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Article

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Dynamics of flexible work and digital platforms: Task and spatial flexibility in the platform economy

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ABSTRACT

Flexibility is recognized as one of the major shifts in the future of work. As emerging forms and structures of work challenge us to rethink how work is organized, specifically through the digitization of work by digital platforms, we are witnessing shifts in workplaces that challenge common models of full-time employment. To date, most frameworks looking to understand flexibility and flexible work arrangements are rooted in traditional employment settings. Building on existing concepts of flexibility and flexible work arrangements, this study examines how platform workers make sense of flexibility. Our findings conceptualize two central dimensions of worker flexibility, task and spatial flexibility, which are driven by the different attributes of the platform work. Our findings also demonstrate that different platform types, and the ways in which they mediate flexibility, leads to important differences in the ways workers experience their work.

1. Introduction

Flexibility is recognized as one of the major shifts in the future of work and workplaces (Kossek, Gettings, & Misra, 2021). Over the past few years, the pace of flexible work environments has rapidly increased. Work flexibility is a common denominator of many non-standard arrangements, where workers enjoy more autonomy over how they fulfill their work responsibilities. Flexible work arrangements now embrace a broadening shade such as compressed hours, flextime, co-working, contracting, platform work (e.g., online freelancing), digital labor (e.g., micro tasking), nomadic work, and portfolio careers (Burnford, 2019). In this study we specifically focus on “platform economy” and the workers pursuing work on these platforms.

An important driver and motivation for workers turning to gig work is the flexibility that it offers (Dunn, 2020; O’Farrell & Montagnier, 2020). Scholarship has shown, that for the worker, flexibility could be about the hours worked and workplace location (Woodcock & Graham, 2019), about the flexibility is about freedom for the workers to optimize their resources (time and other assets) (Burtch, Carnahan, & Greenwood, 2018) and the flexibility to decide when to work (Katsnelson & Oberholzer-Gee, 2021). Scholars have identified various potential advantages, such as allowing their work arrangement to be combined with

life circumstances such that it reduces tensions related to work-family conflicts (Jarrahi et al., 2021).

The growth of digitally-enabled crowdwork, the rise of freelancing, uses of platform ecosystems (Kapoor et al., 2021) and the intensity of project-based work, challenge common models of full-time employment (Hagel, Schwartz, & Bersin, 2017). Recent reports have estimated that as high as 36% of the US workforce is part of the gig economy, and by 2027 over 50% of the US workforce will participate in the platform economy (Spajic, 2021). Despite the rapid growth of flexible work, most frameworks informing the study of work and work systems are still rooted in the experiences and work practices of traditional employees in standard jobs (Barley, Bechky, & Milliken, 2017).

As such there is a lack of understanding of flexible work environments and specifically the role of digital mediation in these work environments (Jarrahi et al., 2021). Scholarship of work and digital mediation still considers organizations as ‘containers,’ encapsulating both the work that is done and systems used to support it (Winter, Berente, Howison, & Butler, 2014). Yet, most forms of flexible work are not cleanly encapsulated within a single organization’s boundary, and technology uses may not fit neatly within the conventional notions of enterprise information systems that support standard work.

To address these gaps we build on a field study of platform work. The

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platform economy can be understood as a harbinger of flexible work where flexibility is a key defining factor and digital platforms are the central foundation and places of work (Lehdonvirta, 2018; Sutherland & Jarrahi, 2018). Platform work can be broadly defined as work that relies on a digital labor platform to provide a service ranging from ride hailing to content editing; the platform acts as a matchmaker that not only brings together platform workers and recipients of service but also provides payment services and trust building mechanisms (O'Farrell & Montagnier, 2020). Recent research indicates how the opportunities, challenges, risks, and disparities that undergird emerging work settings and more specifically the complex roles played by digital platforms in mediating this work (de la Carlos Alvarez Vega, Cecchinato, & Rooksby, 2021; Verhoef et al., 2021; Waldkirch, Bucher, Schou, & Grünwald, 2021).

As emerging forms and structures of work challenge us to rethink how work is organized, specifically work digitally-mediated by online platforms. To date, most frameworks looking to understand flexibility and flexible work arrangements are rooted in traditional employment settings, and those which have examined gig work have focused on specific types of platforms (e.g. Anwar & Graham, 2021; Berger, Frey, Levin, & Danda, 2019). A common limitation of studies on platform workers is the reliance on data from single platforms (Sutherland & Jarrahi, 2018). While the basic arrangement of the two-sided market is common across platforms, there is great heterogeneity in platform attributes, including flexibility (Kalleberg & Dunn, 2016). Howcroft and Bergvall-Kåreborn (2018) distinguish, for example, between four types of platform-work with key differences between platform types including differences in how work is mediated and controlled. Emerging research has pointed out that increased flexibility in other attributes of work is not as common due to the control exerted by the platforms, but that it varies between platform types (Kalleberg & Dunn, 2016; Vallas & Schor, 2020). Thus, the heterogeneity of platforms becomes an important attribute to consider when examining flexibility.

Furthermore, this work is reliant on digital technologies to mediate work introducing a nuanced and complicated work structure ((de la Carlos Alvarez Vega et al., 2021; Verhoef et al., 2021; Waldkirch et al., 2021)). The differences in how work is mediated and controlled across platforms suggests different experiences for workers, which may translate to different outcomes of flexibility. For instance, online freelance platforms like Upwork¹ and Fiverr² tend to draw knowledge workers with specialized skill sets from various professional groups (Kalleberg & Dunn, 2016). Knowledge work, which involves conceptual skills and cognitive abilities (Powell & Snellman, 2004), tends to be project-based and usually calls for some degree of creativity, adaptation and problem-solving skills (Alvesson, 2004). Thus, the role of platforms in facilitating knowledge work is correspondingly complex (Wood, Graham, Lehdonvirta, & Hjorth, 2018), with more subtle mechanisms for matchmaking and workforce management (Kalleberg & Dunn, 2016; Waldkirch et al., 2021). On the other side of the continuum, scholarship has clearly shown a stronger framework of control at lower-skilled platform work such as ridesharing (Peticca-Harris, de Gama, & Ravishankar, 2020), delivery (Veen, Barratt, & Goods, 2019), and microtasking (Fieseler, Bucher, & Hoffmann, 2019). While both Kalleberg and Dunn (2016) and Howcroft and Bergvall-Kåreborn (2018) strongly demarcated the different attributes across the spectrum of platform work, flexibility has universally been cited as a key reason why all platform workers seek this work arrangement (De Stefano, 2015). The different attributes may not be experienced the same, however, as regulations (market or industry) may shape the worker experience and the flexibility afforded. Thus flexibility may not necessarily be positive a priori. As such, a cross-platform approach is necessary to understand the role of digital labor platforms in shaping work flexibility.

Building on the framework demarcated by Kalleberg and Dunn (2016) which demarcated a) control of platforms and b) job characteristics (e.g. job duration) as key differentiators between platforms, we examine how flexibility might be experienced differently in each quadrant within their framework. Specifically, we look to examine how both the nature of the task and the digital platforms shape how platform workers make sense of flexibility. As such, we pursue two goals in this research:

- To discern key dimensions in the nature of tasks and platform organization to better understand how platform workers experience flexibility, including the role of digital labor platforms in shaping work flexibility, and the affordances and constraints that influence the way flexibility is experienced and enacted by workers
- To understand how the heterogeneity in platform work affects the different dimension of flexibility

We see this study as an opportunity to expand the broader concept of flexibility and how it relates to platform-mediated work, workers, and the platform economy. Methodologically, this study enriches literature on platform work by adopting a “cross-platform approach”. More specifically we compare different platforms to understand how their mediating role, along with the type of task (low skilled vs high skilled, i.e. task flexibility) and location (dependent vs independent, i.e. spatial flexibility) affect the way platform workers experience flexibility. Building on to Karanović, Berends, and Engel (2021) work that examines worker responses to platforms, this study identifies an explanation for the “dual role” of platforms, which may enable but may also challenge flexibility (this is complementary). Lastly we argue that “trust towards the platform” is relevant predictor for platform workers’ job outcome and satisfaction contributing to the extant literature highlighting the crucial role of trust in new ways of working (e.g. Pianese, Errichiello, & da Cunha, 2022).

The remainder of the article is structured as follows. We begin with an elaboration of the scholarship examining flexibility in the platform economy. This is followed by an explanation of the study setting and the methods used for data collection and analysis. Then we present our findings and discuss the contributions and limitations of this study.

2. Related research

Recently, scholars have begun to explore flexibility in the platform economy (e.g., Lehdonvirta, 2018). The platform economy is driven by digital platforms that provide an on-demand two-sided digital marketplace that instantaneously matches supply and demand for a variety of services. They have not only enabled new forms of work activity (often referred to as digital work, online gig work, or platform work), but also fundamentally transformed the way workers find new employment opportunities and carry out work tasks (Nash, Jarrahi, Sutherland, & Phillips, 2018). These platforms are thought to provide workers a great deal of formal flexibility (Kuek et al., 2015) and thus provide an excellent opportunity to study flexibility.

Specifically, digital platforms emerge as a key genre of technology in enabling and constraining work flexibility (Rani & Furrer, 2021). Thus, work flexibility is digitally mediated, meaning that it is empowered by a wide variety of digital tools, infrastructure and systems (Sutherland, Jarrahi, Dunn, & Nelson, 2019). For example, research documents that the interaction with the digital platforms raises workers’ flexibility in how, where and when work is conducted but at the same time might have a reverse effect on flexibility by raising their attachment and commitment to the work arrangement (work partners, clients and other stakeholders) (Bader & Kaiser, 2017; Mazmanian, Orlikowski, & Yates, 2013; Shevchuk, Strebkov, & Davis, 2019).

In these arrangements, workers may increasingly interact with technological systems as coordinators rather than a human manager, and hence some unrestrained control may be given to data and

¹ <https://www.upwork.com/>

² <https://www.fiverr.com/>

algorithms (Lustig & Nardi, 2015; Lustig, Pine, Nardi, Irani, & Lee, 2016; Zuboff, 2015) Aloisi & De Stefano, 2022, (Lustig et al., 2016; Lustig & Nardi, 2015; Zuboff, 2015). For example, Lustig and Nardi (2015) proposed the concept of *algorithmic authority* to describe the legitimate power of algorithms to direct human action, and others have continued to discuss the challenges workers face due to labor platform designs and their algorithmic management mechanisms [e.g., (Jarrahi, Sutherland, Nelson, & Sawyer, 2019; Ma, Rivera, Yao, & Yoon, 2022)]. Yet, despite these warnings about algorithms and platforms in our daily lives, work flexibility and the role of digital technology is often glorified and considered unambiguously positive, across much of the literature and media. Thus, we argue it is important to draw attention to the dual roles played by digital technology in shaping flexible work arrangements; while it does enable work flexibility, it simultaneously poses challenges that may undermine flexible work by adding to its precarity and vulnerability. That is, while digital infrastructures empower workers to untether themselves from traditional office spaces and stringent schedules, digital platforms may also come with their own challenges. These challenges can contribute to work precarity and uncertainty of flexible workers, and may require workers to develop strategies to adapt and configure the technology to be able to work flexibly and independently.

Beyond looking at flexibility from the platform perspective, the platform economy literature has focused on several different axes of flexibility from the worker perspective. Scholars have examined attributes like workplace location and number of hours worked as key tenets of flexibility (Woodcock & Graham, 2019). Other have taken a resource-focused approach and argue that flexibility is about freedom for the workers to optimize their resources like time and other assets (e.g. (Burtch et al., 2018). Some scholars have argued a more nuanced approach is necessary and position flexibility as multi-dimensional (e.g. Berg, Furrer, Harmon, Rani, & Silberman, 2018; Churchill & Craig, 2019).

The flexibility most commonly associated with this work arrangement is that of flexibility to decide when to work, schedule flexibility [e.g., (Chen, Chevalier, Rossi, & Oehlsen, 2019; Johns & Gratton, 2013; Katsnelson & Oberholzer-Gee, 2021; Kuek et al., 2015; Malone, 2004; Sundararajan, 2017; Wheatley, 2017; Wu, Zhang, Li, & Liu, 2019)]. Scholars have identified various potential advantages to flexible scheduling, such as allowing paid work to be combined with life circumstances that prevent otherwise regular work and a reduction in tensions related to work-family conflicts (Jarrahi et al., 2021). For example, flexibility is important for women who seek to schedule their work around domestic responsibilities (Foong & Gerber, 2021; Foong, Vincent, Hecht, & Gerber, 2018). Others have been more critical, noting flexibility also often means that access to work is uncertain and other options may no longer be available (e.g., Aroles, Mitev, & de Vaujany, 2019; Pichault & McKeown, 2019; Wood et al., 2018). Shevchuk, Strebkov, & Davis, 2019 found that the online labor platform's always-on presence constraints workers' schedules, such that workers with clients in different time zones take on hours that are more nonstandard. Additionally other scholars have demonstrated that some platform workers are facing diminished flexibility in scheduling and increased earning uncertainty (Dunn, Munoz, & Sawyer, 2021).

We see this study as an opportunity to further demarcate key dimensions of work flexibility that influence the experience of platform workers. Building on existing concepts of flexibility and flexible work arrangements, this study examines how platform workers make sense of flexibility. To do this, we examine key dimensions of work flexibility including the role of digital labor platforms in shaping work flexibility, and the affordances and constraints that influence the way flexibility is experienced and enacted by workers. Given the centrality of the platform in mediating and controlling the work experience and the heterogeneity in platform attributes (and heterogeneity in the type of work done on these platforms), we take a cross-platform approach to understanding flexibility in the platform economy.

3. Methodology

We pursued an exploratory case study of workers from multiple types of platform work. Based on prior work that has presented digital work as heterogeneous (Howcroft & Bergvall-Kåreborn, 2018; Kalleberg & Dunn, 2016), we avoided framing our investigation around particular digital labor platforms but rather approached different kinds of platform work as identified by the comprehensive review of Sutherland and Jarrahi (2018). These included high and low skill platform work, as well as digital and physical platform work (see Table 1). The research team worked to establish contact with workers on major digital labor platforms. (See Fig. 1.)

We used a purposive sampling approach based on Kemper, Stringfield, and Teddlie (2003). The respondents were selected based on the evidence that they had used at least one major platform to conduct work (see Table 1). The criteria for inclusion in the sample was that workers had previously done work in at least one of the following platforms: Uber, Lyft, Rover, Instacart, Point pickup, Doordash, Amazon Mechanical Turk, Takelessons, Thumbtack, Upwork. These ten platforms were identified based on the size and activity of these platforms, as well as the feasibility of making contact with workers on these platforms.

Workers from the different platforms were contacted through external channels, either through forums, social media, or through personal websites. Potential participants were asked to complete a short screener survey about their demographic characteristics, the digital labor platforms they primarily used to find work, the type of platform work they typically engage with, and the length of their career as platform workers. This information helped us recruit a diverse set of participants. Out of 73 workers who filled out the initial survey, we included 33 participants (across genders and a range of age groups for variety).

Our approach centers on interviews using ethnographic techniques, per (Spradley, 2016). Interviewees were selected based on the evidence that they had used at least one of the identified platforms to conduct work, and they were selected to produce a variety along the dimensions of location dependence and skill level. The breakdown of these participants is shown in Table 2.

The workers selected for this study were from the US to control for the broader country-level influences. This, however, can be considered a limitation of this research approach since the platform economy can take somewhat different shapes across different countries (given different national and legal frameworks). Data collection was conducted between August 2020 and December 2020 when most US states experienced lock-downs, enabling us better understand the impact of the pandemic.

The interview protocol covered the following themes: 1) Background information, 2) Gig work experience, 3) Gig and platform literacies, 4) Digital platforms, 5) Challenges, 6) Adapting to crisis, and 7) Learning and skills (See Appendix A for the list of questions for each theme).

Interviews were conducted using remote video conferencing software Zoom, and ranged from 0.5 to 1.5 h, with most lasting approximately an hour. Each participant was compensated for their time with a \$30 Amazon gift card. In total, 32 interviews were conducted. Interviews were transcribed by a professional transcriptionist, and uploaded into Delve for analysis. The findings presented in this report

Table 1
Sampling criteria for inclusion across platform types.

Quadrant	Platforms sampled
Low skill / location dependent	Uber, Lyft, Rover, Instacart, Point pickup, Doordash
Low skill / location independent	Amazon Mechanical Turk (AMT)
High skill / location dependent	Takelessons, Thumbtack
High skill / location independent	Upwork

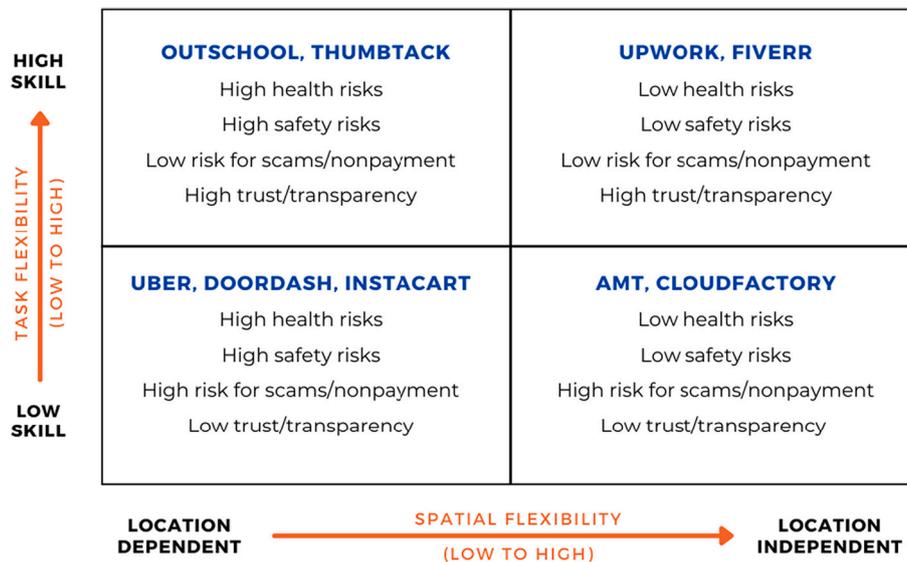


Fig. 1. The quadrants in the figure demarcate dimensions of flexible work in the heterogeneous space of platform work. Platforms are organized into quadrants according to their level of task flexibility and spatial flexibility.

Table 2
Different types of platform work included in this research.

Type of platform	Location	Skill	Examples of platforms used by participants	Participants
Ridesharing, delivery and dog walking services	Dependent	Low	Uber, Lyft, Rover, Instacart, Point pickup, Doordash	P1, P3, P4, P5, P6, P7, P11, P28, P30
Crowdsourcing services	Independent	Low	Amazon MTurk (AMT), Samasource, Crowdfunder, Clickworker	P2, P9, P10, P12, P13, P14, P23, P29
Tutoring and educational services	Dependent / Independent	High	Takelessons, OutSchool, Thumbtack, Lessons.com	P8, P20, P24, P25, P26, P27, P31, P33
Online freelancing services	Independent	High	Upwork, Fiverr, 99designs	P15, P16, P17, P18, P19, P21, P22, P32

reflect analysis conducted against the transcribed interview data. See Appendix A for a summary of themes and questions used.

Interviews were analyzed by researchers, guided by the stated research goals. Initially, interview transcripts were reviewed by one of the researchers, taking detailed notes on common themes and patterns. Then, using the research goals to orient the analysis, we adopted a deductive approach to code the interview data. The researcher worked independently through the transcripts to identify passages that related to dimensions of flexibility and the work platform’s role in mediating flexibility and its outcomes. The researchers collectively and iteratively discussed these passages and themes. For the final analysis, passages were organized around two primary themes of worker’s arrangements: task flexibility and spatial flexibility.

4. Findings

Analysis of interview data suggests that platform work flexibility is a nuanced concept which has differential implications for workers across the landscape of work platforms. Our work aligns with prior studies which have shown the importance of scheduling flexibility in platform

work. Workers across various work platforms value setting their own schedule, working the days and hours which fit their personal life arrangements and/or needs. Yet, our findings go beyond this initial view of flexibility, allowing us to understand additional dimensions of flexible work in the heterogeneous space of platform work. Data makes clear that there are two visible dimensions of work flexibility that define worker’s experience: task flexibility and spatial flexibility, each of which is discussed below. Importantly, platforms have an important role in mediating flexibility and its ensuing consequences.

4.1. Task flexibility

Initially, we found that task flexibility was an important dimension of platform work. Task flexibility relates to how much freedom is offered to workers in picking and handling tasks. Platform work with high task flexibility allows the worker to choose whether to take or pass up on a task, project, or client. On the other hand, platform work with low task flexibility limits workers’ freedom to choose their work, and may actually penalize workers for passing up on a task or project.

Our data show that task flexibility corresponds to the different levels of skills involved in work. Platforms that facilitate complex knowledge work, such as Upwork, Outschool, and Thumbtack involve high skill levels as workers typically rely on their specialized skill sets, cognitive abilities, and problem solving skills to complete their work (e.g., P2, P8, P9, P10, P12, P13, P14, P20, P23, P24, P25, P26, P27, P29, P31, P33). In high-skill platforms, workers have a higher level of task flexibility as they are able to apply for and accept jobs which align with their skills, experience, or desired pay rate. For example, one creative worker on Upwork noted their freedom to control the work they do, and their ability to adapt their skills to the work that is in demand on the platform:

“I always find it interesting to just browse what people’s needs are in this sort of creative space. It helps me get an idea of what skills are really valued... and I like the flexibility of it and that I have control over the type of work that I want to do.” P13, Upwork, Location Independent, High Skill Work

Workers tend to strategize their work arrangements by narrowing their work focus on specific types of projects to build a portfolio of work and experience to signal their expertise in a given area (or multiple areas). And these high-skill workers strategize to pass up on work that does not align with what they are looking for.

"I really focus, like on Upwork I focus on grant writing, and any kind of non profit strategy assistance. I have a couple clients that I do do social media for, so it's issues that I care about... You get to try things out and get to decide what you like and don't like." P2, Upwork/Outschool, Location Independent, High Skill Work

In addition to the agency these workers have in choosing or passing up on tasks, the features and affordances of high-skill platforms translate to more positive perceptions of the platform. High-skill, high task flexibility work tends to be associated with more trust, transparency, and lower instances of scamming/non payment. In addition to having the freedom to align with certain tasks and clients, workers in this type of work typically feel more secure, as they are protected through contracts with clients, and other platform features such as payment verification. The platform also facilitates information sharing and communication between workers and clients so that there is some transparency about the client, task and an agreement over the scope of work prior to the start of the project. As such, high-skill, high task flexibility work platforms tend to facilitate higher trust between worker and clients, lowering the risk of doing work on the platform.

"It feels pretty secure and safe as well using Upwork as like a channel of communication between myself and these clients... I feel like I've already like personally vetted who I'm going to be working with, so like going in I already know that this is a person I can trust so it's nice to feel secure using a platform like Upwork." P13, Upwork UX Designer, Location Independent, High Skill Work

4.1.1. Low task flexibility

Contrary, platform work which is associated with lower barriers to entry and lower skill levels (such as ridesharing, delivery, and micro-tasking) provides low task flexibility to workers. Platforms like Uber and DoorDash provide niche services, limiting the variability in tasks that workers are pursuing. Unlike knowledge workers, the individuals working on delivery and ridesharing platforms do not have the ability to choose from a pool of tasks. Instead, these workers are promoted through an app or desktop application to accept or decline tasks that they have been matched with (e.g., P1, P3, P4, P5, P6, P7, P11, P30). And the platforms minimize the information they share about the job itself to deter workers from passing up on jobs, such as not presenting the amount they will earn from a task or not telling drivers the location of a drop off. One participant makes this point when he discusses his experiences with Uber:

"You never know with Uber you don't even know where you're going. You accept the trip and you're like well I know where I'm going to pick them up but I don't know where I'm going after... Why do you want to see where you're going except to decline a trip and then if you decline a trip then you lose your status anyway." P11, Doordash, Location Dependent, Low Skill Work

Additionally, workers are incentivized to have a high acceptance rate and a low cancellation rate through tiered reward programs like Uber Plus (which has four levels: Blue, Gold, Platinum, and Diamond). This program offers benefits such as free doctor consultations, savings on vehicle maintenance costs, and access to loans. This means workers may actually be penalized, or at least excluded, from accessing these rewards and benefits, should workers choose to exercise the limited flexibility that they have in declining tasks.

Lack of task flexibility is also clear with microtask workers (e.g., P15, P16, P17, P18, P19, P21, P22, P32). These individuals tend to choose work (hits) based on factors such as the time of the requests, amount of payment, and/or worker requirements (rather than basing it on the task itself). At times, work is filtered to fit the specific worker skills/attributes/acceptance rate, which suggests that workers have limited flexibility over the tasks they do in this form of work.

"Prolific gives you a little less control in terms of what you can find because they give you the surveys that are available for you but the designing of profile that already answers questions that most survey requesters are looking for in terms of demographic, like if they want someone under 30 I meet that so I will automatically be considered for that survey. So I don't have to actively do the work to find surveys they give me surveys that I can do to meet the requirements" P17, mTurk/Prolific, Location Independent, Low Skill Work.

"[MTurk has] something called 'closed qualification' and it's pretty much hits closed qualification and those are hits that are closed to everybody else except for a special group of Turkers who have qualifications with a requestor." P22, mTurk, Location Independent, Low Skill Work

And microtask workers are also penalized for declining hits, as their hit acceptance rate is a metric on their worker profile and reflects the type of work you can access. For example, clients on Mturk can determine a threshold so that only workers over a given acceptance percentage can view and complete their task. This further limits workers' task flexibility to choose from what are considered the "better" tasks and clients on the platform.

"the consequence on Amazon Turk which you've probably already heard for a rejection is a decrease in your acceptance rate which means over time you won't be as eligible for the best surveys for the best work because people like you who went on MTurk would say I want a 99.5%, 98% acceptance rate." P32, mTurk, Location Independent, Low Skill Work

In contrast to high-task flexibility work, low-skill, low-task flexibility work tends to be associated with less trust, less transparency, and higher instances of scamming/non-payment. Workers in low-task flexibility work tend to have uncertainty about their work tasks, with the platforms intentionally leaving out information about the client and the task itself until after it has been accepted. Particularly for those on delivery apps, workers mentioned higher distrust, as they face instances of scams and non-payment. Workers report scammers taking advantage of workers through deliberately using wrong addresses, reporting items as not delivered or missing items, and/or using stolen credit cards. This often leaves the worker doing unpaid work, and can even lead to the worker being kicked off the platform if the platform sides with the customer during a dispute. Combined, these experiences lead to an overall lack of trust and higher risks on low-task flexibility platforms.

"What's difficult with the platform is that you have to be at a really high level of suspicion for lots of reasons. There are people that post things and immediately what they want is your email and your address, or your phone number." P32, mTurk/Prolific, Location Independent, Low Skill Work

4.2. Spatial flexibility

Another clear dimension of work flexibility relates to the spatial constraints embedded in the type of platform work. Spatial flexibility is an important work flexibility dimension that refers to the amount of flexibility afforded to workers in choosing their workplace. This dimension of flexibility is discerned by the work's dependence on location, with some work being location-dependent, such as food delivery, ridesharing, and in-person teaching, while other is location-independent, such as online freelancing.

In our study, work with high spatial flexibility included online freelancing and microtasking, jobs which individuals can complete virtually, from a location of their choice (e.g., P2, P9, P10, P12, P13, P14, P23, P29, P15, P16, P17, P18, P19, P21, P22, P24, P31, P32). Workers with high spatial flexibility are able to set up their work arrangement anywhere with an internet connection, allowing the worker to have freedom over their work environment.

“So I’m visiting my parents right now but I live in Philly and so the way I have my actual bedroom in my apartment set up is I have a specific section set up so like my desk and work stuff all together and it’s kind of having that separation in that area and I only go and work” P31, Thumbtack, Location Independent, Low Skill Work

These workers develop their working environment to align with their needs and constraints, and they can evolve as the worker’s life changes. For example, several freelancers noted their work set-up changes based on their location.

“I actually ended up staying with my family because I normally live alone and normally have a good space for it. I’ve been staying with them just to not be 100% isolated in all of this, but yeah, because of that I had to kind of set things up that I didn’t have but it wasn’t a really difficult thing or anything, there’s definitely enough space here for everybody to be working.” P24, Thumbtack, Location Independent, Low Skill Work

High spatial flexibility work provides several benefits to workers, and the data collected during the pandemic gave us a unique insight in how spatial flexibility might reduce work-related risks. Workers noted that this form of work lowered the health and safety concerns associated with in-person/location-dependent work, which was particularly important to workers due to the increased health risks during the COVID-19 pandemic. Because location-independent workers could choose their work environment, they had more flexibility to adhere to social distancing and lockdowns, and to feel more in control over reducing associated risks.

“Basically we lock down any family members or friends to visit of course because they’re all elderly and we have to take very good care... We get tested often, luckily none of our residents have gotten sick or have COVID so we have had three staff members test positive, so it’s kind of scary. I don’t interact with them, I’m in the kitchen. So far everyone has been very cautious.” P18, mTurk, Location Independent, Low Skill Work

4.2.1. Low spatial flexibility

On the other hand, workers with low spatial flexibility have less freedom when it comes to choosing their work environments. Workers for ridesharing and delivery apps, as well some tutoring and pet sitting apps are location-dependent (e.g., P1, P3, P4, P5, P6, P7, P11, P28, P30). In this form of work, the client determines the location of the work; as such, the demand, not the worker, is guiding the location of work, limiting the worker’s spatial flexibility. For example, several participants discussed having to travel to a city in order to get work. The gig workers adapt to the changing city demands in order to access those work opportunities.

“The unpredictability is just the biggest, is and always will be the biggest challenge...depending on where you are and you always have to go into the city to be able to get rides because you’re not going to get much if you’re not.” P1, Lyft/Uber, Location Dependent, Low Skill Work

With some platforms, the lack of spatial flexibility is starkly apparent as platforms withhold the specific distance and/or location of the task until it is accepted. With food delivery work, one participant notes that some platforms only give you that information after the food has been picked up:

“Some of them don’t always tell you how far the customer is though until after you’ve actually picked it up and that can be a problem cause let’s say your near the end of when you were going to work that day and you have plans afterwards and you see an order and you’re like oh that probably won’t take that long and then you accept it and you find out the customer is like 30 miles away and it’s going to take an extra hour to deliver it or

something, then that’s not great.” P5, GrubHub/Doordash/Postmates/Uber Eats, Location Dependent, Low Skill Work

Limiting control over their spatial preferences was one of the biggest challenges noted by participants. While some types of work platforms allow workers to set up a specific distance within which they want to stay, others limit spatial flexibility by pre-determining the regions for work. This lack of flexibility was particularly salient among workers living in larger cities.

“the geographic issues that I experienced with Instacart making all of Indianapolis one zone instead of breaking it down into sub zones... it’s a common issue with most major metropolitan areas. They just say yeah Denver that’s a town, you can get any order in Denver instead of realistically like putting a proximity on it that I’m willing to accept orders within 12 miles of my location, or 6 miles of my location whatever it might be, they just say boom, Indianapolis, enjoy.” P4, Instacart/PointsPickup/Fleet, Location Dependent, Low Skill Work

Our data highlighted the precarity of these workers. Some of the workers in delivery and ridesharing work noted the risks of burn out, driving for long periods of time, and road safety concerns. In addition, the COVID-19 pandemic increased the health risks these workers faced. Most workers with low spatial flexibility note taking extra precautions, and to avoid health risks, some workers paused pursuing this work at the height of the pandemic due to the intense risks it involved:

“Not quite March, but maybe about a couple months in because the first couple months we were on complete lockdown and I was not about to go out so once it, I don’t want to say eased up a bit, but once I guess kind of had a little bit more lax standards as far as going out then I decided to venture and try it.” P7, GrubHub/Doordash/Postmates, Location Dependent, Low Skill Work

5. Discussion

The data collection reveals important aspects of work flexibility and the role of digital labor platforms as an emerging digital infrastructure of work. Our data across multiple forms of platform work point to two dimensions of flexibility that have an important bearing on workers and their experiences. Building on the framework of gig work of [Kalleberg and Dunn \(2016\)](#) we distinct variation in the levels of task and spatial flexibility between the four outlined quadrants. Furthermore our data shows that different work platforms have distinctive ways to mediate and control these two dimensions of flexibility.

5.1. Variations in flexibility across platform types

In platforms with low task flexibility (e.g. Amazon Mechanical Turk and Uber), workers enjoy less (in some cases no) leeway in choosing tasks or clients to serve. This lack of task flexibility can result in important and non-trivial forms of “invisible labor” that the worker must shoulder to find sensible tasks, negotiate with clients, or calculate payments, which ultimately contribute to precarity of work ([Toxtli, Suri, & Savage, 2021](#)). In particular, dissatisfaction about lack of transparency around how things work appears strongest among low-skilled platform workers who engage in low-flexibility tasks. For example, drivers would like to know more information about individual orders or clients—information which is usually withheld—so that they can determine whether an order is worth taking or a client is worth picking up. In a similar fashion, Amazon Mechanical Turkers in our datasets expressed confusion about the platform’s worker rating system, and wished that more information about clients was made available to workers, so that they could more easily avoid abusive clients. It is important to note, though, that invisible labor is a common feature across all forms of platform work including those with high task flexibility.

Location-independence and the ability to work from multiple places

has long been desired by workers. One thing that the COVID-19 pandemic made abundantly clear in the context of platform work and elsewhere is the importance of spatial flexibility. The ability to choose one's workplace provided some workers with a more effective work-life balance. Being able to choose a workplace, be it home or a coworking space, primarily provides spatial flexibility but can translate into temporal, technological or even administrative flexibility (Jarrahi et al., 2021). The location-independent work is enabled by the largely digital nature of the tasks, which allow for a global and remote scale (e.g. online freelancing or microtasking); this is often referred to as digital labor in the extant literature (Bucher & Fieseler, 2017).

5.2. Flexibility and perception of trusts and risks

The figure below categorizes various work platforms into four quadrants based on their level of task and spatial flexibility. Task flexibility, which is defined across the vertical axis, is related to the level of skill associated with the type of work. Spatial flexibility, across the horizontal axis, is related to the worker's location arrangements and constraints. The figure also clearly demarcates that task and spatial flexibility greatly impacts a worker's perception of trust and risk they experience on the platform. For location-dependent platform work, the requirement to be present at certain locations during certain times may add to worker's sense of precarity and lower workers' trust in the platform-mediated work. This insight is important given that research on trust in platform work largely focuses on trust-building between platforms and their stakeholders (Venkateswaran, Kumar, & Gupta, 2021) but worker's trust in the platform could be a major predictor of job outcome and satisfaction (Gleim, Johnson, & Lawson, 2019; Venkateswaran et al., 2021).

Task flexibility also impacted workers' perceptions of trust and risk. More specifically, platforms with low task flexibility adversely impacted the workers' perception of control over their work, trust in the work arrangement, and as noted may increase the risk of getting scammed or engaging in subpar tasks lacking fair compensation or meaningful outcomes for the work. Furthermore, the lack of transparency in low task flexibility platforms impacted perceptions of trust and risk. Confusion around ratings and hiring, and the lack of information provided to workers (e.g. exact location of delivery) magnified the workers' distrust.

In summary, High-skill, location-independent workers, such as knowledge workers on platforms like Upwork and Fiverr enjoy the highest level of task and spatial flexibility, which is reflected in lower overall risks and higher perceptions of trust among these platform workers. Conversely, low-skill location-dependent workers like Uber drivers and delivery workers have the least amount of flexibility, with higher associated risks and lowest perceptions of trust.

Finally, it is noteworthy that the COVID-19 pandemic could have changed the way flexibility plays out in the work life of platform workers and beyond. Recent studies indicate that there has been an uptake in people engaging in the platform work and this is partly due to the flexibility afforded by this type of work (Monica, McClain, Faverio, & Gelles-Watnick, 2021). However, job security and other risks remain important concerns. For example, Tubaro and Casilli (2022) looked across three platform types during the COVID-19 pandemic and found disproportionate risk was transferred to workers, which are platform workers that have a location dependency (e.g. ridesharing/delivery). The outcome was that with less spatial flexibility, the perceived and actual precarity of the work seemed magnified. We predict that flexibility continues to drive the platform economy beyond the pandemic; however to fully capture its role it is important to contextualize it within the broader factors such as work precarity and risk and mechanisms of control couched in platformic management.

The gig economy has been partly driven by workers' preferences to work flexibly and with more autonomy. However the pandemic has brought the desire for flexibility to the front and center in other work contexts. Some scholars argue that the future of the work even in more

traditional contexts of work is flexible and comes with more autonomy for workers (cite). This may not mean that all workers (e.g. organizational members) will necessarily enter the same arrangements as the gig workers; but will experience some dimensions of flexibility in more visible manners. Malhotra et al. note that even in more traditional forms of work; employees will demand temporal, locational, and affiliative (organizational) flexibility and autonomy (Malhotra, Majchrzak, & Bingham, 2021). Some researchers argue that the gig economy provides inspiration for understanding and contextualizing new organizational forms (e.g. the relationship between employers and employees) and business models in the post-COVID era. For example in a blended, hybrid work arrangement (where algorithms and other digital means coordinations are more pervasive), the employer of the future may draw upon lessons learned from the gig economy.

5.3. Platformic management across platforms

Our findings also show that the digital labor platform itself provides affordances and constraints that influence the way flexibility is experienced and enacted by workers. These platforms draw on a holistic suite of sociotechnical features to coordinate, manage and control transactions and workers, which can be understood as 'platformic management.' (Jarrahi et al., 2019). Platformic management exhibits similarities in the ways in which it influences actions across different types of digital labor platforms; however, our findings demonstrate it can vary based on the nature of work being performed.

In terms of similarity, our findings underscore the importance of information provided or lack thereof as a key aspect of platformic management, which helps or hinders how workers make sense of the platform, and optimally enact flexibility in their work. As the research indicates, a fundamental challenge of platform-mediated working is information asymmetry (Rosenblat & Stark, 2016; Wood et al., 2018). Many platform workers in our sample were not adequately aware of how certain decisions are made. In fact, the lack of transparency around algorithms is a well-known issue in the platform work community. Yet, platforms rarely provide workers with insight into the content of their algorithms. Many workers, to varying degrees, feel disempowered by the opacity of these managerial operations. A more comprehensive and clear set of guidelines would enable workers to gain more control over their work and enjoy a higher level of work flexibility and trust in the platforms that are central in managing their work.

The negative impact of platformic management on flexibility was more pronounced in the case of platform work characterized with lower task or spatial flexibility. In these types of work, algorithms are the primary management mechanism to determine how workers' ratings are calculated, which jobs are assigned to a worker, and how much a worker's net pay is. The platform often engages in a high level of taskification by using an array of algorithms to more effectively standardize and manage thousands, if not millions, of tasks everyday (Gray & Suri, 2019).

Algorithmic management in this fashion provides an unparalleled scale of operation and matchmaking between workers and receipts of service (e.g., by disaggregating, distributing and re-aggregating tasks in the case of microtasks or overly standardized tasks and encounters in the case of ridesharing and delivery services). Nevertheless, rigidly-defined algorithmic management strategies diminish workers' negotiation power and sense of flexibility, and therefore decreases trust between transactors and between transactors and the platform. The affordances of algorithms for managing knowledge-intensive and skilled work (e.g., online freelancing) are limited; yet, platformic management still needs a high involvement of workers (and clients) in shaping important management processes like evaluation and therefore leaves more room for sense-making and negotiation by workers. This both reinforces and reflects the higher level of flexibility that these workers typically enjoy.

5.4. Limitations and future research

Three important limitations may impact the generalizability of our findings and theorization, therefore requiring future research and verification. First, we recognize that the time frame of data collection (during the global pandemic with several exogenous shocks caused by the virus) comes with unique opportunities and challenges for theorization of the research problem. While it allowed us to better capture the value and impact of flexibility, it focused on a specific episode which could have been eccentric. This decision could have limited the generalizability of our findings. We also recognize that the snapshot approach adopted here will not adequately take into account changes in people’s attitudes towards flexibility over time. We provided some brief discussion of how the pandemic may have changed the platform-work landscape earlier; but future investigations into the role of flexibility is needed beyond the pandemic era and with a longitudinal approach to more effectively discern what aspects of such a theorization is a function of the timeframe of data collection and how it may evolve beyond it.

Second, this research only focused on platform workers in the US. This helped us control the effects of other factors but could too have limited the generalizability of our findings. We recognized that the platform economy may look different and our phenomena of interest (e.g., work flexibility or platformic management) may unfold differently given distinct regulatory frameworks and local dynamics in other countries. For example, while gig work remains largely under-regulated in the US, the UK upheld a law in 2021 to categorize Uber drivers as employees and the European Union proposed a directive in late 2021 to improve conditions for platform workers. Thus, the findings and our theorization presented in this research therefore need to be reexamined in future research to account for these contextual differences.

6. Conclusions

This work focuses on platform work as a work context defined by flexibility. However, the findings presented here can be illustrative for other organizational contexts where changes in norms of work and technological dynamics pave the way for more flexible work arrangements. Our research underscores the centrality of task and spatial flexibility and how they’re manifested in platform work. The emerging

forms of non-standard work arrangements challenge us to rethink how work is and will be organized, yet much of the current scholarship is rooted in the experiences and work practices of traditional employees in standard jobs. But clearly, most forms of flexible work are not cleanly encapsulated within a single organization’s boundary, and technology uses may not fit neatly within the conventional notions of enterprise information systems that support standard work. Our work begins to address these gaps.

We also report the ways that task and spatial flexibility are related to risk and trust. Our findings showed that risks tended to be related to worker’s spatial flexibility and trust was primarily associated with worker’s task flexibility. As such, workers with both high task and spatial flexibility faced the lowest overall work risks and had the highest sense of trust doing their work. Platform workers with limited task and spatial flexibility reported the most precarious situations, with overall higher health, safety and scamming risks, leading these workers to have less trust in their clients, the platform and their work.

As work is increasingly digitally mediated both in traditional and alternative work environments, more scholarly attention is needed to conceptualize the ways digital technology mediate, enable or constrain work, and transform the relationship between different stakeholders within the context of work. Our findings direct attention to common ways digital labor platforms manage work and shape how workers experience flexibility, trust and risk embedded in their work. They are in effect not just mechanisms that merely support work practices like the previous waves of information technologies (e.g., enterprise information systems). In fact, they emerge as paradigms of management and in the case of digital platform work, the very workplace from which workers perform work practices.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

Appendix A. Interview protocol themes and questions

Interview themes	Questions
Background information	<ul style="list-style-type: none"> ● What is the highest degree or level of school you have completed? ● Could you tell me your age?
Gig work experience	<ul style="list-style-type: none"> ● What is your work and employment background? What is your professional background? ● Why did you pursue gig work? ● At what times do you usually do your gig work? ● What types of gig work are you currently doing or have been doing in the past? ● How long have you been doing gig work? ● Is working on this/these platform(s) your main job or do you have other employment? <ul style="list-style-type: none"> ○ (*for high-skill workers) Is there any training required for you to perform this gig? ● Tell me about a typical day. ● Where do you perform your work?
Gig and platform literacies	<ul style="list-style-type: none"> ● What skills would you say are essential for the type of work you do? ● Have you developed any strategies for how to maximize your productivity and salary on the platform? <ul style="list-style-type: none"> ○ How did you learn or develop these strategies?
Digital platforms	<ul style="list-style-type: none"> ● When did you start working on this platform(s)? ● Why do you work using this platform(s)? ● What resources does the platform provide? ● How do you build your reputation on the platform? ● What features of the platform enable you to work productively? ● How do you interact with other workers, if at all? ● How do you communicate with your clients? Future clients? ● If you could change one thing about [insert digital platform], what would you do?
Challenges	<ul style="list-style-type: none"> ● Do you find any challenges with using this platform? Tell me about a time when you were frustrated or uncomfortable with a platform feature. ● What would you change about your working conditions if you could?

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Interview themes	Questions
	<ul style="list-style-type: none"> ● What city or area do you typically work in? ● How does your living in ____ impact your ability to do work? Do you think it would be different if you lived somewhere else? (for location-dependent workers)
Adapting to crisis	<ul style="list-style-type: none"> ● Has COVID-19 impacted how you work? If so, how? ● Does your job endanger your health during this crisis? If so, how?
Learning and skills	<ul style="list-style-type: none"> ● How do you communicate with your clients? Future clients? ● How do you discover what skills you should acquire? Has the pandemic influenced your mindset? ● Where do you find resources for learning and career mobility? ● Do you know if there is a union out there for your work? ● Where do you go to find resources for social support? ● What information would be helpful for you to do your job better? ● Is there anything about gig work that we are missing that you would like to discuss?

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