

# Working on Low-Paid Micro-Task Crowdsourcing Platforms: An Existence, Relatedness and Growth View

*Completed Research Paper*

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## Abstract

Low-paid micro-task crowdsourcing sites present a new workplace that has been increasingly popular. Given recently reported crowd demographics and relevant literature we believe that the understanding of higher-level motivations for workers on these sites is still an under-explored area. Using a qualitative research methodology, we explore workers' motivations in their natural settings. We conduct interviews with Amazon Mechanical Turk workers and analyze the data through the lens of Alderfer's existence, relatedness, and growth theory. Our paper contributes new insights to the crowdsourcing literature, specifically that low-paid micro-task crowdsourcing workers aim to satisfy relatedness (connectedness and societal impact), existence (income, basic rights and rewarding experience), and growth needs (impact on self and skill development). We also discuss three additional categories that emerge from our data: sense of control and power, having fun and passing the time. Our findings provide new contributions that are of high relevance to both theory and practice.

**Keywords:** Crowdsourcing, Low-Paid Micro-Task Crowdsourcing Platforms, Existence Relatedness and Growth Theory

## Introduction

Crowdsourcing is the phenomenon of outsourcing tasks, which are traditionally performed within the organization, through an open call to the masses via the Internet (Howe 2006). Crowdsourcing platforms vary by participation mode, task nature and size, payment level, and function. Crowd participation could be a solicitation of independent individual contributions, which is the case in marketplaces and individual contests, or a collaboration of a group of individuals whose joint contributions constitute the added value or knowledge, as is the case in crowdsourcing communities. The tasks' nature and size determine the level of innovation, complexity, and proficiency required to complete them. The payment level ranges from no payment for voluntary work, to less than a dollar for low paid marketplaces, and thousands of dollars in the case of contests. In terms of crowdsourcing functions, Howe (2006) differentiates between four functions: crowd creation, crowd wisdom, crowd voting, and crowd funding. Crowd creation refers to contribution via a new design, product, idea, or solution while crowd voting denotes the contribution via voting, judging, or filtering content. Crowd wisdom refers to the concept of collective intelligence: the crowd can outperform the best individuals in it (Surowiecki 2005). As for crowd funding, it refers to financing the activities of individuals or groups through pooling small funds provided by the crowd (Belleflamme et al. 2014). Crowdsourcing is a complex mechanism and often involves more than one of these functions, that were traditionally performed by individuals within organizational boundaries (Geiger et al. 2011). When approached through the crowd, these functions seem to gain an unprecedented power due to the fading of time, space and even organizational boundaries (Brabham 2008).

Low-paid micro-task crowdsourcing sites present a new workplace that has been increasingly popular in the last few years. These crowdsourcing platforms have been recognized as comparable to traditional workplaces, mainly assembly lines (Moussawi & Koufaris 2013), and the task completion as equivalent to that of regular work (Kaufmann et al. 2011). These platforms have changed the way that many individuals work, view work, use technology, and generate income (Cushing 2013). The tasks posted on these platforms are small and vary between transcription, image labeling, visual and speech recognition, scientific surveys and experiments.

On Amazon Mechanical Turk (AMT), a low-paid micro-task crowdsourcing platform, prior studies used field experiments to explore the impact of an increased reward structure (Mason & Watts 2009), and the interaction between monetary payments and high-level motivation (Rogstadius 2011). Other studies explored motivations, task characteristics, task design, and workers' experience in these contexts (Ipeirotis 2010; Kaufmann et al. 2011; Schulze 2011; Moussawi & Koufaris 2013). The average wage per hour on AMT ranges between \$1.5 and \$2, while the percentage of workers with at least a bachelor degree is around 50% in the US and 74% in India (Ross et al. 2010). In 2009, the percentage of AMT workers located in the US who reported an annual household income above the national median was 41% (Ross et al. 2010; Noss 2010). The reasons causing these workers to return to the platform every time, and ask for better tools to help them better present themselves to employers are still under-investigated (Harris 2014). In a lab experiment, Ariely (2008) found that subjects in the higher perceived meaning condition exhibit higher reservation wages than those in lower meaning conditions. On AMT, Chandler et al. (2013) found that when subjects were told they were participating in cancer research, that is when working in a meaningful context, their work quantity and participation rates increased while their work quality didn't change. In their cross-sectional study, Kaufmann et al. (2011) found that identification with the community is a relevant factor to workers, but the reasons behind this finding remain unexplored. Based on our review of the literature, we believe that the understanding of higher-level motivations for workers on crowdsourcing platforms is still an under-explored area.

To address this gap in the literature and to better understand the workers' experience on low-paid micro-task platforms, we interview Amazon Mechanical Turk workers. Using a qualitative research methodology, we explore workers' motivations in their natural settings, in an attempt to interpret the crowdsourcing phenomenon in terms of the meaning workers bring to it (Denzin & Lincoln 2005). We conduct interviews with AMT workers and analyze the data through the lens of the existence, relatedness, and growth theory (Alderfer, 1972). Our paper contributes new insights to the crowdsourcing literature specifically that low-paid micro-task crowdsourcing workers aim to satisfy relatedness needs (connectedness and societal impact), existence needs (income, basic rights and rewarding experience), and growth needs (impact on self and skill development). We also identify two additional categories that emerge from our data: sense of control and power, and having fun or passing the time. While some of our results confirm prior research findings, we provide several new contributions that are of high relevance to both theory and practice. This research study is part of a series of studies we are conducting to explore higher-level motivations on low-paid micro-task crowdsourcing platforms.

In the next section we present the theoretical background starting with a review of the literature in low-paid micro-task crowdsourcing contexts. We follow that with a review of the existence, relatedness, and growth view (Alderfer, 1972) in general, and in these crowdsourcing contexts. We then present our research methods and findings. We conclude with a limitations, contributions and implications section.

## **Theoretical Background**

### ***Research in low-paid micro-task crowdsourcing contexts***

Low-paid micro-task crowdsourcing platforms provide their users with micro-tasks, characterized as small, simple (Shaw et al. 2010), and completed quickly for a relatively small amount of money (Ipeirotis 2010a). Amazon Mechanical Turk (AMT) is one example of these platforms where crowdsourcers post Human Intelligent Tasks (HITs) for the crowd to work on (Ipeirotis 2010a). HITs are tasks that are easy for the average human being to perform but hard for the computer to do. On AMT, research has shown that intrinsic motivation triggered through a non-profit context cover story can improve the quality of output for the average task, sequences of task, and tasks with varying levels of complexity (Rogstadius et al. 2011). Additionally, increased financial rewards increase the quantity but not the quality of work

(Mason & Watts, 2009). The same study discovered an anchoring effect on the AMT platform where workers who were paid more perceived their work to be of a higher value.

Prior studies explored incorrect pricing and task starvation issues (Faridani et al. 2011) and developed predictive models for worker reservation wages on crowdsourcing platforms such as AMT (Horton & Chilton 2010). Ipeirotis (2010b) analyzed the demographics of workers on AMT and explored six motivational factors on the platform, specifically: fruitful work, fun, time passing, primary and secondary source of income, and part time job. Results reveal the dominant motivational factors for participation to be fun, free time passing, and primary or secondary source of income. Kaufmann et al. (2011) analyzed motivational aspects on AMT based on the classic motivation theory, work motivation theory, and the OSS literature. They found that extrinsic motivations have a strong impact on the time spent of the platform. As for intrinsic motivations, they found task autonomy and skill variety to be the most important factors for many workers. Their results also showed community identification as one of the top five intrinsic factors for users (Kaufmann et al. 2011).

Other studies explored task characteristics on AMT (Schulze et al. 2011), along with experience in similar contexts (Moussawi & Koufaris 2013). Schulze et al. (2011) showed that the task needs to be enjoyable and simple with a good description, high monetary reward, and with available examples of answers. Moussawi & Koufaris (2013) found that extrinsic reward valence along with perceptions of task autonomy, skill use, and meaningfulness, matter to the workers and help in creating a positive experience on the platform.

Other studies looked at crowdsourcing issues aside from motivation. For example, Kittur et al. (2008) investigated the potential of using AMT to collect data for user studies, while Paolucci et al. (2010) discussed concerns related to running experiments with AMT workers.

### ***Existence, Relatedness and Growth Theory***

There are two types of motivation theories: mechanical and content-based (Campbell et al. 1970; Alderfer 1972). Mechanical theories of motivation aim to define the variables that explain a motivated behavior. Content-based theories are concerned with what is inside the individual and her environment that energizes and supports behavior. Existence, Relatedness, and Growth (ERG) theory is a content-based theory developed by Alderfer (1972) whose work was influenced by Maslow's. ERG theory explains subjective states of satisfaction and desire or primary-needs. An important distinction here is between primary and secondary needs, where the former refers to innate needs the individual possesses biologically or physiologically, while the latter are learned tendencies (Alderfer 1972). ERG needs can be intensified through learning processes, but they are based on primary needs.

Existence needs include the various material and physiological, desires such as hunger, pay, and physical working conditions. Relatedness needs involve relationships with others with whom one interacts either by virtue of their own choice or because of the setting in which one is situated. Satisfying these needs is necessary to prevent feelings of isolation, solitude and remoteness, and leads to meaningful interpersonal relationships. More particularly, individuals need to feel accepted in their social groups whether professional, religious, family or work related. Growth needs drive the individual to make creative and productive effects on the self and the environment. These needs are satisfied when one is involved in activities that call upon her to utilize her capacities or possibly need her to develop new ones. This results in feelings of completeness and fullness as a human being.

ERG theory is based on the assumption that these three broad categories of needs are active in all individuals, and was empirically studied and supported in various contexts (Alderfer 1972; Schneider and Alderfer 1973; Yang et al. 2011).

In this study, we propose that workers in low-paid micro-task crowdsourcing contexts are primarily motivated by these three need levels: existence, relatedness, and growth. Existence needs satisfaction on these platforms is related to satisfying monetary needs and acceptable working conditions on these platforms. Prior research has reported that workers on these platforms are motivated by primary or secondary income fulfillment (Ipeirotis 2010b; Kaufmann et al. 2011). Relatedness needs involve the interaction of the workers with other workers, task provider, platform, and platform provider in direct or indirect ways. Workers need to feel that they belong to crowdsourcing work groups. This belongingness dimension is reflected in a different manner than in a physical world, overcoming boundaries of time, space, and material objects or forms. Kaufmann et al. (2011) found that community identification, which

results from a personal identification process where the worker is guided by the community's norms and values, is important for workers on AMT. They report a positive association between the time spent (per week) on the platform and community identification. As for growth needs, workers satisfy these needs when they accept tasks that utilize their skills or push them to develop new ones. Prior research results reported skill development as one source of motivation in these contexts (Kaufmann et al. 2011; Ipeirotis 2010b).

In low-paid micro-task crowdsourcing contexts, the ERG theory seems particularly interesting. Workers visit the platform to complete very simple tasks for small payments. The payment for some of these workers is lower than the minimum wage in their countries, yet prior studies that explored the demographics on these platforms reveals a population dominated by well-educated individuals with sufficient incomes.

## **Research Design**

Our primary objective in this study is to conduct an in-depth investigation on Amazon Mechanical Turk to better understand how workers choose tasks, satisfy their primary needs, and connect while working on these micro-task low-paid crowdsourcing platforms. The goal was to explore these research issues in their natural context in order to maintain the richness of information (Eisenhardt 1989). We use an interpretivist perspective and aim to understand the crowdsourcing phenomena through the meanings that workers in these contexts assign to them (Myers 2013). While Eisenhardt (1989) states that qualitative research needs to start with a clean theoretical plate, other researchers (Paré 2004) argue that this is an impossible task, and theory can play a necessary and guiding role in research. Therefore, we use our review of the literature, and the ERG theory to guide the interview process. We follow an inductive reasoning approach to analyze the data. Two researchers worked on collecting the data through structured open-ended interviews with active and experienced Amazon Mechanical Turk workers. A HIT with the title "Interview: Tell us about your AMTurk experience!" was posted on the platform. The description of the task was informal and in line with the linguistic norms on the platform so that it is not burdensome to the participants (Kaye & Johnson, 1999; Brabham 2010). It clearly explained to the workers that they would need to answer a set of questions to tell us about their experience as AMT workers. We clearly indicated the expected completion time of 30 minutes. However, we set the time limit on the platform to be two hours and clarified this to the workers to make sure participants feel comfortable with no pressure of time. The compensation for this HIT was set to \$1.5. While the average compensation for AMT workers is approximately equal to 30 cents per task, and around \$1.8 per hour (Ross et al. 2010), we decided to pay participants an amount equal to \$1.5 for their participation time. We believe this amount is a sufficient compensation given the participants' invested time and effort during the interview that had numerous questions (presented in column 1 of table 2 in the Appendix). Furthermore, to make sure participants are experienced workers, we set the qualification requirements for this HIT to be based on prior completion of 50 HITs or more. Participants who chose to participate got directed to our experimental platform. At this point they were presented with an informed consent where they were assured anonymity and confidentiality. The HIT was available for completion over few days during September 2013.

## **Data Analysis**

The original sample consisted of 58 interviews. The primary data cleaning for empty submissions and spams led to the exclusion of 8 interview records. The resulting final sample consisted of 50 respondents, a satisfactory number to achieve saturation in qualitative interviewing (Guest et al. 2006). Descriptive statistics are presented in Table 1 in the Appendix. We conducted several rounds of coding. Our interpretation of the text relied mainly on the workers' own terms. The first step was a pre-coding phase where we highlighted, and circled interesting parts of the text. The following step was an open coding stage where we assigned in vivo codes to transcripts (presented in Table 2 in the Appendix). The next two stages involved analyzing the codes in order to identify categories, and then extract themes.

## **Results**

Twelve main categories emerged from the data analysis: AMT as a source of income, workers' right, connectedness with other AMT users, sense of belongingness, sense of control and power, fun, free time, skill development, impact on self, impact on society, criteria for task choice and third-party communities. The last step in the data analysis process was to group the categories guided by the ERG theory. We present the results in table 3 in the appendix, and discuss them in detail next.

### ***Existence Needs***

The satisfaction of existence needs refers to the fulfillment of physiological and material needs. We identified three categories under this theme, specifically: source of income, workers' rights and criteria for task choice.

#### **Source of Income**

The respondents stated that the potential to earn monetary rewards for their work was the dominant reason for joining AMT. One worker who has been on the platform for 3 years, working around 20 hours per week, and based in the US, wrote:

*I don't do this for fun, I do it for money ... I do it so I can pay my bills and buy myself things<sup>1</sup>*

In addition, workers stated that the income they earned was either supplementary to their primary income or served as income used for leisure purchases, or "beer and cigarettes" money as one user put it.

#### **Workers' Rights**

When asked about things they would like to see change, workers asked for more workers' rights. In line with their expressed frustration due to their lack of control and power, workers asked for protection against 'bad' crowdsourcers, who don't pay them for tasks they have worked on, or reject their work. They also asked for compensation above the minimum wage rate. Regarding advancement on the platform, workers asked for more transparency on how master level is gained and if it is available or not. Master level workers are elite workers who demonstrate high level of accuracy while completing HITs (Amazon, 2013). Additionally, workers requested transparency in HITs contents, clarity of contents, and rights to block requesters and rate them. One worker wrote:

*I would like Amazon to consider the workers at least a bit. It feels like we can easily be taken advantage of and there is no recourse. I worked on a long study once but once I started I wanted to finish. I got an e-mail for a follow up with the wrong link. I could not compete it so after all that time I wasn't paid, my work was rejected, leaving a stain on my reputation, and I could do nothing about it. I contacted the requester who acknowledged that it was their mistake but they said they couldn't/wouldn't fix it...*

#### **Criteria for Task Choice**

Based on the participants' responses, we found that the primary criterion used for choosing which tasks to complete was the pay vs. time tradeoff. Users stated that how much a task paid was key in their decision (often with an arbitrary threshold for each user, below which the task was undesirable), along with how long a task would take. So, even if a task paid above their individual threshold, if the time required was too long, the task was rejected.

As one worker puts it:

*I try and pick tasks that earn the highest amount of money in the shortest amount of time. I often do not do tasks that pay less than \$1 or \$0.75 overall. With that said, a task that pays \$1 but takes two hours to complete is also undesirable. A pay rate of about 10 cents per minute or higher is most sought after.*

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<sup>1</sup> This and all other quotes from the interviews appear verbatim with no spelling or grammatical corrections. Any additional details appear in brackets within the quote itself.

However, there was also a clear tendency to select tasks based on their fit with the user's abilities or interests. Users reported that they rejected tasks because they wouldn't be able to finish them or because they found them less interesting or boring. Conversely, they chose tasks based on how much they'd enjoy them. For example, there was a clear preference by many users for surveys and game-based tasks. For instance, one worker wrote:

*I choose tasks that I feel that I can do well. If I look at a task and see that it is something that I could not provide the requester with adequate information, I return the HIT. I enjoy doing surveys for university studies. I am not good at writing tasks and I am not very good on difficult reading comprehension tasks, so I usually avoid those.*

Additionally, many workers chose tasks based on information reported in third-party communities as discussed later.

### **Relatedness Needs**

Relatedness needs are satisfied through feelings of connectedness to others and belongingness to social groups. The existence of any form of community could help fulfill these feelings. Due to the nature of these platforms, the interaction with users and with the platform takes a new form. We identify four categories under this theme: connectedness with other AMT users, sense of belongingness to the platform, impact on society, and third-party communities.

#### **Connectedness with Other Workers and Belongingness to the Platform**

Despite the fact that many users said they used third-party sites to communicate with other AMT users and gather useful information, the vast majority stated that they felt no connection to the AMT community and expressed satisfaction with that. In fact, most of them expressly said that they would not want any communication with other users, often stating the value of anonymity and privacy afforded by the AMT platform. One worker with 2 months experience working between 5 and 120 hours a week writes:

*I just look at the tasks and pick what I think is interesting. To be honest, [I] don't care who else is looking at and performing the same jobs/tasks.*

Another worker wrote:

*[There] is a forum called turker nation where others workers share their story so [I] feel part of the mturk community.*

However, a smaller group of users stated that they felt a sense of community with other AMT users, though not through community-related activities. Instead, they reported a shared sense of identity with other users, making them feel connected with them. This connection arises because as they explain it they are working for the same goal. As one user stated, "we are all working to earn extra money." Another said that they felt part of a community by "just knowing there are others doing the same thing." One worker wrote:

*... I feel a common bond but I have no idea what they are like. They could be in jail for all I know and this is all they can do. Or they could be homeless or just bored sitting at an office job. No idea.*

#### **Impact on Society**

Despite the clear role of monetary rewards for participation on AMT, participants indicated that their work on the platform had an impact on society. One worker wrote:

*I am proud to be able to assist college students in their theses, in their degree programs, and their research.*

At a broader level, users overwhelmingly stated that they believed that their work impacted society in general in a positive manner. For most users, this was due to the nature of many of the tasks they completed on AMT, i.e. research studies from academic institutions on various topics. For some users, the

fact that AMT provided a platform where people with financial need or who were housebound could work and earn extra income was a societal contribution in itself.

### **Third-party Communities**

Despite their claims of no sense of community with other AMT users, workers often used information from third-party communities (such as Turkopticon.com) to assess the trustworthiness of a task requester. Using this information, they chose tasks from requesters that would be more likely to pay them and not reject their work. One female worker with one month of experience and spending around 40 hours a week on the platform wrote:

*Turkopticon is a review website where Turkers post reviews of requester. If a requester has a bad TO, I normally avoid that requester because I don't want to run the risk of getting a rejection. Also, if the requester is not paying enough for the survey or if I think that the task is not something I would be good at.*

### **Growth Needs**

Growth needs are driven by a desire to utilize one's capacities either to exercise existing skills or to develop new ones. These needs are satisfied when a worker works on activities that are beneficial and creative. We identified two categories under this theme: impact on self, and skill development.

#### **Impact on Self**

Several users stated that completing tasks on AMT made them feel smart and more self-confident. For instance, one worker wrote:

*I feel satisfied and confident , since [I] earn some extra money in my free time.*

Another one stated:

*I feel myself being helped. I am able to pinpoint things about myself that I never considered before. I am evolving, with my participation, and I know that in the way these tasks help me, it is helping others, who are just like me.*

However, this was not something that was shared by all the users. Others responded that their work had no impact on their self-confidence or sense of accomplishment.

#### **Skill Development**

Participants stated almost unanimously that their work on AMT did not serve to advance their careers. However, at the same time, many of them stated that they experienced some skill improvement through their participation on the platform. Specifically, three skills were mentioned often: computer/web skills, typing skills, and transcription skills. For instance, one worker who has been completing tasks for 2 years at a 20-hour per week rate wrote:

*It gives me practice for things such as transcription, data entry, reading skills, etc*

### **Other Emerging Themes**

Consistent with ERG theory, we identified three main themes. However, three additional categories emerged from our data that are not accounted for in the ERG theory: sense of control and power, having fun and free time passing. These three categories don't belong to any of the three types of needs (existence, relatedness, and growth needs). They also comprise many internal contradictions, which we discuss next.

#### **Sense of Control and Power**

The underlying parts of this theme were contradictory. On one hand, the vast majority of users reported that they felt in control during the participation in AMT. However, they also clarified that their sense of control was specific to their ability to choose which tasks to attempt and whether to finish a task or not.

For instance, one worker with 2 years experience, working around 50 hours per week, based in India wrote:

*[I] have control myself on the mturk [Referring to AMT] because myself [I] decide what to do and what not to do so...*

Another worker stated:

*I choose what to do. I can start something, decide I don't want to do it, and return the HIT.*

On the other hand, users also expressed frustration with their lack of power when it came to dealing with disputes with requesters. They cited unfair rejections or requesters who did not pay and stated that there was no way for them to dispute such cases, especially given Amazon's official position that they were just enabling the platform and would not get involved in any disputes. Similarly, users expressed a strong desire for information transparency on the platform. For example, they would like more information on requesters, the ability to communicate with requesters, more information on the Masters qualifications, etc.) One worker wrote:

*... You can pick if you don't want to do something, but for the stuff you want to do you can't decide when it will be up or for how long or even if you will be allowed to do it since many of the tasks require masters qualification*

Another worker stated: "I've read nightmare stories of 85 rejections from one company taking months to raise your score up enough to get the decent work again."

*I did a task for a requester that asked for workers in certain counties, and zip codes. I lived in the specified area, and so I completed the task. I was rejected, and the requester was kind enough to include a note that said "rejected due to not meeting geographic location requirements". I wrote to the requester, and asked that he explain the rejection, since I did indeed live where the task demanded. He never responded. ... I reported the situation to Amazon, expecting that the organizer of the whole affair ought to have some ability to straighten out a conflict. Amazon's response was "MTurk [Referring to AMT] is just an intermediary that arranges the ability of requesters and workers to be paired. We don't make any effort to arbitrate disputes"...*

### **Fun and Free Time Passing**

While some respondents mentioned that they choose to work on tasks if they find working on these tasks to be fun, others clearly stated that they "don't work for fun". Additionally, many respondents said that they work on the platform in their free time. Several workers consider this work to be a way to kill their free time and earn money at the same time as one worker expressed it:

*Many of the tasks are fun to do. I enjoy doing surveys that are fun and I sometimes learn new things as well.*

### **Contributions, Limitations and Implications**

This research study uses a qualitative approach to explore workers' motivations on low paid micro-task crowdsourcing platforms such as Amazon Mechanical Turk. Based on structured interviews with experienced workers on Amazon Mechanical Turk, we identified twelve categories of primary need satisfaction grouped under four main themes. This study makes several contributions to the crowdsourcing literature. First, adopting the ERG theory as a guiding theoretical lens contributes to the existing theoretical lenses explaining motivation, and satisfaction of workers on low-paid micro-task crowdsourcing platforms. Second, our study contributes to the research stream that uses the ERG theory by extending its applicability to the context of crowdsourcing. Third, adopting a qualitative research methodology, this study provides a rich and deeply informative assessment for workers' experiences in these contexts.

While most prior studies focused on monetary payments, fun, and time passing (Mason & Watts 2009; Rogstadius et al. 2011, Ipeirotis 2010b; Kaufmann et al. 2011), only two studies addressed community identification and meaning related motivations in low-paid micro-task crowdsourcing contexts



(Kaufmann et al. 2011, Chandler et al. 2013). This study takes a more comprehensive approach to understanding workers' motivation on these platforms. Our findings show that feelings of connectedness to others and to the platform are important to many workers. On AMT, workers felt connected to other 'turkers' through feelings of shared identity and goals, and by observing the changes in the numbers of available tasks. Feelings of relatedness emerged despite the structure of the platform. Other workers looked for direct forms of connectedness elsewhere in third-party communities such as Turkopticon. A new model of connectedness online came into play (through third-party communities) when the main platform didn't allow 'traditional' online interactions, i.e. messages, and chatting. In addition, most workers believe their work has an impact on the society. With around 50% of workers possessing at least a bachelor degree, and 90% of them earning more than \$10,000 per year (Ross et al. 2010), believing that their work has an impact on society could be the reason these workers return to the platform. They believe they are advancing science, helping research, and supporting students and various academic institutions. These users try to avoid feelings of isolation and solitude by choosing to belong to a platform where they can have an impact, and where it is easy for them to do so.

We also find that workers go through a cost benefit analysis before they decide whether they work on a task or not. This cost benefit analysis includes a valuation of time, money, as well as fit. A worker would choose a task if the analysis results in more benefits than costs on her behalf, that is, if it results in a rewarding experience. While prior research tried to create monetary reward structures, and add a high level motivation to the task (Mason & Watts 2009; Rogstadius et al. 2011), it seems that the workers go through a more complicated process when choosing the tasks they want to work on.

Furthermore, workers are looking to improve their skills, and feel smarter and more confident through their participation on the platform. This finding, along with considering their work to be a source of income, fun, and a time killer, confirm prior studies' findings. Also confirming prior findings, workers believed they had a sense of control and autonomy while working on the platform. However, despite this sense of control, workers felt powerless. They were frustrated especially when facing unfair rejections and not being able to get their basic rights on the platform. Users asked for mechanisms to increase transparency and fairness, and enhance communication. Based on these findings, future research needs to investigate possible governance mechanisms on these platforms to improve the workers' status and satisfaction levels.

A major limitation for this work is related to the recruitment strategy which might increase the presence of a self-selection bias due to the fact that the link to the study was posted as a HIT on Amazon Mechanical Turk's website. Given the nature of the crowd in crowdsourcing contexts, conducting structured asynchronous interviews seemed to be the most suitable interviewing technique. The goal was to interview a representative sample of experienced AMT users. The demographics of the resulting sample (Appendix, Table 1) are representative of the AMT population when compared to previously reported data (Ipeirotis 2010b, Ross et al. 2010). All non-probability online research methods have their own problems and are cause for caution (Schillewaert et al. 1998; Kaye & Johnson 1999; Brabham 2010). The goal was to obtain a purposive and representative sample to help us better understand the nature of motivations on these platforms.

Additionally, despite the fact that the three need levels, i.e., existence, relatedness and growth, proposed by Alderfer's theory provide a good explanation for the workers' needs and their indications in the context of crowdsourcing, alternative explanations and assumptions could exist. For instance, the reason why workers need to feel belongingness to crowdsourcing work groups could be that the community identification of crowdsourcing can create privilege since crowdsourcing is a popular concept. Such identification can be explained as more than just a pure need for belongingness. Another possible alternative is the possibility that working in low-paid contexts could help create a working profile, which can potentially lead to a bigger project and thus link to a much better reward. If this is the case, one could argue that this example represents a need for growth, a need for existence, or possibly both. None of these assumptions has been flagged in our interview data but they definitely constitute opportunities for future research.

This study also has practical implications for platform and task providers. First, we find that workers on these platforms care for their work and value it. Workers were looking to improve their skills and advance to master level on the platform. They were willing to discuss future work prospects with the platform provider (the provider wasn't in this case). We propose that providing more basic rights to these workers

could help improve the work environment on the platform. That is, doing most good for all stakeholders will help improve and advance the platform as a whole. Our findings also show that workers on these platforms weren't joining just to complete tasks and get money but they also looked to progress to 'elite' workers. They aspired for more. Platform providers need to develop a reward structure based on appreciation of workers' contributions, dedication, and efforts. For instance, creating different levels of 'master' workers and letting workers actually earn the title could help enhance the workers' performance. Task providers need to consider how their work is impacting society in general since workers are interested in making this kind of impact. Finally, platform providers need to consider implementing some much-needed governance mechanisms to enhance the experience on these platforms.

## References

- Alderfer, C. P. 1972. *Existence, Relatedness, and Growth: Human Needs in Organizational Settings*. New York, NY.
- Amazon 2015. "Amazon Mechanical Turk." from <https://www.mturk.com/mturk/>.
- Ariely, D., Kamenica, E., and Prelec, D. 2008. "Man's search for meaning: The case of Legos," *Journal of Economic Behavior & Organization* (67:3), pp 671-677.
- Belleflamme, P., Lambert, T., and Schwienbacher, A. 2014. "Crowdfunding: Tapping the right crowd," *Journal of Business Venturing* (29:5), pp 585-609.
- Brabham, D. C. 2008. "Moving the crowd at iStockphoto: The composition of the crowd and motivations for participation in a crowdsourcing application," *First monday* (13:6).
- Brabham, D. C. 2010. "Moving the crowd at Threadless: Motivations for participation in a crowdsourcing application," *Information, Communication & Society* (13:8), pp 1122-1145.
- Campbell, J. J., Dunnette, M. D., Lawler, E. E., and Weick, K. E. 1970. "Managerial behavior, performance, and effectiveness,").
- Chandler, D., and Kapelner, A. 2013. "Breaking monotony with meaning: Motivation in crowdsourcing markets," *Journal of Economic Behavior & Organization* (90), pp 123-133.
- Cushing, E. 2013. "Amazon Mechanical Turk: The Digital Sweatshop," UTNE: UTNE.
- Denzin, N. K., and Lincoln, Y. S. 2009. "Qualitative research," *Yogyakarta: PustakaPelajar*.
- Eisenhardt, K. M. 1989. "Building theories from case study research," *Academy of management review* (14:4), pp 532-550.
- Faradani, S., Hartmann, B., and Ipeirotis, P. G. 2011. "What's the Right Price? Pricing Tasks for Finishing on Time," *Human computation* (11).
- Geiger, D., Seedorf, S., Schulze, T., Nickerson, R. C., and Schader, M. Year. "Managing the Crowd: Towards a Taxonomy of Crowdsourcing Processes," AMCIS2011.
- Guest, G., Bunce, A., and Johnson, L. 2006. "How many interviews are enough? An experiment with data saturation and variability," *Field methods* (18:1), pp 59-82.
- Harris, M. 2014. "Amazon's Mechanical Turk workers protest: 'I am a human being, not an algorithm'," *The Guardian: The Guardian*.
- Horton, J. J., and Chilton, L. B. Year. "The labor economics of paid crowdsourcing," Proceedings of the 11th ACM conference on Electronic commerce, ACM2010, pp. 209-218.
- Howe, J. 2006. "The rise of crowdsourcing," *Wired magazine* (14:6), pp 1-4.
- Ipeirotis, P. G. 2010a. "Analyzing the amazon mechanical turk marketplace," *XRDS: Crossroads, The ACM Magazine for Students* (17:2), pp 16-21.
- Ipeirotis, P. G. 2010b. "Demographics of mechanical turk". NYU Working Paper No. CEDER-10-01.
- Jain, R. Year. "Investigation of Governance Mechanisms for Crowdsourcing Initiatives," AMCIS2010, p. 557.
- Kaufmann, N., Schulze, T., and Veit, D. Year. "More than fun and money. Worker Motivation in Crowdsourcing-A Study on Mechanical Turk," AMCIS2011, pp. 1-11.
- Kaye, B. K., and Johnson, T. J. 1999. "Research Methodology: Taming the Cyber Frontier Techniques for Improving Online Surveys," *Social Science Computer Review* (17:3), pp 323-337.
- Kittur, A., Chi, E. H., and Suh, B. Year. "Crowdsourcing user studies with Mechanical Turk," Proceedings of the SIGCHI conference on human factors in computing systems, ACM2008, pp. 453-456.
- Maslow, A. H. 1943. "A theory of human motivation," *Psychological review* (50:4), p 370.
- Mason, W., and Watts, D. J. 2010. "Financial incentives and the performance of crowds," *ACM SigKDD Explorations Newsletter* (11:2), pp 100-108.
- Moussawi, S., and Koufaris, M. 2013. "The crowd on the assembly line: designing tasks for a better crowdsourcing experience," in *The International Conference on Information Systems: Milan, Italy*.
- Myers, M. D. 2013. *Qualitative Research in Business and Management*, (Second ed.). SAGE Publications.
- Noss, A. 2010. *Household Income for States: 2008 and 2009*. US Department of Commerce, Economics and Statistics Administration, Bureau of the Census.
- Paolacci, G., Chandler, J., and Ipeirotis, P. G. 2010. "Running experiments on amazon mechanical turk," *Judgment and Decision making* (5:5), pp 411-419.
- Paré, G. 2004. "Investigating information systems with positivist case research," *The Communications of the Association for Information Systems* (13:1), p 57.

- Rogstadius, J., Kostakos, V., Kittur, A., Smus, B., Laredo, J., and Vukovic, M. Year. "An Assessment of Intrinsic and Extrinsic Motivation on Task Performance in Crowdsourcing Markets," ICWSM2011.
- Ross, J., Irani, L., Silberman, M., Zaldivar, A., and Tomlinson, B. Year. "Who are the crowdworkers?: shifting demographics in mechanical turk," CHI'10 extended abstracts on Human factors in computing systems, ACM2010, pp. 2863-2872.
- Schillewaert, N., Langerak, F., and Duhamel, T. 1998. "Non probability sampling for WWW surveys: A comparison of methods," *Journal of the market Research Society* (40:4), pp 307-322.
- Schneider, B., and Alderfer, C. P. 1973. "Three studies of measures of need satisfaction in organizations," *Administrative Science Quarterly*, pp 489-505.
- Schulze, T., Seedorf, S., Geiger, D., Kaufmann, N., and Schader, M. Year. "Exploring task properties in crowdsourcing-an empirical study on mechanical turk," ECIS2011, pp. 1-1.
- Shaw, A. 2010. "The CrowdFlower Blog-For love or for money? A list experiment on the motivations behind crowdsourcing work."
- Sun, Y., Wang, N., Yin, C., and Che, T. 2012. "Investigating the non-linear relationships in the expectancy theory: The case of crowdsourcing marketplace".
- Surowiecki, J. 2005. *The wisdom of crowds*, Anchor.
- Wright, K. B. 2005. "Researching Internet-based populations: Advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services," *Journal of Computer-Mediated Communication* (10:3), pp 00-00.
- Yang, C.-L., Hwang, M., and Chen, Y.-C. 2011. "An empirical study of the existence, relatedness, and growth (ERG) theory in consumer's selection of mobile valueadded services," *African Journal of Business Management* (5:19), pp 7885-7898.

## Appendix

**Table 1: Descriptive Statistics**

<b>Country</b>		
India	18	36%
USA	31	62%
Other	1	2%
<b>Gender</b>		
Female	23	46%
Male	27	54%
<b>Age</b>		
18-24	12	24%
25-34	18	36%
35-44	13	26%
45 or above	7	14%
<b>Average experience with AMTurk (in months)</b>		<b>15</b>
<b>Number of Participants</b>		<b>50</b>

**Table 2: Interview Questions and Open Codes**

<b>Interview Question</b>	<b>Open Codes *</b>
Why do you use AMTurk?	Extra Money (35); Primary income (10); I have much free time (4); Gain Knowledge (4); Feel useful (3); Fun (3), interesting (1); Something worth doing, satisfy a need (buy kindle, retirement account) (1); stay at home mom (1); give part to charity (1);
How do you choose which tasks to work on? What things are important to you in making that decision?	Reward (19); Time (8); Time vs. Money (18); Difficulty /simplicity (6); Surveys (17); Avoid rejection, denied payment possibility (9); Requester review (Requester I trust) (8); Tasks I feel I can do well (7); Task I'm confident abt the result (2); Task qualified for (2); Matching interest, preferred tasks (11); New opportunities (on AMTurk) (4); University studies/help research (2); Fun (1); enjoyment (1); brain stretching (2); no stress or confusion (1); clear guidelines (1); new hits (2); fair wage for my efforts (1); retrieve info (1); games to interact with others (1)
What things would lead you to decide NOT to choose a particular task?	Time/money (14); Avoid chance of rejection (5); Type of task: writing, calls, repetitive (9); Time/long tasks (6); Pay (8); Review on Turkopticon/ feedback (12); Task I think I can not perform well/ I'm not confident (3); difficulty (3); effort/money (5); effort/work (not worth the time) (5); task design: survey with bubbles, scroll a lot, etc. (2); reveal personal details (4); scam, commercial (4); requester reputation (2); task reviews (1); I don't believe I will give quality answers (2); Confusing task (1); outside my scope/talent/knowledge (1); instructions not clear (1); instructions long to read (1); not feel comfortable (1); need technical skills (1); cant do the task (1); fast pay (1); not fun (1); new things (1); immoral behavior (1); fairness (1); time allocated (1); adult content (2); personal rating (1)
What if anything, would you like to see change in	Nothing (11); More workers rights (5); See what I took to prevent duplicates (4); Review of requesters/ feedback (5); Payment increase (above minimum

AMTurk (e.g., different/additional information on each task, changes to the AMTurk platform, new functionality on the website, etc.)?	wage) (4); How master is gained/if available (5); Transparency of hit/ clarity of content (4); More work on weekends (1); more tasks outside USA (1); more variety (2); approval time (2); better filters (2); search aid (2); get in touch with requesters and amazon via rating (1); tag/ tablet (1); hit removed when completed (1); remove if not qualified (2); block requester (1); time issue (1); quality score (1)
Do you think that your work on AMTurk provides a contribution to society and/or other people?	Society/ scientific studies (35); No/not sure (8); Workers needed (3); Needed service (3); Society benefits/ I benefit (money) (3); Improve the world (1); pay bills, buy stuff (2); main source of income (2); help charity (3)
Would you prefer to have additional contact with other participants on AMTurk?	No (28); Anonymity (3); Here to work (4); No need to socialize, there are forums (16); Yes, get help, advice, know about hits, chat for advice, contact masters (7); I'm engaged no (1); no benefit (1); privacy (1); security (1); distraction (1); prevent bias (1); contact with requester (1); indifferent (1)
As an AMTurk worker, do you feel connected to the community of AMTurk workers?	No (25); Part of community but no contact (1); Forum/ community (10); Yes (all making extra money, same goals) (13); Don't want contact, privacy important (4); Work for money not for sense of community (1); reddit.com (1)
* The number of times the open code appeared in the transcripts is presented in parentheses next to each code	

<b>Categories</b>	<b>Themes</b>
Source of Income	Existence need
Workers' rights	Existence need
Criteria for Task Choice	Existence need
Connectedness with others	Relatedness need
Sense of Belongingness	Relatedness need
Impact on Society	Relatedness need
Third-party communities	Relatedness need
Impact on Self	Growth need
Skill Development	Growth need
Fun	Other
Free Time Passing	Other
Sense of Control & Power	Other