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CHALLENGES AND LIMITATIONS OF CROWDSOURCING TECHNOLOGY

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INTRODUCTION

Crowdsourcing recently has achieved a prominent stance within the open-innovation and collaborative business ecosystem. It has been widely used by firms for a range of activities in different domains by providing an unlimited access to both internal and external workforce thus substantially enhancing companies' innovation capacities **(Bjelland and Wood, 2008; Simula and Ahola, 2014, Ruiz and Berretta 2021).** Crowdsourcing itself is defined as a business model that involves an open call for problem-solving or idea-generation stemming from an organization or a requester and an online community of participants that engage in a managed process of providing their invaluable input in the form of creative solutions, ideas, designs and suggestions. Brabham defined crowdsourcing as an ''online, distributed, problem-solving and production model that leverages the collective intelligence of online communities to serve specific organizational goals'' **(Brabham, 2013).**

Crowdsourcing as one of the forms of open innovation is perceived as a tool to help fetch ideas and solutions for the purpose of value creation and innovation. An increasing number of companies are now applying a wide-range of crowdsourcing platforms that engage both the internal and external crowds of employees as well as independent contributors in the innovation process. The benefits of this collaborative process are extensive ranging from new idea generation, improved innovation and new product development, reduction in R&D associated costs, market validation, and have been widely covered by the existing literature. However, highlighting limitations and challenges associated with the implementation of crowdsourcing is quite important especially in the context of less experienced companies from developing economies where crowdsourcing phenomena is relatively new. As this business model entails new roles and activities to integrate and support numerous submitted ideas/solutions the companies' own employees may face various challenges while managing this process. New roles are assumed by the external crowds which at least partially fulfill the duties of regular employees without being employed by the companies.

Shedding light on possible limitations and challenging aspects of crowdsourcing may help companies around the world adopt this innovative practice more efficiently. The author therefore has attempted to review recent literature on crowdsourcing to identify the most pertinent challenges in the implementation of crowdsourcing technology. Addressing this aspect is of particular significance because in developing countries crowdsourcing remains yet an unfamiliar terrain for most companies as they have no to very limited experience with the platforms and lack capabilities required to

harness their potential **(Birkinshaw et al., 2011; Blohm et al., 2018; Pollok et al., 2019).**

LITERATURE REVIEW

INTELLECTUAL PROPERTY ISSUES

Numerous studies **(Mao et al., 2015, Thuan et al, 2016, Machado et al, 2016)** point out a range of challenges related to IP and data security issues. The companies face serious risks assigning tasks and making open calls to a crowd community without due consideration of IP issues involved. Acquiring IP rights is a critical legal aspect within a crowdsourcing framework. Organizations or requestors need to decide in advance of a crowdsourcing competition what degree of ownership of a successful design, solution and/or innovation they shall acquire. It is also important to clearly define the attributes of a technical problem that a successful solution must satisfy to be granted a reward. Crowd participants have to have a clear understanding prior to their engagement in a crowdsourcing competition as to the transfer of their intellectual property rights, i.e. who will possess ultimate IP for the resulting solution, design or innovation (***Shestak, V. (2020).***

Other authors had focused on IP related issues of crowdsourcing in mobile app development. Majority of app-developing and peer-to-peer networks grant the actual IP ownership rights of the submitted output to the requester-organizations. They note that only 5% of platforms give freedom of choice of IP ownership rights on whether to conclude an agreement directly with the requesters regarding retaining IP ownership rights, the transfer of ownership, or the granting of licenses to use the submitted content (**Hani Al-bloush(&) and Badariah Solemon 2018).** The risk of losing IP, including IP 'leakage' and data security, are among the most salient risks in the crowdsourcing ecosystem which has worsened in the context of rewards-based crowdsourcing. Crowds is a valuable resource for companies that offer trade-off benefits with participants' contributions granted the firms are able to effectively apply those. **(Franke, Keinz, & Klausberger, 2013).** As crowds are not governed by employment laws the employer's rights of ownership of an employee's work is not therefore stipulated for the crowdsourcing contest. When designing a crowdsourcing contest the companies should seek in advance to obtain permission from the rights owners to use their crowdsourced content. **Jeremy de Beera, Ian P. McCarthyb, Adam Solimana, Emily Treenb,**

Another area of major concern mentioned in the literature is related to the need to protect the organization or the requester legally from the plagiarized or otherwise malicious content. The issue is twofold as the more aggressive legal approach of the firm to manage its IP rights decreases the crowd's resolution to contribute to the idea pool. **(Jeremy de Beera, Ian P. McCarthyb, Adam Solimana, Emily Treen).** However, the less robust legal approach on the side of the company will pose much greater risks for the company itself. Aitamurto et al in the article on limitations of crowdsourcing highlights the importance of finding a balanced approach. The authors

continue to suggest that the value of IP resides in the ability to mitigate risks between participation and legal protection. **(Aitamurto, Leiponen, and Tee (2011).**

ETHICAL ISSUES

Much discussions on ethical aspects of crowdsourcing practices have been generated lately, however these topics do not receive adequate coverage in the scholarly literature. Most criticism is aimed at workers exploitation and undermining of employment laws and regulations. Although crowdsourcing does have obvious advantages in providing participants with much autonomy and opportunities to work from home as well as engaging people with disabilities or those that previously had no access to similar types of jobs thus fostering inclusivity (**Shlagwein et al, 2016).** Other authors have also analyzed legal aspects of crowdsourcing relating to fair labor laws and minimum pay in the US. Felstiner proposes that 'Crowd workers tend to receive extremely low pay for their cognitive piecework' adding that they have no job security nor legal protections and rarely earn benefits for their work. The author then concludes that alongside the above mentioned drawbacks participants in crowdsourcing contests face problems with information asymmetry and deception as well as compromised privacy. **('Working The Crowd from 2011, Alek Felstiner)**

Other works analyzing crowdsourcing practices identified an issue of systemic waste of work. Participants submitting their works are unaware whether or not they will ever be rewarded for their job. Some authors even claim that compensation for this skilled work resembles a lottery with participants engaging in it primarily for reasons of being unemployed and having some type of enjoyment in the process itself. **(Florian Shmidt 2013).** Accessing knowledge with the help of crowdsourcing technology may open the way to exploitation and knowledge devaluation. If participants' knowledge and work is not adequately compensated or rewarded this can be regarded as one form of exploitation and lead to these workers feeling undermined or unrecognized **(Susan Standing 2016, Ethical norms of crowdsourcing).**

In one of the empirical studies the authors have interviewed the participants of crowdsourcing platforms on both ends about their personal experience in crowdsourcing engagement. Some participants have cited ethical concerns that crowdsourced jobs take regular jobs away from professionals. Workers have also claimed that their work in some cases had been underestimated by requestors. Requestors on the other hand complained that even when the submitted work did not fully meet their expectations they were obligated to reward it as the work had met the criteria for submission.**(Shlagwein 2016)**

QUALITY CONTROL

Participants' ability and quality have a direct impact on the crowdsourced work outcome. The quality of workers is characterized by their expertise, experience and reputation. Quality assurance is one of the highly cited issues identified among the crowdsourcing related articles. There is an ongoing debate about whether it is appropriate to allocate jobs normally given to experts and that requiring scientific expertise to untrained laypersons **(Kittur A. Crowdsourcing, collaboration and creativity. ACM Crossroads. 2010; 32. Thawrani V, Londhe ND, Singh R. Crowdsourcing of Medical Data. 2014).** The proposed solutions to this include the multi-level reviews of the work, setting objectifiable tasks to leave out malicious participants and setting certain criteria for workers selection. Brabham also reported that "crowdslapping" does happen within the crowdsourcing practices **(Brabham).** This is manifested in the crowds rebelling against the competitions and rallying together against the project itself resulting in sabotage and poor quality work. when a crowd 'rebels' against the competition and is, essentially, a crowd of malicious workers, rallying against the project.

Some authors have reported frequent problems in guaranteeing reliable results to the requester even with the reward-based crowdsourcing **(Kim et al., 2011, Altmeyer et al., 2016; Cao et al., 2014). S**ome of the quality management techniques include training and filtering of workers and simplifying task execution. However these methods do not necessarily produce results as the abovementioned activities occur prior to participants' engagement in task execution and fail to forecast how exactly the workers will perform **(Alonso & Mizzaro, 2012; Chowdhury et al., 2014; Nguyen-Dinh et al., 2013; Tavares, Mourão, & Magalhaes, 2013).** One other cited limitation of existing quality-control methods stems from the subjective nature of quality. The final's task outcome is dependent on a few parameters, such as task properties, requesters requirements, participants' incentives and associated costs **(M.Allahbash 2013 Quality control systems).** Therefore the actual quality of the results depends on the following aspects: the people (requesters, participants and other possible actors), associated software systems (the platform or application) and the crowdsourcing process quality (the overall organization of tasks and the deployment of quality management systems) **(F.Daniel et al, 2018)**

CONCLUSION:

The reviewed literature sources clearly suggest that although crowdsourcing practices provide significant benefits for all the involved parties some persistent limitations continue to hinder effective implementation of crowdsourced results. On the one hand the companies willing to strongly protect themselves from malicious work and IP leakage and putting forward robust legal protections risk alienating the crowds and reducing their willingness to collaborate. While the opposite scenario with relatively loose approach towards the legal issues pertaining to IP rights result in salient risk for the company itself. Ethical issues have been reported primarily by the workers citing

low pay, waste of work and underestimation on the side of requesters. Quality control issues were cited on behalf of requester organizations. Inadequate quality control systems in place or lack thereof result in malicious crowdsourced outcomes which do not need the expectations of the requester for which they feel obligated to pay nonetheless. The importance of learning these limitations and finding the best approach to mitigate the associate risks is of ultimate importance for the firms in developing economies which currently lack abilities and expertise to harness the great potential of crowdsourcing technology.

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