I AM A CROWD WORKER
– HOW INDIVIDUALS IDENTIFY WITH A NEW FORM OF DIGITAL WORK –

Research in Progress

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

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

Abstract

Crowd work has emerged as a new form of digital gainful employment that changes the nature of work. However, an increasing number of people perform certain tasks in the crowd and start to identify with this work. In this paper, we outline our research in progress which is concerned with the effects of work characteristics in crowd work that have impact on the individual's identification. Thus, we developed our research model and conducted an online survey amongst 434 crowd workers to examine their perception of work and illustrate the antecedences of identification. Our expected contribution will increase the understanding of crowd work and extend prior research on self-determination theory (SDT) and work design. For practice, we provide important insights for platform providers to (re-) design work on platform in order to increase identification among their crowd. In addition, our findings can serve as common basis for future discussions on decent crowd work.

Keywords: Crowd Work, Identification, Self-Determination Theory, Work Characteristics.

1   Introduction

In recent years, digitization linked all activities in our society and gave rise to dynamic forces reshaping our established working structures whereby new forms of labor emerged (Brynjolfsson and McAfee, 2014). As a result of rising digitalization which provides a shared new communication as well as collaboration infrastructure and crowdsourcing as an alternative system of organizing, a novel form of digital work has emerged; i.e. crowd work. According to Durward et al. (2016), crowd work reflects a digital form of gainful employment based on the crowdsourcing idea, in which an undefined mass of people creates digital goods via an open call on IT-facilitated platforms. The potentials of crowd work for the individual include the opportunity to generate an additional income (Kittur et al., 2013) on full- or part-time-basis. Furthermore, crowd work fosters the specialization in certain fields of competence (e.g., software development or design) as well as higher self-determination and autonomy through self-selection. It has shown a strong track record since the number of platforms and crowd workers has been growing continuously. In this context, the World Bank estimates the total crowd work market to be $4.8 billion in 2016 and up to $25 billion in 2020 (Kuek et al., 2015).

In general, work is an important part in our lives and thus an essential determinant of wellbeing (Cole et al., 2009). These effects are particularly pronounced when we identify ourselves with the work (Lee, 1971), which in turn is directly related to work characteristics (e.g., Knippenberg and Schie, 2000). Identification with its own work refers to self in terms of social categories ("I am") (Ashforth and Mael, 1989) and thus tends to be an even superior and more valuable outcome regarding the perception of work than satisfaction. Prior research, drawing on self-determination theory (SDT) as theoretical framework, examined the impact of work characteristics on various work outcomes, such as job satisfaction and identification (e.g., Deci et al., 2017; Güntert, 2015; Millette and Gagné, 2008).

However, based on its definition mentioned above, crowd work has fundamentally different characteristics than traditional forms of work. For individuals, crowd work can be more than the exchange of

time for money and thus just an additional income source. It can represent a new favorable alternative that leads to a sense of autonomy and flexibility, based on the individual perception of work. However, little is known about the antecedents of identification in crowd work regarding the work itself (e.g., Deng and Joshi, 2016; Olkkonen and Lipponen, 2006).

Despite this rather growing importance, research on crowd work is still in its inception, in particular regarding the ones who perform the work, i.e. the crowd workers. In literature, the focus has been on motivational (e.g., Rogstadius et al., 2011) or trust-related aspects between the crowd workers and the crowdsourcers (Guo et al., 2013). Prior research has paid less attention to ethics and values of crowd work focusing the impact on the individuals (Irani and Silberman, 2013). Although few studies have been conducted to address the demographical backgrounds of individuals working in the crowd (Kaufmann et al., 2011), there is a gap in understanding experiences and perceptions of crowd workers (Deng and Joshi, 2013). Therefore, we address this gap by analyzing the perception of crowd work characteristics from an individual perspective. In particular, we draw on SDT and focus on the psychological mechanisms that cause identification with this novel form of digital work. Hence, this quantitative study seeks to fill the outlined research gaps by addressing the following research question:

How do work characteristics affect the identification with crowd work?

We examine how this sense of identification can arise in crowd work. Thus, we apply a mediated-moderation model, based on a large-scale survey with crowd workers, to analyze the effects of work characteristics on identification. In this setting, we assume job satisfaction in crowd work to act as a mediator of these effects. Our study is unique in the current stream of research on crowd work since we analyzed satisfaction and identification with crowd work not on a motivational level but rather based on its own nature of work. Furthermore, we address existing shortcomings in recent SDT literature by examining the concrete crowd work characteristics in relation to work outcomes (Deci et al., 2017). To our knowledge, these issues have not been analyzed before.

This paper proceeds as follow: Section two provides the theoretical background by introducing related work. In section three, we outline our research model and develop the hypothesis. Afterwards, we present the applied methodology. Finally, we illustrate the expected contributions for theory and practice before presenting our next steps.

2 Theoretical Background

2.1 Crowdsourcing and Crowd Work

The phenomenon of crowdsourcing describes a new form of outsourcing tasks, or more accurately, value creation activities and functions. According to Blohm et al. (2013), the fundamental idea of crowdsourcing is that a crowdsourcer (which could be a company, an institution or a non-profit organization) proposes to an undefined group of contributors or crowd workers (individuals, formal or informal teams, other companies) the voluntary undertaking of a task presented in an open call. In this context, the ensuing interaction process unfolds over IT-based crowdsourcing platforms (Blohm et al., 2016), which are provided by intermediaries. These crowdsourcing intermediaries assure the connection between the crowdsourcing companies and the crowd workers (Zogaj et al., 2014).

Furthermore, research has found important differences between the notions of crowdsourcing and crowd work (Durward et al., 2016; Kittur et al., 2013). According to Durward et al. (2016) crowd work resembles a distinct type of labor that is located at the intersection of digital work and gainful employment. While crowd work is always paid, participation in crowdsourcing initiatives may have different motives and does not necessarily require financial remuneration, for example unpaid work that is done for a common good promoted by galleries, libraries, archives, or museums (e.g., Alam and Campbell, 2013). Thus, out of an individual's perspective, crowd work reflects a kind of digital gainful employment that is based on crowdsourcing as organization principle but implies three structural work characteristics (Durward et al., 2016):

- The contributions of the crowd workers are financially remunerated, whereby they generate a substantial part of their income out of crowd work on full- or part-time basis.

- The crowd workers act as self-employed agents since they are not employed by crowdsourcers in a regular employment relationship and thus can freely choose their working time and location. This reflects some kind of autonomy and flexibility.

- Substantial parts of the value creation in crowd work take place on IT-facilitated platforms. Thus, this specific work environment affects the individual crowd worker.

2.2　Self-Determination Theory

As a macro theory of human motivation, the self-determination theory (SDT) evolved from research on intrinsic as well as extrinsic motivations and expanded to include research on work organizations (Deci et al., 2017). SDT suggests that both individuals' performance and their well-being are affected by the type of motivation they have for their job activities (Deci et al., 2017). According to Battistella and Nonino (2012), individuals are more creative when they feel motivated primarily by interest, satisfaction, and the challenge of the work itself.

Furthermore, the SDT includes several concepts that are often addressed in the work design and work characteristics literature (e.g., Morgeson and Humphrey, 2006) as important aspects of individuals' work (Deci et al., 2017). For example, Humphrey et al. (2007) found that various work characteristics (e.g., complexity, interdependence and social support) relate to satisfaction of one or more of SDT's basic psychological needs. Other studies confirm these effects by showing that certain facilitative work characteristics promoted positive work outcomes, including performance and job satisfaction (e.g., Millette and Gagné, 2008). Besides job satisfaction, the SDT provides a theoretical lens to describes how individuals personally identify with the importance or value of their work (Deci et al., 2017). Identification with work, however, has long been recognized as a critical and superior construct in the literature on work behavior (Ashforth et al., 2008) since its positive effects on various work outcomes (Olkkonen and Lipponen, 2006). Prior research on digital labor has established the relevance of perceived work characteristics, such as autonomy, variety and feedback to evaluate individuals' satisfaction (Eckhardt et al., 2016; Morris and Venkatesh, 2010), which in turn affects identification with ones work (Knippenberg and Schie, 2000)

In crowd work literature, many studies have identified a lot of motivating factors for participating in crowd initiatives (e.g., Afuah and Tucci, 2012; Bayus, 2013; Brabham, 2010). With regard to SDT, prior research has mainly focused on the classification as well as consequences of these crowd workers' motivation. According to Zou et al. (2014), there are significant moderating effects of promotion focus on the relationship between extrinsic motivation and creativity within the crowd community. Moreover, Gassenheimer et al (2013) conducted a literature review and identified as well as categorized various motivators and demotivators for the crowd workers' participation. Nevertheless, research on the specific work characteristics as well as the underlying mechanisms that foster satisfaction and even identification with crowd work, out of an SDT perspective, have been largely neglected. In this regard, it can be useful to consider these relationships to gain new insights, since more and more people decide to undertake tasks in the crowd (Kuek et al., 2015).

3　Research Model and Hypothesis Development

Drawing on SDT (Deci et al., 2017) and work design concepts (Morgeson and Humphrey, 2006), we unravel the mechanisms of how structural work characteristics that are grounded in the very nature of crowd work (i.e., *remuneration, autonomy and flexibility, IT-facilitated*) affect identification with crowd work. Since crowd work is paid, we included financial compensation in our research model. In addition, we examined the perception of autonomy in order to represent the characteristic of self-

employment. Finally, the aspect of IT-facilitation will be covered by task variety, task identity and feedback from task as aspects primarily related to and determined by the intermediary.

In general, we assume to find evidence of moderated mediation that describe when and under what condition work characteristics positively affect the identification with crowd work. However, we expect satisfaction to be a mediator and thus acts as a mechanism through which the work characteristics influence the identification. In contrast, the financial compensation represents a moderator influencing the strength and direction of the relation between the work characteristics and satisfaction. Hence, we operationalize the structural work characteristics and examine their effects on identification through satisfaction as a generative mechanism. Figure 1 depicts our research model.
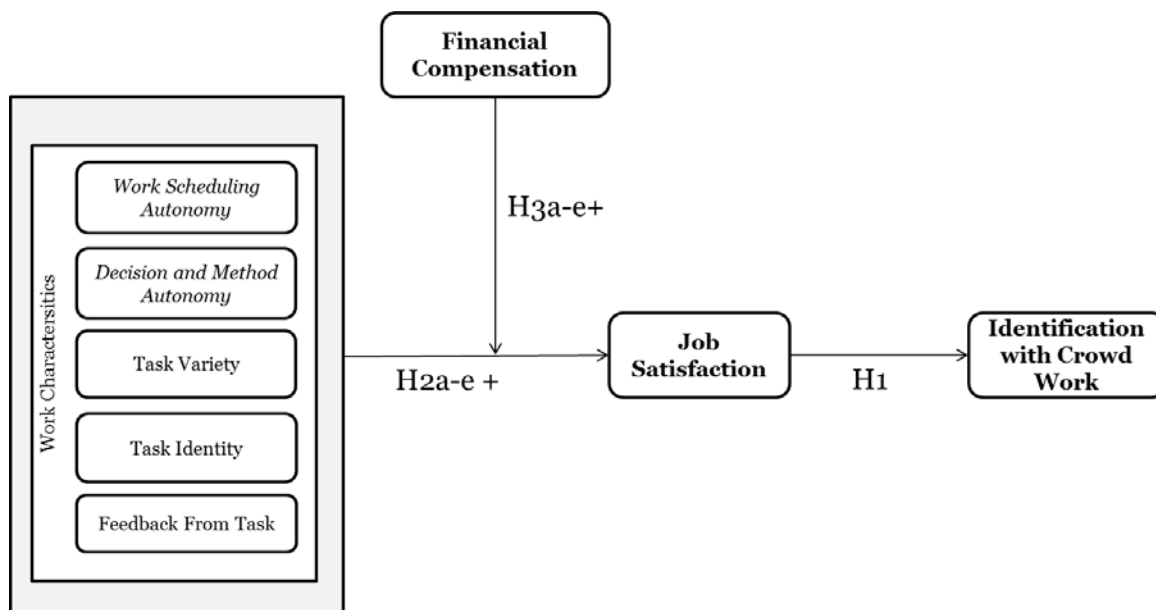

Figure 1.   Research Model

3.1   Satisfaction

In work settings, researchers found satisfaction to be understood as feelings, attitudes or preferences of individuals regarding their job (Chen, 2008). In crowd work, satisfaction has been primarily examined on a motivational level (e.g., Brabham, 2010). The perceptions of the individual crowd workers regarding their work and its effects on satisfaction have been largely neglected (Silberman et al., 2010). However, researcher found that aspects of the work itself influence satisfaction (Chen, 2008). Furthermore, several studies on work and social behavior have examined significant effects between satisfaction and identification (e.g., Olkkonen and Lipponen, 2006). Feather et al. (2004) found statistical significance between job satisfaction and identification among school teachers. Others researchers examined the effects of satisfaction and identification between work groups and the organization as a whole (Knippenberg and Schie, 2000). Since the relationship between identification and turnover is mediated by job satisfaction as a more specific evaluation of one`s task and working conditions (Van Dick et al., 2004), we assume crowd workers, who are satisfied with their work, will more likely identify with crowd work. Against this backdrop, we assume that a crowd worker, who is satisfied with its work, will more likely consider itself as a part of the crowd and thus starts to identify with crowd work. We think that satisfaction positively affects identification with crowd work. Hence, we assume:

H1)   A crowd workers` perceived job satisfaction positively influences the identification with crowd work.

3.2 **Work Characteristics**

In general, task characteristics have been one of the most commonly investigated work design characteristics in research describing the range and nature of tasks associated with a particular job (Morgeson and Humphrey, 2006). In this part, we introduce several task characteristics that seem to be highly relevant in crowd work, i.e. *autonomy, task variety, task identity, feedback from task.*

3.2.1 Autonomy

The term autonomy is described as the amount of freedom and independence an individual has in terms of carrying out his or her work assignment (Hackman and Oldham, 1975; Judge et al., 2017). A certain amount of autonomy among digital workers provides flexibility to manage the own workload and influences perceptions of digital work settings (e.g., Ply et al., 2012). In crowd work, this need of autonomy seems to be even more important since this platform-based work can be performed at any time, from any location in the world and by almost everyone who has access to the Internet. Working in the crowd means certain independence for the participants in terms of working time, amount of work and the process of work. By choosing its own working time, workplace and procedure, the crowd worker can better combine work with other areas in daily life. Furthermore, with respect to stress the crowd worker can regulate the own workload, which in turn, positively affects its satisfaction.

According to Morgeson and Humphrey (2006), there are different forms of autonomy. First, crowd workers perceive a certain degree of autonomy regarding their work scheduling since they act as self-employed agents that can freely choose their working time and location (Durward et al., 2016). Second, the crowd workers can choose by themselves which tools and methods to use in order to perform the tasks. Thus, the workers decide not only when and where but also how they work within the crowd to a certain degree. Further, both forms of autonomy seem to positively affect the satisfaction of crowd workers since they perceive more self-determination regarding their work. This in turn facilitates positive emotional valuations of crowd work and thus fosters identification, which is why we assume:

H2a)   The positive effect of perceived autonomy in work scheduling on identification with crowd work is mediated by perceived job satisfaction.

H2b)   The positive effect of perceived autonomy in decision making and work methods on identification with crowd work is mediated by perceived job satisfaction.

3.2.2 Task Variety

Another important work characteristic is task variety that refers to the degree to which a job requires workers to perform a wide range of tasks on the job (Morgeson and Humphrey, 2006). In general, individual workers appear to be more satisfied with work that allow them variety rather than repetition (Lambert et al., 2001). In digital labor settings, these findings could be confirmed and a certain task variety among IT workers has significant direct effects on their satisfaction (Thatcher et al., 2002). On the one hand crowd workers act in self-employed structures and thus enjoy a certain level of flexibility in choosing tasks. On the other hand there are many different applications for crowd work in practice and consequently various forms of tasks have emerged (Leicht et al., 2016). Hence, the crowd workers can perform a great variety of tasks that in turn represents a great benefit of crowd work and thus satisfies the individual worker. In this context, it is reasonable to expect that crowd workers who perceive greater task variety will be more satisfied and further are more likely to identify with their work:

H2c)   The positive effect of perceived task variety on identification with crowd work is mediated by perceived job satisfaction.

3.2.3   Task Identity

Prior research has defined task identity to be the degree to which a job involves a whole piece of work (Sims et al., 1976). That means it refers to the extent to which a job enables individuals to complete an entire piece of work from beginning to end (Ang and Slaughter, 2001). Researchers found evidence that digital workers, who usually perform only coding tasks, do not have the opportunity to see the results of their work when the system is implemented, and this is leading to low task identity (Ang and Slaughter, 2001). However, tasks that are predominantly self-contained, independent and do not only in combination with other tasks lead to a solution, increase job satisfaction (Ilgen and Hollenbeck, 1991). In crowd work, there are various tasks which differ considerably in their holistic nature (Leicht et al., 2016). Nevertheless, we assume crowd workers who undertake more jobs of high task identity, are more likely to be satisfied than others performing only small parts of a whole solution. Due to these facts the tasks with high task identity are invariably more interesting to perform since the individual workers see the results of their work. Therefore, we believe that the more frequently crowd workers have the possibility to perform jobs of high task identity, the more satisfied they are and further the higher is their identification with crowd work. Thus, we assume:

H2d)   *The positive effect of perceived task identity on identification with crowd work is mediated by perceived job satisfaction.*

3.2.4   Feedback from Task

Another essential characteristic is the feedback from tasks that reflects the degree to which jobs provide direct and clear information about the effectiveness of task performance (Hackman and Oldham, 1976). In crowd work, this means the extent to which carrying out the work activities provides the crowd worker with clear information about his or her performance (Morris and Venkatesh, 2010). In general, this kind of feedback seems to have a strong relationship with overall satisfaction in work contexts (Parker et al., 2017), because it provides constant information about the appropriateness of task performance, and thus reduce the individual's sense of uncertainty (Battistelli et al., 2013).

According to Durward et al. (2016) substantial parts of the value creation in crowd work take place on IT-facilitated crowdsourcing platforms and, therefore the platform environment affects the individual crowd worker. Although the crowd workers receive feedback in form of reviews for any single task, the fundamental infrastructures as well as the management of those review mechanisms are provided by the platforms. However, these platforms set basic conditions for feedback, orchestrate the presentation of information and thereby primarily shape the design of the crowd workers` feedbacks. Hence, crowd workers perceive feedback about the effectiveness of their performance as a prompt response of their own platform-based activities. We assume that crowd workers, who get important information about the appropriateness of their task performance, are more likely to perceive certain satisfaction and thus identification with crowd work can arise. This is because the platform provides critical information about the type, the quantity, the quality as well as the impact of reviews from crowdsourcers. Hence, we hypothesize:

H2e)   *The positive effect of perceived feedback from tasks on identification with crowd work is mediated by perceived job satisfaction.*

3.2.5   Financial Compensation

The financial compensation affects the perceived fairness and job satisfaction in almost any work contexts (Spector, 1997). Since crowd work resembles a financially remunerated form of digital employment on full- or part-time basis (Durward et al., 2016), the compensation affects the perception of crowd work as well (Rogstadius et al., 2011). Drawing on the two-factor theory (Herzberg et al., 2011), besides the motivators that positively influence satisfaction, hygiene factors does not give positive satisfaction and thus dissatisfaction results from their absence. These hygiene factors are extrinsic to the work itself, and include aspects such as company policies, supervisory practices, or wag-

es/salary. In order to remove that dissatisfaction the most effective way would be to pay reasonable wages (Herzberg et al., 2011). Therefore, we presume financial compensation to be a hygiene factor and thus must be sufficiently in place to strengthen the effect of work characteristics on satisfaction and further cause identification. In line with prior work and business research (e.g., Griffeth et al., 2000; Janssen, 2001), who has examined the effect of financial compensation, we assume it to operate as a moderator and thus affect the strength and direction of the relationships between the work characteristics and satisfaction. This means that financial compensation as a moderator influencing the relation between the work characteristics and the identification with crowd work through satisfaction:

H3a-e) Financial compensation moderates the indirect effect of the work characteristics on identification through job satisfaction; the higher the financial compensation, the greater the influence of satisfaction on identification.

4　　Research Method

4.1　　Research Context and Data Collection

To empirically test our research model, we conducted an online survey to collect data from crowd workers on various international crowdsourcing platforms. We ended up receiving completed questionnaires from crowd workers of 23 different platforms. Due to the fact that a structural characteristic of crowd work is the financial remuneration (Durward et al., 2016), only those platforms were considered on which the crowd workers get paid for their contributions. The survey was online from May to July 2015 and focused on German-speaking crowd workers. In sum, a total of 434 crowd workers provided a completed questionnaire. In the following, we outline some key characteristics of the sample: In the sample of the 434 crowd workers, 52,3 % were females. 83,4 % of the respondents have a higher school-leaving qualification and even 44 % have an academic background (Bachelor's or Master`s degree or diploma). The "average crowd worker" on the platforms is about 30 years old and has been registered as crowd worker for about 15 months.

4.2　　Measures

Workplace attributes have been shown to be important predictors of perceptions about the work (Oldham and Rotchford, 1983). Thus, we followed the approach of Morgeson and Humphrey (2006) since they used well-established and valid items for the measurement of work characteristics (Morgeson and Humphrey, 2006; Stegmann et al., 2010). We therefore had to modify the wordings of the existing items and adjust them to the study context of crowd work. The following work characteristics have been measured by adapted items: decision making and work methods autonomy, work scheduling autonomy, task variety, task identity, and feedback from task. While satisfaction was measured using the scale provided by van Dick and Wagner (2002), items to measure identification were adapted from Doosje et al. (1995).

We used a five-point Likert scale for all items, since the use of more complex response scales in the work design area has been shown to add substantial amounts of construct-irrelevant variance (Harvey et al., 1985). Furthermore, since negatively worded items have been shown to produce factor structure problems in work design measures (Idaszak and Drasgow, 1987), the items were positively worded such that greater levels of agreement indicated the presence of more of the work characteristic (Morgeson and Humphrey, 2006). The hourly wage of the crowd workers has been calculated by diving the self-reported number of working hours and the monthly income out of crowd work in order to be as objective, reliable and valid as possible.

To control for the possibility that sociodemographic differences in the predictor and outcome variables might lead to spurious relationships, age (years), gender (male; female) as well as the share on total income of the crowd work earned money (percentage), were entered as controls in the analysis. Fur-

ther, since the nature and characteristic of the performed task in the crowd vary widely and thus the perceptions of crowd work can differ, we followed Leicht et al. (2016) and additionally included the different types of crowd work (i.e., *microtask, marketplace, innovation, design, testing*) as covariates.

4.3 Empirical Testing Strategy

We assume a moderated mediation effect that generally describes when and under what conditions an effect occurs, i.e., that the strength of a mediation effect is based on a moderator (Preacher et al., 2007). In general, a variable is a mediator when it represents the generative mechanism through which one variable influences another (Blohm et al., 2016). In contrast, moderators influence strength and direction of a relationship between two variables. Therefore, moderated mediation models reflect mediation models in which one or several relationships in a mediation model are moderated (Hayes, 2013; Preacher et al., 2007). We will apply ordinary least squares (OLS) regressions with a nonparametric bootstrapping approach to compute biascorrected confidence intervals for testing our hypothesis (Hayes, 2013; Preacher et al., 2007). This procedure involves a direct bootstrapping based mediation test. The test looks for significance between the strength of the direct effect between an independent and a dependent variable as well as the effect between the two variables, which are controlled for the mediator. The bootstrapping procedure illustrates low type I errors and high power in assessing moderated mediation effects (Preacher et al., 2007).

5 Expected Contributions and Next Steps

In sum, our current state of research comprises the completed data collection as well as data preparation of a survey among German crowd workers. We further established a theoretical model and hypothesis which describe the effects of work characteristics on identification with crowd work through job satisfaction.

To our knowledge, this study is the first to investigate the nature of crowd work from an individual crowd workers` perspective. Therefore, we expect our research project to provide two main contributions. First, our expected results detail and extend the findings of existing research regarding crowd work such as Irani and Silberman (2013) and Kittur et al. (2013) by addressing the individual and examining the structural work characteristics and its effects on identification. Hence, we gain insights for a better understanding of the experiences and perceptions of crowd workers, as suggested by Deng and Joshi (2013). Second, we contribute to prior research on SDT (e.g., Deci et al., 2017; Millette and Gagné, 2008), by expanding as well as refining its propositions with work design concepts in the specific field of crowd work. Another aim is to generate important new contributions to work design literature (e.g., Ang and Slaughter, 2001). We will be able to provide valuable insights for the process of decomposing and allocating tasks to crowds in ways that increase the crowd workers' satisfaction, and particularly, the identification. This hopefully encourages IS researchers to focus on appropriate design patterns and elements that address the effects of our examined work characteristics in further studies. Our results are expected to provide a basis for future discussions on decent conditions in crowd work among different policy makers (e.g., platform providers, companies, politicians and unions).

As our next steps, we will apply exploratory and confirmatory factor analysis in order to confirm validity and reliability of our measures. According to Muller et al. (2005), we test moderated mediation with a series of OLS regressions. Applying OLS analysis, we hope to find positive and significant effects of the work characteristics on satisfaction, and especially on identification, supporting our hypothesis. To further explore our research model, we also employ mediation analysis as suggested by Hayes (2013). We assume satisfaction to be a mediator since it represents a generative mechanism through which the work characteristics influence the identification with crowd work. Against this backdrop, we will illustrate that the structural work characteristics and thus the perception of the nature of crowd work, influences the identification of crowd workers.

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