Why Is Your Crowd Abandoning You? Exploring Crowdsourcing Discontinuance through the Lens of Motivation Theory

Full Paper

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Abstract

A typical crowdsourcing platform connects organisations in need for workforce to individuals willing to work for a compensation. Considering that a motivated crowd constitutes a vital resource of such platforms, nurturing it becomes a crucial managerial consideration. Yet, little is known of why individual workers abandon crowdsourcing platforms after long periods of usage. Therefore, we set out to explore how crowd-workers' motivations change during a platform's usage lifecycle, from initial usage, to continued use, to its eventual abandonment. To this end, we conducted an in-depth qualitative inquiry into a popular crowdsourcing platform in the software-testing domain. Leveraging self-determination theory and IS use lifecycle as sensitising devices, we interviewed crowd-workers who had adopted, used, and eventually abandoned the platform. As a result, we propose a stage model in which individuals' extrinsic and intrinsic motivations emerge and interact over time, resulting in discontinued use. We provide implications to both theory and practice.

Keywords: crowdsourcing, IS discontinuance, motivation theory

1 INTRODUCTION

Crowdsourcing has become one of the most recognisable examples of modern-day two-sided markets (Eisenmann et al., 2006; Rysman, 2009), whereby a platform (the agent) orchestrates the demand for, and supply of, the crowd's under-utilised resources (Soliman 2015), be it funds (Ordanini et al. 2011), expertise (Ebner et al. 2009), or general belongings they are willing to share (Constantiou et al. 2017; Malhotra and Van Alstyne 2014). As spatiotemporal distances vanish, organisations, on the one hand, gain access to vast numbers of potential workers; and the public, on the other hand, are provided with novel opportunities to employ themselves. To retain and nurture their indispensable human resources, crowdsourcing platforms must understand their crowd-workers, what motivates them, what disturbs them, and above all, must treat them as co-creators of value (Grönroos 2008; Lusch et al. 2008). Strictly speaking, there is nothing preventing a displeased or frustrated crowd-worker from discontinuing or abandoning a crowdsourcing platform. However, it is not clear what frustrates or displeases a worker on a crowdsourcing platform. This is where information systems (IS) use discontinuance becomes a topic of interest. Whereas various phenomena around IS use have been studied quite extensively in the past (see, e.g., Bhattacherjee 2001; Davis 1989; Venkatesh 2000), the focus has largely been on adoption and continued use of technologies, leaving the final stage of the use life cycle only passingly addressed at best, and completely neglected at worst. Yet, IS discontinuance represents behaviour that is arguably different from adoption and use continuance, governed by its own distinct mechanisms (Turel 2014). Individual users constitute a vital asset of any IS, especially when it comes to people-powered crowdsourcing platforms, rendering IS use discontinuance a critical strategic issue to be acknowledged and addressed by managers (Xu et al. 2014). Accordingly, recent decades have witnessed a surge in studies tackling the IS discontinuance phenomenon (see Soliman and Rinta-Kahila 2019).

Although interest in the IS discontinuance topic is growing, comprehensive understanding of individual IS discontinuance is only starting to emerge, leaving crowdsourcing discontinuance a completely uncharted area. In our attempt to contribute to this development, we drill into the topic leveraging motivation theory. Current research on IS discontinuance, and IS use phenomena in general, tends to focus on explaining behavioural outcomes such as continued or discontinued use with the IS users' psychographic factors and their perceptions of the IS. However, the role of users' motivations has received less attention in the literature. Moreover, research on individual-level IS use discontinuance has mostly investigated hedonic, leisure-time systems, such as social networking systems (Luqman et al. 2017; Maier, Laumer, Eckhardt, et al. 2015; Maier, Laumer, Weinert, et al. 2015), focusing on their stress-inducing and addictive properties. Yet, information systems come in wide varieties, and crowdsourcing systems in particular represent IS use that stems from a complex interplay of various types of motivations, thus challenging the traditional hedonic/utilitarian distinctions (Soliman and Tuunainen 2015). In this study, we view crowd-workers' IS use behaviour as a temporal process, that evolves over time. Therefore, our interest lies in examining how workers' extrinsic and intrinsic motivations evolve and interact over the course of the platform usage lifecycle, ultimately leading to discontinued use. Self-determination theory (Deci and Ryan 1985, 2000; Ryan and Deci 2000a) provides important insights especially in a non-compulsory context where, unlike in many organisational-specific technologies, workers can exercise freedom of choice. The research questions to be answered are the following: *1. How do motivational factors change during crowdsourcing service use life cycle from adoption to discontinued use?*; and *2. What are the demotivational factors driving crowd-workers to abandon the crowdsourcing platform they volitionally adopted?*

In order to shed light on the connection between discontinued IS use and users' motivation, an empirical inquiry was performed. As we strived to tap onto individual users' lived experiences, a natural choice was of method was to conduct a series of in-depth interviews with workers who had used a crowdsourcing platform and passed through the entire use lifecycle from adoption, through continued use to discontinuance. This paper is organised as follows: the next chapter will discuss crowdsourcing and self-determination theory as our theoretical framework. After this, we disclose our research approach and methods. The last two sections are dedicated to reporting on findings and discussing their implications, respectively.

2 THEORETICAL BACKGROUND AND RELATED WORK

Self-determination theory (SDT) is a broad socio-cognitive theoretical framework focusing mainly on understanding the study of human motivation, and its impact on behaviour and wellbeing (Deci and Ryan 1985, 2000; Ryan and Deci 2000a). SDT distinguishes two types of motivations based on the origin of motivation (i.e., a locus of causality): intrinsic motivation and extrinsic motivation. *Intrinsic motivation* is "... the doing of an activity for its inherent satisfactions rather than for some separable

consequence." (Ryan and Deci 2000a, p. 56). It is the kind of motivation that is present when a person does something out of his or her pure, inherent interest, enjoy or challenge (Ryan and Deci 2000a). SDT further argues that certain context-specific events, for example rewards, communication and feedback which promote individual's feeling of *competence*, are the factors that can reinforce or increase individual's motivation towards certain activity. Here, the intrinsic motivation is perceived to satisfy individual's inborn psychological needs of competence and autonomy (Deci and Ryan 2000). Furthermore, the experience of efficacy or competence alone does not enhance intrinsic motivation. Individuals must feel a sense of *autonomy* over the activity being performed. The behaviour must be experienced as self-determined by the individual. As Ryan and Deci (2000a, p. 58) put it, "... for a high level of intrinsic motivation people must experience satisfaction of the needs both for competence and autonomy."

By contrast, *extrinsic motivation* involves some separable outcome (e.g. money, food, prizes) to be accommodated with an activity. More precisely, an activity is performed because it can yield some instrumental value to the person performing the activity (Ryan and Deci 2000b). Ryan and Deci (2000a) argue, that extrinsic motivation gains more ground on individuals' lives as they grow up, since social demands and roles force people to engage with activities that are not intrinsically motivating. According to SDT, extrinsic motivation varies in the level of autonomy. For example, an individual might perform an activity because he or she wants to avoid a sanction (i.e., the instrumental value of the activity) which occurs, if the individual did not perform that particular activity. Or individual wants to perform certain activity because it can help her work career, school some other aspect in the individual's life. In the latter example, the instrumental value of the activity is the positive outcome obtained from performing the activity (e.g. individual's work career is being uplifted). Both are examples of individuals acting by extrinsic motivation and to gain instrumental value (instead of performing out of pure interest towards the activity), but the level of autonomy varies from compliance with some external control/authority and the latter involves individual's personal choice (Ryan and Deci 2000a). If an individual is not motivated at all (he or she does not have extrinsic or intrinsic motivation), the person is said to be *amotivated* and as a result of this, does not act at all or acts without an intent. Amotivated person is unwilling to commit certain behaviour. Thus, in this respect, an individual who is forced to do something that he or she is not willing to do, would be amotivated and would act without an intent.

SDT has been instrumental in shaping our understanding of crowd motivation in various crowdsourcing contexts (Antikainen et al., 2010; Brabham, 2008, 2010; Ebner et al., 2009; Väätäjä, 2012; Zheng, Li, & Hou, 2011). A central assertion these studies build on is that crowd work is generally motivated by both intrinsic and extrinsic motivations (Hossain, 2012). Despite its importance in explaining workers' motivation in crowdsourcing platforms, this line of research has largely ignored a critical question unaddressed: how do changes in motivation impact the crowd's willingness to contribute over time? In fact, motivation research emphasises the dynamic nature of motivations, and that their strengths and impact may change over time (Pink 2009). While different motivations may co-exist over time, their respective strengths can lead to varying behaviours. What this means is that different motivational factors are expected to be responsible for initiating and driving different behaviours at different times. For instance, recent crowdsourcing research indicates that pre-adoption motivations differ significantly from post-adoption motivations (Alam and Campbell 2016; Soliman and Tuunainen 2015). This new research direction which takes temporality at its core is discussed next.

IS scholars have recently acknowledged that the IS use phenomenon is best portrayed as a lifecycle (Furneaux and Wade 2010, 2011) going through various stages. Most notably, three major stages have been widely recognized: the adoption stage, the continued usage stage, and the termination stage (Maier et al., 2015). These stages reflect an archetypical lifecycle process, with its phasic transitions through inception, growing and maturing, before its eventual termination (Van de Ven 1992; Van de Ven and Poole 1995). This lifecycle process has been recently translated into what Maier et al. (2015) describe as the user transformation model. This model describes a typical lifecycle that begins with an IS being adopted, after which it transits to being continuously or repeatedly used, and as the process matures, usage is eventually discontinued. In the current work, we adopt this generic three-stage view to guide our research exploration into the process by which crowd workers go through the phases of adoption, continued use, until they decided to discontinue the using the platform.

3 RESEARCH APPROACH

Considering the nascence of the phenomenon under investigation (i.e., IS discontinuance, in general, and crowdsourcing platforms, in particular), our endeavour is mainly premised on gaining an in-depth and subjective understanding of a particular worldview through the eyes of those who actually live in that world. This emphasis on subjective interpretation generally steers the research direction to be

explorative in nature (Klein and Myers 1999; Walsham 1995), rather than testing theory in the traditional explanatory sense (Dubé and Paré 2003; Lee 1989). Thus, our interpretive work draws on some central tenets from phenomenology and case study research. On the one hand, from phenomenology, we adopt the notion that a phenomenological study 'describes the meanings for several individuals of their lived experiences of a concept or a phenomenon' (Creswell 2007, p. 57). As such, the emphasis here is on examining *what* the individuals experienced and *how* they experienced it (*ibid*, p. 58). Motivations (or lack thereof) are manifestations of abstract human experience, just like anger, excitement, or insomnia, suggesting that a phenomenological approach is an appropriate perspective for studying individuals' motivations to IS use over its lifecycle. On the other hand, from case study research we adopt the emphasis on the examination of a phenomenon in its naturalistic context, with the purpose of confronting theory with the empirical world (Piekkari et al. 2009; Keutel et al. 2014).

3.1 Data Collection and Analysis

This study was conducted in the context of a crowdsourcing service called uTest (www.utest.com), which is an established, global online community of software testers with a platform for managing crowdsourced software testing. To gain a comprehensive understanding of the context in which the phenomenon of interest occurs, we conducted an in-depth inquiry to the uTest platform before engaging in the actual data collection. This investigation gave us a good understanding on how the service works, allowing us to prepare an adequate interview protocol and to sensitise us to possible behavioural patterns that could emerge in this context. Moreover, in accumulating our contextual understanding, we were also able to leverage the expertise of one of this paper's authors as he had previously been involved in software testing business.

Before a tester can participate in paid projects on uTest, he or she must be qualified by completing an audition known as Sandbox arranged by the platform. This allows uTest to evaluate new starting testers (or testers who are not yet rated) and familiarize them with the service. In short, new testers are invited to upcoming Sandbox test cycles. Once he or she gets invited, the tester is assigned with a so-called Sandbox team lead who supervises and provides all the necessary resources and guidance for the tester. Then the tester follows given Sandbox test cycle (an unpaid test cycle mimicking real, paid test cycles) instructions, submit one test case and one-to-two software bugs from a pre-defined website. New testers' performance in the Sandbox Program is linked to their profiles and thus, to some extent, dictates the tester's ability to receive paid projects. Activity level is determined by lifetime participation level (which is determined by quality of participation factors, e.g., number of reported bugs, number of approved bugs), recent participation level during the previous three, six or twelve months and reliability (i.e., the tester reports test cases and bugs for projects that have a Test Cycle Agreement checked). Workers are compensated with monetary payments and the size of the payment depends mainly on the tester's performance. Thus, the better the tester the higher the payment. It should be noted that from here on, the terms "information system" and "service" are used interchangeably to describe the crowdsourcing platform that the crowd-testers on uTest are interacting with.

We conducted in-depth, semi-structured interviews with former uTest crowd-workers. All interviewees were first contacted via LinkedIn or by email. The potential interviewees to be contacted were selected based on three main criteria: (1) The person had worked for uTest according to his or her LinkedIn profile; (2) The person is no longer working for uTest according to his or her LinkedIn profile; and (3) The end-date of the uTest work period is not more than three years ago. This requirement was set to ensure the person still remembered the time he or she was using the crowdsourcing platform and hereby was able to reflect meaningfully on the interview questions. The sampling process led to the identification of five such users who had used the service and later discontinued it. An interview protocol was developed to cover the main themes we wanted to cover with each case. Altogether three temporal stages were covered: adoption stage, usage stage, and discontinuance stage. While our interview protocol included a list of questions for the interviewees, we refrained from posing the questions in a strict and ordered manner. Rather, we started by sensitising the interviewees' lived experiences and after this allowed the interviews to flow naturally, using the interview protocol as a frame of reference. Thus, more detailed questions could be presented in varying order, some questions were added, and some left out from one interview session to another (Myers and Newman 2007). The approach gives freedom for the interviewer to adapt the course of the interview and to acquire deeper insights, which may be necessary when studying individuals' motivations. The interviews were conducted using a computer-mediated communication strategy (Kazmer and Xie 2008) via Skype, because the interviewees were globally distributed and lived in different countries. The interviews were carried out using either instant messaging (i.e. typing), voice call without video, or video call. The chosen communication technique (i.e., typing, voice call, or video call) was determined by the interviewees' preferences and abilities to use

that particular medium. Each interview was recorded and transcribed. Table 1 presents the study's participants.

	Pekka	Matti	Eeva	Kimmo	Tiina
Gender	Male	Male	Female	Male	Female
Age (in their …)	30s	30s	20s	40s	30s
Location	S. Europe	S. America	Central Europe	N. Europe	N. Europe
Soft. eng. education	No	Yes	No	Yes	Yes
Frequency of use (approximate)	5-7 days per week	1-3 days per week	4-7 days per week	1-5 days per week	0-3 days per week
Usage (stage) duration	36 months	18 months	12 months	7 months	12 months

Table 1: Overview of study participants

The analysis was informed by the theoretical framework discussed earlier, with its emphasis on the capturing how different motivations interact and how they evolve across the three stages of adoption, continued use, and discontinuance. Each stage was examined closely via the lens of SDT, which sensitised us to distinctions between intrinsic and extrinsic motivations, as we highlighted significant statements that were found to convey interviewees' motivations within each stage. This analysis procedure yielded a matrix which consisted of the identified motivational factors related to each usage life cycle stage. Eventually, every interview was then transformed into a narrative (Creswell 2007, p. 61) of interviewees' experiences. Using the textual descriptions based on the interviews and the structural description based on both the interviews and our own inquiry to the research context, we then strived to capture essence of the phenomenon by describing the interviewees' shared experience of motivations within the context of software testing crowdsourcing service. This process was informed by the experiences of one of the authors who had been involved in software testing. The transcriptions were complemented by studying the recordings and typing down descriptions on how the interviewee seemed to react to our questions. Next, we report on our findings.

4 FINDINGS

4.1 Adoption

The interviewees found out about uTest from various sources, such as software testing publications, through googling, from colleagues, and testing related blog sites. The reasons to try the service varied to some extent, indicating that both intrinsic and extrinsic motivations contributed to the adoption decision. Specifically, the intrinsic factor of curiosity and enjoyment, together with the extrinsic factors of financial reward and self-development were central to entering the adoption stage. Curiosity to try the service, to see how it works, and to see what it could offer was one of the main intrinsic motivations influencing the initial interest in trying out service. "*… I was curious to see whether it would work.*" (Kimmo) and "*… I wanted to try it.*" (Pekka) were the typical answers the interviewees gave when asked about why they decided to try the service. Enjoying this type of work (software development) was equally important in this stage. Interviewees expressed enjoyment as a driving factor of adopting the service by stating explicitly that they enjoyed their work and role in the platform.

The prospect for financial rewards was the major driving extrinsic motivation of the service adoption. All of the interviewees stated that financial rewards played an important role when it comes to initial trial of the service and later on adopting it, as exemplified by Pekka who said: "*… Probably wouldn't have ever started if the service did not offer any money.*" Self-development and the desire to learn more about software development and testing after becoming exposed to it was another critical driving force at this stage.

4.2 Continued Use

Similar to the adoption stage, the continued usage stage was driven by a combination of both intrinsic and extrinsic motivational factors, although of differing nature. Specifically, in terms of intrinsic motivation, self-actualisation and enjoyment were the main driving forces, followed by curiosity, and altruistic factors. Self-actualisation reflected a general tendency to appreciate the sense of mastery and autonomy: *"the freedom to do it anywhere and when you wanted…"* (Eeva); and *"… a sense of autonomy regarding project selection."* (Matti). Altruism was also identified as a key contributing factor by some. Altruism here reflected a general sense of belonging to the community and a tendency to appreciate helping its members. For example, Pekka stated being rather active in the uTest community

helping new members and educating old ones; while Eeva had written an instructional article for the community to help other members in the testing work.

In terms of extrinsic motivation, financial rewards and self-development remained as the leading extrinsic factors. However, these were complemented with other factors, namely, non-monetary personal gains, and to a lesser extent social pressure and a desire for publicity. Non-monetary personal gains reflected self-oriented extrinsic motivational factors such as the possibility to add the work experience gained during the service use to one's CV. Some form of social pressure also contributed as an extrinsic factor to use the service. For instance, Tiina implied that the society's expectations made her feel that doing work via uTest is better than doing nothing at all, considering that at that time she had no permanent job. Finally, publicity was identified as a key contributing factor to Pekka since working with uTest helped him gain a reputation as one of the best testing engineers in the community.

Interestingly, the findings suggest that both intrinsic and extrinsic motivations are necessary for driving workers to participate in the crowdsourcing platform. However, whereas these motivations remain similar in terms of origin or what SDT describes as perceived locus of causality (i.e., being intrinsic or extrinsic); the direction of these motivations have changed from the adoption to usage stages. Specifically, whereas all identified motivational factors at the adoption stage were self-oriented (i.e., aimed at the self), with no indication that social motivational factors played a role at this stage; the continuance stage was found to be driven by a mix of both self-oriented and socially-oriented (i.e., aimed at others) motivational factors (see, Soliman and Tuunainen 2015). Next, we present the final stage: discontinuance.

4.3 Discontinuance and Abandonment

Understanding motivations is important especially in the last stage of IS use lifecycle, considering that uTest is a service that relies on voluntariness. The motivational factors discussed above explain the changes in the driving forces behind the adoption and continuance stages, which may be described as positive forces. By contrast, discontinuing/abandoning uTest was driven by a decrease in those positive forces, combined with the emergence of negative forces. Specifically, we found that abandoning uTest was mainly driven by the dwindling influence of enjoyment, self-development, and financial rewards, combined with the emergence of frustration towards uTest practices, feeling of injustice, and a sense of personal life constraint. We discuss these next.

When it comes to intrinsically oriented demotivating factors, we find that decrease of enjoyment was one of the major demotivating factors that triggered or sparked individuals' decision to discontinue the use of the service. *"The projects did not feel interesting anymore…"* (Matti) and "*… it didn't feel like fun anymore*." (Pekka) are examples of how the service use was experienced in the end of the usage life cycle for some of the interviewees. Per interviewees' reflections on their motivations, the service use had lost its excitement along the way since the projects or tasks did not offer any novelties. In some cases, the enjoyment was hampered by the service's practicalities, as the interviewees got eventually fed up with certain quirks in the service use. Thus, increased frustration with uTest's practicalities, instructions, and operative management were identified as key intrinsically oriented demotivating factors. Frustration against practicalities and instructions stemmed from confusing and vaguely expressed instructions. For example, Matti lamented the *"… confusing terms regarding payments…"* referring them as one reason he had decided to quit using uTest. Further, Matti described frustration with the operative management as follows: *"… the project's technical leader was never present"*, which affected his perception of the service's support and consequently contributed into his discontinuance decision.

Two of the interviewees' stated that they had felt themselves being mistreated during the service use, reflecting a sense of injustice. This emerged as rather sensitive and emotionally loaded topic to the informants, who stated having discontinued the service fairy quick after being confronted by the feeling. As elaborated by Pekka: *"I was professionally frustrated with uTest because I was working hard there, had earned great ratings, received awards and was active in the community but I was always left out from role promotions and high value contracts"*. Pekka's testimony implies that he did not feel himself as being valued by the service superiors. Sense of injustice, together with the lack of novelty, resulted in decreased self-actualisation. In Pekka's situation, self-actualisation was suppressed by not providing an opportunity to develop his skills further, fulfill his talent and expertise, and feel competent over the activity. In other words, the need for competence was not satisfied and was, in fact, undermined.

On the other hand, personal life constraints were identified as the most prominent extrinsically originated demotivational factor affecting individual's decision to quit using the service in par with limited learning and self-development possibilities. Personal life constraints emerge through changes in one's life situation. Here, acquiring a full-day job resulted in a lack of time for uTest use, as did a decision

to move from one's testing work to another environment. Moreover, the service's learning and self-development possibilities emerged as another extrinsic demotivator: limitations encountered in prospects of learning and self-development affected individuals' use behaviour in a negative manner: *"… I felt like I achieved my top regarding learning from projects…"* (Matti), *"The possibility to learn new decreased…"* (Pekka).

Although still perceived as a significant factor, the informants did not find financial rewards as important in the end stage of service use lifecycle as they had been in adoption and continuance stages. Per interviewees, the monetary compensations offered by uTest were perceived too inadequate compared to the amount of time and work the interviewees had put on the service use: *"As I put more effort I started expecting more* [money] *but that never really happened…"* (Pekka) and *"… if the pay was vastly different, then I might have reconsidered…"* (Kimmo). Disappointing monetary compensations decreased motivation towards using the service, especially in the absence of other intrinsic motivators that could have compensated for the small pay, leading individuals to quit using the service.

Figure 1 summarises the findings in terms of the typical stages of the crowdsourcing platform usage lifecycle and its underlying motivations.

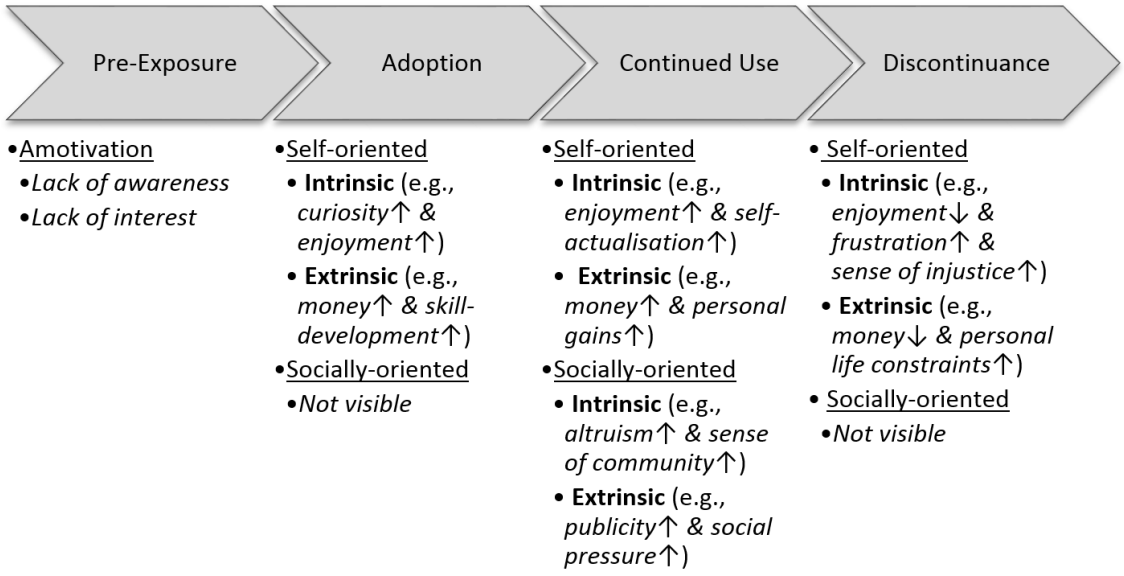

Figure 1: Stages in the Crowdsourcing Platform's Usage Lifecycle and the Underlying Motivations

5 DISCUSSION

From a static perspective (i.e., stage-agnostic), our work corresponds well to the accumulating body of knowledge on crowd motivation in that both intrinsic and extrinsic motivations play a critical role in driving crowd-workers to join and participate in crowdsourcing platforms (Antikainen et al., 2010; Brabham, 2008, 2010; Ebner et al., 2009; Väätäjä, 2012; Zheng, Li, & Hou, 2011). In this regard, curiosity, enjoyment, self-actualisation, and altruism were among the most salient intrinsic motivational factors; while money, self-development, social pressure, and publicity were among the salient extrinsic motivational factors. Whereas previous research has reported signs of the 'crowding out' phenomenon (e.g., Lee et al. 2015) where controlled extrinsic motivation (such as financial compensation) would undermine intrinsic motivation when adopting technology; this was not the case in our study. By contrast, the participants in our study reported the synergic co-emergence of extrinsic and intrinsic motivations in both adoption and continued use stages, and there was no evidence that financial compensation had a negative impact on the workers enjoying their assigned work.

When we adopt a temporal perspective (i.e., stage-orientation), however, we start to see some interesting observations. First, throughout the stages of adoption, continuance and discontinuance, both intrinsic and extrinsic are critical. For instance, as Figure 1 illustrates, in the adoption phase, the emergence of both extrinsic and intrinsic motivations triggered the participants to start using the service to inspect if it actually offers what it promises. However, at this stage, the crowd-workers were fundamentally driven by selfish reasons. Specifically, curiosity and the possibility to gain financial rewards were the chief

drivers, although the latter's role was more pronounced. Gradually, over continuous use of the service, intrinsic motivations started to outweigh extrinsic ones in significance, and also new, additional intrinsic motivations emerged, especially socially oriented ones (e.g., sense of community and social pressure). Towards the end of the usage life cycle, demotivating factors emerged, and previously motivating factors diminished, triggering users to discontinue using the service and abandon it. Once again, discontinuance at this point was driven by both intrinsic and extrinsic motivations, although, just in like the adoption stage, they were all selfish in nature. As the users' motivations disappeared, they ultimately returned to a state of amotivation. However, amotivation after discontinuance is different from pre-use amotivation since the former exists already before the individual's actual use behaviour whereas post-use amotivation depends on the individual's use behaviour. Very few studies in the domain of crowdsourcing adopt a temporal lens and aim to capture the dynamic nature of motivations and how they evolve across the different usage stages (see, Alam and Campbell 2016; Soliman and Tuunainen 2015). Our work complements this line of research by a) noting the changing nature of motivational factors from selfish to social during the transition from adoption to usage stage, and b) noting that, just like in the adoption stage, discontinuance stage is mainly driven self-oriented reasons, although different in substance.

Overall, we enrich the current knowledge of motivations in IS use by examining the interplay of different types motivations over time, showing how the motivational factors change and interact during the usage life cycle. Our findings provide interesting perspective to the stage of continued IS use. While continued use has traditionally been treated as a unidimensional construct (e.g., Bhattacherjee 2001), some have noted that it in fact consists of various dimensions, such as frequency, intensity, and breadth of use (Turel 2015; Venkatesh et al. 2008). Our temporal analysis revealed that the dimensions of use are not only closely connected to one's intentions to continue using the IS but also to the expected outcomes of IS use. This aspect has not received much attention in the prior literature. Expectations of IS use's outcomes are in the core of the IS use continuance model (Bhattacherjee 2001), which posits that confirmed or positively disconfirmed expectations result in continued use of IS through increased satisfaction. In our study, the users were first relatively satisfied (i.e., expectations confirmed) with the service (uTest), but when they increased their use frequency and intensity, they consequently revised their expectations of financial and career-related rewards to a higher level to correspond the increased work input. However, the service did not yield the expected benefits, resulting in negative disconfirmation and dissatisfaction. This indicates a crucial connection between varying levels of use, confirmation of expectations, discontinued use, and their joint interplay over time, which can be difficult to capture with static, factor-based models. Our temporal treatment provides a starting point developing richer ways to examine how variations in IS use cause expectations to evolve over time.

Retaining individual users is a paramount issue in managing crowdsourcing platforms. Our study indicates that lack of managerial and operative support can make users feel insecure about their work and alienate them from the service and its community. As the user does not work face-to-face with superiors and peers, it would be important to strive for making everyone feel as part of the community and invest in the availability of support. Moreover, the interviewed ex-uTesters reported that they were interested in learning new things about software testing and earning a bit of money amidst an activity they enjoy. However, negatively disconfirmed expectations diluted the effect these extrinsic motivators and resulted in the emergence of intrinsically oriented demotivators, such as feelings of injustice. In the light of this, crowdsourcing platforms should critically evaluate their incentive systems by enabling continuous learning and progression on their platforms. Monetary rewards act as a tempting kicker to get users onboard but are not a lasting solution to retain them.

We acknowledge that our findings come with certain limitations. Firstly, our study builds on insights from five participants. Although this number falls within the range of adequate sample size for qualitative studies aiming for an in-depth understanding of subjects' lived experiences (Creswell 2007, p. 61); we do not claim that our findings are generalisable in the statistical sense. Furthermore, we contend that when conducting explorative qualitative research on a phenomenon that is in its nascence, it may be advisable to focus on gaining an in-depth understanding of individuals' lived experiences instead of trying to strive for generalisability. Secondly, we could not include all the analyses and supporting materials that we would have wished to include in this manuscript, mainly due to space limitation. However, we encourage the reader to contact the authors if any further clarifications are desired.

This study was set in a context of crowdsourced software engineering service that is specifically focused on software testing. In this light, it would be interesting to conduct future research on a service that is less specialised in a small niche and offers wider array of crowdsourcing activities. Moreover, studying the evolution of motivations over the course of IS lifecycle in other IS contexts could prove fruitful. For instance, currently trending research on social networking systems (SNS) discontinuance could benefit

from considering the temporal dimension of IS use together with motivations, as the main focus in that stream has been on testing factorial models in cross-sectional settings. In this paper, we considered both the hedonic and utilitarian aspects of crowdsourcing as both were found prominently present in this context and thus neither could be ignored. However, we find that, especially in the case of SNS research, the focus has almost solely been on the hedonic and social aspects that incite excessive use and feelings of overload. Yet, SNS, as well as various other IS with prominent hedonic character can be used for purely utilitarian purposes too. We find that future research could benefit from a more inclusive and multidimensional understanding of how and why individuals use their IS artefacts. Finally, we note that the way in which diminishing extrinsic motivations invited the emergence of new intrinsically oriented demotivators in the stage of discontinued use is interesting and warrants further investigation.

6 CONCLUSION

In this paper, we explored the motivational journey through the lived experiences of five crowd-workers who adopted, used, and then later on abandoned the crowdsourcing platform uTest. To complement previous research that has charted workers' motivations to adopt and continue using crowdsourcing platforms, we examined the IS use lifecycle in its entirety, including the previously neglected final stage: discontinuance. Our results indicate that while both extrinsic and intrinsic motivations are present throughout the IS use lifecycle, their content and relative importance change over time. In the adoption phase, the emergence of both extrinsic and intrinsic motivations triggered the interviewees to start using the service to inspect if it actually offers what it promises. However, at this stage, the crowd-workers were fundamentally driven by selfish reasons. Specifically, curiosity and the possibility to gain financial rewards were the chief drivers, although the latter's role was more pronounced. Over continuous use of the service, intrinsic motivations started to outweigh extrinsic ones in significance, and additional intrinsic motivations emerged, especially socially oriented ones. Towards the end of the usage life cycle, demotivating factors emerged, and previously motivating factors diminished, triggering users to discontinue using the service and abandon it. Once again, discontinuance at this point was driven by both intrinsic and extrinsic motivations, although, just like in the adoption stage, they were all selfish in nature.

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