Participation in Micro-task Crowdsourcing Markets as Work and Leisure: The Impact of Motivation and Micro-time Structuring

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1. INTRODUCTION

Crowdsourcing via information and communication technology platforms has grown exponentially in recent years (Howe, 2006a; Howe, 2006b). Significant numbers of skilled individuals with discretionary time are available online, thus providing an opportunity for recruiting workers through the cloud (Hoßfeld et al., 2011). A variety of crowdsourcing applications have emerged that allow the harnessing of distributed intellect for problem-solving. Crowdsourcing platforms such as Threadless, iStockphoto, or InnoCentive (Brabham, 2008a; Brabham, 2008b; Brabham, 2010), are characterized by innovative co-creation in specific domains (Zwass, 2010), such as photography. Micro-task crowdsourcing markets, such as Amazon’s Mechanical Turk (Ipeirotis, 2010b) or Microworkers (Hirth et al., 2011), in contrast, foster another paradigm where small and simple tasks are transacted at low cost within small chunks of time (Kittur et al., 2008; Kittur et al., 2011).

The micro-task paradigm, though, appears to go contrary to economic logic for task workers. Although the task completion has been recognized as similar to regular work (Kaufmann et al., 2011), the micro-payments (frequently about $0.01 to $0.10 per task) and a median reservation wage of $1.38/hour for paid crowdsourcing platforms (Horton & Chilton, 2010) are far below regular minimum wage in the traditional workplace. Moreover, typical micro-task crowdsourcing platforms such as Amazon’s Mechanical Turk are dominated by highly educated workers who possess bachelors or advanced degrees (Ipeirotis, 2010a; Ross et al., 2010). Are these highly educated individuals acting irrationally by completing low-pay micro-tasks? If not, are they possibly achieving additional gains, by re-framing their crowdsourcing task completion, so that different benefits accrue? Specifically, are they framing their participation as leisure, rather than as work? Thus, to understand the paradox of participation, our study aims to explore two research questions: 1) what is the mindset of participants in micro-task crowdsourcing platforms (work-oriented or leisure-oriented)? 2) What factors indicate participants’ work-oriented attitude and leisure-oriented attitude in micro-task crowdsourcing platforms respectively?

2. RELATED WORK

Previous research on crowdsourcing is dominated by the work-oriented perspective, in their focus on the utilitarian nature of crowdsourcing participation (Brabham, 2012; Quinn & Bederson, 2011; Rouse, 2010; Zwass, 2010). Characterizing crowdsourcing participation as a regular daily job, researchers employ theories and models related to classical working conditions (e.g., work motivation and job characteristics model) to explain motivations of crowdsourcing (Hossain, 2012; Kaufmann et al., 2011; Zheng et al., 2011). Whereas the literature identifies extrinsic and intrinsic motivations as typical antecedents of crowdsourcing participation, the unique characteristics of micro-task crowdsourcing markets appear to transform the connotations of these motivations, while apparently also introducing leisure-oriented and time-oriented cost-and-effect rationality considerations. Being more akin to self-organized markets where requesters offer marginal money for the completion of
small tasks, micro-crowdsourcing markets may reduce the cohesion among participants and weaken extrinsic motivations (e.g., monetary rewards, peer recognition, and social capital), which are the key reasons for participating in co-creation crowdsourcing platforms, such as Wikipedia, Linux open source software, and InnoCentive (Zwass, 2010).

More importantly, apart from considering crowdsourcing participation as a regular job (part-time or full-time) to make money, participants apparently also perceive performing crowdsourcing tasks as a fruitful way to spend free time instead of watching TV, playing online games or even wasting that time (Brabham, 2012; Ipeirotis, 2008). The traditional trade-off between work and leisure (Gratton & Taylor, 2004) may thus be redefined to a coexistence of work and leisure in the context of micro-task completion. Meanwhile, the rather short time allocation to micro-task crowdsourcing platforms also suggests another benefit, namely the meaningful structuring of individuals’ fragmented time via completing micro-tasks. The literature, though has attributed little attention to the leisure nature and temporal structuring of task emerged from micro-task crowdsourcing platforms.

3. RESEARCH MODEL

This study investigates participants’ mindsets by exploring their perceptions of work and leisure simultaneously, and seeks to identify the predictors and consequences of these two mindsets. The research model is depicted in Figure 1a.

![Figure 1 Research Model](image)

Specifically, we draw upon the research on motivations of crowdsourcing participation to treat extrinsic motivation as the indicator for perception of work and intrinsic motivation as the indicator for perception of leisure. Given the income-driven nature of work, reliance on extra earnings, which is distinguished from extrinsic motivation based on mental accounting, such as the acquisition of “mad money” (Paulos, 2003; Thaler, 1980; Thaler, 1985), is proposed as another indicator for perception of work. In light of the theory of time allocation and research on time structure, we introduce an additional factor, micro-time structure, as a further indicator for perception of leisure to capture how completing micro-tasks help participants to well structure their fragmented spare time. Considering perception of work and perception leisure as the fulfillment of participants’ original needs, we posit that these two types of perception could predict participants’ satisfaction with micro-task crowdsourcing platforms.

4. RESEARCH METHOD AND RESULTS

To test the proposed research model, we conducted an online survey in a micro-task crowdsourcing platform, Amazon’s Mechanical Turk (AMT, https://www.mturk.com/mturk/), at the individual level.
Except for the self-developed items measuring micro-time structure and perception of work, the remaining items were adapted from previously validated instruments and reworded to fit the context of this study. The survey was administered as a human intelligence task (HIT) posted on AMT. We totally collected 311 usable responses. The psychometric properties of all constructs were within acceptable boundaries.

| Table 1 Mediating Effect Test Results |
|--------------------------------------|----------------|----------------|----------------|----------------|
| DV | IV | M | IV→M | IV→DV | IV+M→DV | M→DV | IV→DV | Sobel test | Results |
| SAT | EXM | PWR | 0.449*** | 0.362*** | 0.326*** | 0.170* | 4.26*** | Partial |
| SAT | REL | PWR | 0.661*** | 0.325*** | 0.349*** | 0.076 | 3.90*** | Full |
| SAT | INM | PLE | 0.524*** | 0.552*** | 0.133* | 0.483*** | 2.04* | Partial |
| SAT | MTS | PLE | 0.607*** | 0.436*** | 0.195* | 0.314*** | 2.38** | Partial |
| PLE | LAT | MTS | 0.530*** | 0.386*** | 0.565*** | 0.081 | 6.26*** | Full |
| PLE | RAD | MTS | 0.611*** | 0.363*** | 0.618*** | -0.019 | 6.93*** | Full |

Notes. DV = dependent variable, IV = independent variable, M = mediator.
EXM = extrinsic motivation, INM = intrinsic motivation, LAT = lack of alternatives, RAD = relative advantage, MTS = micro-time structure, REL = reliance on extra earnings, PWR = perception of work, PLE = perception of leisure, SAT = participant satisfaction.
*p < 0.05, **p < 0.01, ***p < 0.001

We tested the hypotheses by running the structural equation model in SmartPLS 2.0. As shown in Figure 1b, all proposed relationships are supported by the empirical evidence. We further tested the mediating effects depicted in the research model following the three-regression procedure proposed by Baron and Kenny (1986). Except for the partial mediating effect of perception of leisure between micro-time structure and participant satisfaction, the remaining five mediating effects are consistent with the relationships proposed in the research model (see Table 1).

5. CONCLUSION

Our findings explain why micro-task crowdsourcing platforms can seemingly considerably underpay participants, compared to normal wage rates and education levels, yet still achieve active and satisfied participation. Our conclusion is that the decomposition into micro-tasks, which match the fragmented non-work time availability of participants, explains the seeming paradox at least in part. Furthermore, participants’ multiple mental accounts for finances and for time provide participants with a justification for why to work for much less than a reservation wage, during particular time segments, namely fragmented non-work time. To understand this interpretation of participation in micro-task crowdsourcing platforms, i.e., as paid-leisure, we had to create an integrated model that draws on theories of motivation, time structuring, utility, mental accounting, and satisfaction.

In practical terms, as competition for qualified crowdworkers increases in future, tasks will likely be reformulated to raise perceptions of task completion as a leisure activity. Hence, we expect a gamification of crowdwork. Furthermore, given the importance of micro-time structuring, crowdsourcing platforms will likely want to enable better uses of micro-time. A likely outcome will be the design of mobile device friendly task completion platforms (Chatzimilioudis et al., 2012; Eagle, 2009), so as to attract people in transit, with considerable, yet highly fragmented time. In the same vein, we may also see further attempts to better structure tasks, improve search-ability and possibly even pre-registration, as attempts to fit micro-tasks ever better into small segments of available time.

Taken together, we expect micro-task crowdsourcing to require a significant reconceptualization of the nature of work (and its rewards), one element towards which is this article. Furthermore, we expect significant changes in the practice of task completion, and in the governance and regulation of crowdsourcing activities, all of which need to be informed by guiding research.
REFERENCES


