2)
		Journal articles (6)
		Book chapters (0)

In total, 30 papers were found using the defined Boolean search queries. The papers included for analysis were dated from 2008 to 2016. These papers were classified into major categories: motivational factors and challenges in crowdsourcing in open innovation.

The following section discusses the important motivational factors identified from the papers and key challenges faced in current open innovation.

RESULTS AND DISCUSSIONS

Motivational Factors Influencing Participation in Open Innovation Communities

The motivational factors were analysed and classified using the Kaufmann and Veit (2011) motivational model. Kaufmann and Veit (2011) refined intrinsic motivation into personal intrinsic (enjoyment based) and community based. Our findings demonstrated that while the general framework of the Kaufmann and Veit (2011) motivational model could be applied, the factors that led to intrinsic enjoyment were different from the factors identified for crowdsourcing for tasks. In task-based crowdsourcing application, the factors that led to enjoyment (an intrinsic factor) were mostly related to the task characteristics and design such as task autonomy and task identity. In contrast, in crowdsourcing for ideas, the factors that led to enjoyment were based on learning experience (Ståhlbröst & Bergvall-Kåreborn, 2011), curiosity (Ståhlbröst & Bergvall-Kåreborn, 2011) and intellectual stimulation (Lakhani & Wolf, 2003) resulting from participating in open innovation. For example, studies have demonstrated how participants loved to respond to challenging questions and gathering different viewpoints (Muhdi, Daiber, Friesike & Boutellier, 2011). Another emergent intrinsic enjoyment-based factor was sense of efficiency, which encapsulates aspects like triggering creativity and innovation, self-development and increasing efficiency.

As for the extrinsic factors, similar motivational factors evident in crowdsourcing for tasks were observed (Hossain, 2012). For immediate extrinsic motivation, monetary rewards

and the desire to win something emerged as main factors. Equally, for delayed extrinsic factors, similar factors, such as gaining reputation and signaling expertise were discovered. The third type of extrinsic factor, social motivation, was also cited as one of the motivational factors in open innovation (Schuurman, Baccarne, Marez, & Mechant, 2012). Another factor in this category, the desire to be with similar-minded people, also drove participation in open-innovation communities.

Besides the difference in terms of the intrinsic motivational factors, these motivational factors were also found to differ according to different types of open innovation communities (Simula & Ahola, 2014). Ståhlbröst and Bergvall-Kåreborn (2011) further classified motivation in different open innovation communities, namely: brand community, beta-test community, user content communities, development communities and innovation intermediary communities. The brand community consists of experienced and avid consumers of specific brands like Nike, and they actively participate in product innovation (Füller, Matzler, & Hoppe 2008; Muniz & O'guinn, 2001), while beta-test communities are represented by users who experiment with prototypes and provide feedback before the products are launched. In user-content communities, users collaboratively contribute various types of information as in Google Maps and YouTube. Development communities refer to open-source communities and other developer communities, who develop new IT product or service, such as Linux (Barcellini, Burkhardt, & Détienne, 2008). In innovation-intermediary communities, a neutral third party hosts the community comprising users who are not the companies' customers, and there is no strong relationship between the users and the company (Antikainen, Mäkipää, & Ahonen, 2010a). Table 2 shows the identified motivational factors in each type of innovation community.

Table 2

Classification of motivational factors according to two types of open-innovation communities

Type of Open Innovation Community	Intrinsic		Extrinsic		
	Enjoyment	Passion for Community	Immediate	Signalling Expertise	Social Motivation
Brand Community	Interest innovation (Füller et al., 2008).				
	Learn something new (Ståhlbröst & Bergvall-Kåreborn, 2011)		Win something (Ståhlbröst & Bergvall-Kåreborn, 2011)	Recognition (Füller et al. 2008, Bayus, 2013).	
	Stimulate curiosity (Ståhlbröst & Bergvall-Kåreborn, 2011)				

Table 2 *(continue)*

	Testing innovative products (Ståhlbröst & Bergvall-Kåreborn, 2011)				
Developer Community	Fun and challenging (Antikainen et al., 2010a) Knowledge exchange and learning (Wasko, McLure, & Faraj, 2000) Intellectual simulation (Lakhani & Wolf, 2003)			Reputation building Casalo, Cisneros, Flavián, & Guinaliu, 2009)	
Beta-Test Community	Curiosity (Peltola, 2008)	Altruism (Peltola, 2008) New viewpoint (Antikainen et al., 2010b)	Money or products (Antikainen et al., 2010a)	Being a forerunner (Peltola, 2008) Reputation (Antikainen et al,. 2010a)	Similar people (Antikainen et al., 2010b)
User Content	Enjoyment (Antikainen et al., 2010b)			Status seeking (Lampel & Bhalla, 2007)	
Innovation Intermediary	Learn something new (Ståhlbröst & Bergvall-Kåreborn, 2011, Muhdi et al., 2011) Stimulate curiosity (Ståhlbröst & Bergvall-Kåreborn, 2011) Testing (Ståhlbröst & Bergvall-Kåreborn, 2011) Sense of efficiency (Muhdi et al., 2011)		Win something (Ståhlbröst & Bergvall-Kåreborn, 2011) For a reward. (Antikainen et al., 2010b, Muhdi et al., 2011)	For fame or exposure (Antikainen et al., 2010a) Recognition (Antikainen et al., 2010b)	Social interaction (Antikainen et al., 2010a, Muhdi et al., 2011)

In summary, both intrinsic and extrinsic motivational factors influence participation in diverse open-innovation communities. Most importantly, for creating intrinsic motivation, the crowdsourcing application needs to accommodate tasks or opportunities that can create new knowledge and enhance the sense of efficiency of the participants. Additionally, participants need to be involved in contributing ideas that stimulate their intellectual ability and curiosity. In these open-innovation communities, the participants emphasise on the learning process, experience and the social interaction with like-minded people in addition to monetary rewards.

Challenges in Open-Innovation Communities

The concept of crowdsourcing for ideas, however, imposed several issues that can be categorised in two main challenges: managing the ideas and sustaining the participants of crowdsourcing communities.

In managing the ideas contributed by the communities, the first challenge was to understand the ideas contributed. Most of the organisations implementing crowdsourcing have a difficult time understanding the idea posted due to lack of details about the ideas and lack of understanding among the idea contributors (ideators), other users and the organisation itself (Gangi, Wasko, & Hooker, 2010). The contributors are usually focussed on developing solutions rather than on elaborating on the initial ideas posted by others, and this led to minimal collaboration between them (Majchrzak & Malhotra, 2013). Organisations then faced difficulties in identifying and selecting the best promising ideas due to the large volume of ideas collected and idea duplication. The large volume of ideas overwhelmed the organisations as they needed to evaluate all the ideas contributed, not just the top-ranked ones. Other than managing such an overwhelming quantity of ideas, the quality of the ideas contributed often suffered due to the race to contribute lots of ideas. The race to quickly post the ideas led the contributors to fail to offer good solutions that incorporated various perspectives, risks and needs (Majchrzak & Malhotra, 2013). Apart from the quantity and quality of the ideas contributed, protecting the ideas contributed was also a challenge for the organisation. The organisations faced difficulties in balancing information dissemination to their own contributors against disclosure to their competitors. Protecting ideas contributed is crucial when there are competitors attempting to derive financial benefit from the ideas and creativity mined from crowdsourcing communities (Chanal & Caron-Fasan, 2010).

Sustaining continued contribution from participants of crowdsourcing communities is another issue that needs to be addressed by organisations (Gangi et al., 2010). Apart from managing the ideas contributed, organisations have to develop strategies for interacting with their contributors in order to sustain their participation and idea contribution. This is important as organisations can potentially lose their valuable contributors and their ideas if their contributors feel alienated due to lack of communication and interaction between both parties. Organisations need to protect and nurture the relationship between them and the contributors carefully to effectively ensure sustainable contribution of ideas. On the other hand, less collaboration among the contributors will lead to the failure of ideas to evolve and create solutions for organisations due to diminished willingness among contributors to provide free help when competition increases.

CONCLUSIONS

After analysing and classifying the factors that stimulate crowdsourcing motivation, this study found that factors responsible for intrinsic enjoyment were different from the factors responsible for crowdsourcing for tasks. It was found that in task-based crowdsourcing application, the factors that led to intrinsic enjoyment were mostly associated with the task characteristics and design such as task autonomy and task identity and sense of efficiency, which encapsulates aspects like triggering creativity and innovation, self-development and increasing efficiency. On the contrary, in crowdsourcing for ideas, the factors that led to enjoyment were established from the learning experience, curiosity and intellectual stimulation that resulted from participating in open innovation. In addition, monetary rewards and the desire to win something were the factors that led to immediate extrinsic motivation. However, in crowdsourcing for ideas, other delayed extrinsic motivational factors like gaining reputation and signalling expertise played a significant role. Another extrinsic factor, social motivation, which is the desire to be with like-minded people, was also cited as one of the motivational factors in open-innovation communities.

The motivational factors also differed in proportion to different types of open-innovation communities. This study found that there were different motivational factors in different open-innovation communities, such as brand community, beta-test community, user content communities, development communities and innovation-intermediary communities. It can be summarised that intrinsic and extrinsic motivational factors influence participation in diverse open-innovation communities. Above all, in order to appeal to intrinsic motivation, a crowdsourcing application needs to provide tasks or opportunities that can create new knowledge and enhance the sense of efficiency of the participants.

There are two main challenges in crowdsourcing in open-innovation communities, which are understanding and protecting the contributed ideas and sustaining crowdsourcing participants. Understanding the contributed idea tended to be difficult because of lack of details about the idea and understanding among the parties involved. Protecting contributed ideas was found to be critical when there were competitors attempting to derive financial benefit from the idea and creativity evident in crowdsourcing communities. In addition, it was found that to ensure sustainability of idea contribution, task providers needed to protect and nurture their relationship with the communities.

ACKNOWLEDGMENT

REFERENCES

Antikainen, M., Mäkipää, M., & Ahonen, M. (2010a). Motivating and supporting collaboration in open innovation. *European Journal of Innovation Management, 13*(1), 100–119.

Antikainen, M. J., & Vaataja, H. K. (2010b). Rewarding in open innovation communities – How to motivate members. *International Journal of Entrepreneurship and Innovation Management, 11*(4), 440–456.

Barcellini, F., Burkhardt, J-M., & Détienne, F. (2008). Requirements for design participation in open source software communities. *Proceedings of CHI.* Florence, Italy.

Bayus, B. L. (2013). Crowdsourcing new product ideas over time: An analysis of the Dell IdeaStorm community. *Management Science, 59*(1), 226–244.

Boutin P. (2006). Crowdsourcing: Consumers as creators. *Business Week (July 13)*. Retrieved from http://www.businessweek.com/innovate/ content/jul2006/id20060713_755844.html.

Casalo, L. V., Cisneros, J., Flavián, C., & Guinaliu, M. (2009). Determinants of success in open source software networks. *Industrial Management and Data Systems, 109*(4), 532–549.

Chanal, V., & Caron-Fasan, M. L. (2010). The difficulties involved in developing business models open to innovation communities: The case of a crowdsourcing platform. *M@n@gement, 13*(4), 318–340.

Di Gangi, P. M., Wasko, M., & Hooker, R. (2010). Getting customers' ideas to work for you: Learning from Dell how to succeed with online user innovation communities. *MIS Quarterly Executive, 9*(4), 213–228.

Füller, J. (2010). Refining virtual co-creation from a consumer perspective. *California Management Review, 52*(2), 98–122.

Füller, J., Matzler, K., & Hoppe, M. (2008). Brand community members as a source of innovation. *Journal of Product Innovation Management, 25*(6), 608–619.

Geiger, D., Seedorf, S., Schulze, T., Nickerson, R. C., & Schader, M. (2011, August). *Managing the Crowd: Towards a Taxonomy of Crowdsourcing Processes.* In AMCIS.

Hossain, M., (2012). Crowdsourcing: Activities, incentives and users' motivations to participate. *Innovation Management and Technology Research (ICIMTR), 2012 International Conference on* (pp. 501–506). IEEE.

Howe, J. (2008) *Crowdsourcing: Why the power of the crowd is driving the future of business*. New York: Crown Business.

Kaufmann, N., & D. Veit, D. (2011). More than fun and money. Worker motivation in crowdsourcing – A study on mechanical Turk. *Proceedings of the 17th Americas Conference on Information Systems*.

Kavadias, S., & Sommer, S. (2009). The effects of problem structure and team diversity on brainstorming effectiveness. *Management Science, 55*(12), 1899–1913.

Lakhani, K., & Wolf, R. G. (2003). Why hackers do what they do: Understanding motivation and effort in free/open source software projects. *Perspectives on Free and Open Source Software, 1*, 3–22.

Lampel, J., & Bhalla, A. (2007). The role of status seeking in online communities: Giving the gift of experience. *Journal of Computer-Mediated Communication, 12*(2), 434–455.

Magnusson, P. R. (2009). Exploring the contributions of involving ordinary users in ideation of technology-based services. *Journal of Product Innovation Management, 26*(5), 578–593.

Majchrzak, A., & Malhotra, A. (2013). Towards an information systems perspective and research agenda on crowdsourcing for innovation. *The Journal of Strategic Information Systems, 22*(4), 257–268.

Muhdi, L., & Boutellier, R. (2011). Motivational factors affecting participation and contribution of members in two different Swiss innovation communities. *International Journal of Innovation Management, 15*(03), 543–562.

Muniz Jr, A. M., & O'Guinn, T. C. (2001). Brand community. *Journal of Consumer Research, 27*(4), 412–432.

Peltola, I. (2008). *Online co-creation and beta trialling of mobile software and services*. Tampere: Faculty of Business and Technology Management, Tampere University of Technology.

Schenk, E., & Guittard, C. (2011). Towards a characterization of crowdsourcing practices. *Journal of Innovation Economics and Management, (1)*, 93–107.

Schuurman, D., Baccarne, B., De Marez, L., & Mechant, P. (2012). Smart ideas for smart cities: Investigating crowdsourcing for generating and selecting ideas for ICT innovation in a city context. *Journal of Theoretical and Applied Electronic Commerce Research, 7*(3), 49–62.

Schweisfurth, T., Raasch, C., & Herstatt, C. (2011). Free revealing in open innovation: A comparison of different models and their benefits for companies. *International Journal of Product Development, 13*(2), 95–118.

Simula, H., & Ahola, T. (2014). A network perspective on idea and innovation crowdsourcing in industrial firms. *Industrial Marketing Management, 43*(3), 400–408.

Ståhlbröst, A., & Bergvall-Kåreborn, B. (2011). Exploring users' motivation in innovation communities. *International Journal of Entrepreneurship and Innovation Management, 14*(4), 298–314.

Von Hippel, E. (2005). Democratizing innovation: The evolving phenomenon of user innovation. *Journal für Betriebswirtschaft, 55*(1), 63–78.

Wasko, M. M., & Faraj, S. (2000). "It is what one does": why people participate and help others in electronic communities of practice. *The Journal of Strategic Information Systems, 9*(2), 155-173.

Zhao, Y., & Zhu, Q. (2014). Evaluation on crowdsourcing research: Current status and future direction. *Information Systems Frontiers, 16*(3), 417–434.