Methodology for Managing Crowdsourcing in Organizational Projects

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ABSTRACT
Crowdsourcing is a business model for outsourcing work to crowd which is generally adopted by innovative entrepreneurs. However, promises of low cost, scalability and easy access to experts made crowdsourcing a means for gaining a competitive edge for well-established enterprises as well. In enterprise settings where risks have significant impacts, crowdsourcing must be used with caution. Project Management Offices (PMO) should adopt the ability to support enterprise crowdsourcing initiatives in projects and project managers need to be aware of techniques and methods used to manage crowdsourcing. This research maps standard project management processes to crowdsourcing management practices and discloses a research agenda to develop a crowdsourcing management methodology.

Keywords
Crowdsourcing, project management, coordination theory.

1. INTRODUCTION
Crowdsourcing is the act of outsourcing tasks traditionally performed by designated agents to a large group of people in the form of an open call [1]. Two most important reasons for using outsourcing are listed in the literature as lower costs and higher quality [2]. Crowdsourcing, which is a special type of outsourcing, also provides same advantages. Crowdsourcing is qualified as an enabler for new business models, rather than being a business model itself [3]. Nowadays crowdsourcing examples are mostly initiatives undertaken by risk prone, young entrepreneurs. The most important reason for this is the access to a scalable workforce. Additionally, in crowdsourcing costs are always associated with outputs produced, not effort spent on producing those outputs. This is another key reason for the entrepreneurs to use crowdsourcing [4]. There are many different types of crowdsourcing initiatives existing in the market, including; content generation (YouTube), product development (Threadless), funding (Sell-a-Band), alpha-beta tests (mob4hire), marketing (Amazon), innovation (mystarbucksidea), solution development for complex problems (Innocentive), image tagging (ESP Game), music tagging (tag-a-tune) and massive data analysis (helpfindjim).

Making crowdsourcing manageable and controllable is currently an essential problem of crowdsourcing [5]. Researches aiming at solving this problem are limited to examining and classification of existing crowdsourcing initiatives. In order to examine concepts of crowdsourcing and wisdom of crowds, researchers developed several taxonomies. According to LaVechia, crowdsourcing initiatives are classified into three groups; contest, marketplace and bid [6]. Contest type crowdsourcing is the type which the work is announced to the crowd in the form of an open call. Submissions are evaluated either by experts or democratic voting of participants. Threadless organizes a T-shirt design contest each week. At the end of the week the designs which get the majority of votes are sent to production and designers are awarded with a royalty fee from all sold t-shirts. Similarly Innocentive announces highly complex problems and offers huge amounts of money to anybody providing an acceptable solution. The marketplace crowdsourcing type is breaking down the work into microtasks and assigning them to crowd members. One by one the microtasks are completed by participants and aggregated by the system into the end product. Analyzing satellite photos and transcribing voice recordings are examples of marketplace type crowdsourcing. The bid type crowdsourcing refers to the activity which the work is announced in the form as an open call and participants submit their price and capability proposals. Another classification derived from LaVechia’s approach, similarly categorizes crowdsourcing initiatives as marketplace and contest [7]. This categorization differences in defining an additional dimension called the crowdsourcing mode. Vukovic’s categorization also emphasizes the function within an enterprise where crowdsourcing initiative is undertaken. Major functions are innovation, design, development, test, sales, marketing and support. In order to support academic research a new, more detailed taxonomy was proposed [2]. Rouse’s taxonomy examines crowdsourcing initiatives from three dimensions; the nature of the work done, distribution of benefits and motivational tools used. This taxonomy is important because it is the first research done which examines the elements to consider while using crowdsourcing. However it fails to recognize effort redirection crowdsourcing types, thus, it is not considered a complete taxonomy. Another taxonomy was recently proposed, extending all categorization work done in crowdsourcing Quinn provides solid definitions to similar domains such as crowdsourcing, collective intelligence and human computation and emphasizes the differences among these concepts [8]. Quinn’s taxonomy examines crowdsourcing initiatives in 6 dimensions. These are; motivation, quality control, aggregation, human skill need, procedural order, work demand cardinality. This taxonomy is the most detailed and comprehensive work done since today.

Studies aiming at making crowdsourcing manageable exist in the literature. Researchers defending that open source software development are a form of crowdsourcing focus on application of management techniques used for open source projects on crowdsourcing initiatives. Jain examined governance techniques for major, successful open source software development projects
and gathered her findings as an analysis framework for crowdsourcing initiatives [9]. Viitamaki’s FLIRT (Focus, Language, Incentives, Rules, Tools) model is another guideline which can be used to ensure manageability of crowdsourcing [10]. According to this model, a successful crowdsourcing initiative must have a clear focus, a common language used by the crowd, proper incentive mechanisms, rules defining the terms of participation and tools to make participation easier.

Collective intelligence studies focus on the subject of coordination for a very long time. Coordination is defined as “the harmonious work of parts” [11]. Without doubt, coordination is essential for crowdsourcing. One of the most comprehensive studies performed on coordination is the coordination theory [12]. Coordination theory defines the components of coordination and related processes. According to this theory, management of coordinated work is possible by identification and management of dependencies between subtasks. Major dependency types are defined as producer/consumer, simultaneity, task/subtask. Crowdsourcing can be defined as a system of coordinated tasks and dependencies. Thus theory of coordination provides a basis for studying crowdsourcing management.

2. RESEARCH QUESTION

Considering the existing literature we define the question motivating this research as;

(Q) How can we improve the usage of crowdsourcing in organizational settings, by minimizing risks, enabling measurement and estimation, without sacrificing the quality?

Thu, we hypothesize:

(H1) Time/cost/effort estimations of crowdsourced work packages can be estimated accurately, effectively and correctly, by using the Crowdsourcing Management Methodology, in a project.

(H2) A crowdsourcing system which is specifically designed by using the Crowdsourcing Management Methodology, considering the nature of the work to be done, coordination requirements and required quality level, enables a lower risk and higher success rate, within organizational settings.

3. RESEARCH OUTLINE

The first phase of the study includes (a) examination and classification of crowdsourcing methods, (b) developing a crowdsourcing taxonomy, (c) constructing a component model and (d) developing a crowdsourcing management methodology for guiding crowdsourcing complex work within enterprises.

a) Existing crowdsourcing methods were examined focusing on concepts such as, crowdsourcing, human computation, social computation, collective intelligence, management, governance. The aim of the literature search was to find literature work which presents crowdsourcing or similar business models and especially mentioning management problems, and measurement techniques.

b) Taxonomies are generally used to form a common language of a concept and related concepts for detailed examination, emphasizing inherited characteristics. In this research a taxonomy shall be developed by using the literature findings about crowdsourcing methods and management problems, classification of existing crowdsourcing initiatives and existing taxonomies.

c) Component model which shall be constructed as a part of this thesis is basically an anatomy of a generic crowdsourcing initiative, describing work done in crowdsourcing including, breakdown of work, quality assurance and aggregation of work products. An initial version of the component model can be described by following abstract formulation:

\[ T = D + B + M + C + Q + A \]

(T: Crowdsourcing system as a whole, D: The design of the system, B: Work breakdown into microtasks, M: Performance of microtasks, C: Coordinating microtask outputs, Q: Quality assurance, A: Aggregating the outputs)

d) In this research a crowdsourcing management methodology shall be developed which defines management activities, techniques and processes for crowdsourcing types classified in the taxonomy.

e) In the second phase of this study the crowdsourcing management methodology shall be verified through multiple case studies.

4. REFERENCES


