

What Do We Know About Task Characteristics of Crowdsourcing?

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Abstract

Digitalization and the Internet changed our life. Many phenomena are responsible for this change. A relatively new one is crowdsourcing. Companies such as Amazon or Procter and Gambles use crowdsourcing successfully. The change will continue and we need to fully understand this subject to use the potential offered by this new phenomenon. This literature review summarizes and structures the crowdsourcing literature with focusing on the crowdsourcability of tasks. We analyzed the outsourcing literature to build a framework and adopted 7 perspectives, which were used to describe the outsourcability of tasks. The framework helps us to structure and analyze the crowdsourcing literature with focusing on the crowdsourcability of tasks. We found relevant literature regarding every perspective, but great research gaps were shown concerning these perspectives, leading to the assumption that the task characteristics of crowdsourcing are not sufficiently explored by the state-of-the-art literature. More research is needed to fully understand and use the potential of crowdsourcing.

1 Introduction

We live in a world of constant change. Since its invention, the Internet is a driving factor for changes in our life. In our professional life, digitalization and the Internet unfolded their potential in many different ways. Jeff Howe identified a new change in his Wired Magazine article in 2006 and called it “crowdsourcing”. The fundamental idea of crowdsourcing is that a crowdsourcer (which could be a company, an institution, or a non-profit organization) proposes the voluntary undertaking of a task presented in an open call to an undefined group of contributors (individuals, formal or informal teams, other companies) (Blohm et al. 2012).

Ever since, many organizations changed their tasks through crowdsourcing (Geiger et al. 2011). Numerous examples of success stories can be found with companies using crowdsourcing in their business tasks or them being based on it (Stol and Fitzgerald 2014). Amazons marketplace for workforce “Mechanical Turk” or Procter and Gambles innovation platform “Connect + Develop” are just two examples of the diverse possibilities crowdsourcing offers. Among the success factors of crowdsourcing are for instance (1) a high number of people who are easy accessible and who can execute tasks (2) anytime (3) at low costs (Malone et al. 2011). These factors lead to competitive

advantages for the crowdsourcing companies (Prpic et al. 2015). As a result of this development, a new management decision occurred, dealing with the question “What tasks can we crowdsource?”. But to crowdsource intelligently, we have to fully understand the potential of crowdsourcing. It is important to understand which characteristics of tasks influence the “crowdsourcability” of a certain task. Crowdsourcing is a relatively new field of research, a limited amount of literature in the task context is available, and therefore, researchers suggest to further analyze the fit between task and crowdsourcing (Chiu et al. 2014, Afuah and Tucci 2012, Zhao and Zhu 2014).

In order to address this research gap, the present paper summarizes and structures the current research of crowdsourcing through a literature review with focusing on the characteristics of tasks’ crowdsourcability. It is conducted according to vom Brocke et al. (2009) and Webster and Watson (2002). On the basis of the outsourcing literature, we will develop a framework with 7 different perspectives with which the outsourcability of tasks was analyzed, and we will apply them on crowdsourcing. Extensive literature is dedicated to the question of what task an organization could outsource (Gerbl et al. 2015). Frameworks were created to understand which characteristics of a task have to be considered for the decision whether to “make or buy”. Now, with the third dimension “crowd” in play, a similar question arises for management and science.

This paper proceeds as follows: Chapter 2 describes the structure of the literature review, which uses the framework according to vom Brocke et al. (2009). In addition to that, we explain the conceptualization of the topic and how we will categorize the literature in 7 perspectives. Chapter 3 focuses on the findings and offers insights on the literature found concerning every perspective. Chapter 4 discusses these results and offers a research agenda. In chapter 5, we reflect on our present paper critically by concentrating on possible limitations. Finally, we conclude our literature review in Chapter 6.

2 Literature Review

The literature review follows the five steps of the framework of vom Brocke et al. (2009): 1) Definition of the Review Scope, 2) Conceptualization of the Topic, 3) Literature Search, 4) Literature Analysis and Synthesis, and 5) Derivation of a Research Agenda.

Characteristic		Categories			
1	focus	research outcomes	research methods	theories	applications
2	goal	integration	criticism		central issue
3	organization	historical	conceptual		methodological
4	perspective	neutral representation		espousal of position	
5	audience	specialized scholars	general scholars	practitioners	general public
6	coverage	exhaustive	exhaustive & selective	representative	central/pivotal

Table 1: Review Scope

2.1 Definition of Review Scope

To define the review scope, we followed the taxonomy by Cooper (1988). This literature review focuses on research outcomes and theories related to the crowdsourcability of tasks. The paper aims

to integrate the present state of the art in crowdsourcability of tasks into a conceptual overview. The existing body of knowledge will address general and specialized scholars.

2.2 Conceptualization of the Topic

Crowdsourcing is closely related to outsourcing. “Many of the problems identified in this crowdsourcing initiative are very similar to the problems reported in the early days of outsourcing” (Nevo et al. 2012, 15). On the one hand, Gossman and Helpman (2002) define outsourcing as subcontracting a set of internal activities in a bilateral relationship to an external organization, for example another company. On the other hand, Leimeister and Zogaj (2015) regard crowdsourcing as proposing work to an undefined mass, the crowd. In crowdsourcing, we observe three different models: (1) internal crowdsourcing, which organizes an internal crowd through an internal platform, (2) external crowdsourcing without mediation, which organizes an external crowd through an internal platform, and (3) crowdsourcing with an intermediary, where an external crowd is organized by an external platform (Leimeister and Zogaj 2013). In this paper, we focus on the third model, crowdsourcing with an intermediary, considering that we use a conceptual outsourcing framework to analyze the literature and crowdsourcing with an intermediary, which among all crowdsourcing models is the closest to outsourcing. Both sourcing types give an internal task to a single player outside. The task will equally be sourced externally, but in the context of outsourcing, the task will often be executed by a single employee; in the context of crowdsourcing, the task will often be executed by an undefined group of individuals. Since outsourcing is a mature field of science compared to the field of crowdsourcing, it seems advantageous to use the experience of outsourcing and to apply it to a certain extent in the field of crowdsourcing.

We develop our conceptional framework based on the contributions of Gerbl et al. (2015), Graf and Mudambi (2005), and Vining and Globerman (1999); each of them created a framework explaining the outsourcability of tasks. According to Nevo et al. (2012), the outsourcing client perspective was mostly used to analyze the outsource capabilities. All papers share this perspective, as for instance Gerbl et al. (2015). They drew a conceptual framework from the transaction cost and resource-based view theories, combining firm-level and process-level factors with location attractiveness. The transaction cost theory seems especially suitable due to the fact that its main objective is to analyze the circumstances under which market governance is more cost-efficient within the boundaries of a firm or outside of them (Dibbern 2008), and because it is the most used theory in the context of outsourcing (Perunović 2007). Furthermore, the combination of firm-level, process-level, and location by Gerbl et al. (2015) seems beneficial because, besides internal aspects, it also takes into account that locations inherit diverse circumstances linked to their different distances and combines this with internal aspects. In addition to that, we also consider Gerbl et al. (2015) with including the paper of Graf and Mudambi (2005), whose objective it is to improve the understanding of the location decision. At the same time, we add the paper of Vining and Globerman (1999), who focus on the internal aspects, such as the decision to source. With these two papers extending the work of Gerbl et al. (2015), we want to develop a comprehensive framework. Finally, we will use this framework to analyze the crowdsourcing literature. The literature has to be synthesized into appropriate categories, which have to be developed. Following, we describe these categories:

- **Complexity Perspective:** This category refers to the complex interdependencies mentioned in the paper by Gerbl et al. (2015). It summarizes papers that deal with the general question of what task is crowdsourcable. The modulation of tasks, the coordination and communication outside the modulated tasks, and the understanding related to it are examples that are of interest. If the

complex interdependencies are high, the need for coordination will increase the transaction costs, and they are therefore important for the crowdsourcability.

- **Uncertainty Perspective:** This category refers to the uncertainty that can occur as a result of changing requirements for the intermediary's customer. Changing circumstances due to quick cycles may frequently lead to changing task requirements. This would result in lower crowdsourcing ability because the specification prior to crowdsourcing a task would change too fast.
- **Control Perspective:** This category refers to the performance measurement difficulties related to the contribution and performance by the intermediary's crowd. Precisely defining measurable outcomes is the focus of this category. In addition to that, people of the crowd cheating concerning the measurements are of interest. If measurement categories are not defined properly, the quality of the results delivered by the crowd cannot be assessed, making crowdsourcing impossible.
- **Knowledge Security Perspective:** This category refers to intellectual protection issues. Legal mechanisms, such as patents, NDAs, or trusted crowds can be crucial for a company prior to crowdsourcing a task to protect itself against data loss or other issues.
- **Strategic Perspective:** This category refers to the strategic level of crowdsourcing with regards to the competitive advantage. It also covers issues concerning the availability of internal resources and crowdsourcing capabilities, skills, and experiences concerning crowdsourcing, such as language or crowdsourcing management skills.
- **Cost Perspective:** This category refers to costs involved in crowdsourcing a task. It covers aspects such as preparing the crowdsourcing process internally, or external costs such as paying the intermediary.
- **Quality Perspective:** This category is related to the outcome quality of the crowdsourced task delivered by the intermediary. This includes all possible outcomes, for instance ideas, investments, or software. If the crowd cannot deliver results with acceptable quality concerning a specific task, this task will not be crowdsourcable.

Besides the conceptual framework, the literature review is based on a definition of the key variables (Webster and Watson 2002). The paper focuses on structuring the characteristics of task crowdsourcability. We will adapt the search of key words to the framework we develop in this paper.

2.3 Literature Search

Relevant articles are identified by a systematic literature review to guarantee comprehensibility and traceability of the process. A journal search on diverse databases and a key word search was conducted. In addition to that, a forward and backwards search was executed.

The journal search was conducted on the following databases: EBSCO (Business Source Complete), Web of Science, ProQuest, Emerald, and ScienceDirect. Concerning the key variables, we used the following: 1. "crowdsourcing" AND "complexity", 2. "crowdsourcing" AND "Uncertainty", 3. "crowdsourcing" AND "Control", 4. "crowdsourcing" AND "Cost", 5. "crowdsourcing" AND "Knowledge", 6. "crowdsourcing" AND "Strategy", and 7. "crowdsourcing" AND "Quality".

The literature review identified 46 papers, of which 27 were considered relevant. A paper was considered relevant, if it had contributed to explaining the crowdsourcability of a task according to one or more of the seven perspectives developed in this paper. Eleven of them were found through forward and backwards search. Nineteen papers were considered irrelevant due to their lack of contribution to any perspective developed in this paper.

3 Findings

Overall, the existing research on the crowdsourcability of tasks contributes to every perspective we developed in this paper.

- **Complexity Perspective:** A company can crowdsource simple, complex, and creative tasks (Schenk and Guittard 2011). A simple task includes rather poor cognitive requirements, and crowdsourcees receive mostly micropayments. Crowdsourcing a simple task seems interesting in a case where many simple tasks are crowdsourced. That means, the bigger the amount of simple tasks of an organization, the more likely it is that this organization decides to crowdsource them. On a small scale, it is cheap to deal with it internally, but on a big scale, it becomes cheaper to crowdsource. Crowdsourcing complex tasks is defined as knowledge-intensive problem solving. Crowdsourcing complex tasks appeared to be more crowdsourcable, the more frequently the problem had already been solved outside the company. Contrary to Afuah and Tucci (2012), Schenk and Guittard (2011) believe that if the problem needs very rare and specific skills or expertise, it is less likely to be successfully crowdsourced. For instance, if crowdsourced software development projects require rare technical skills and these are not available, then the projects will hardly receive any submissions (Nevo et al. 2012). This means, the more the required knowledge for a task is available by the crowd, the higher is the crowdsourcability of a task. On the other side, every task is crowdsourcable as long as the task is simple to describe, to communicate, and to modularize (Afuah and Tucci 2012).
- There is an alternative way of looking at task complexity (Nakatsu et al. 2014). Crowdsourcing can also be described as a threefold phenomenon. It includes 1) task structure, which describes how well a task is defined or specified. The second aspect 2) covers task interdependence, describing how well a task can be solved by an individual or group. Finally, there is 3) the task commitment, describing which level of commitment is expected. Nevo et al. (2012) focused on software development tasks, which are well suited for crowdsourcing. They addressed the first aspect 1) of Nakatsu by pointing out that tasks with a clear specification, low priority, and no need for domain knowledge are particularly appropriate for crowdsourcing. In terms of task type, they identified new developments, which are not closely linked to existing functionality, labor-intensive tasks with low skill requirements, or idea generation, and which are regarded as suitable for crowdsourcing. Existing applications may be difficult to decompose due to internal dependencies or licensing agreements.
- **Uncertainty Perspective:** Software development tasks in an agile life cycle can be problematic due to specification issues. It is difficult to define the stories in advance (Nevo et al. 2012). This means, the better a process can be anticipated for a timeframe wide enough leading to a high predictability and stable specifications, the higher is the chance to decide to crowdsource. Therefore, it seems that the degree of task repetition may influence crowdsourcability. The higher the repetition rate, the lower is the uncertainty of a possible change in the crowdsourcing

process, and the more likely it is to crowdsource. In general, the lower the uncertainty, the higher is the chance to decide to crowdsource.

- **Control Perspective:** It is critical to the success of a crowdsourcing project to establish specific measurements to evaluate the outcomes. If a task is crowdsourced, it is important to be able to control the result. The easier the outcome of a crowdsourced task can be controlled, the higher is the crowdsourcability of a task (Ford et al. 2015). Some measures were described in the literature. Similar to rating scales, they were identified as performance measurements in terms of evaluating decision quality in an idea generation context (Riedl et al. 2013). The literature indicated that a multi-criteria scale outperforms a single-criteria scale, leading to higher decision quality. In addition to that, multiple criteria scales can complement or replace expert panels in their assessment of customer-based idea generation (Blohm et al. 2011). Another alternative could be automated control mechanisms. They were successfully used to control the output of the crowd (Lee et al. 2011). All these measurements are useful to counter cheaters. In addition to that, cheaters are less frequently found with novel tasks that require abstract thinking or creativity. Also, tasks with less reusable outcomes are less frequently approached by cheaters (Eickhoff and Vries 2013). To summarize, tasks with higher control through specific measurements and other means may be more likely to be crowdsourced.
- **Knowledge Security Perspective:** Several knowledge security problems arise if crowdsourcing is used as a tool. One matter is that companies have to open up to internal problems. This new management philosophy is sometimes difficult to implement. Another one is the IP ownership and the concern about how the company can ensure its intellectual property if a new idea is generated outside (Bonabeau 2009). As a solution, intellectual property and trade secrets can be protected through contractual constraints. As alternative solution, the possibility to decompose a task in a manner that leads to the original problem not being understandable for a single crowdworker could be considered (Ford et al. 2015). Therefore, it seems that the better the internal IP is protected and the clearer the IP situation is, the higher is the crowdsourcability of a task.
- **Strategic Perspective:** Crowdsourcing can significantly influence a company's ability by leveraging previously unattained resources to build competitive advantages. The strategic value could only be gained by aligning the purpose of engaging with crowdsourcing with the goals of the company, and therefore, the type of knowledge or expertise needed from the crowd in order to access the proper crowd directly needs to be defined in advance. Finally, the outcomes of the crowd need to be aligned with existing internal processes (Prpic et al. 2015). This means, the better the purpose of engaging with crowdsourcing is aligned with the outcome, the more likely it is that a task is crowdsourcable.
- Apart from the alignment, employees and the company's capabilities also influence the strategic perspective. A company that does not have the necessary internal capabilities should consider crowdsourcing. This lets us assume that the lesser necessary internal expertise a company has, the more likely a task could be considered to be crowdsourced. The motivation of employees is important, leading to the suggestion that high routine tasks should be considered for crowdsourcing due to the effect of demotivating employees internally also resulting in lower quality (Ford et al. 2015). It also seems more likely to decide to crowdsource in the strategic perspective, the higher the routine characteristic of a task is. But crowdsourcing should only be considered if enough experience or/and time is available. If not, the company will not receive a suitable solution from the crowd or will not be able to use the solution. The literature provides

recommendations to build an effective absorption capacity, such as creating high acceptance for crowdsourcing among the internal employees of a company or focus on tasks that are precisely explainable and easy to understand (Blohm et al. 2012). Therefore, the more experience in crowdsourcing and the more time a company has for the crowdsourcing project, the higher is the crowdsourcability of a task.

- In addition to that, crowdsourcing a task to an intermediary is also connected to a strategic risk if a platform changes its business model or processes. Following that string of argumentation, a task is more crowdsourcable, the better intermediaries can signal a potentially long-lasting business relationship. Furthermore, companies should start with little and simple projects with low risk involved. Through first positive experiences, companies collect valuable crowdsourcing experience and decrease internal doubts that make the project management more complicated (Schenk and Guittard 2009).
- Cost Perspective: The costs involved in projects vary according to the nature of crowdsourcing, ranging from micropayments to several thousands of Dollars (Schenk and Guittard 2011). For instance, due to crowdsourcing, complex infrastructure for software development may be needed, such as having two development and test environments (Nova et al. 2012). Some cost categories are related to crowdsourcing, such as costs of planning and organizing a crowdsourcing project, the costs of employing the crowd and/or the intermediary, and finally the costs related to manage the changes required to implement the crowdsourced solutions. In addition to that, crowdsourcing costs should be looked at as outsourcing costs and cost savings potential. This means the literature relates certain cost saving potential with outsourcing, and the same potential is seen in crowdsourcing. As examples, availability on a flexible demand basis, increased time to market, or the filter function of intermediaries resulting in presenting only the most promising crowd solutions to the customer, and avoiding time spent with contributions by underperforming employees are mentioned. To summarize, costs have to be smaller than the benefits (Ford et al. 2015). This would mean that the bigger the positive delta between benefits and costs, the higher is the potential to be crowdsourcable.
- Quality Perspective: The quality of the outcome, as a benefit of crowdsourced tasks, has an influence on the crowdsourcability of tasks. If the crowd delivers an unacceptable level of quality concerning a certain task type, consequently, this type of task cannot be considered for crowdsourcing. Therefore, we will look at different quality outcomes of crowdsourcing. There are different definitions for the quality of a crowdsourcing outcome. For instance, the quality of simple tasks could be defined as the amount of tasks achieved, and complex tasks could be defined as the characteristics of the problem's solution or originality (Schenk and Guittard 2011). In the field of software development, the quality of crowdsourced submissions was in certain projects marginally acceptable (Nevo et al. 2012). This may be related to the crowdsourcees' capabilities, because the quality of outcome is related to the crowdsourcees' abilities and qualities (Allahbakhsh et al. 2013). Another possibility may be a low motivation or a high complexity of the task, because motivation is positively and task complexity is negatively related to quality (Lee et al. 2015). By contrast, Zaidan et al. (2011) demonstrated that non-professionals can deliver translations on a professional level at much lower costs than professional translators. In addition, it was also shown that certain training improves the outcome of tasks (Lee et al. 2010). But quality can also be improved by selecting the right criteria for crowdsourcees as orientation for their work. Giving crowdsourcees the right criteria for their annotations increases the quality (Hsueh et al. 2009). Certain tasks can be even more suitable

for crowdwork than for experts, such as applications where many varied data points are collected. In this case, a heterogeneous crowd is better for delivering a higher quality than a homogenous group of experts (Kitter et al. 2008). Moreover, an automated aspect in allocating information through crowdsources increased the quality (Oleson et al. 2011). If it comes to novelty and costumer fit, Poetz et al. (2012) claim that user-generated ideas outperform professionals, but do so a little less concerning feasibility. We saw examples with marginally acceptable outcomes and some with acceptable outcomes. This means, the higher the quality as a form of benefit, the higher is the crowdsourcability. Finally, it depends on the delta described before. The bigger the delta between benefit and costs, the more likely a task can be crowdsourced.

4 Discussion and Research Agenda

Prior to the literature review, we looked at the outsourcing literature. We examined concerning which perspectives the outsourcability of tasks was analyzed. Furthermore, we identified seven perspectives and examined the state of the art of the crowdsourcability of tasks according to our perspectives. This paper reveals that the research of crowdsourcing in the perspective of outsourcability is in certain areas at an early stage. There are no sufficient research results to fully understand all task characteristics of crowdsourcing. Although a few papers cover all perspectives, the depth of the research is not yet sufficient.

First, the complexity perspective distinguished between simple, complex and creative tasks in a synthetic and analytical perspective (Schenk and Guittard 2011). It would be very useful to back this perspective with a broader empirical basis of practical examples to verify the perspective and better understand the impact of complexity on crowdsourcability of tasks. Furthermore, every task is crowdsourcable as long as it can be easily described, communicated, and modularized (Afuah and Tucci 2012). Therefore, future research could focus on how a task could effectively be described, communicated, and modularized in regards to crowdsourcing a task, this means developing a systematic modularization method for crowdsourcing.

Second, an agile life cycle can be problematic due to specification issues (Nevo et al. 2012). If a task is to be crowdsourced, the aspect of a stable task specification should be addressed. Future research could focus on further verifying whether our suggestion that the lower the uncertainty, the more likely a company decides to crowdsource, is correct. A way of addressing this perspective could be looking for possibilities that could reduce uncertainty of crowdsourcing tasks, to increase the crowdsourcability.

Third, it seems that the control perspective could be more profoundly explored by developing a more generic translation of a basic measurement system, which could be used for adaption concerning a novel task. A certain elementary framework could further explain the depth of the control perspective. Therefore, future research could focus on measurement possibilities in different project settings. A framework might be developed to standardize the measurement process for certain types of tasks. With this in mind, the success of crowdsourcing projects could become more comparable. This comparability could be a good indicator for the crowdsourcability potential of projects. Another limitation of control approaches is derived from the subjective nature of quality; developing a more objective definition would be necessary (Allahbakhsh et al. 2013). Considering the importance of the control perspective, not many papers were published. The better the crowdsourcing task can be controlled, the higher is the crowdsourcability of a task.

Fourth, our results suggest that a clear and well-protected IP may be important for the decision to crowdsource. To expand the set of possible crowdsourcing tasks and to further use its potential, it is important to find actual solutions. If the IP issues were further explored, the crowdsourcers would have more security possibilities for their tasks, thus an increased crowdsourcability. Some important questions in this field were addressed (Bonabeau 2009, Ford et al. 2015), but it lacks for example an empiric study with a meaningful amount of cases and a useful diversity of possible solutions as outcomes. If such a study is not conducted in the future, the field of crowdsourcing will limit itself unnecessarily to a smaller field than it actually could be, and it will leaves certain tasks with a decreased crowdsourcability.

Fifth, crowdsourcing is mostly regarded as a complementary tool to the old business model to create additional competitive advantage. By contrast, it should also be considered as a way to change business models in order to adapt to changes in the environment of a company. In some strategic situations, crowdsourcing might not just be a tool but a game changer, changing the organizational structure of organizations. If the strategic potentials of crowdsourcing are further explored, the general crowdsourcability of tasks can increase.

Sixth, it lacks a clear assessment of different crowdsourcing costs. If the cost perspective is not clearly analyzed, research will not be able to assess the real benefits crowdsourcing is potentially delivering. Beginnings of categorizing costs were found (Ford et al. 2015), but it needs further development and validation. It could be beneficial to pursue this path and to profit from the extensive research in the field of outsourcing costs. In addition to that, it might be useful to localize certain cost elements along the crowdsourcing process, from the planning phase to the result review via the actual execution of the crowdsourcing task. This could enhance the IT management ability to forecast the cost structure of crowdsourcing projects and to quantify the costs more properly. If costs are precisely predictable, the tasks will have an increased crowdsourcability.

Seventh, the field of crowdsourcing has not sufficiently looked into possible parallels of outsourcing and crowdsourcing characteristics. This comparison could be beneficial for crowdsourcing if findings in the field of outsourcing could be used in the crowdsourcing field. New findings could be generated faster with a good scientific foundation. An outcome could be a framework, which could be used as help to analyze the crowdsourcing potential of projects to increasingly visualize the crowdsourcability of a task.

Eighth, some perspectives are linked to each other. It seems important to analyze these links to better understand the matter of crowdsourcability. For instance, the quality perspective seems to be linked to the cost perspective. It still seems difficult to exactly quantify the delta between costs and quality or benefits, such as time to market, flexibility, or other benefits. In the future, it may be interesting to connect the cost and benefit dimensions more closely by offering a broader empirical basis of diverse practical examples to better explore the value generation of crowdsourcing. In the end, the benefits and quality of crowdsourcing might be described, but if they include higher costs, they seem to vanish; benefits must outweigh costs (Ford et al. 2015). If this equation is properly explored and it is possible to generate reliable predictions, the crowdsourced task will have an increased crowdsourcability. In addition to that, it also seems also reasonable to connect the control perspective to the quality perspective. These two perspectives were often mentioned together in papers and seem to influence each other directly. The more precisely and efficiently the control mechanisms work, the better the quality can be ensured. For instance, it would be more difficult for crowdsourcees to cheat and the crowdsourcing process would deliver more reliable results.

5 Limitations

With this paper, we conducted an extensive literature review to summarize and categorize the research in the field of crowdsourcing with regards to the task crowdsourcability characteristics. Critically reflecting on this paper, two aspects are worth to be mentioned. First, it is possible that there are further research papers not considered in this framework that might be relevant for this or a similar subject. Also, one should take into account that the papers addressed in this work were solely non-technical. Even though the technical background might play a role in the crowdsourcability of tasks, this aspect is outside the scope of this paper. Second, the core focus of this literature review was crowd-related. It is possible that non-crowd-related papers address further key issues.

6 Conclusion

The present paper categorized and summarized literature from the field of crowdsourcing and linked the findings to task characteristics of crowdsourcing. The categorization was structured according to outsourcing frameworks due to the extensive research experience in this field and the relation to crowdsourcing. On the one hand, the findings showed that every perspective was covered with research. On the other hand, the limitations showed great research gaps concerning these perspectives, leading to the assumption that the task characteristics of crowdsourcing are not sufficiently explored by the state-of-the-art literature. More research is needed in this field to fully understand and use the potential of crowdsourcing. Finally, we found that the relation between the research fields of outsourcing and crowdsourcing is quite new to the domain while it may offer substantial insights.

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