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# Pathways to Meaningful Work on Micro-Task Crowdsourcing Platforms

Completed Research

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## Abstract

*In this paper we investigate different mechanisms for meaningful work on micro-task crowdsourcing platforms. We adapt the pathways to meaningful work framework from the organizational behavior literature to build a theoretical model in the context of micro-task crowdsourcing. We conduct a field study with Amazon Mechanical Turk workers on a simulated crowdsourcing platform to test the research model. Our results show that motivations to connect with the self (self-connection pathway) and others (unification pathway) form two major paths to meaningful work on these platforms. Our findings contribute to the work meaningfulness research in information systems and confirm that how workers derive meaning on micro-task crowdsourcing platforms that center on the information technology (IT) artifact is comparable to traditional organizational settings.*

## Keywords (Required)

Micro-task crowdsourcing platforms, meaningfulness, meaningful work

## Introduction

Deriving meaning from our work and experiences is important for our psychological health (King et al. 2006). Being good at one's work can provide a sense of meaningfulness that pervades other areas of life (Steger and Dik 2009). People who find meaning in their work report greater meaning in life, higher life satisfaction and fewer depressive symptoms (Steger and Dik 2009). Individuals who feel that their needs are met at work are less anxious and report higher self-esteem (Deci et al. 2001).

Micro-task crowdsourcing platforms have evolved into virtual workplaces for many individuals all around the world. Crowd workers complete many micro-tasks and aggregate enough small payments to make the work worthwhile for them. Platforms like mTurk have changed the way that individuals work, are motivated and generate income. Given the work conditions on these platforms including low pay, the ways workers find meaning and the reasons they choose to come back to the platforms merit further investigation.

Prior research aimed to improve workers' experience on crowdsourcing platforms through a better understanding of the impact of intrinsic and extrinsic motivational factors (Kaufmann et al. 2011) for workers on mTurk and the role of task personalization on motivation in crowdsourcing contests (Paulino 2021). A small number of studies explored meaning in crowdsourcing contexts. Researchers investigated the role of a meaningful context for tasks on quantity and quality of work (Chandler and Kapelner 2013), the impact of task meaningfulness on workers' perceptions (Moussawi and Koufaris 2015), and the values that help increase meaningfulness for workers on platforms like mTurk (Deng et al. 2016).

More research is needed to better understand the psychological and social mechanisms that drive workers in non-traditional work environments such as crowdsourcing contexts. Our goal in this paper is to better understand sources of meaning for workers on micro-task crowdsourcing platforms. Specifically, we aim to answer the following research question: What are the sources and pathways to meaningful work on micro-task crowdsourcing platforms? We build on the literature on workers' intrinsic and extrinsic motivation and prior research on meaning to investigate our research question. We first map the findings from an earlier study by the authors (Moussawi and Koufaris 2015) to Rosso et al.'s (2010) model of meaningfulness and identify themes around workers' motivations, needs, choices, and rights. We then connect the sources

of meaning to the corresponding pathways of meaningfulness creation. After presenting the theoretical development, we propose and test a quantitative model to explore the antecedents and consequences of perceptions of work meaningfulness among workers.

## Related Work

Sources of meaningfulness in work can include the self, others, work context, and spirituality (Rosso et al. 2010). The self is a primary agent in many sorts of behaviors, attitudes, and beliefs (Bandura 1989). In Information Systems (IS), a rich stream of studies explored how individuals' motivations influence their effort and output quality. For instance, prior research explored how personalization of crowdsourcing tasks to workers' capabilities can keep them motivated (Paulino 2021). In crowdsourcing contests, prior work explored how intrinsic motivation, extrinsic motivation and engagement influence workers' effort (Liang et al. 2018). A very limited number of studies explored the role of meaningfulness in a crowdsourcing context. For instance, Moussawi and Koufaris (2015) explored how task meaningfulness shaped workers' perceptions of effort and performance in micro-task crowdsourcing platforms. Through a Value Sensitive Design lens, Deng et al. (2016) investigated how mTurk workers' values impact their perceptions of the work as meaningful. The study uncovered nine values (access, communication, accountability, fairness, security, transparency, impact, dignity) that were connected to four crowdsourcing structures (governance, technology, micro-task and compensation).

A second source of meaningfulness in work contexts is others. For instance, close relationships with coworkers, the influence of leaders, communities, and even one's family can help define the meaning of work. Various research studies in IS investigated the role that others, in various contexts, have on users' behavior and interactions with the system (e.g. Ren et al. 2012).

The work that one engages in can bring meaning. Many individuals choose to work for organizations with specific missions that they believe in. The mission of an organization can impact how workers interpret the meaning of the work they do (Rosso et al. 2010). For instance, prior work has found context to be a significant source of meaning for workers. As part of an experiment, workers on the same task were provided one of three contexts: a condition where subjects were told they were labeling tumor cells for medical research, a condition where participants completed the tasks and not provided any context, and a condition where participants completed the work and were told that it will be discarded. Workers were more likely to participate when the context was positive and labeled as contributions to medical research (Chandler and Kapelner 2013). Prior research also explored how the design of tasks can influence workers' motivation and sense of meaning (Hackman and Oldham 1976). Prior IS research explored work design and task characteristics without linking it to perceptions of meaning on the platform (Liang et al. 2018; Moussawi and Koufaris 2013).

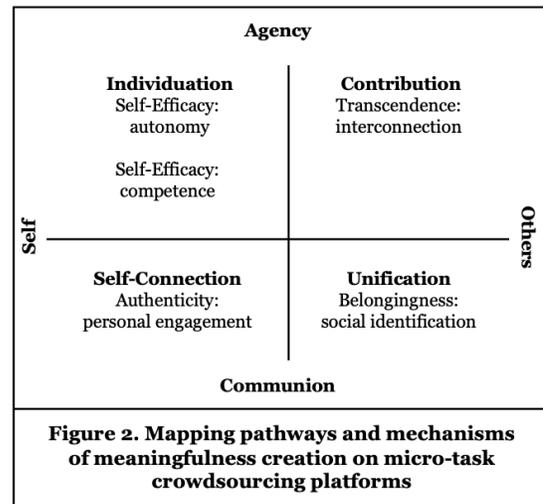
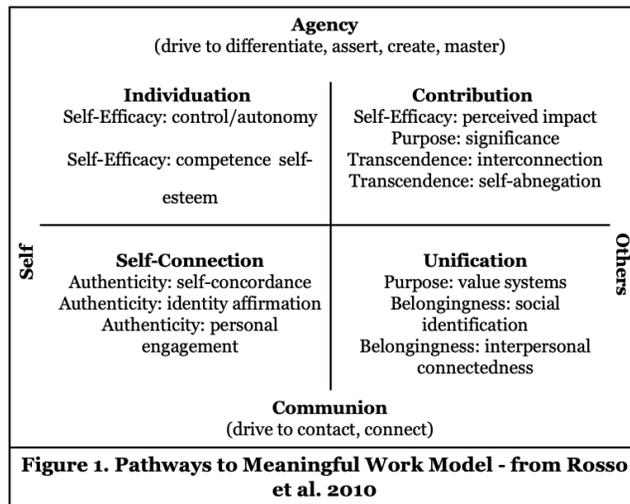
A fourth source of meaning relates to spirituality. Spirituality helps workers interpret their work activities in relation to sources greater than the self and to a higher purpose. For instance, religious workers may see their work as a sacred calling, done in the service of God.

To better understand the pathways to meaningfulness in relation to each of the sources (self, others, work context, and spirituality) in micro-task crowdsourcing platforms, we conducted a prior project where we followed a qualitative approach to explore workers' motivations and choices on mTurk (Moussawi and Koufaris 2015). We conducted interviews with experienced mTurk workers. Our qualitative analysis guided by the existence, relatedness, and growth motivation theory (Alderfer 1972), eventually resulted in twelve categories grouped into three themes. The *existence theme* consisted of categories that focused on satisfying the biological and physiological needs of workers. The following categories fall under this theme: mTurk as a source of income to workers, workers' rights and need for protection against unfair work conditions, and task choice criteria relating to pay and time tradeoffs. The *relatedness theme* focused on categories that related to satisfying workers' needs for connectedness and belongingness. Categories under this theme included the connectedness to workers on mTurk and in workers communities, feelings of belongingness to mTurk and third-party communities, and the projects' impact on society. The *growth theme* related to secondary needs that helped workers refine their skills or develop new ones. Categories under this theme included the impact of work on the self and the level of skill use and development. Three categories, specifically control/ power, enjoyment, and free time passing did not fall under any of the three themes.

## Sources of Meaningful Work

The pathways to meaningful work framework by Rosso et al. (2010) identifies pathways and mechanisms of meaningfulness creation in a work context (see Figure 1). Rosso et al. (2010) specifies seven mechanisms through which work is perceived as meaningful: self-efficacy, self-esteem, purpose, transcendence, authenticity, belongingness, and cultural and interpersonal sensemaking. These mechanisms are organized along two key dimensions: agency vs. communion, and self vs. others. Mechanisms of meaningfulness tend to differ with respect to the level to which the experiences are perceived as internal or external to the self. They also tend to vary with respect to the degree to which the individual is driven to differentiate, expand, assert, create (seeking agency) or to contact and connect (seeking communion). The intersection of these dimensions highlights four pathways by which meaningful work is created: individuation (self-agency), contribution (other-agency), self-connection (self-communion), and unification (other-communion). Individuation refers to a pathway that helps create meaningfulness through defining and differentiating the self as worthy and appreciated. Contribution refers to a pathway that leads to creating meaningfulness through actions that are perceived as significant and performed for a purpose greater than the self. Self-connection reflects the meaningfulness of actions that help individuals achieve closer alignment with their view of their selves. Unification refers to the meaningfulness of actions that bring individuals into agreement with value systems, principles, or other human beings. These mechanisms are not mutually exclusive and can be activated simultaneously (Rosso et al. 2010).

While these mechanisms were proposed in a more traditional work context, the individual’s drive to be an independent actor (agency dimension) as well as part of a group (communion dimension) are expected to be present whether the work context is more traditional (organizational) or not (online crowdsourcing platforms). And hence the mechanisms proposed by Rosso et al. (2010) are expected to work in parallel ways in online contexts. It is essential to highlight the crucial role that the IT artifact plays as enabler of many of those mechanisms. The mere existence of the platform allows the environment to exist. Additionally, several technical characteristics allow workers to distinguish themselves by building skills or sharing their achievements and qualifications. They (characteristics) also allow workers to communicate with work providers on the platform, and other workers on chat forums (through other online platforms). Figure 1 presents Rosso et al. (2010) original model while Figure 2 presents the mapping that we explain in the next few sections.



### Pathway 1: Individuation Mechanisms of Meaningfulness Creation

The pathways to meaningful work framework proposes self-efficacy and self-esteem as mechanisms in the individuation category that help create meaningfulness through distinguishing the self as valuable. Research suggests that individuals have a need to see themselves as capable to effectively manage their own activities and environments and exercise free choice (Rosso et al. 2010). These realizations are meaningful because they reassure individuals that they have agency (Wrzesniewski and Dutton 2001).

Self-esteem suggests that feelings of achievement and affirmation in a work context help workers strengthen their beliefs that they are valuable. Self-efficacy is a powerful motivator of human action towards specific outcomes (Rosso et al. 2010; Bandura 1989). It captures beliefs that reflect power and ability to produce an intended effect. Self-efficacy enables individuals to feel they have the capability and competence to force change or exercise control in their environment (Baumeister and Vohs 2002). Micro-task crowdsourcing platforms allow workers to have control over their work environment, decide when and where to complete the tasks, and choose providers, projects, and tasks. This level of autonomy can trigger feelings of control and power in the work context, hence increasing perceptions of meaningfulness. A higher sense of agency will help reassure workers of the significance of their work. We propose that higher perceptions of autonomy on micro-task crowdsourcing platforms are likely to help workers experience higher levels of meaningfulness.

**H1:** *Perceived autonomy is positively associated with perceived meaningfulness.*

Competence reflects the ability to successfully overcome challenges at work. That is, an individual is more likely to feel personally competent when learning, growing, and effectively reacting to obstacles that arise in the work context. Effectiveness helps individuals feel competent and create a sense of meaning for individuals at work (Grecas 1991; Rosso et al. 2010). On micro-task crowdsourcing platforms, users who perceive the work as engaging (of their skills) could experience higher levels of perceived meaningfulness due to the increased feelings of self-efficacy. Workers on these platforms reported skill use and improvement as an important motivating factor (Kaufmann et al. 2011). Hence, we propose that workers are likely to perceive their work as particularly significant due to the competence factor, i.e. self-efficacy.

**H2:** *Perceived use of skills is positively associated with perceived meaningfulness.*

### ***Pathway 2: Contribution Mechanisms of Meaningfulness Creation***

Mechanisms of meaningfulness creation through contribution entail self-efficacy, purpose, and transcendence. The self-efficacy mechanism under contribution refers to perceived impact. It suggests that the perception of being able to positively impact others (e.g. organizations, work groups, coworkers, etc.) through work tasks contributes to increased levels of meaningfulness. Purpose is another mechanism falling under the contribution category. Philosophers have long affirmed that the pursuit of a purpose or guiding ideal provides life with meaning. Sources of purpose can be internal or external - internally driven motivations or spiritual (Rosso et al. 2010).

Contribution also includes transcendence mechanisms where work contributes to connecting individuals with groups, experiences, and entities that transcend the self (Frankl 1959; Weiss et al. 2004). An important employment of transcendence in the literature is interconnection which refers to the extent to which a person's work makes her feel that she is part of a system of interconnected persons. Such a system cannot exist without the joint efforts of all individuals belonging to it and is greater than the self (Rosso et al. 2010).

Feelings of connection to groups through work can contribute to the emergence of meaningfulness as it helps individuals experience a nurturing sense of shared identity and humanity with others (Rosso et al. 2010). Workers can draw meaning from various group memberships (e.g. social identity groups, work groups, organizational communities, etc.). Prior IS research investigated belongingness (through attachment) to a group within the community (i.e. to a specific project) and to the community as a whole (i.e. to the platform) in online communities (Ren et al. 2012).

We propose that workers in micro-task crowdsourcing communities draw meaning from several group memberships. Workers may consider themselves to be members of the platform community, project community, Internet community, or third-party communities (see Moussawi and Koufaris (2015)). Workers develop attachment and belongingness feelings to each of the communities with which they associate themselves. In this study, we focus on workers' belongingness to the project and the platform.

Belongingness to the platform community promotes feelings of interconnection with an entity larger than the self. The platform cannot exist without the joint effort of all individuals (workers, providers, administrators, etc.) working in various capacities. Meaningfulness can emerge as the result of connecting and contributing to a system of interconnected persons that is outside of and greater than the self (Rosso et al. 2010). Hence, we expect that higher levels of perceived belongingness to the platform would increase perceptions of meaningfulness on the platform.

**H3:** *Perceived belongingness to the platform is positively associated with perceived meaningfulness.*

### **Pathway 3: Self-connection Mechanisms of Meaningfulness Creation**

Self-connection includes authenticity mechanisms, which can be reflected through personal engagement (Rosso et al. 2010). Meaningfulness in this case is derived from feeling immersed in the work experience (Deci and Ryan 1985). Feelings of authentic engagement in the work are often meaningful because they indicate the development of the self-concept through a sense of coherence between one's behavior and perceptions of the true self (Rosso et al. 2010). When an individual is feeling engaged or intrinsically motivated by her work, she is likely to perceive her work as allowing for the expression of her authentic self (Csikszentmihalyi 1990; Spreitzer 1996).

We propose that perceived enjoyment reflects personal engagement on micro-task crowdsourcing platforms. Personal enjoyment emerges when the worker is immersed and motivated by the task or collection of tasks. The high level of agency, which workers have over the task choice suggests that the worker will be very engaged when working on the tasks. These feelings of enjoyment will help intensify the connection with the self, hence increasing the meaningfulness of the work.

**H4:** *Perceived enjoyment is positively associated with perceived meaningfulness.*

### **Pathway 4: Unification Mechanisms of Meaningfulness Creation**

Unification encompasses purpose and belongingness mechanisms. Belongingness is the urge to foster and maintain long-lasting, positive and significant interpersonal relationships (Rosso et al. 2010; Baumeister and Leary 1995). The feelings of connection to groups through work are likely to provide individuals with meaningfulness triggered by positive feelings of common identity and humanity with others. The social identification aspect of belongingness represents the drive to become a member of social or workplace groups. This membership produces a sense of shared identity, beliefs, or attributes (Rosso et al. 2010). We propose that feelings of belongingness to the project will help promote feelings of common identity with others working on the same project. Working on common goals stimulates a sense of harmony with other workers contributing to the same project. We propose that higher perceptions of belongingness to the project will increase perceptions of meaningfulness of the work at hand.

**H5:** *Perceived belongingness to the project is positively associated with perceived meaningfulness.*

### **Meaningfulness and Work**

Prior research explored the impact of meaningfulness, triggered through a contribution mechanism, i.e. sense of purpose enabled through a tumor research cover story, on the quantity of output on micro-task crowdsourcing platforms (Chandler and Kapelner 2013). A more meaningful context (workers were told that these tasks benefit tumor research) was found to impact the quantity of work. Similar results were found in a lab study where participants in the meaningful condition (triggered through a self-efficacy mechanism: accumulation of built products) assembled more products than those in the non-meaningful condition (Ariely et al. 2008). In line with prior research, we propose that the more meaningful workers perceive their micro-task crowdsourcing work to be, the more tasks they will complete.

**H6:** *Perceived meaningfulness is positively associated with the quantity of work.*

The motivation through job design theory (Hackman and Oldham 1976) proposed that experienced meaningfulness at work creates a psychological state that leads to high quality performance at work. The motivation-hygiene theory (Herzberg 2005) proposed that motivators such as personal growth in competence are effective in motivating workers to superior performance. On micro-task crowdsourcing platforms, prior research found that participants in non-profit work consistently demonstrated more accurate work than those in for-profit workers (Rogstadius et al. 2011). This finding indicates that the significance of work is important to workers on these platforms. In line with prior research, we expect that workers who perceive their work as particularly significant will deliver higher quality work.

**H7:** *Perceived meaningfulness is positively associated with the quality of work.*

Many adults consider their job as an important part of their identity (Ariely et al. 2008). We propose that workers who perceive their work to be particularly significant will be more likely to return to the platform. The intention to perform a behavior is shaped by the individual's attitude towards the behavior. When the worker perceives the work to be meaningful, the attitude towards the return behavior will be positive, hence positively impacting intention.

**H8:** *Perceived meaningfulness is positively associated with the intention to return.*

IS work influenced by flow theory (Csikszentmihalyi 1990) proposed and found support for the association between perceived enjoyment and intention to return to the system. For instance, enjoyment impacts the users' intention to return to use various systems (Kamis et al. 2008; Koufaris 2002). We propose that feelings of pleasure and fun will be a strong determinant for the workers' intention to return to the platform to complete more tasks.

**H9:** *Perceived enjoyment is positively associated with the intention to return.*

## Research Design

To test our model, we conducted a field study, using a simulated crowdsourcing platform. We recruited participants from mTurk, one of the most popular crowdsourcing platforms for micro-tasks. Upon choosing the task, participants were informed that they would be working on a simulated platform, to complete micro-tasks as part of a larger project called "The Feather Project" and that they would be receiving a fixed payment for their work. We explained to participants that their help was needed for a visual recognition project that is too difficult for machines to complete and that humans can do relatively easily. For each micro-task, the subjects were presented with an image that included a number of feathers (full and partial feathers). The workers had to count the number of 'full' feathers in the image, i.e., not cut off by the image borders. We constructed the images so that the task was non-trivial but achievable in less than a minute.

A continuously scrolling ticker at the top of the screen informed the subjects of the current number of workers on the platform as well as usernames of new workers joining the project. The ticker was in fact hardcoded and presented the exact same information to all the subjects in the study. This ensured that the subjects' sense of belongingness was based solely on their own interpretation of the information regarding the other workers and not on differences in that information itself. Additionally, a vertical banner on the right hand of the screen, informed the subjects of the number of micro-tasks that they completed, as well as the percentage of the entire project that had been completed at the time. The number of micro-tasks completed by each subject was an objective count. However, the percentage of the entire project completed was hard coded so that it was the same for all subjects, starting at 49.8% complete and moving up by varying intervals to a maximum of 51.2%. This information ensured that the interface provided some indication that the subjects' efforts contributed positively to the project, thereby possibly impacting their perceived use of skills.

Subjects were required to complete a minimum of 5 micro-tasks. Starting at the fifth micro-task, they were given the option to leave the platform and complete a survey, or to stay and complete an additional micro-task. If they opted for an additional micro-task, they were then given the choice to leave after each new task they completed, up to 40 micro-tasks at which point they are automatically directed to the survey. We clearly explained to participants that completing more than the initial five micro-tasks would not result in any additional monetary payments.

This structure allowed us to achieve the following goals. First, the mandatory five micro-tasks guaranteed that subjects would get at least some exposure to the platform and the visual cues that would impact their perceptions. Second, the ability to control how many additional micro-tasks they could do without any penalty allowed the subjects to form varied perceptions on autonomy. Third, the fixed monetary reward, regardless of the number of micro-tasks completed, enabled us to remove the impact of variable external rewards (additional pay) from our model and be able to focus solely on the effect of our research model variables regardless of the level of compensation to subjects. After completing their tasks, all participants were directed to an online survey.

### Sample

A total of 246 Amazon Mechanical Turk workers participated in this field study. 40 data records were marked and removed due to incomplete data records, resulting in a total of 206 complete and valid observations for data analysis. 59% of participants were male and 39% were female. 2% preferred not to disclose their gender. 57% of workers who participated in our study had full-time employment, 18% had part-time employment and 24% were unemployed. Additionally, 61% of participants have been working on mTurk for more than a year.

### Data Analysis

We used the SmartPLS software package for our data analysis (Ringle et al. 2015). We started by evaluating the estimates of the relationships between the reflective latent variables and their indicators, i.e. the outer loadings.

All cross-loading values were above the satisfactory threshold of 0.70 except for two items for autonomy that had outer loadings of 0.30 and 0.28 which we removed. All composite reliability values demonstrated high reliability for all constructs (Table 1). All AVEs were above the minimum level of 0.5 indicating good convergent validity. To ensure discriminant validity, we used the Fornell-Larcker criterion (Fornell and Larcker 1981; Lindell and Whitney 2001). According to this criterion, the square root of the AVE for each construct needs to be higher than its correlations with other constructs. Overall, the square roots of the AVEs for the reflective constructs were all larger than their correlations with other variables in our model.

**Table 1. Composite Reliability, Average Variance Extracted, Latent Variable Correlations, and Square Root of the AVE**

	CR	AVE	Correlations							
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	
(1)	0.84	0.72	<b>0.85</b>							
(2)	0.98	0.95	0.38	<b>0.97</b>						
(3)	0.97	0.91	0.43	0.59	<b>0.95</b>					
(4)	0.95	0.83	0.53	0.63	0.71	<b>0.91</b>				
(5)	0.96	0.89	0.34	0.47	0.54	0.70	<b>0.94</b>			
(6)	0.96	0.89	0.59	0.56	0.68	0.82	0.59	<b>0.94</b>		
(7)	0.91	0.77	0.58	0.39	0.42	0.55	0.36	0.73	<b>0.88</b>	

(1) Autonomy, (2) Belongingness to the platform, (3) Belongingness to the project, (4) Enjoyment, (5) Intention to return, (6) Meaningfulness, (7) Skill use, CR: Composite Reliability, AVE: Average Variance Extracted. The values in bold in the diagonal cells in the correlations part of the table are the square root of the AVE for the corresponding constructs.

We checked for the presence of common method variance using the marker variable technique (Lindell and Whitney 2001) as well as the Harman’s single factor test (Podsakoff et al. 2003). We found low correlations between the constructs and our marker variable, a scale measuring the belief in fate (adapted from (Chan et al. 2009), which should have no theoretical relationships with our model’s variables. The correlations between our constructs and the marker variable were very low ranging between 0.06 and 0.29). There was also no emergence of a single factor that accounts for the majority of the covariance among our measures. This indicated that any common method bias in our data set was too low to be of concern.

### Hypotheses Testing

We used Partial Least Squares (PLS) with the SmartPLS software to test our structural model (Hair et al. 2016; Ringle et al. 2015). H1 and H3 examined whether perceived autonomy and perceived belongingness to the platform positively impact perceived meaningfulness and were not supported. H2, H4, and H5 investigated whether perceived use of skills, perceived enjoyment, and perceived belongingness to the project positively impact perceived meaningfulness. All three hypotheses were supported with H2 ( $\beta = 0.36$  and  $p = 0.000$ ), H4 ( $\beta = 0.46$  and  $p = 0.000$ ), and H5 ( $\beta = 0.18$  and  $p = 0.001$ ). H6 and H7 examined the positive association between perceived meaningfulness and quantity of work and quality of work. Both hypotheses were supported with H6 ( $\beta = 0.18$  and  $p = 0.001$ ) and H7 ( $\beta = 0.19$  and  $p = 0.003$ ). H8 investigated the impact of perceived meaningfulness on the intention to return and was not supported. Finally, H9 examined the relationship between perceived enjoyment and the intention to return and was

supported ( $\beta = 0.65$  and  $p = 0.000$ ). The coefficient of determination  $R^2$  was strong for perceived meaningfulness ( $R^2=0.80$ ), moderate for intention to return ( $R^2=0.46$ ), and weak for quality ( $R^2=0.04$ ) and quantity ( $R^2=0.04$ ) of work.

<b>Hypotheses</b>	<b>Results</b>
H1: Perceived autonomy is positively associated with perceived meaningfulness.	Not Supported
H2: Perceived use of skills is positively associated with perceived meaningfulness.	Supported
H3: Perceived belongingness to the platform is positively associated with perceived meaningfulness.	Not Supported
H4: Perceived enjoyment is positively associated with perceived meaningfulness.	Supported
H5: Perceived belongingness to the project is positively associated with perceived meaningfulness.	Supported
H6: Perceived meaningfulness is positively associated with the quantity of work.	Supported
H7: Perceived meaningfulness is positively associated with the quality of work.	Supported
H8: Perceived meaningfulness is positively associated with the intention to return.	Not supported
H9: Perceived enjoyment is positively associated with the intention to return.	Supported

## Discussion

In this study we proposed a model for pathways to meaningful work. We tested the model with Amazon Mechanical Turk workers on a simulated micro-task crowdsourcing platform. Our results (Table 2) from the empirical test highlight the role of perceived work meaningfulness in shaping the quality and quantity of work consistent with H6 and H7. Feelings of belongingness to the project (H5), enjoyment (H4) and perceived use of skills (H2) positively shaped perceptions of work meaningfulness. Finally, we find enjoyment to be an important factor in predicting the intention to return to the platform (H9). We do not find support for the relationship between feelings of belongingness to the platform and perceptions of work meaningfulness. Additionally, since mTurk workers were redirected to the simulated platform immediately upon selecting the task, this could have had adverse effects on feelings of belongingness to the mTurk platform. We also do not find support for perceived meaningfulness’ impact on intention to return to the platform. It is possible that perceptions of meaningfulness contribute to workers’ growth and experience and in that way (indirectly) impact intention to return. Furthermore, we did not find that perceived autonomy impacts perceived meaningfulness. One possible explanation relates to the fact that participants signed up for one task on mTurk. On the simulated platform, subjects were then asked to complete a minimum of 5 micro-tasks (thus possibly reducing their level of autonomy) before the completion of additional tasks became optional.

## Limitations

One limitation in our study relates to self-reported data. We designed a cross-sectional study to measure users’ perceptions. Meaningfulness is experienced through the self and builds through experience. Future work can explore workers’ pathways to meaningful work using a longitudinal approach. Additionally, the choice of a simulated crowdsourcing platform with one type of tasks, i.e. object identification limited the generalizability of our study. Future research could investigate multiple types of tasks on different crowdsourcing platforms. Finally, the variance explained for the impact of meaningfulness on quality and quantity of work was low, indicating that there are additional determinants that our model did not account for.

## Contributions

Prior research states that a single work experience can activate one or multiple pathways to meaningful work (Rosso et al. 2010). We find evidence that this might be the case on micro-task crowdsourcing platforms. Our study identifies pathways to meaningful work in this context. The significant impact of perceived enjoyment and belongingness to a project on the workers’ sense of meaningfulness indicates that the pathways to meaningful work on micro-task crowdsourcing platforms can be motivated by the workers’

drive to connect to others (communion) whether the goals are personal (self) or social (others). More specifically, we find that workers are looking for work that would bring them into closer alignment with their perception of self (self-connection pathway) and want to identify with and be connected to other individuals (unification pathway). These findings add to prior work in this context that identified the importance of specific values (e.g. accountability, fairness, impact, dignity) on workers' perceptions of meaning from the work (Deng et al. 2016).

At the same time, the lack of significance on the impact of autonomy and belongingness to the platform on meaningfulness suggests that perhaps workers are not motivated by a drive to differentiate or assert themselves. In other words, they are not necessarily aiming to prove themselves as worthy or valuable (i.e. individuation pathway), nor are they looking to contribute to something bigger than themselves (i.e. contribution pathway). This finding makes sense given that the tasks are repetitive, not competitive, and small (thus lacking context in most cases).

This work also contributes to the IS literature by adapting the Rosso et al. framework (2010) and exploring meaningfulness in an IS context. Rosso et al.'s work in the organizational behavior literature explores psychological and social mechanisms that underlie perceptions of meaningfulness in a traditional and organizational work context. In this study, we extend the application of these mechanisms and pathways to a non-traditional and online work context. Crowdsourcing work is enabled by the IT platform and consists of large projects being broken down into smaller tasks allowing the micro-work of many contributors to be combined. The IT artifact here is both important and incidental. It is important in the sense that it provides certain affordances, such as showing the number of microtasks completed or the number of workers currently working on the project, that impact the workers' perceptions and experience. The results of this study are confounded by those affordances, in the sense that a differently designed artifact may produce different results. The findings in this research provide insights into how the design of the IT artifact could change worker behavior in this context, though additional research is needed to explore various designs.

Practically, it is evident that workers in crowdsourcing environments are actively shaping their work experiences. Platform providers can enable more description and categorization (or tagging) of tasks to better explain the task and anticipated experience (e.g. type of skill development, nature of communication with other workers or requesters, overall rating of the task, etc.).

## Conclusion

In this paper, we explored pathways to meaningful work on micro-task crowdsourcing platforms. We built on the pathways to meaningful work model (Rosso et al. 2010) to propose mechanisms for meaning creation on micro-task crowdsourcing platforms. The results of a field study with a simulated crowdsourcing platform reveal interesting findings. Our results support pathways to meaningful micro-task crowdsourcing work where workers are driven by a motivation to connect with the self and others.

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