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Resilience in the gig economy: digital skills in online freelancing

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Abstract

Research on digital inequality suggests that digital skills are integral to participation on gig platforms. Focusing on the case of online freelancing, this article asks what such skills look like and how gig workers translate them into opportunities. Drawing on semi-structured interviews with 21 U.S. online freelancers, I identify moments in which participants approach the gig platform differently because of their digital skills. I find that digital skills enable online freelancers to (1) optimize their use of platform tools, (2) construct alternative pathways when existing tools malfunction, and (3) imagine and blaze new paths that go beyond the platform's current functionality. These findings suggest that, in the volatile context of gig platforms, digital skills entail not only the ability to leverage platform tools as designed but also the capacity to creatively navigate situations in which the online environment changes, breaks, or proves inadequate for their needs.

Lay Summary

Finding and completing work through online platforms is becoming more popular. Drawing on interviews with so-called online freelancers, this study explores what skills are involved in using these platforms effectively. These digital skills allow people to find appealing work and determine how to apply more efficiently. More digitally skilled individuals are also better prepared to handle unexpected situations that may arise in their work on the platform. Additionally, online freelancers use their skills to devise creative ways to meet their needs when platforms lack the functionality they require. Ultimately, given that the platforms provide little support, digital skills are essential to making a career out of online freelancing.

Keywords: gig economy, online freelancing, digital skills, digital literacy, precarity, resilience.

Gig platforms such as Upwork, Fiverr, and Amazon Mechanical Turk offer a wide range of short-term employment opportunities that are appealing in a variety of situations. People have taken advantage of these opportunities during troubled times, such as the COVID-19 pandemic (Fiers & Hargittai, 2023) and hyperinflation in the Venezuelan economy (Johnston, 2022). Others have used gig work to supplement other income sources (e.g., Schor et al., 2020) or gain control over their schedules (Gray & Suri, 2019). By being deliberate about the tasks or projects they pursue, gig workers can—at least theoretically—be more selective about how, when, and where they make money. Many gig workers value this flexibility (Pew Research Center, 2021).

However, recent research finds that these flexible employment opportunities are not equally accessible to all (Fiers & Hargittai, 2023; Hoang et al., 2020; Shaw et al., 2022). People from advantaged sociodemographic backgrounds—e.g., in terms of education (Shaw et al., 2022) or gender (Fiers & Hargittai, 2023)—tend to pursue gig work more than others. Besides sociodemographic factors, digital skills predict participation in the gig economy, where digitally savvy individuals are more likely to pursue gig work (Fiers & Hargittai, 2023; Shaw et al., 2022). This suggests that digital skills are integral to participation in the gig economy. However, given that such findings rely on quantitative—and therefore reductive—measures of digital skills, qualitative research is necessary to understand what these skills look like in practice. This study leverages interviews with online freelancers, who perform technical and creative project-based work, to gain an understanding of how they translate their digital skills into employment.

Similar to other freelance industries (e.g., Cohen, 2016), employment in the gig economy is characterized by uncertainty (Woodcock & Graham, 2020). On top of being independent contractors and therefore responsible for finding work, gig workers face uncertainty because of their reliance on a gig platform. Platforms can change, malfunction, or cease to exist altogether, and worker accounts might get suspended temporarily or permanently without warning (Gray & Suri, 2019). Given that the platforms function as gateways to clients, the possibility of such events is a threat to gig workers and their livelihoods. An emerging literature on resilience, reworking, and resistance strategies among gig workers has started to examine the ways that gig workers navigate these uncertainties (e.g., Anwar & Graham, 2020). The role that digital know-how plays in the ability to pursue such strategies remains unclear. To this end, this study adopts a digital inequality approach and considers how online freelancers' experiences differ because of the digital know-how they possess or are able to develop.

The study draws on semi-structured interviews with 21 U.S. adults who have pursued work via the platforms Upwork and Fiverr to understand how their digital skill levels might augment or detract from their ability to procure and complete projects. I specifically consider how digital skills might improve their resilience and ability to navigate the uncertainty in their work. While prior research identified

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the need for digital skills as an obstacle to participation (Fiers & Hargittai, 2023; Shaw et al., 2022), this study aims to reveal exactly what such skills look like as online freelancers leverage them to participate in an ongoing manner. Understanding the role of digital skills in participation more deeply is an essential step toward understanding not only the agency of gig workers but also the structural inequality between gig workers.

Background

Digital inequality in the gig economy

While the gig economy presents short-term employment appealing to people in a variety of situations (e.g., Gray & Suri, 2019; Thompson, 2021), digital inequality research suggests that such opportunities are not equally available to all (Fiers & Hargittai, 2023; Hoang et al., 2020; Shaw et al., 2022). Based on national survey data, this research compares the sociodemographic background and digital skills of adults pursuing employment on gig platforms with those of other adults. Broadly speaking, privileged individuals are more likely to adopt gig platforms than others (Fiers & Hargittai, 2023; Hoang et al., 2020; Shaw et al., 2022). This suggests that the employment opportunities of the gig economy are not equally accessible, creating disparities that compound existing inequalities.

In particular, digital skills play a deciding role in participation in the gig economy (Fiers & Hargittai, 2023; Shaw et al., 2022). Analyzing U.S. national data, Shaw and colleagues (2022) find that digital skill level positively correlates with participation on TaskRabbit and Amazon Mechanical Turk. They disaggregate participation into four steps required to become a gig worker: hearing of the gig site, visiting, making an account, and completing a task. Having more developed digital skill sets predicts the completion of each step. Examining participation in remote gig work during the COVID-19 pandemic, Fiers and Hargittai (2023) reach the same findings: More digitally savvy people tend to have completed gig work than others. This suggests that digital skills are integral to participation in the gig economy.

While survey methods have thus proven helpful in identifying patterns in who participates in gig work (Fiers & Hargittai, 2023; Shaw et al., 2022), such methods allow for limited insight into what such participation looks like and the intricacies of the role that digital skills play. Specifically, prior research relies on a survey measure of general Internet skills that provides limited detail on how gig workers translate their digital skills to employment. To draw out such detail, I leverage the strengths of semi-structured interviews, including the ability to copy participants' language and ask follow-up questions. Such qualitative methods permit me to uncover more nuance surrounding how some—but not other—people are able to use digital skills to their advantage in online and digitally mediated contexts (e.g., Marler, 2022; van Laar et al., 2022).

Conceptualizing digital skills

Despite the widespread attention paid to digital skills by academics as well as politicians and civil society actors (e.g., UNESCO, 2018), the concept is hardly named or defined consistently (see Litt, 2013 for an overview). The terms "digital skills" (e.g., van Dijk, 2014), "digital literacy" (e.g., Bawden, 2008), and "twenty-first-century competencies" (e.g., de Vries et al., 2022) all describe (various subsets of) the skills necessary to operate and navigate digital technologies. This includes both so-called "button knowledge" (van Deursen et al., 2014) and an understanding of the platform's inner workings, such as an awareness that algorithms shape the content one sees online (Gruber et al., 2021). In addition to technical skills, it encompasses the ability to make sense of, evaluate, and engage with content and opportunities online (Hargittai, 2022; Helsper, 2021). Given these various applications, digital skills are often understood to have multiple dimensions, such as operational, formal, informational, communication, and strategic skills (van Deursen et al., 2014).

Critics of such categorizations, however, argue that digital "literacies come 'whole' and any attempt to dissect them into constitutive elements runs the risk of distorting the seamlessness and intricacy of literacy practices" (Knobel & Lankshear, 2008, p. 269). Given its goal of capturing the complexity around what digital skills look like in online freelancing, this study deliberately draws on a broad definition of digital skills: "knowing what is possible through digital technologies and the ability to engage with those possibilities effectively and efficiently" (Hargittai, 2022, p. 4). This conceptualization emphasizes that being digitally savvy is not simply the ability to operate technology but to do so effectively and efficiently. This implies that an individual must situate their needs in relation to their understanding of the technology and its capabilities. In this view, digital skills are a resource that allows people to transform their Internet connection into opportunities and outcomes which are valuable given their needs (DiMaggio et al., 2001; Helsper, 2021). Digital literacy education is a commonly proposed intervention to democratize such skills and, as such, remedy inequality stemming from technology use (see Macevičiūtė & Wilson, 2018 for an overview).

While digital skills in the gig economy intersect with competencies which are valuable in the twenty-first-century labor market more generally (e.g., van Laar et al., 2020), digital skills are situated in online environments. Gig workers need to make sense of the environment, determine their goals within that setting, and employ their technical skills to advance their goals. While digital skills are occasionally claimed to develop through continuous practice (Helsper, 2021; van Dijk, 2020), few studies on digital inequality adopt methods that can capture such practices. Whereas the survey measures common in prior literature only assess digital skills at one time (e.g., Fiers & Hargittai, 2023), this study aims to gain a deeper understanding of digital skills as resources that are context-dependent and dynamic in nature.

Navigating gig work

Even though the pay-offs of this form of online participation are immediate, limited research has examined digital skills in the gig economy (as emphasized by Lutz, 2019). Klawitter and Hargittai (2018) examined algorithm skills of creative entrepreneurs who sell their goods online. They find that, while many understood the vital role of algorithms in their visibility, few participants expressed an understanding of how to improve such visibility. Despite not using the term digital skills, Jarrahi and Sutherland (2018) describe how Upwork users make sense of and work with the platform's algorithms. These studies on digital skills in the gig economy focus primarily on awareness and understanding of algorithms. In contrast, this study zooms out to understand the role of digital skills more generally in

online freelancing—considering both awareness of the platform's features and inner workings.

Tangentially related is a body of research that examines resilience, reworking, and resistance strategies, which refer to the individual-level tactics through which gig workers exert their agency and navigate their precarious position (e.g., Anwar & Graham, 2020). In their position as independent contractors, the individual workers—rather than an employer—bear the responsibility to procure their next job. Uncertainty also arises from workers' reliance on online platforms for access to clients (Vallas & Schor, 2020). An example of a strategy to mitigate such uncertainty is adopting multiple platforms and offering a variety of services (Chen & Soriano, 2022). Another strategy entails using external communication and payment tools, such as WhatsApp and PayPal, to evade the commission fee charged by the platforms as well as to be able to contact clients even when they lose platform access (Jarrahi & Sutherland, 2018). This study extends this scholarship by examining the role that digital skills play in these strategies. This study particularly considers variation between freelancers' ability to navigate working on a digital platform in an ongoing manner. In contrast to prior research (Anwar & Graham, 2020), I do not distinguish practices based on individual's goals or critical consciousness. Instead, in line with common notions of resilience (e.g., Masten, 2001; Wald et al., 2006), I focus on practices through which individuals overcome adversity and can engage in continued online participation.

Research context

Online freelancing is a subset of gig work that may be appealing to a wide variety of people because it not only affords the flexibility of gig work (Thompson, 2021) but also involves lines of work popular outside the gig economy (e.g., Cohen, 2016). Online freelancing encompasses fully remote contract work characterized by technical and creative skill, especially as compared to other forms of gig work (Vallas & Schor, 2020). Examples include software engineering, graphic design, and writing. Outside the gig economy, these careers are hard to break into because fixed positions are scarce and freelancing requires a clientele (e.g., Cohen, 2016). Online platforms give individuals a venue to seek clients outside their personal networks. Platforms such as Upwork and Fiverr thus afford people the flexibility of working where and when they choose (e.g., Thompson, 2021) as well as the opportunity to launch a career of choice.

While online freelancing is—like other forms of gig work—characterized by the uncertainties arising from independent contracting through digital platforms, online freelancers might enjoy more agency than other gig workers. They can sustain a roster of clients and engage in brand building (Blyth et al., 2022), making them less reliant on the platforms as well as more visible than, say, microworkers (Ahmad & Krzywdzinski, 2022; Gray & Suri, 2019). This study explores the ways that digital skills allow online freelancers to navigate the inevitable uncertainties with their work and access potential opportunities.

Methods

To understand the role of digital skills in online freelancing, I draw on semi-structured interviews with 21 U.S. adults who pursued such work for at least one month.

Data collection

Interviews took place between February and May 2023 on Zoom, allowing for easy audio recording (upon obtaining the participant's permission). These recordings were initially transcribed using a feature of Microsoft Word and checked by a research assistant. Interview length ranged between 36 and 64 minutes, with a mean of 55 minutes. I use pseudonyms for all participants to protect their privacy.

To recruit participants, I employed nonrepresentative stratified sampling (Trost, 1986). This technique ensures diverse sampling across specific variables, for which I chose education and age based on prior literature (Shaw et al., 2022) as well as whether a participant pursued online freelancing as a main or supplemental form of income (Schor et al., 2020). Recruitment primarily happened through job postings on Fiverr and Upwork, the two most prominent online freelancing platforms (Chang, 2019). I supplemented by posting publicly on personal social media and through snowballing from participants.

The recruitment message invited a person to participate in the study and asked them to fill out a short questionnaire determining eligibility (i.e., English-speaking, at least 18 years old, and a minimum of one month of experience pursuing paid work through a freelancing platform). The eligibility screener allowed me to choose participants based on the variables identified for stratified sampling. All participants received USD $20 either via the platform or in the form of an Amazon gift card.

We[1] began each interview by asking participants to share details on sociodemographic background through a brief questionnaire. Subsequently, we relied on a protocol that I developed based on prior literature, pretested on three online freelancers, and improved iteratively. The protocol asked participants about the platform(s) they use, the type of work they pursue, and the role this work plays in their broader life. We inquired about the process of adopting and learning the online environment, since pretesting indicated that doing so prompted freelancers to talk about challenges they faced. Afterward, we asked directly about specific risks and uncertainties participants face as well as strategies they developed in response. Rather than imposing terminology around digital platforms, we copied the language of participants, such as "magical sorting mechanism" instead of "ranking algorithm." Similarly, we did not use the terms "digital skills" or "digital literacy," as participants may or may not perceive their online habits and strategies as digital skills and our goal was to understand a wide range of behaviors. Instead, we were on the lookout for strategies and tricks they developed to navigate the online environment and paid special attention to how they did or did not overcome problems they ran into.

Participant characteristics

The sample included 21 online freelancers based in the United States (see Table 1 for an overview of their characteristics). Their lines of work varied across the categories proposed by Kässi and Lehdonvirta (2018), with some engaging in multiple. Seven worked as writers or translators. Four participants provided professional services, such as project management. Three pursued creative and multimedia projects, and the same amount worked in software development and technology. Two participants performed clerical work and data entry. Lastly, one worked in sales and marketing support.

Table 1. Participant characteristics related to online freelancing

	N
Type of work	
Writing and translation	7
Professional services	4
Creative and multimedia	3
Software development and technology	3
Clerical and data entry	2
Sales and marketing support	1
Other	1
Experience online freelancing	
Less than 1 year	11
1–5 years	3
More than 5 years	7
Platform	
Upwork	19
Fiverr	4
Other	5
Income through platform	
Main source	10
Supplemental source	11
Total N	21

Table 2. Participant sociodemographic characteristics

	Mean	N
Age (27–70)	41.1	
Gender		
Male		8
Female		13
Education		
Less than a Bachelor's degree		4
Bachelor's degree		6
Advanced degree		11
Race and ethnicity		
White		14
Black		0
Hispanic		6
Asian		2
Native American		1
Total N		21

While all pursued employment opportunities on Upwork ($n = 19$) or Fiverr ($n = 4$), their experiences on these platforms varied. Approximately half ($n = 11$) had adopted gig platforms less than 1 year ago as opposed to three participants who had done this work between 1 and 5 years. Lastly, seven participants had used the platforms for more than 5 years. The sample is approximately equally divided on whether they consider their earnings from the platforms as a main ($n = 10$) or supplemental ($n = 11$) form of income. Almost all are currently active on the platforms, with the exception of one individual.

In terms of sociodemographic background (see Table 2), the sample resembles the demographic composition measured in reports of U.S.-based gig workers (Shaw et al., 2022). Ages ranged from 27 to 70 years, with a mean of 41 years. I interviewed eight men and 13 women. Most had an advanced degree ($n = 11$) as their highest obtained degree, followed by Bachelor's degree ($n = 6$) and less than a Bachelor's degree ($n = 4$). The sample was majority White ($n = 14$), with zero Black, six Hispanic, two Asian, and one Native American freelancers.

Data analysis

For analysis, I drew on strategies from grounded theory (Charmaz, 2015; Corbin & Strauss, 2015). I first open coded five interviews, which involved extensively marking up the transcripts. To stay close to the data, some of this initial coding was in vivo style. I engaged in constant comparison of data and mind mapping to reflect on the data and identify general themes. In addition to open codes, I identified a list of what Charmaz (2004) calls "sensitizing concepts" (p. 517). Such concepts included "affordance" (Davis & Chouinard, 2016) and "digital skills" (Hargittai, 2022). In the second round of coding, I paid attention to these concepts. This round of coding involved noting larger themes while continuing to open code, choose excerpts, and write memos. I paid special attention to "rich and very descriptive" language, especially when participants described moments when digital skills appeared critical (Corbin & Strauss, 2015, p. 100). Coding, memo writing, and mapping relationships formed an iterative process through which I developed an understanding of participants' experiences navigating online freelancing platforms.

Results

While all participants draw on their digital skills in navigating online freelancing platforms, their digital skill levels vary widely, with some expressing more elaborate understandings of the platform's features and inner workings than others. This section is divided into three parts, each describing a set of practices in which participants leverage their digital skills to varying degrees. Having or being able to develop more extensive digital skill sets allows participants to (1) optimize their use of the platform tools, (2) find alternate pathways when existing platform tools break or change, and (3) imagine and forge new paths to meet their needs when platforms do not have necessary functionality. Ongoing participation on online freelancing platforms in an ongoing manner requires skills not only to navigate a digital workplace but also to respond effectively to this environment changing, breaking, and proving inadequate.

Optimizing use of platform tools

To varying degrees, participants described taking advantage of the platform tools, especially those related to identifying the opportunities most appealing to them. Appealing work is legitimate (i.e., offered by clients who are serious about hiring and, ultimately, paying) as well as relevant to the freelancer's skills and interests. For many freelancers, procuring paid projects is the main form of unpaid labor they engage in. Variation in digital skills plays out in how participants use platform tools to identify relevant job openings and determine whether to apply for or accept a job.

Searching for and sorting through job openings

One challenge that freelancers face is locating jobs within an endless array of opportunities. Many participants talked about how they "invested a lot of time looking for jobs" (Maeve, 46, translator). Some of that unpaid labor, as specified by Frida (42, writer and copy editor), includes "taking aptitude tests—you know, answering questions even to be applying or considered for a job." The freelancing platforms

provide tools to facilitate the job search, such as search and filter functions. However, participants varied in the extent to which they took advantage of such tools. For example, Ursula (27, copy editor) described how she "worked through 'best matches' … self-filtered, just like scrolled down and checked." The "best matches" feed is a personalized list of job openings that Upwork constructs for every freelancer. Going through each job and manually determining its relevance, as Ursula described, is a time-intensive strategy. This might be particularly true given that, according to many participants, the feed includes many irrelevant jobs. Indeed, Lydia (38, copy editor) called the feed "a pile of crap."

To extract the appealing opportunities, Lydia and others use the search bar. Some described constructing their search strings carefully, drawing on their understanding of how keyword searches work. For example, Lydia shared:

> Maybe someone will say 'I want a transcription of my work meeting,' whereas another person would say 'I need someone to transcribe my work meeting.' So I would use all of those variations and then I feel like that helps you find more variety.

This quote demonstrates not only Lydia's awareness of the search bar as a tool to narrow down job openings but also her understanding that keyword searches rely on a precise match between the key terms and the language in the job ads. This understanding of keyword searches informs her practice of iteratively trying keywords, through which she ultimately optimizes her use of the platform tool and identifies relevant jobs more effectively.

Even with precise searches, some participants shared that they feel overwhelmed by the sheer number of job openings their searches yield. Maeve (46, translator) indicated, "I found about 10,000 jobs. I cannot navigate through them … it is a lot of jobs." Freelancers with more knowledge of what is possible on the platform, such as Christie (32, technical support) and Qiana (41, sales and admin support), use filters provided by Upwork to narrow down the job openings according to an extensive set of parameters. They filter, for example, on job level (i.e., entry vs. intermediate) and minimum hourly rate. To distill the results down to a more manageable and relevant list of job openings, these freelancers draw on their awareness of the search bar and the filters as well as their understanding of how these tools work on the backend.

Additionally, Christie described the "saved search" function on Upwork as a tool to make searching faster. This functionality creates and automatically populates a new feed based on keywords and filters that the freelancer chooses. Christie's knowledge of this platform tool lets her minimize the time and energy she spends constructing a search. As compared to Ursula and Maeve, her awareness and understanding of multiple platform tools thus enable her to speed up the job search process. From Ursula to Maeve to Christie, digital skill level increases, and time spent searching for jobs decreases.

Determining whether to apply for or accept a job

In addition, participants vary in their ability to find and leverage the information available on the platform about a job and the associated client, enabling some to make more informed decisions than others before applying. Most participants indicated the importance of gathering such information. Qiana, for example, called herself "a shark [that] snoops everything, grabs all the information you can get before applying for a job." For many freelancers, the primary reason to obtain such information is that it, as Christie said, tells them "at what point you need to get out" to avoid scams, less lucrative jobs, and clients who are difficult to work with. Details on the platform include basic information on the project, such as a description and skills required, as well as the client's history, such as whom they hired before, how much money they have spent, and reviews previous hires wrote about them. Knowing about and where to access such details gives online freelancers a more complete image of what the job and the employment relation might entail.

Some freelancers also leverage such information to gain insight into their chances of getting a particular job before investing time, energy, and, in the case of Upwork, money (as every application costs a certain number of so-called "connects") in applying. Christie expressed that she avoids "going bonkers and just randomly applying for anything." Instead, she pays attention to reviews left by other freelancers and whether a client had uploaded a payment method to the platform. Lacking a payment method is, according to Christie, "a big sign … that [the clients] are not serious or they're trying to just lure [you] into something." Similarly, Bella (30, research consultant) explained that if more than 24 hours passes since the job had been posted, she sees that as a sign that "either the client is very slow or it has already been taken." Hope (32, research consultant) regards the number of freelancers that have already applied to a job as "the most effective" strategy. That this metric exists and where to find it is not information all participants had. For example, Ursula said that "it's hard to tell the volume of people that are applying for any individual posting," implying she is unaware the platform provides this information. Having more information on the status of the job opening allows Bella and Hope to make inferences about their chances that Ursula is not able to make.

Finding alternate pathways to malfunctioning platform tools

In addition to optimizing their use of the tools on the platform, participants use their digital skills to mitigate situations in which those tools do not function as expected. Most participants had experienced the platform malfunctioning or glitching at least once, sometimes with serious consequences. Maeve (46, translator) described, "I lost many jobs when I was trying to verify my identity, because I couldn't submit proposals. My account was locked and it was so, so frustrating." While confusion regarding the platform environment was common among participants, their responses to such situations varied. Some participants described their efforts to seek help from the platform. For example, when Upwork did not give John (61, data scientist and research consultant) confirmation of his job applications in the way that he was used to, he "had to go out and say, 'Hey, what goes on there?'" Despite his efforts, he struggled to get a response from customer service. This was a common experience among other participants. For instance, Christie found that "they do have a [phone] number, but I guess … Yeah, I don't think [the call] even went through." Similarly, Frida talked about waiting for a response to her emails: "They go into the cloud or the universe, and I don't know whatever happens to that … like the Wizard of Oz." Regardless of whether participants received a response or not, they repeatedly reported that

the strategy of reaching out to the platform did not provide them with solutions.

Rather than reaching out to customer service, other participants described finding solutions themselves to platform malfunctions, often requiring a high level of digital skill. For example, some recounted drawing on their knowledge of alternative online services to circumvent the platform altogether. When Fiverr did not allow Spencer (63, voice over) to deliver files to his clients due to the size of the files, he used an alternative online service for sending files called WeTransfer. Likewise, Allan (69, copy editor) described that when his non-U.S. clients were unable to connect their bank account to the platform, he "ended up using Google Pay or Zelle." In both cases, Spencer and Allan drew on their awareness of alternatives to the gig platform for completing their work or getting paid.

Some participants described reliance on their skills and knowledge rather than on support of the platform as a more general approach they took to navigating the online environment. Hope said, "I've never contacted the platform … Like usually I'm one of those people that just tries to play around and mess with it and then figure it out as it happens." Similarly, John was not satisfied by the descriptions that Upwork provided for the new feature that allows a freelancer to bid on a project and instead decided to try out the feature himself:

> It wasn't very clear how that worked, but I went ahead because I saw a project that looked interesting … and so I thought 'alright, I'll try this bid process and see how that works.' … it was certainly something that [the platform] didn't really give a lot of detail into how it works and what the benefit is.

John's statement attests to his proactive attitude toward learning new platform features. His experience stands in contrast with the experiences of other participants, such as Edwin (34, English tutor), who "still [doesn't] even understand" the bidding feature as they felt that the platform did not provide clear instructions. Online freelancers like Edwin seem to rely on the platform to provide instructions and training materials. The lack of such support is thus more consequential to these participants than to participants such as Hope and John who draw on their digital skills to search for solutions proactively.

Across the interviews, participants who rely less on the platform for support draw on their digital skills to find alternative pathways when platform tools are not functioning according to their expectations. These pathways are workarounds or adaptations that online freelancers pursue when existing platform tools are broken or otherwise not working. In these situations, their digital skills, whether understanding of the gig platform or knowledge of other online services, enable them to find solutions.

Imagining and forging new paths

Additionally, digital skills appear to play a pivotal role in participants' ability to imagine and forge new paths when their needs and desires are not met by the platform. This practice is distinct from finding alternative pathways to platform malfunctions in that it requires an ability to think beyond the platform's current functionality. For example, many participants expressed being frustrated that none of the platforms provided a way for them to view the profiles of other freelancers, specifically those who offer similar services. Frida (42, writer and copy editor) said: "I have no idea what other profiles look like. I actually wish I could see, so I can kind of get ideas from the people who are getting lots of work. Like, what they're doing differently?" Similarly, Ingrid (36, copy editor and translator) explained: "I don't know how I stack up or how I look compared to others, so it's hard to know what the norm is." When asked whether they did anything to fulfill this desire, both Frida and Ingrid pointed out the platform simply did not provide the option and concluded there was nothing they could do.

In contrast, Thomas (34, software engineer) came up with an innovative solution to circumvent the same limitation: he created a second account on Fiverr in which he pretended to be a client. He described, "I also have another account that I use as a client … [I get] another device and search a service." This strategy attests to Thomas' capacity to think outside of the bounds of possibility as set by the platform's design. While others, such as Frida and Ingrid, accepted the limitations of the online environment, Thomas was able to imagine a path through which the technology could meet his needs. This difference between Frida and Ingrid, on the one hand, and Thomas, on the other, lies not just in awareness of the platform's functionality or technical ability to act upon this awareness—presumably, Frida and Ingrid know how to make a second account. Rather, Thomas' digital skills encompass thinking about the technology in a creative way, outside the realm of what it was, strictly speaking, designed for.

The reason that Thomas created a client account was to find out whether and where his profile showed up in the search results, which is another example of how online freelancers draw on their digital skills to imagine and forge new paths in the face of the platform's constraints. Specifically, the platforms provide little insight into how the ranking algorithms sort the content on the platform. Some participants did not mention algorithms explicitly or anything else that indicated they were aware that the platform sorts content. Others showed awareness of the existence of algorithms but no deeper understanding, such as Darcy (33, copy editor): "I feel like some things on Upwork are based on some magical algorithm that maybe I'm not fully privy to."

Still others demonstrated an understanding of the platform's use of algorithms to sort content by actively attempting to influence algorithmic output. For example, Gwen's (38, research consultant) attempt to impact her personalized job feed is illustrative of such strategizing. When she found her job board primarily contained irrelevant jobs, Gwen manipulated the data that she believed to be used by the algorithm that determines the personalized feed: "I changed my bio and I noticed that I was impacted by different job proposals." Gwen engages in an iterative process of devising strategies, systematically testing them, and observing the outcome. Similarly, when Thomas searched through his client account for the service he offered, he "was disappointed that [he] had to scroll like five pages to find [his] profile." To achieve his goal of showing up on the first page, he engaged in a trial-and-error process:

> When I do not see myself inside the results, I try to change some wording on my gigs, and sometimes I see that the results improve. Maybe with the words that you use, like,

> to match a little bit the words that the customers use on the platform to get better results.

Both Gwen and Thomas's strategizing demonstrate their awareness of the different platform features, including what information one can enter in their profile, as well as an understanding that such information might impact the ranking algorithm and thus that it should match the language used by customers. Moreover, their activities attest to their capacity to leverage these skills and pioneer a method to meet their needs when the platform does not provide such functionality. In this case, new paths concern ways to understand and manipulate the platform's operations.

In a more extreme case, some participants dislike the platform's interface altogether and find ways to access the information they need in other ways. For example, Allan believes that the platform is more complex than it needs to be due to "a combination of stale code that has probably been around for quite a while with a lot of patches on it." To circumvent the interface altogether, Allan uses an online software called Feeder. Feeder brings content from online sources together in a simple interface. Allan explained, "it narrows down what I'm interested in." Similarly, Gwen said she finds Upwork's interface "too crowded." Instead, she would prefer a table that contains the statuses of her applications. Since Upwork did not provide such a table, Gwen "tried to get [access to] the API for managing [her] projects." She could not gain such access and ended up downloading the data that Upwork provides in a CSV file and creating tables herself. While her attempt to access the backend of Upwork was unsuccessful, her actions demonstrate her capacity to find a way to meet her needs—even when those go beyond what Upwork facilitates. Both the ability to utilize an application like Feeder and accessing an API are examples of digital skills.

These innovative solutions sometimes involve deviations from the intended use of the platform, such as Gwen attempting to access the Upwork API and Thomas creating a client account on Fiverr. In these cases, participants draw on their understanding of the inner workings of gig platforms to identify the forms of unintended use that are tolerated versus penalized. Most participants expressed, for example, that while they often feel frustrated by the commission fee that the platform takes, they avoid taking clients off the platform and using alternative payment methods. For instance, Edwin said, "I've built up my profile, you know, and I don't want to violate [the terms of service] and lose access to potential clients … I don't want to be banned from the platform." For Edwin as well as other participants, the fear of losing access to one's account thus becomes stronger as they invest more time, energy, and money into building their profiles. Given the reality of platform sanctions, the experimentation that online freelancers engage in is thus not boundless.

Other participants, however, did share contact information with clients they trust and used alternative payment methods, such as PayPal or Wise. When they did, they drew on their digital skills to avoid potential repercussions. They appeared to be highly aware of how to circumvent the surveillance by the platform. For example, Thomas explains,

> I had good results even [with doing Zoom consultations]. And this is something where Fiverr does not record sellers. Of course, they want to do all the transactions on their platform, but by doing [Zoom consultations] for example, … I work regularly outside Fiverr … Like we jump on Zoom, they pay me with PayPal and that also helps me to not get that 20% fee Fiverr takes.

In this explanation, it becomes clear that Thomas understands that Fiverr engages in some level of surveillance and that when communicating on a video call through Zoom, his interactions are not monitored. Similarly, Spencer (63, voice over) only agrees to communicate or receive payments outside the Fiverr platform when a client contacts him via email. In contrast, he cuts off someone who is "dumb enough to put in writing in an open chat platform that they look at." In this case, Spencer's understanding of Fiverr's monitoring of exchanges on the platform informs the way he responds to requests for using alternative payment methods. Being more digitally savvy thus enables some participants not only to avoid riskier forms of unintended use of the platform but also to avoid repercussions when they decide to engage in such use.

Discussion

This study set out to tease apart the digital skills valuable in online freelancing and how being more digital savvy translates to positive outcomes for online freelancers. Differences in participants' strategies in navigating freelancing platforms suggest varying levels of knowledge of the platform's features and inner workings. In particular, results show that having more elaborate digital skill sets aids online freelancers in optimizing their use of platform tools, in constructing alternative pathways when existing platform tools do not function as expected, and in imagining and forging new paths when existing platform tools do not provide desired functionality.

The first practice—optimizing use of platform tools—involves leveraging idiosyncratic knowledge and skills to locate appealing job openings while avoiding others. Specifically, participants draw on the information the platform provides on the potential projects and associated clients to infer their prospects of actually obtaining work when applying. Similarly, they report using filters, reviews, and other tools to avoid jobs not relevant to their interests, scams, and unfavorable clients. In these ways, online freelancers leverage their digital skills to identify and access opportunities as well as avoid losing money, time, and energy. Awareness of platform features sits at the root of an individual's experience in the online labor environment. This finding is in line with earlier theorizing on digital skills, which notes awareness of possibilities as a prerequisite for interacting more effectively with a digital technology (Hargittai, 2022). Extending prior research (Sutherland et al., 2020), I show that this awareness of and ability to use platform tools to one's advantage is not commonplace. Some participants demonstrated an elaborate understanding of platform capabilities, combining them to engage with the technology as effectively as they could. Others appeared to lack any awareness of the same functionalities, which hampered their ability to derive a stable income from online freelancing.

Besides helping online freelancers secure more favorable employment opportunities, utilizing the platform features optimally enables them to cut down on unpaid labor. Prior literature has documented extensively that gig work requires considerable investments of time and labor in procuring jobs, settling disputes, and performing administrative tasks (e.g., Pulignano & Mara, 2021). This study suggests that having more developed digital skill sets permits a freelancer to devise

more effective strategies to find and secure jobs, allowing those with more digital know-how to get paid for a higher percentage of their time. While research on labor conditions and resilience strategies in the gig economy hardly considers digital skills (a speculation by Chen & Soriano, 2022 notwithstanding), this study suggests that digital skills might contribute to an individual's ability to build a more favorable work-life balance and thrive in this career. Therefore, future work should continue to take digital savvy into account when trying to understand labor conditions and worker agency in the gig economy, especially variation by digital skills.

While platform tools thus are helpful to online freelancers, findings reveal that they do not always work as they should and that freelancers leverage their digital skills to find alternative pathways to work around such hurdles. For example, participants regularly experience platform malfunctions or changes to the interface. In response, some freelancers turn to the platform for support to no end (in line with findings of Gray & Suri, 2019). Others are more resilient in the face of such adversity: They are able to find a solution themselves by exploring the platform and using third-party services when necessary. In this exploratory process, they draw on the general digital skills they already have while building the knowledge skills they need to cope with a specific situation. This practice highlights the self-reinforcing nature of digital skills, where more digitally savvy individuals adapt their skill set to specific situations and, in that way, add onto it.

Given their changes and malfunctions, gig platforms—and thus the digital skills required to navigate them effectively—are a moving target. Consequentially, having a robust digital skillset in the gig economy necessitates not only utilizing current platform features fully but also the ability to adapt when necessary. Across the interviews, participants expressed frustration with changing platform features and recalled navigating these moments using their understanding of the platform as well as the Internet more broadly. This suggests that adaptability is an important dimension of digital skills in the case of gig work. Being able to adapt more effectively allows online freelancers to rely on themselves rather than on a platform feature over which they have limited power. Given the limited support and training materials provided by gig platforms (e.g., Gray & Suri, 2019), the ability to train oneself and find solutions to platform malfunctions is valuable in the gig economy. This implies that interventions such as digital literacy education might focus on adaptability and problem-solving rather than on knowledge of specific platform features that could change quickly.

Going a step further than finding alternative pathways to accomplishing the same ends as existing platform tools, the third practice identified in this study concerns the imagining and blazing of new paths. When setting their goals, some participants appear not to be constrained by the limits of the platform design. Instead, they demonstrate an ability to understand their needs independently of what is possible on the platform and imagine a path to meeting those needs. New paths thus go beyond the platform's current functionality. Given the creativity involved in devising a path, the specifics of any given path depend on the goals of the gig worker as well as the tools and knowledge available to them. A new path may refer to actions to gain information not readily provided by the platform (e.g., what profiles of other workers look like) or manipulate the platform's operations (e.g., how worker profiles are ranked). New paths often involve a use of the technology in unintended ways, which some literature refers to as "appropriation" (e.g., Carroll et al., 2003). When engaging in unintended use, freelancers draw on their digital know-how to avoid repercussions. Understanding the platform's internal workings appears to be vital in freelancers' ability to avoid the consequences of violating the terms of service. Importantly, this ability to appropriate the technology to meet one's needs while avoiding repercussions is an ability that not all participants have; many accept the limitations of the platform. This suggests that more digitally savvy freelancers' experience more agency in engaging with the platform environment.

All three practices contribute to the gig workers' resilience in the face of a labor environment that changes, malfunctions, and is otherwise unsatisfying. Particularly, a gig worker's ability to find alternative pathways to platform malfunctions and imagine new paths in the event of limited functionality allows them to overcome challenges they face in their work. The differences between participants suggest that digital skills are at the root of disparities between gig workers' resilience and, thus, their ability to participate in an ongoing matter. Digital skills are among the resources essential to empowering gig workers to navigate the technology to meet their needs.

This study's findings extend research on digital skills by stretching the concept, defined as "knowing what is possible through digital technologies and the ability to engage with those possibilities effectively and efficiently" (Hargittai, 2022, p. 4). The functionality that gig platforms formally offer through the tools they provide constitutes "what is possible" in the online environment. The practice of optimally using platform tools fits within this definition of digital skills. However, the capacity to navigate situations when the platform tools break arguably requires a deeper, more creative level of digital skills. Further, the ability to imagine goals and paths outside the functionality provided by the platform requires still deeper mastery of the technology and higher level of creativity. Thus, whereas existing literature on digital skills focuses on knowing and operating existing features, this study suggests that engaging with digital technologies in ways that the design does not encourage or even allow for is another key dimension of digital skills. Future research on digital skills should take into consideration variation in people's ability to stray from the beaten path in their technology use.

Since digital skills presumably do not account for all variation in the experiences of online freelancers, future research might explore other factors, such as personal circumstances. Given this study's findings around online freelancers' exploration of online environments, a focus on attitudes toward exploration, play, and problem-solving might prove fruitful, as emphasized in other settings (e.g., Rafalow, 2020). While this study suggests that digital skills are essential in such exploration, participants had different mindsets around solving problems, where some indicated feeling deterred faster than others. Future research might examine the role of attitude—drawing on fixed versus growth mindset (Dweck, 2000)—in ongoing participation in the gig economy, while still considering digital skills.

While this study focuses on online freelancing, the practices described may extend beyond this case and apply to employment in the gig economy more generally. Specifically, the responsibility to search for work—often by perusing a list of job openings—is common beyond online freelancing (e.g., Woodcock & Graham, 2020). Similarly, the phenomenon of platforms providing little support and leaving workers to

their own devices seems to be prominent beyond online freelancing (Gray & Suri, 2019). That said, given that online freelancers are in direct contact with their clients, they may have more possibility to engage in non-standard platform use. Therefore, being more digitally savvy might make more of a difference than it would in an environment with higher levels of worker control, such as microwork. Future research should explore the intricacies of digital skills in other segments of the gig economy, as other gig workers might run into other situations because the tasks they pursue are shorter or their work is in-person rather than fully remote.

While participants had varying amounts of experience with the platform, this study is limited in that all participants knew about and successfully signed up for the freelancing platforms. Most participants are currently still active on a platform, implying that they are at least somewhat satisfied with their experience. As a result of these factors, the sample is presumably skewed toward more active and satisfied freelancers. Further studies may aim to include the voices of people who have never used these platforms as well as those who do not anymore. Future research might also examine the role of digital skills in other forms of gig work as well as in other national contexts. This study focused on online freelancers in the United States, limiting the findings to this specific case. Navigating gig platforms might look different for individuals in countries with different cultural norms as well as community-based and governmental protections. More research is necessary to understand dynamics in other environments and how they might compare.

Conclusion

Building on prior research that reveals a relationship between digital skills and gig work (e.g., Shaw et al., 2022), this study examines how knowledge of platforms, their features, and inner workings enables resilience and, thus, ongoing participation in the gig economy. Drawing on interviews with 21 U.S. online freelancers, I find that online freelancers translate their digital skills to find, obtain, and complete work in a workspace that is not only online but also prone to malfunctions and regularly fails to meet their needs.

Freelancers draw on their digital skills to utilize the platform tools more optimally, which allows them to make more informed decisions about where to invest time, labor, and money. On top of that, digital skills empower freelancers to navigate unexpected circumstances that might result from platform changes and malfunctions. Whereas some individuals rely on the limited support that the platform provides, others are more self-reliant because of their capacity to find solutions through exploratory processes. Lastly, online freelancers draw on their digital skills to imagine and construct new paths when the existing functionality of the gig platform does not meet their needs. When they interact with the platform in ways that violate their terms of service, their understanding of the platform's inner workings enables them to avoid repercussions. Digital skills appear to afford online freelancers an increased level of agency, strengthening their position as independent contractors on a digital platform.

The findings of this study suggest that digital skills empower individuals not only to access employment opportunities in the gig economy but also to be resilient given the uncertainties associated with this work. Being more digitally savvy allows gig workers to cut down on their unpaid labor, make more informed decisions, and mitigate risks, such as the platform malfunctioning. Knowledge of digital platforms allows freelancers to be more self-reliant and resilient in a precarious labor environment. Given that digital platforms and (algorithmic) systems change regularly and unpredictably, the ability to navigate changes, learn new environments, and adapt quickly may be valuable, especially if ongoing participation is necessary to reap benefits. As a result, future research as well as digital literacy education should consider adaptability as an important dimension of digital skills. While many have argued that the responsibility for worker protection should not fall on the individual, imparting advanced digital skills to workers can make a difference when the reality of the gig economy is that such environments lack in training and support.

Data availability

Interview data are only available upon request. Those interested can contact the author.

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