

RAGS TO RICHES - HOW SIGNALING BEHAVIOR CAUSES A POWER SHIFT IN CROWDSOURCING MARKETS -

Research

Durward, David, University of Kassel, Kassel, Germany, david.durward@uni-kassel.de

Blohm, Ivo, University of St. Gallen, St. Gallen, Switzerland, ivo.blohm@unisg.ch

Leimeister, Jan Marco, University of St. Gallen, St. Gallen, Switzerland
JanMarco.Leimeister@unisg.ch

Abstract

Crowdsourcing has emerged as new form of digital work organization. This novel socio-technical arrangement changes the organization of work as well as its general nature. In this paper, we focus on the crowdworkers – a perspective that has been largely neglected by crowdsourcing research. We report results from crowdworker-interviews on two different platforms. Our research shows that quality signals of crowdworkers increase the bargaining power towards their principals, i.e. the crowdsourcers. As a result, the crowdworkers can reach a turning point of critical bargaining power at which the distribution of power shifts in their favor. We contribute to the literature by unraveling signaling behavior as mechanism influencing bargaining power and thus success in crowdsourcing. Beyond, we develop a theoretical model that indicates a shift in bargaining power over time and improves our understanding of crowdsourcing as novel way of organizing digital work. For practice, our results provide guidelines for crowdworkers how to improve their position in bargaining in relation to the crowdsourcer.

Keywords: crowdsourcing; crowdworker; bargaining power; signaling; quality signals

1 Introduction

The rise of new information technologies, particularly the Internet as an immersive and multi-media rich technology, comprising low costs of mass communication, allows an interaction with a large number of external sources (Zogaj et al., 2014). Against this backdrop, companies are able to reach out to these masses (Vukovic, 2009) and outsource tasks and functions, once performed by employees, to an undefined mass of individuals. This new type of sourcing is referred to as ‘crowdsourcing’ and is based on the concept of outsourcing corporate activities to an independent mass of people, called “crowdworkers”. The fundamental idea of crowdsourcing is that a crowdsourcer (which could be a company, an institution or a non-profit organization) proposes to an undefined group of contributors the voluntary undertaking of a task presented in an open call. The power of crowdsourcing lies in aggregating knowledge from a multitude of diverse and independent contributors (Blohm et al., 2013). In addition, a third agent mediates between the crowdsourcing companies and the crowdworkers by providing a platform where these parties are able to interact. These crowdsourcing intermediaries assure the connection between the crowdsourcing companies and the crowdworkers (Zogaj et al., 2014). Since these intermediaries provide platforms on which supply and demand of labor meet, crowdsourcing describes an online labor marketplace as well as a new approach of work organization.

Despite its popularity, there is still comparatively little well-founded knowledge on crowdsourcing, particularly concerning the perspective of those who perform the work in crowdsourcing – i.e., the crowdworkers. In literature, some promising approaches have focused on motivational (e.g. Rogstadius et al., 2011; Zheng et al., 2011) or trust-related aspects such as trust between crowdwork-

ers, the crowdsourcing intermediary and the companies (Guo et al., 2013). As researches have explored the possibilities of human computation, they have paid less attention to ethics and values of crowdsourcing focusing the impact on the individuals (Irani and Silberman, 2013). In spite of its main advantage – i.e., low labor costs - crowdsourcing has several shortcomings regarding the individual crowdworker within those systems (Busarovs, 2013), such as: complicated quality control systems (Kittur et al., 2008) and ethics violation by exploiting and underpaying workforce (Postigo, 2003). Although few studies have been conducted to address the demographical backgrounds of individuals working in the crowd (e.g. Kaufmann and Schulze, 2011), there is a gap in understanding the experiences, perceptions and behaviors of crowdworkers (Deng and Joshi, 2013).

Nevertheless, it will be essential to address the individual level since the spread of crowdsourcing will gain momentum. From an economical perspective, the World Bank estimates the total crowdsourcing market to be \$4.8 billion in 2016 and medium-term models predict a gross service revenue in the range of \$15 billion to \$25 billion in 2020 (Kuek et al., 2015). This implicates an increasing number of people who work in the crowd and generate income on a full- or part-time basis. And if crowdsourcing continues to develop and grow, we need to understand these social environments and examine design practices and workers' experiences in these systems (Silberman et al., 2010).

Against this backdrop, there have neither been systematic analyses concerning the position of crowdworkers nor a compilation of behavior regarding their work. Within crowdsourcing settings, the crowdsourcer broadcasts tasks on crowdsourcing markets and the crowdworker enters into a business relationship that can be described as an agency relationship (Harris and Raviv, 1979) in which the co-operating parties have different goals and thus information asymmetries occur (Ross, 1973). Since a crowdsourcer and a crowdworker interact, both can exert power on each other in a mutual way (Saam, 2007) whereby dependencies arise. In particular, the business interactions are characterized by a new form of negotiation. Hence, the bargaining power is an essential aspect out of an individuals' perspective that has been largely neglected in previous crowdsourcing studies. To our best knowledge, a theory of crowdsourcing addressing these shortcomings, does not yet exist and thus has to be developed for further research.

Therefore, we intend to fill the outlined research gaps within the understanding of crowdsourcing out of an individual perspective by addressing the following research question:

RQ: Which impact does the crowdworkers' behavior has on its relationship with crowdsourcers?

The remainder of this paper is structured as follows: In section two, we first provide the theoretical background by introducing related work. In section three, we outline the applied methodology. Afterwards, we present the results of the study. Finally, we discuss our results and draw implications for research as well as for practice.

2 Theoretical Background

2.1 Signaling Theory

Crowdsourcing can be seen as an agency problem, in which information imperfections and asymmetries of information are pervasive. The crowdsourcer as principal does not possess per se all information about the crowdworker as an agent. In general, the competences of any individual crowdworker to complete a given task are not entirely accessible. Although the crowdsourcer can choose between various crowdworkers, it is hard to estimate in advance which skills a crowdworker possess to perform the job satisfactorily. In this paper, we draw on the information asymmetry about latent and unobserved quality of crowdworkers, which constitutes the majority of management studies that explicitly invoke signaling theory (Connelly et al., 2011).

Signaling has been proposed as a well-recognized mechanism to reduce these information asymmetries between two parties (Spence, 2002). The signaling theory describes implications of asymmetric

information and its consequences in various markets (Riley, 2001; Stiglitz, 2002). In crowdsourcing, as online labor markets, signaling theory has been examined in quite a few quantitative studies (e.g., Gefen and Carmel, 2008; Hong et al., 2013). Nevertheless, the research focus has been on the crowdsourcers' behavior and decisions acting as buyer or employer. Against this backdrop, we extend existing quantitative research by analyzing crowdsourcing settings out of the crowdworkers' perspective and introduce quality signals as an effective mechanism to rebalance the existing information asymmetries. We refer on the notion of Connelly et al. (2011) in which quality denotes the underlying, unobservable ability of the agent (i.e., crowdworker) to fulfil the needs or demands of a principal (i.e., crowdsourcer) observing the signal. In a crowdsourcing context, the crowdworker can be seen as an agent who obtains information about his own person, marketplace characteristics or task specifications that are not visible in its entirety for the crowdsourcer as the principal. Therefore, the crowdworker aims to convey positive quality signals in order to persuade the crowdsourcer to hire him. The crowdsourcer in turn occurs as receiver of the signals and wants to compensate the lack of information.

Furthermore, these quality signals can be differentiated more specifically into two types of signals – i.e. activating signals and pointing signals (Connelly et al., 2011). The activating signals indicate a characteristic that separates the agent from competitors and is also essential for activating the quality in the agent (Hasson, 1997). Concerning crowdsourcing, an activating signal of a crowdworker could be a specific aspect related to its person with which he stands out from the crowd. Thus, for instance, the proactive communication of mastering a wide range of programming languages in software development can be seen as an activating signal. These signals are inherently and personally related to the quality of the single crowdworker. In contrast, pointing signals indicate a characteristic, apart from the signal, that separates the agent from competitors (Connelly et al., 2011), e.g. obtained awards or certifications of a crowdworker. For example, the presence of good references in software development could be considered a pointing signal of certain experience. Although these signals are not directly linked to the signals of the crowdworker, they are liable indicators of work experience.

2.2 Bargaining Power

Within a setting of information asymmetries, the principal intends to change the behavior of the agent if the agent is likely to behave in an opportunistic way that harms the principal (Saam, 2007). In general, this form of power refers to an individual's relative ability to control others' outcomes, experiences or behaviors (Keltner et al., 2003). The crowdsourcing scenarios outline a specific form of power within human social interaction which is characterized by negotiations and bargaining between the crowdsourcer and the crowdworker. Researchers studying bargaining and those investigating resource dependence have each identified a source of bargaining power (Yan and Gray, 1994). In general, the bargaining power can be defined as a bargainer's ability to favorably change the bargaining set (Lax, 1987); to win accommodations from the other party (Dwyer and Walker Jr, 1981); or to influence the specific outcome of a negotiation (Schelling, 1956).

Against this backdrop, Saam (2007) analyzed agency problems and showed which bases of power are available to principal and agent. In sum, all situations in which an agency problem exists, the principal possess quantitatively more bases of power than the agent. Hence, agency theory assumes implicitly a power asymmetry in favor of the principal (Saam, 2007). This gives new insights for re-evaluating specific principal-agent-relationships and the role of power asymmetries within – e.g., crowdsourcer-crowdworker relationship. Since the crowdsourcer (i.e., principal) decides which crowdworker (i.e., agent) to hire and when to reward the outcome, the bargaining power balance is in favor of the crowdsourcer. Due to this, the crowdworker aims to convince the crowdsourcer to choose him and thus get the job. Previous research on crowdsourcing has examined that the crowdsourcer can set prices for jobs (Felstiner, 2011), endure no or only few penalties for renegeing on their agreements (Kittur et al., 2013), use its own evaluation software for jobs or even reject completed tasks without sufficient justification (Silberman et al., 2010). Thus, the crowdworkers' power is limited (Kittur et al., 2013),

since the crowdsourcer possesses an superior bargaining position. In this case, the crowdworker needs solution mechanisms to reduce these power asymmetries.

3 Research Method

3.1 Research Context

To develop our theoretical model, we investigated crowdworker on two crowdsourcing marketplaces – i.e., *Elance.com* and *Freelancer.com*. We have chosen these marketplaces to overcome biases resulting from a single intermediary and due to the diversity of offered tasks and the various types of crowdworkers. *Elance.com* was first launched in 1999 and merged in 2013 with oDesk, another crowdsourcing marketplace. The size of their crowd currently amounts to more than 3.6 million crowdworker who have earned over 1.4 billion US dollar since launch of the marketplace.¹ In this online labor marketplace, crowdsourcers can post jobs, which are then performed by a very heterogeneous crowd consisting, inter alia, of programmers, mobile developers, designers, writers and marketers. The Australian intermediary *Freelancer.com* was founded in 2009 and since then has built up a size of 15 million registered crowdworker who worked on over 7.5 million projects². The crowdworker on *Freelance.com* can be assigned, amongst others, to the fields of design, websites, IT & software, business, accounting and legal. Observed patterns of signaling, bargaining power and certain behavior were highly consistent across the two marketplaces.

3.2 Data Collection

Our primary data source reflects 12 semi-structured interviews with crowdworkers of the two crowdsourcing marketplaces. The general aim of interviewing is not to be representative, but to understand how individuals experience their environments and make sense of their own lives by considering the meanings people attribute to their lives and the processes which operate in particular social contexts (Valentine, 1997). Semi-structured interviews are well suited in exploring attitudes, values, beliefs as well as the views of a person towards a phenomenon of interest (Kvale, 1996). This interview form provides in-depth information by understanding the respondent's point of view rather than make generalizations about behavior (Tashakkori and Teddlie, 2010). Although, each respondent gets the same key questions asked, there is flexibility in how they are asked what permits questions to arise in response to the dialog (Kvale, 1996). Hence, we decided to conduct semi-structural interviews to understand the socio-technological context of crowdsourcing out of a crowdworkers' perspective and extract their views toward working in online labor markets. In developing the interview protocol, we therefore used Kvale's (1996) framework of conversational, qualitative interviewing as a template to ensure that our semi-structured interview elicit information relevant to our research question. Based on these guidelines, we designed an open-ended interview protocol (Grant et al., 2013) that focused on the work environment and the behavior of crowdworkers. The interviews took place between December 2014 and January 2015 and each lasted between 60 and 90 minutes. Subsequently, we have transcribed the recorded interviews, before coding and analyzing the transcripts with the aid of the qualitative analysis software package *ATLAS.ti*.

In order to provide an unbiased data collection, we use numerous and knowledgeable respondents who view the focal phenomena from diverse perspectives. Hence, we included respondents who differ regarding the duration of marketplace membership and performed crowdsourcing jobs, e.g., translation,

¹ <https://www.elance.com/trends/talent-available>

² <https://www.freelancer.com>

programming or writing. As the evaluation of behavior could differ concerning their previous experience, we interviewed more and less experienced crowdworkers. Thus, we also relied on their personal data that was available on their publicly visible user profiles on the marketplaces. It has been found that the duration of membership (i.e., the time registered on the given crowdsourcing marketplace), the amount of clients, the number of performed jobs and the average hourly rate of the crowdworkers are reliable indicators of experience (see Table 1). We interviewed six crowdworkers per intermediary.

Crowdworker	Membership	Category	Jobs	Average Hourly Rate	Clients
CW1	Nov 11	Writing	64	\$ 15	37
CW2	Nov 11	Writing	21	\$ 27	15
CW3	Aug 13	Translation	53	\$ 30	35
CW4	Nov 14	Programming	11	\$ 11	6
CW5	Dec 12	Administration	16	\$ 14	12
CW6	Jan 14	Programming	7	\$ 15	5
CW7	Nov 07	Translation	272	\$ 30	196
CW8	Jan 15	Writing	17	\$ 25	16
CW9	Feb 14	Translation	18	\$ 20	12
CW10	Apr 11	Writing	31	\$ 30	28
CW11	May 14	Programming	24	\$ 18	21
CW12	Aug 03	Programming	16	\$ 80	13

Table 1. Selection of Crowdworkers

3.3 Data Analysis

The qualitative research has a long and venerable history, particularly in terms of its ability to be revelatory (Guba and Lincoln, 1994). Qualitative data has the ability to offer insight into complex social processes and explicate them (Eisenhardt and Graebner, 2007). Since decades researches have used qualitative data to inductively develop theories. The purpose of qualitative research is not to make truth statements about the reality, but to extend institutional theory and to explicate the complex social processes involved (Eisenhardt and Graebner, 2007). Qualitative research and content analyses thus does not test hypotheses about reality, but rather make statements on how actors interpret reality (Suddaby, 2006). This approach is best used when no explicit hypothesis is to be tested (Martin and Turner, 1986) and where researchers have an interesting phenomenon without explanation and from which they seek to “discover theory from data” (Suddaby, 2006).

Against this backdrop, we want to find out how crowdworkers behave and what factors contribute to their actions. Hence, in line with several researchers (e.g. Mantere et al., 2012; Stigliani and Ravasi, 2012), we follow the approach of Gioia, et al. (2013) to analyze our data. This approach basically consists of two separate analysis phases. In a first iteration, the analysis follows interviewee-centric terms and concepts in an inductive fashion (1st-order analysis). Within the phase of the 1st-order analysis, a myriad of terms, codes and concepts emerged in the analysis process. Looking for similarities and relations among the many codes we tried to reduce the number of codes to a manageable amount by relating them to concepts. The aim was to focus on concepts and tentative relationships emerging from the interviews to develop a comprehensive compendium of 1st-order terms (Gioia et al., 2013). Concepts describe a vaguely specified notion capturing basic qualities that explain a phenomenon (Gioia et al., 2013). In a second step, we organized the 1st-order concepts into 2nd-order (theory-centric) themes and distilled them into overarching theoretical dimensions. These emerging 2nd-order themes suggest concepts that might help to explain the observed phenomena. In particular, we focused on nascent concepts that do not seem to have adequate theoretical referents in the existing literature or exist-

ing concepts which stand out because of their relevance to a new domain. In addition we distilled the 2nd-order themes even further into aggregate dimensions (Gioia et al., 2013).

In sum, having the 1st-order concepts, the 2nd-order themes and the aggregate dimensions, the basis for building a data structure is present. Besides its visual support, the data structure provides a presentation of the process from raw data to terms and themes in conducting the analysis and thus is an essential part of demonstrating rigor in qualitative research (Pratt, 2008; Tracy, 2010). Subsequently, we formulated dynamic relationships among the 2nd-order concepts in the data structure and then transforming these insights into a theoretical model (Gioia et al., 2013). In this context, the focus of building models is how to account for not only all the major emergent concepts, themes and dimensions, but also for their dynamic interrelationships (Gioia et al., 2013). Against this backdrop, we want to find out how crowdworkers behave in crowdsourcing marketplaces by following this introduced approach.

4 Results

4.1 Constitutive Elements of a Theoretical Model

In a first step, we therefore provide the essential groundwork for theory-building by developing the data structure. Our data structure includes 1st-order concepts that are meaningful to the crowdworkers and 2nd-order themes that are extracted overarching themes. Both iterations finally enabled us to assemble the aggregated dimensions.

4.1.1 Sending Pointing Signals

Our findings provide information about several components that can be used to improve a crowdworkers' position. In particular, pointing signals that are not directly related to the individual person, but yet separate the crowdworker from its competition. In general, pointing signals serve as a kind of metadata of the own competences of the crowdworker that are generated by others. First, an instrument that gives insights on work history of a person, are references. We observed references, in particular of large and well-known clients, to be valuable awards for the single crowdworker. In addition, the crowdworkers described the interaction and cooperation with large companies that crowdsource certain tasks, to be very professional and instructive. On the one hand, important references seem to be useful opportunities to learn new ways how to deal efficiently with crowdsourcers. On the other hand, references serve as flagships to promote the own abilities and differentiate from other crowdworkers. Thus, references can be seen as advertisements.

Second, we could observe that not only the existence of reviews matters, but also the absolute number of reviews has been found to be important in the behavior of the crowdworkers. In terms of jobs on crowdsourcing marketplaces, we assume the absolute number of reviews of a crowdworker to influence its self-confidence. The amount of reviews has impact on the appearance of the crowdworker as a potential agent to the crowdsourcers and thus serves as an additional pointing signal.

Third, another concept has been examined which is used by the crowdworkers to promote themselves – i.e., the emphasizing of the review quality. We found evidence that the content and the scope of reviews are a highly credible source of information on the crowdworkers' performance. The review quality in terms of substance is so crucial for future jobs that crowdworkers would rather renounce remuneration to prevent negative reviews. In contrast, emphasizing excellent reviews can sustainably stimulate further business due to their signaling effect.

4.1.2 Sending Activating Signals

In this context, there is a second type of quality signals which is strongly associated with the crowdworker as a person and also differentiates the individual from the crowd - i.e., activating signals.

In general, these signals express personal information that is given by the crowdworker itself. First, the individual track record of a crowdworker on the marketplace serves as an indicator of status and seems to be related to the type and manner of getting new jobs. The crowdworkers described mechanisms that can be characterized as listing systems. By visualizing the own track record as a crowdworker on the marketplace, it is easier to be found by crowdsourcers. In contrast, somehow losing an achieved level, rank or status is associated with very negative consequences, such as a declining number of jobs and less chance to prevail over competitors.

Second, since the crowdsourcers know little about the quality of crowdworkers as job candidates, the obtained education of the crowdworkers could be a powerful activating signal to reduce this lack of information. Hence, crowdworkers utilize their educational background to demonstrate expertise and quality. They specify academic degrees as well as specific technical education that empower them to do certain jobs in high quality and better than its competitors. Some crowdsourcers offer tasks only to certain groups of crowdworkers by so called “Invite-only-Jobs” depending on the educational background.

Third, the promotion of specific skills of crowdworkers is used as an activating quality signal that is strongly associated with the individual person. Within crowdsourcing settings, the crowdworkers consciously use their skills, e.g., concerning IT: PHP, Software Architecture, MySQL or Javascript, to present themselves as experts in their specific fields. Furthermore, the crowdworkers can use exams or trainings on the crowdsourcing marketplaces to test their skills and to quantify them in order to compare directly with the rest of the crowd.

4.1.3 Dependence

We observed bargaining power to be an expression of dependence which is determined by the crowdworkers’ own alternatives. The interviewed crowdworkers described situations in which the crowdsourcers reject almost any submitted job application. Further the crowdsourcers set the conditions and contents of the tasks without any co-determination by the crowdworker. At the beginning of their career, crowdworkers get badly paid. In this situation, the crowdworkers have no bargaining power and are highly dependent on the crowdsourcers. Nevertheless, at some point on the crowdsourcing marketplaces this situation changes and the crowdworkers are able to participate in negotiations of task conditions. Since then, the crowdworkers give instructions and requirements of the task processing to the crowdsourcers instead. In this position, the crowdworkers reach a critical amount of bargaining power and are therefore almost independent of the crowdsourcers as requesters. In sum, there is evidence that a crowdworker experience different stages of bargaining power and is able to reach a critical value with which its individual situation changes.

4.1.4 Affecting Own Future Success

In general, higher proposed remunerations of the crowdworkers increase the likelihood that these offers will be rejected by the crowdsourcers. That means crowdworkers with relatively high wage expectations hardly get job offers from crowdsourcers, particularly without any justification for a higher price. More experienced crowdworkers seem to be more self-reflective and thus can better assess the appropriate remuneration for their work. They argue very precisely by means of their improved performance over time and their acquired competences whereby they increase the amount of job offers. Beyond, experienced crowdworkers not only get a higher number of job offers, but particularly more sophisticated and demanding ones. Hence, we observed the amount and quality of job offers to be indicators of more self-determined and successful crowdworkers. It is a position of “cherry picking” in which these crowdworkers got the ability to select the best job offers.

Besides, crowdworkers strive for high incomes, such as employees on any other labor markets. Nevertheless, we found a great gap between minimum and maximum payments for the same tasks in almost every observed form of crowdsourcing. This wide range of remuneration can be up to several hundred US Dollars in these online marketplaces. Furthermore, we observed the crowdworkers’ income to

change during their membership on the marketplace. The respondents described an exponential process that starts with almost marginal income and increases rapidly in the course of time. These findings indicate that the crowdworkers' behave differently over time and develop the ability to set their own prices.

In sum, we outline our data structure in figure 1, based on the distilled terms and concepts of our interviews that have been condensed to aggregate dimensions. These insights enabled us to develop a theoretical framework of crowdworkers' behavior which links the various concepts that emerged from the data.

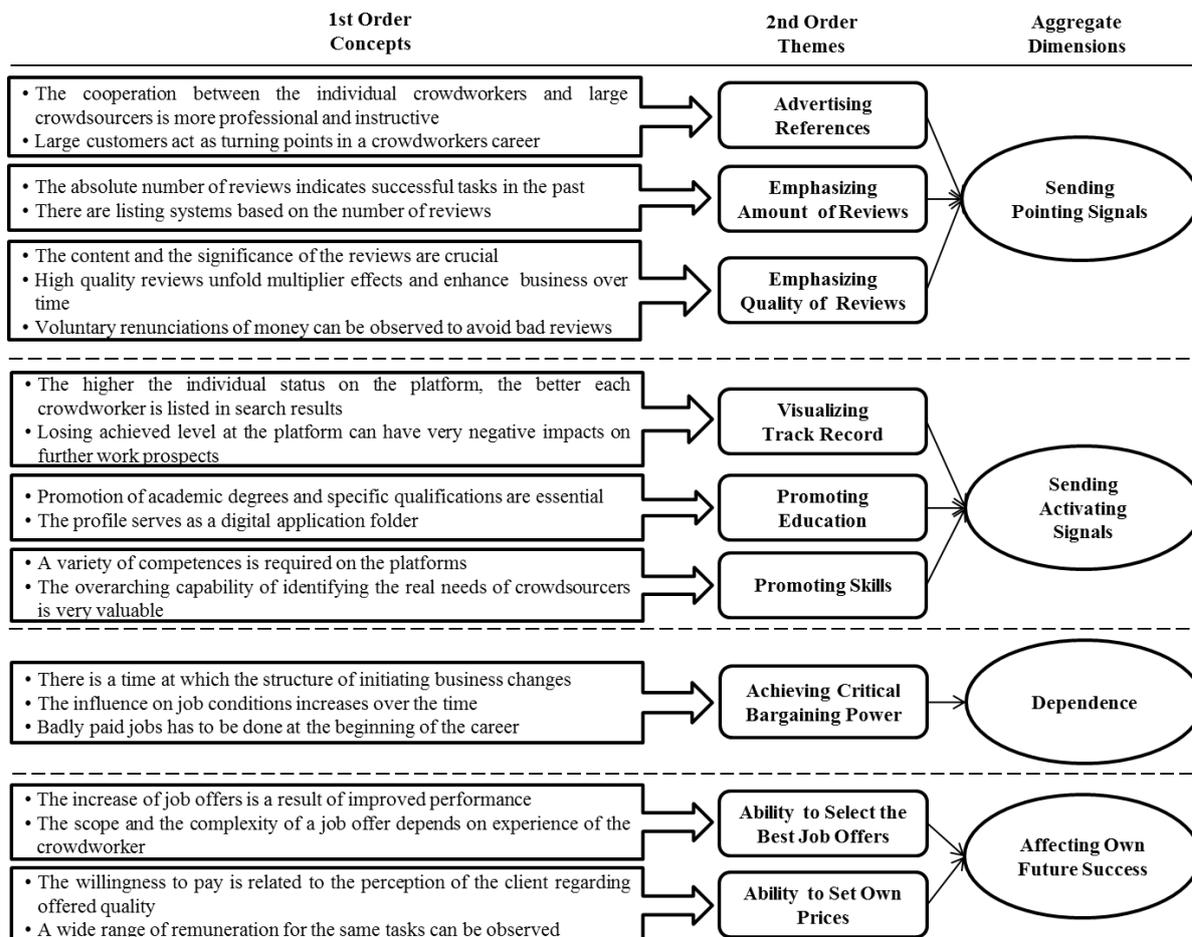


Figure 1. Data Structure

4.2 A Theory of Critical Bargaining Power in Crowdsourcing

According to Gioia et al. (2013), although the data structure is very important, it is nonetheless the static picture of a dynamic phenomenon. Hence, we develop an inductive model that is grounded in the data of the crowdworkers and captures the crowdworkers' behavior in theoretical terms. Therefore, our theoretical model shows the dynamic relations amongst the emergent concepts which describe effective behavior in crowdsourcing.

The identified quality signals of crowdworkers indicate a nexus to the actual ability to control the crowdsourcers' behavior. In context of pointing signals, references seem to have a positive effect on bargaining power since they enhance the potential of positive word-of-mouth and thus enable the crowdworkers to negotiate better job conditions.

“I always need to revise and to incorporate some reputation in my website. For example, customer name, etc. and continue to rename references.” (CW7)

Furthermore, the number of reviews is an indicator of past achievements and thus a pointing signal of experience in crowdsourcing. A certain amount of reviews facilitates a higher listing of the crowdworker on the marketplace. Due to the fact that the amount of reviews seems to be an influencing factor in this ranking system, we assume this factor to improve the individual negotiation position.

“If you don’t have one single review and no single job, then people are first cautious. But the more good reviews you have and the more well-paid jobs, the more jobs you get afterwards. Then it is a self-perpetuating process.” (CW2)

In addition to the total number of feedbacks, the quality of these reviews is crucial. We found evidence that the explicit content of reviews regarding scope, expression and richness is a strong pointing signal to potential employing crowdsourcers. Against this backdrop, we believe the quality of reviews to strengthen the position of the crowdworkers due to its sustainable advertising impact.

Hence, we propose that the promotion of own references as well as emphasizing the amount and the quality of the received reviews are very useful to improve the own bargaining situation as a crowdworker.

Proposition 1: The sending of pointing signals positively affects a crowdworkers` bargaining power.

In terms of activating signals, which are related to the crowdworkers` person, the personal track record is an obvious distinguishing feature. It describes an activating signal that determines the crowdworkers` visibility on marketplaces. A well visualized track record is easier to be found by crowdsourcers due to the higher listing in search results. If crowdworkers are at the top of the list, they usually get a lot of requests from crowdsourcers. The composition as well as the representation of track records can vary between different crowdsourcing marketplaces (e.g. track records can be composed of ranks, levels or badges). Nevertheless, high listed crowdworkers` are appreciated as experts and thus do have a strong bargaining position. The outstanding signaling effect as well as the great impact on further jobs of individual track record has been highlighted by all respondents.

“And since it may just happen that I will be displayed. Especially when it is about medical writing. Then I am listed very often, because I got a pretty high, I think it is called “E lance-Level”. That’s why I will appear frequently and get contacted.” (CW3)

In addition, we observed crowdworkers` education to be utilized as a quality feature. The majority of respondents stated that they provide all academic or professional achievements on their profile to signal crowdsourcers a high level of expertise.

“So the clients know that I got an academic background and of course I have text examples on my profile to proof my skills” (CW1)

The crowdworkers seek to provide evidence for its own quality to be perceived as specialists. Hence, we assume that the promotion of education is considered a strong activating signal of the crowdworkers` quality and thus strengthen its position in relation to crowdsourcers.

Furthermore, the crowdworkers emphasize their specific skills on the profiles. The respondents stated that providing a variety of skills is very beneficial regarding the interactions with crowdsourcers. If a crowdworker has specific skills in a particular field, he can easily justify certain conditions of jobs.

“You can enter various skills at Elance and then Elance proposes a freelancer. And specifically invite people for this job. And then it can happen that I’ll appear.” (CW3)

Hence, crowdworkers promoting a wider range of skills are more likely to determine bargaining outcomes than others. Against this backdrop, we assume the track record, the education and the specific skills of crowdworkers to serve as activating signals that improve the options within negotiations.

Proposition 2: The sending of activating signals positively affects a crowdworkers` bargaining power. The bargaining power as a major indicator of dependence within crowdsourcing settings illustrates the relationship between crowdsourcer and crowdworker regarding their individual scope of action in this

dyad. At the beginning of a crowdworkers' career, this bargaining power manifests in low-paid jobs and almost no participation in the negotiating situation with crowdsourcers. At that stage, the crowdworkers have to accept almost any job, even to inferior conditions. They receive payments below 5 \$ per hour, got very tough deadlines and had to be available at any time for the crowdsourcers. However, with increasing bargaining power, due to more influence regarding the terms of a job over the time, the crowdworkers improve their negotiating position. Although, we observed large differences and extreme opposing positions of crowdworkers' bargaining power, there is a time at which a fundamental change in the structure of the initiation of business takes place. In particular, powerful crowdworkers, who have surpassed the turning point, do not have to search and apply for any jobs, they rather get invited. Hence, the amount of job offers increases significantly, wherein the majority is then even rejected from the crowdworkers. Furthermore, with rising bargaining power the crowdworkers gets a wider range of jobs regarding scope, complexity and duration. In general, these jobs are related to significantly higher remuneration as well as more flexible milestones. Due to its higher bargaining power the crowdworkers are able to accept demanding tasks according to their preferences. They can choose what kind of jobs as well as how many jobs they want to accept and when they want to start. Our interviews showed that some crowdworkers have obviously reached a critical bargaining power which gives them a stronger position than others:

"I reject 20 jobs per week and just say "no, because I'm not interested." But if you of course emanate from the average of 99% or 95% on the platform, then it's "take it or leave it" (CW4)

Since CW4 works as a programmer, comparatively few jobs have been sufficient for achieving a strong bargaining position. In comparison to other job categories, there is less competition among highly qualified programmers and single jobs are extensive and of large financial volume. Therefore, a small number of good references or reviews can quickly improve the own position. Nevertheless, this crowdworker points out that the majority of the crowd is in a less favorable position and thus do not have the critical bargaining power towards the crowdsourcers. Consequently, we found evidence that, especially at the beginning of a crowdworkers' career, bargaining power is low since the dependence of employing crowdsourcers is very high. In this context, we assume critical bargaining power to be a central mechanism in crowdsourcing settings that increases the individual job offers of a crowdworker.

Proposition 3: Achieving critical bargaining power will positively affect a crowdworkers' ability to select the best job offers.

In most labor markets, including crowdsourcing, successful behavior is often accompanied by a certain income and the ability to make own decisions. In contrast, highly dependent crowdworkers with little bargaining power in relation to the crowdsourcers, earn very little money at the beginning of their career:

"So for any person that starts working on those platforms, the first two months are like working for free, I must admit." (CW4)

Nevertheless, we found evidence that crowdworkers who are less dependent to crowdsourcers and thus have a critical bargaining power in negotiation, generate more income than their competitors. Although they perform the same tasks, i.e., translation, programming, editing, designing, there are large discrepancies in their income structures. For example, in the specific field of writing the monthly income has been stated between 300 \$ and up to 3.000 \$ for similar jobs. In addition, the information on the profiles of the crowdworkers substantiate these findings by indicating the average hourly rate of minimum 15 \$ and maximum 30 \$ for writing tasks. One explanation is rooted in the willingness to pay of the crowdsourcers which seems to increase, in case there are significant signals of quality regarding the crowdworker. That is an indicator that there must be a turning point in the relationship between crowdworker and crowdsourcer at which a critical amount of bargaining power is reached and this power shifts in favor of the crowdworker. Hence, crowdworkers who provide strong quality signals and thereby achieve a critical bargaining power can increase their earnings and further choose which job conditions they accept or even determine the prices. The crowdworkers evolve from price

takers to price setters. Thus, we assume the strong bargaining position, after overcoming that power shift, to be the major indicator of the crowdworkers' ability to set prices:

Proposition 4: Achieving critical bargaining power will positively affect a crowdworkers' ability to set its own prices.

In sum, our theoretical model describes a phenomenon of a fundamental shift in crowdworker-crowdsourcer relationship. In the beginning, crowdworkers do not have a strong position in relation to the crowdsourcer and thus are very dependent. But based on strong quality signals, which serves as a tool to reach a critical bargaining power, we assume that a turning point can be reached. At that point the power and thus the dependence shift in favor of the individual crowdworker. As a consequence, critical bargaining power seems to be related to a more self-determined and thus successful behavior of the crowdworker within crowdsourcing settings.

We outline the data-to-theory connections in order to make the theory comprehensible. In figure 2, the model of critical bargaining power in crowdsourcing represents the core of our research results.

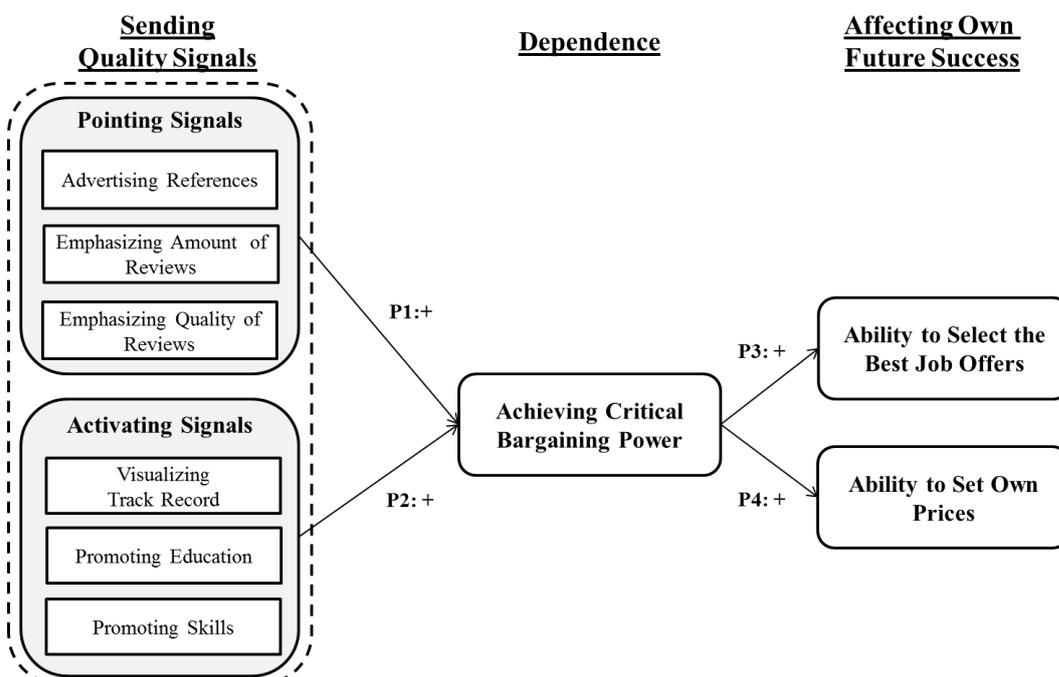


Figure 2. Model of Critical Bargaining Power in Crowdsourcing

5 Discussion

5.1 Theoretical Implications

Within crowdsourcing literature, the individual crowdworker as processing agent of the tasks has been largely neglected. Hence, we address this research gap by developing a theory, emerged from interviews with those affected, that describes crowdworkers' position in this new online labor marketplace. We focus on the individual crowdworker and its dependencies to crowdsourcers which can be characterized by different balance of bargaining power. This bargaining power decisively affects the behavior of crowdworkers. Although, previous research on crowdsourcing stated that the bargaining power is a feature of the crowdsourcer (e.g. Felstiner, 2011; Kittur et al., 2013; Silberman et al., 2010), we found evidence that this may change over time. The distribution of bargaining power between crowdsourcer and crowdworker is no permanent condition but of dynamic nature. Thus, the crowdworker can, due to its signaling behavior, cause a power shift at which the critical bargaining

power is reached and the dependence switches in favor of the individual crowdworker. In general, we observed this shift to be related with the success of the crowdworker. Hence, we extend previous research by illustrating that crowdworkers can hold strong bargaining positions in which the crowdsourcers are the dependent ones.

Previous research examined technological infrastructures (e.g. Irani and Silberman, 2013) or system intelligence (e.g. Kittur et al., 2013) that can help crowdworkers to be more efficient and skilled. The developed theory is, to our knowledge, the first that exclusively focus on the individual perspective of the crowdworkers. In particular, the behavior of the crowdworkers has been a black box in recent studies. Thus, our theoretical model discovers segments of this black box by identifying both, nascent concepts (e.g. critical bargaining power, affecting own future success) and established concepts (e.g. quality signals, dependence) that have a significant relevance for individuals. Our findings give insight on how efficient and successful crowdworkers behave and thus extends the existing theories.

5.2 Practical Implications

The present study provides a first approach to describe crowdsourcing markets as well as the relationship between crowdsourcer and crowdworker out of an individual's perspective and serves as a basis for further discussions. According to our model of critical bargaining power, the crowdworkers are sensitized for their relationship to crowdsourcers and its antecedents of behaving successful in crowdsourcing marketplaces. At the beginning of their career, when they have little bargaining power in crowdsourcing settings and thus are very dependent on the crowdsourcers, the crowdworkers should focus on their individual quality signals. Due to the fact that pointing signals can hardly be amplified in an early stage and serves as instrument to climb the marketplace listings, the crowdworkers should primarily focus on its activating signals. These activating signals are more appropriate to differentiate itself from competition and thus to highlight the own unique selling proposition because they are inherently linked to the individual crowdworker. In contrast, more experienced crowdworkers should focus primarily on their pointing signals. At this stage, promoting excellent references as well as a large number of high-quality reviews differentiate crowdworkers to their competitors and thus increase their bargaining power.

5.3 Limitation and Future Research

While our study provides some significant contributions with respect to crowdworkers' behavior, we also recognize that our research has several limitations which constrain the generalizability of our results. First, we developed our model using data from crowdworkers of only two crowdsourcing marketplaces. It can be assumed that bargaining power and its effects are assessed differently in collaboration-based forms of crowdsourcing (Afuah and Tucci, 2012). Further studies may overcome these limitations. Second, within our theoretical model we exclusively consider power in the crowdworker-crowdsourcer dyad. Nevertheless, it can be assumed that other environmental factors, i.e. simultaneous relations to crowdsourcers, interaction and support with the marketplaces as well as relations to other crowdworkers, opens up more complex power structures. Hence, further research may address the antecedence and effects of critical bargaining power across crowdsourcing as a multiple dyadic relationship (Anderson et al., 2012).

6 Conclusion

Given the lack of research on the individual in crowdsourcing, our primary objective was to achieve a better understanding of the factors that determine crowdworkers' behavior. We followed a well-established methodology to conduct a qualitatively rigorous inductive study and developed a theory of critical bargaining power in crowdsourcing. Our results illustrate that crowdworkers have different stages of bargaining power towards the crowdsourcers. Furthermore, bargaining power is no permanent condition but rather of dynamic nature and can be increased by the crowdworkers' activating and

pointing signals. Due to its signaling behavior, the crowdworker is then able to reach a turning point of critical bargaining power at which the distribution of power shifts in his favor. Beyond this point of power shift, the crowdworkers behave differently since they have significantly more success. Our findings have several implications. Theoretically, this study expands existing theories on bargaining power, introduces specific quality signals and their impact on bargaining and power shifts in crowdsourcing settings. Practically, our study contributes guidelines for crowdworkers especially in the field of improving quality signals. In conclusion, our study considered crowdsourcing to be a new facet of digital online work that deserves future theoretical and practical attention with focus on the individual crowdworkers as the executing agents.

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