Fairwork

Skills for the Planetary Labour Market: Indian Workers in the Platform Economy

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1. List of Abbreviations

BMZ	Federal Ministry of Economic Cooperation and Development (Germany)
CEO	Chief Executive Officer
DGT	Directorate General of Training
FAQ	Frequently Asked Questions
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
HIT	Human Intelligence Task (a task on Amazon Mechanical Turk)
HR	Human Relations
ILO	International Labour Organisation
IT	Information Technologies
ITeS	Information Technology Enabled Services
ITI	Industrial Training Institute
MSDE	Ministry of Skill Development and Entrepreneurship
MTurk	Amazon Mechanical Turk
NASSCOM	National Association of Software and Service Companies
NCVET	National Council of Vocational Education and Training
NGO	Non-Governmental Organisation
NSDC	National Skill Development Corporation
NSQF	National Skills Qualification Framework
PLU	Platform-led Upskilling
PM	Prime Minister
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
RASCI	Retailers Association's Skill Council of India
SSC	Sector Skill Council
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEVOC	UNESCO International Centre for Technical and Vocational Education and Training
UNFPA	United Nations Population Fund
WEF	World Economic Forum

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3. Introduction and Summary

With 560 million internet users, India is the second largest digital market in the world. People between 20 and 39 years of age represent just over half of the country's internet users. This means that workers located in India may overcome some of the constraints of their local labour markets by using digital labour platforms to take part in a planetary labour market. So, for many of these young internet users, digital labour platforms provide an essential income and much-needed opportunity to improve their livelihoods. Given the potentially important job opportunities offered by this planetary labour market, there is a need to understand how Indian workers view and expand their skills portfolios in relation to their platform work, and unveil the points of leverage where existing training initiatives by governmental, private and third-sector actors may need to be adapted to meet their needs.

This report focuses on five key research questions:

1. What are the impacts of the COVID-19 pandemic on Indian cloudworkers and the cloudwork landscape?
2. What skills are particularly relevant for cloudworkers in India and how are they acquired?
3. What factors support or limit cloudworkers in acquiring the skills they need for their work, and what strategies do they use to overcome obstacles?
4. What connections and interactions exist between the platform economy, informal work and skills training?
5. What conclusions can be drawn for future skills training approaches, in particular for development cooperation?

Methodologically, we structure our empirical inquiry of the five research questions around a mixed-methods research approach, combining quantitative and qualitative methods to collect and analyze our data. The qualitative phase included semi-structured interviews with 12 leading TVET stakeholders, including experts from India's National Skill Development Cooperation and sector skill councils, as well as platform managers, among others. We additionally carried out 31 in-depth interviews with Indian platform workers. The quantitative phase involved the development of a novel survey instrument, which was administered to over 400 Indian platform workers across four platforms, and representing the two different types of cloudwork: microwork and freelancing. We included one microwork platform (Amazon Mechanical Turk) and three freelancing platforms—which included two global platforms (Upwork and Freelancer) and one Indian platform (Truelancer).

Before presenting our empirical evidence, we first set the stage for our study by situating it vis-a-vis relevant literature and insights on the relationship between cloudwork platforms and skills development in India, in section 4. We pay particular attention to defining cloudwork and skills for cloudwork, discussing the demographics of India's platform workforce, and introducing the country's extant skills training systems. We distinguish between government-led skills training, platform-led skills training, private skills training, and skills training beyond organisations.

On that basis, we describe the impacts that the COVID-19 pandemic has had on Indian cloudworkers (RQ1) in section 6. In section 7, we elucidate which skills are particularly relevant for cloudwork in India while investigating the differences across the four platforms and between women and men (RQ2). Section 8 closely

examines what factors support or constrain cloudworkers in acquiring the skills they have identified as important to develop for their work and what strategies they employ in order to overcome obstacles (RQ3). In section 9, we outline the connections between the platform economy, informal work, and skills training (RQ4). Section 10 draws conclusions from the findings and offers practical recommendations for development cooperation, as well as to inform the emerging policy landscape that governs cloudwork in India (RQ5).

3.1. Key Findings

3.1.1. Impacts of COVID-19 on Cloudwork

- Since the pandemic started, there has been a marked surge in new sign-ups on cloudwork platforms. Across platforms, 18% of the survey respondents reported that they only started working on the platform where they were surveyed after the pandemic started, often due to difficult circumstances that arose as a result of the pandemic.

- 62% of veteran cloudworkers reported that they are spending more time working or looking for work since the pandemic started—though workers' ability to dedicate more time to platform work may be constrained by their working environment, caring responsibilities, etc.

- A recurring experience that survey respondents and interviewees from across all platforms reported was that they were facing substantially more competition, and were able to secure fewer jobs, during this past year.

- 79% of all survey respondents agreed or strongly agreed that cloudwork will grow in importance compared to traditional employment arrangements as a result of the pandemic. This corresponds with the finding that more companies are beginning to outsource parts of their business operations to temporarily engaged cloudworkers.

3.1.2. Skills for Cloudwork

- Indian cloudworkers find a variety of skills to be useful for their work on online labour platforms. Communication skills, technical skills, platform-related skills, and learning skills are particularly valued.

- Indian cloudworkers tend to develop different kinds of skills during their work on platforms and during leisure time. Respondents indicated a greater overall focus on soft skills developed during cloudwork with communication skills, personal dispositions, and organizational skills being developed at least weekly by over 80% of the respondents. During leisure time respondents instead focused on developing technical skills and learning skills, as well as platform-related skills.

- While the board patterns of skill development are related across the four platforms, we saw more variation between platforms in terms of skills developed during leisure time than with skills developed on-the-job. During cloudwork, the workers on MTurk tend to differ in relation to the workers on the other three platforms, developing language skills and computer literacy relatively more often and technical skills and most soft skills less often than the workers on other platforms. During leisure time the focus of skill development varies more with workers on Truelancer tending to focus on soft skills, workers on Upwork focusing on learning skills, and MTurk workers spending their leisure time developing computer literacy and analytical skills.

- Similarly, differences in skill development between genders were also somewhat more pronounced for skills developed during leisure time than during cloudwork. Women were slightly more likely to develop both hard and soft skills on each platform while working, with the gap somewhat wider when considering communication and organizational skills. During leisure time female survey respondents focused on language skills, computer literacy, and organizational skills, while the men tended to focus on improving communication, analytical, and technical skills.

- Respondents reported that their rationales for on- and off-platform skills development varied, as skills developed while working are either needed to complete the job successfully or otherwise directly benefit platform work, but developing skills during leisure time entails a further investment of resources into training skills that are more challenging to develop during platform work, but which have expected utility for platform work.

- Across platforms, workers had similar motivations for developing skills: for instance whereas technical skills were developed with an expectation of leading to more clients and higher paying jobs, languages were developed with the hope of facilitating finding work and building a better rapport with clients.

3.1.3. Strategies and Obstacles for Skills Development

- Workers face significant challenges accessing and undertaking learning activities, particularly in the absence of support from platforms. Since cloudwork can be highly independent, the exchange of tacit knowledge, like strategies for managing cloudwork through on-platform interaction can be limited. Platforms tend to be designed to support individualised, not collaborative work. Furthermore, learning outside of platform work hours can come at a high cost to workers who are aware of the trade-off between investment and income, one that does not always even out. The willingness to invest in developing skills in leisure time can be tied to the limited development opportunities offered by platforms, and is indeed one area where workers expressed significant interest in having the third sector provide support.

- Respondents reported generally favouring self-directed learning activities over collaborative learning activities. Among the groups of learning activities, workers engaged most often in individual self-directed learning activities and in platform-specific learning activities. Taking paid online courses, webinars or tutorials was a specific challenge, and one that was also particularly felt by women survey respondents. Even when respondents indicated the desire to undertake learning activities, they faced challenges finding the financial and logistical support to develop skills, an investment that workers did not always feel able to make. This may indicate that workers require more structural forms of support to enable them to locate and access low-cost learning activities that align with their goals.

- Survey respondents were also asked to reflect on the reasons why they were unable to undertake some of the learning activities they indicated they wanted to take. Time emerged as the central constraint to undertaking learning activities across all platforms. Time in these instances referred to several issues including a lack of time due to caring responsibilities and the need to make an income. This was followed closely by financial constraints to undertaking paid activities or missing work opportunities. Another key issue was a lack of information and awareness of potential places to undertake learning activities, which was also linked to a lack of time to look for these resources as well as a lack of guidance and mentorship. Together, these three reasons were given, in combination or alone, by the majority survey respondents when asked why they were unable to undertake the learning activities despite expressing an interest in doing so.

3.1.4. The Platform Economy and Skills Training

- While skills development is a key priority for the Indian government, cloudworkers have been a blind spot in government-led TVET approaches. There are numerous initiatives spread across the Indian skills ecosystem aiming to impart digital skills, but none of them specifically target cloudworkers, nor impart platform-specific skills.

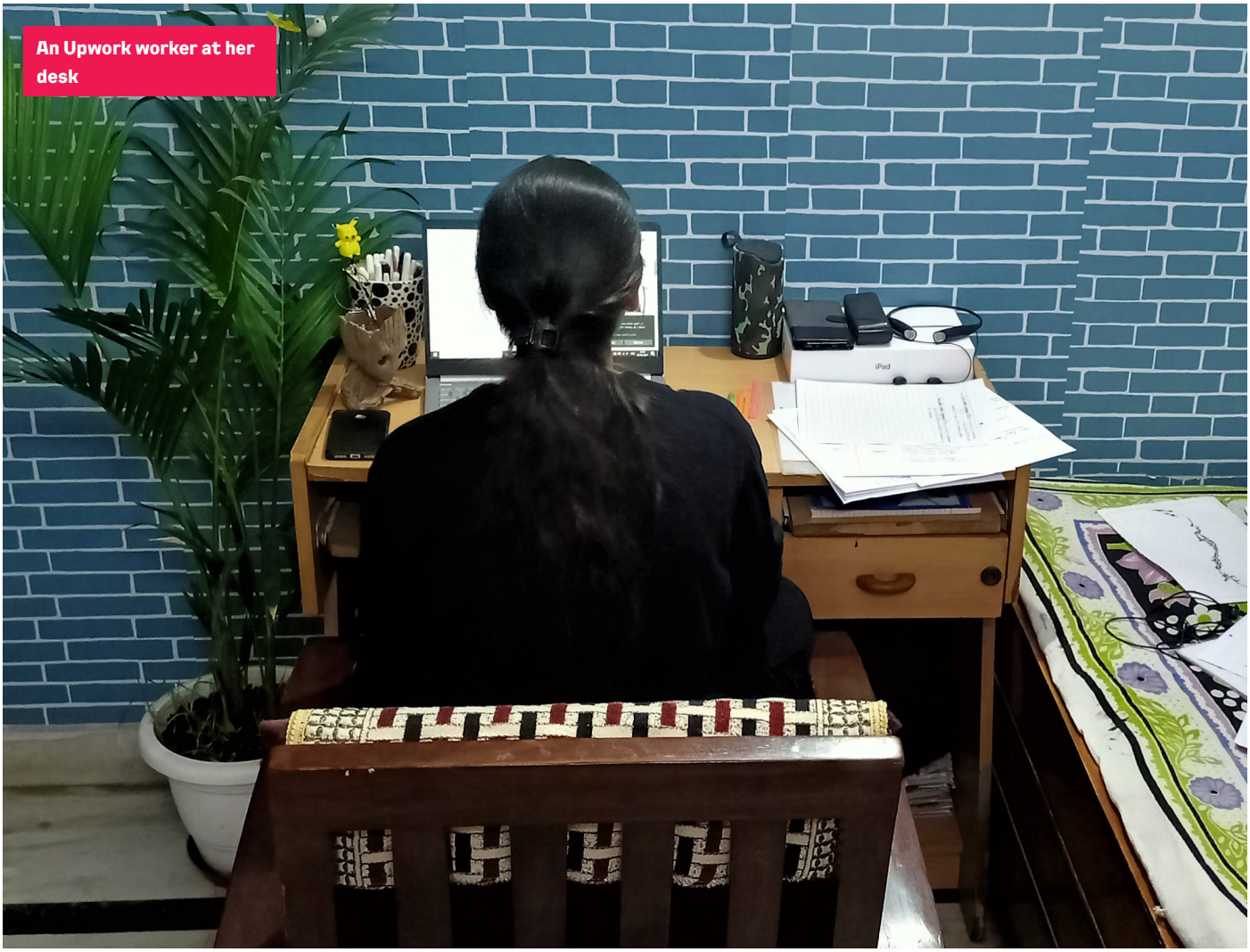
- Platforms engage in very limited direct skills training, though some platforms do more than others. Platforms do often have mechanisms for workers to showcase their skills on their profiles, but portability of platform-specific skills credentials (as well as work history and ratings) is limited, and leads to 'locking in' workers onto particular platforms.

- Whether workers can make use of their "off-platform" experiences and their educational background to increase their success "on-platform" depends on a variety of aspects: the platform interface and its work allocation method; the type of task or gig; the expectations of clients; and the form of education or experience. There is no simple answer to the question of how education and experience shape, and are shaped by, the interactions between platforms, informal work and skills training, requiring tailored evidence-based solutions for building one's profile when joining and fostering upskilling on the basis of different platform types.

- Irrespective of workers' education and background and significant differences between platforms when it comes to reputation systems a common theme to emerge from these interviews is therefore the need for a standard, preferably platform-specific, skills training course that provides basic information about profile building. Against the backdrop of workers' lived experiences, it's vital to improve the portability of their profiles and reputation or create external portals in which workers can show off their qualifications and experiences, without being restricted to one particular digital labour platform.

3.2. Policy Recommendations for Development Cooperation

1. Engage with, and encourage the growth of, cloudworker networks and communities.
2. Convince platforms to support and invest in cloudworkers' skills development.
3. Support the adjustment of existing institutional mechanisms to better cater for cloudworkers.
4. Support the creation of platform-specific training courses.
5. Advocate for a jurisdiction-spanning policy environment that would improve cloudworkers' access to skills development.
6. Include access to skills development for cloudworkers in legislative action to foster due diligence in global supply chains.
7. Support further research and develop pedagogical tools to share knowledge about cloudwork.



An Upwork worker at her desk

4. Research Context

4.1. Cloudwork and the Planetary Labour Market

There are now over 50 million platform workers who live all over the world, doing work that is outsourced via digital labour platforms or apps. It has been predicted that by 2025, one-third of all labour transactions will be mediated by digital labour platforms (Standing, 2016). A 'digital labour platform' is a company that uses digital resources to mediate value-creating labour interactions between consumers and individual service-providing workers.

Digital labour platforms include two broad types (Woodcock & Graham, 2019). In the first, geographically-tethered work, platforms require a job to be done in a particular place (e.g. delivering food to an apartment or driving a person from one part of town to another). As Shyamal Majumdar, Former Head of the UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training, puts it, these location-based types of work 'are executed in real world and locally but channeled through online independent contracts.' Cloudwork, in contrast, is work that can, in theory, be performed from anywhere via the internet. This means that cloudworkers located in India can use digital labour platforms to take part in a 'planetary labour market' (Graham & Anwar, 2019) and may overcome some of the constraints of their local labour markets. Cloudwork tends to be less well-known compared to more visible and urban forms of platform work.

When referring to platforms, it is vital to be clear about definitions. Different ideas of what platforms *are* and what they *do* entail various assumptions about what development actors should do *about them*. In other words, how we define platforms doesn't just shape our analytical perspectives but also our policy repertoire. In this report, we focus on the second type of platform work, cloudwork, and therefore use the term 'cloudworkers' to refer to *people who find work remotely through labour-broking cloudwork platforms, regardless of their employment status* (e.g. employees or independent contractors).[1] Digital platforms like Airbnb or eBay—where goods are exchanged—or social media platforms like Instagram are explicitly not included within this definition.

Cloudwork has also been called 'crowdwork', 'online gig work', and 'online freelancing' (Schwellnus et al., 2019). A common denominator of all these labels is that digital labour platforms are seen to be functioning as cross-jurisdictional infrastructures that mediate labour transactions, bringing together workers in one country with clients anywhere on the planet. Some commentators have promoted platform-mediated forms of labour transactions and value creation as a solution to reducing structural and geographic inequalities by fostering inclusive development around the world (Schwab, 2017). However, acting as a counterweight to this optimism, a rich body of qualitative and quantitative research has pointed to troubling features of cloudwork, including: selective formalisation, exploitative working conditions, and oversupply of labour (Graham et al., 2017; Anwar & Graham, 2020).

4.1.1. Selective Formalisation

Cloudwork must be situated in an empirical context in which huge numbers of workers around the world are engaged in non-standard and vulnerable forms of employment characterized by low pay and no social protection—accounting for two billion people, or almost two thirds of the global workforce (ILO, 2021). Standard employment is traditionally defined as work that is full-time, indefinite, and that includes statutory benefits and entitlements. In many places, including India, cloudwork is typically regarded as less secure than standard employment, owing to the overwhelming proportion of self-employed workers on these platforms. This status quo frequently leaves workers poorly integrated into social protection schemes, uncovered by key labour law legislation governing minimum wages, unable to collectively bargain, and with limited opportunities for skills development—all things that may be acutely dangerous for the economically precarious (Heeks et al., 2020).

Research shows that cloudwork platforms exacerbate particular features of informal work by carefully deploying narratives of flexibility, freedom, and entrepreneurship while systematically devolving social and economic risks onto workers, and positioning themselves as neutral intermediaries (Donner et al., 2019; Anwar & Graham, 2020; ILO, 2021). That is, platforms formalise certain aspects of informal work by centralising exchange between workers and clients while perpetuating the precarity associated with informal labour markets—a phenomenon that van Doorn (2020) has called 'selective formalisation.' At the same time, cloudwork deviates from other types of work in that it is difficult to

[1] We will use the terms cloudworker, platform worker, and worker interchangeably throughout the document.

contain within clearly defined, and conventionally articulated, occupational standards and job roles.

4.1.2. Exploitative Working Conditions

While cloudwork platforms are frequently celebrated for their ability to offer workers access to a global clientele and expanded work opportunities, this can give rise to working conditions that are frequently characterized by long and irregular working hours, high levels of stress, and other detrimental psychosocial risks and hazards (Wood et al., 2018; Berg, 2016; Berg et al., 2018). Due to their access to a huge number of spatially dispersed workers, cloudwork platforms are sensitive to the fact that their clients need some mechanism to be able to trust that workers—who are often on the other side of the planet—are indeed doing the work that they are paying for. Platforms' solution to this trust issue is sometimes an automated surveillance system, for example which captures screenshots from workers' computers at random intervals, contributing to stressful working conditions. Most platforms additionally employ ratings-based performance management systems whereby clients can 'rate' workers. Such ratings systems can be opaque and arbitrary, especially when they are based on algorithmic decisions, thus contributing to the psychosocial risks and hazards of platform work.

There are several ways to conceptualise the fairness of working conditions on cloudwork platforms (Harmon & Silberman, 2019; Whiting et al., 2019; Graham et al., 2020). The Oxford Internet Institute's Fairwork Project (of which the authors are members) periodically assesses the fairness of working conditions on cloudwork platforms along five dimensions of work quality—pay, conditions, contracts, management and representation (Fairwork, n.d.). An upcoming report (Fairwork, 2021) that surveys working conditions on major cloudwork platforms across the world, echoes the findings from previous research that the cloudwork model can frequently result in poor working conditions. However, it also notes importantly that there exists a diversity of platform models, with some cloudwork platforms implementing policies to ensure fair working conditions, and others falling short.

4.1.3. Oversupply of Labour

With a planetary labour market linking together billions of people, most of whom live in low- and middle-income countries, we have a system of truly planetary competition (Graham and Anwar 2019). In an already largely unregulated labour landscape, cloudwork may further erode workers' structural power and fuel intense competition between workers, in a digitally mediated marketplace that makes workers more easily replaceable (Huws, 2014). For almost all types of digital work, there are fewer jobs than there are workers able and willing to do them, creating an oversupply of labor that drives a global race to the bottom (Graham & Anwar, 2019). This means that when competing for jobs and tasks, workers are well aware that others may underbid them.

Cloudwork platforms are also careful to frame what does and does not count as working time. Indeed, one study found that online freelancers spend an average of 16 hours a week (unpaid) looking for new jobs (Wood et al., 2019). At the same time, those same freelancer platforms are careful to frame payment for platform workers as optional (Graham & Anwar, 2019). Guru.com prominently notes on their website: '*Pay only for a job well done.*' Upwork.com similarly states: '*Upwork…helps ensure that an hour paid is an hour worked*'. Platforms put effort into highlighting the ephemeral temporalities of the labour relationship to clients, and workers are often seen as an anonymous, replaceable group that can be brought together with their clients rather seamlessly.

In this study, we focus on a particular dimension of cloudwork: the relationship between skills development and digital labour platforms. This intersection is highly relevant because it relates to all three features mentioned above. It is hard now to imagine a world without some form of digital intermediaries that bring together workers and clients. For this reason, the task of understanding cloudwork is pivotal for anticipating future challenges in the world of work—particularly skills development in an informal, and perhaps precarious, context. Before presenting the results in sections 6-9, we will situate and contextualise our research questions by discussing skills for cloudwork, the demographics of platform workforces in India, and skills training systems.

4.2. Skills for Cloudwork

The skills and abilities required for cloudwork are impacted by larger transformations that have taken place over recent decades. The changing nature and organization of work combined with the accelerating speed of technological change have had diverse impacts on societies around the world. As jobs have shifted from manufacturing and agriculture to the

service, communication, transportation, and creative sectors, and alternative work arrangements have become more common, labour markets have come to demand and reward different skill sets than they did in the past (Ojanperä et al., 2018). Many jobs call for human capital and involve cognitive and socio-emotional skills as well as adaptability and resilience. The introduction of new technologies has permeated both innovative sectors that are driven by technological development as well as more traditional sectors where new technologies have been integrated into existing practices, thus demanding the ability to navigate software and hardware (Sudakov et al., 2016).

The emergence of the platform economy offers unique opportunities and challenges in terms of professional skills and education. The multitude of different kinds of platforms host a great diversity of job opportunities with varying levels of required skills—ranging from the microtasks offered by Amazon Mechanical Turk, to the freelancing work offered in a range of sectors by Upwork, Freelancer, or Fiverr, to legal work offered by sector-specific platforms like UpCounsel. While cloudwork platforms differ in the kinds of work that are available through them, they defy the mechanisms of more traditional labour markets by challenging the importance of formal education qualifications and rather compensating for metrics of expertise and success on the platform in the form of a profile history of completed jobs and favourable ratings (Herrmann et al., 2019). Relatedly, formal educational qualifications are often designed to deliver a fixed set of skills and knowledge, agility for learning and a mentality for life-long learning while emphasizing labour-market related content to a lesser extent. Given their nature as self-contained marketplaces for work with limited facilities for importing professional or educational histories from outside, or to export profile information from the platform, securing job opportunities largely operates through algorithms matching workers to available jobs, relying on platform-generated metrics to rank search results and sort submitted bids and applications. In order to succeed on these platforms—i.e. to win bidding contests for projects and acquire favourable reviews from employer—workers must familiarize themselves with and learn to utilize a wide array of practical skills and strategies ranging from communication etiquette with often foreign clients to financial considerations about budgeting and bidding for jobs with remuneration levels that are neither too low to be suspicious nor too high to be discouraging, to navigating the many platform functionalities that are subject to frequent revision as the platform updates its interface.

There is little research so far on the kinds of skills that workers use or develop for their work on the platform. Surveying European freelancers, Cedefop (2020)—an agency supporting development of European vocational education and training policies—developed a typology of 10 skills that cloudworkers tend to develop while working on platforms. They note that successful cloudworkers are already in possession of strong digital skills, technical skills related to the kind of work they do, communication and organizational skills, and positive personal dispositions such as confidence and resilience, *before* they start working on a platform. The majority of the survey respondents reported that they did not further develop their digital skills while working on platforms, but two-thirds continued developing their professional and technical skills at least on a weekly basis. Immigrants and women reported developing their skills while doing cloudwork more often than men.

Due to the scarcity of research in this area, little is known about the skill acquisition of Indian cloudworkers. Based on interviews carried out with 32 MTurk workers in 2013 in India, Gupta (2017) identifies particular skills developed by these cloudworkers, including communication skills, language skills, and technical skills. Investigating various platform-led upskilling initiatives across 13 cloud-based and geographically tethered platforms in Africa and Asia, Donner et al., (2019) find training content types to generally include technical skills, general digital literacy, financial literacy, platform proficiency, and soft skills. Interviewing 24 Indian freelancers working on Elance-oDesk (since renamed to Upwork), D'Cruz & Noronha (2016) respondents generally reported being able to utilize and develop their skills while working on the platform. Surveying the attitudes of cloudworkers in India and Sri Lanka, Bandaranayake et al. (2020) noted that women generally have positive attitudes towards cloudwork, but are forced to take on smaller projects due to the time constraints of their caring duties.

4.3. Platform Workforces in India

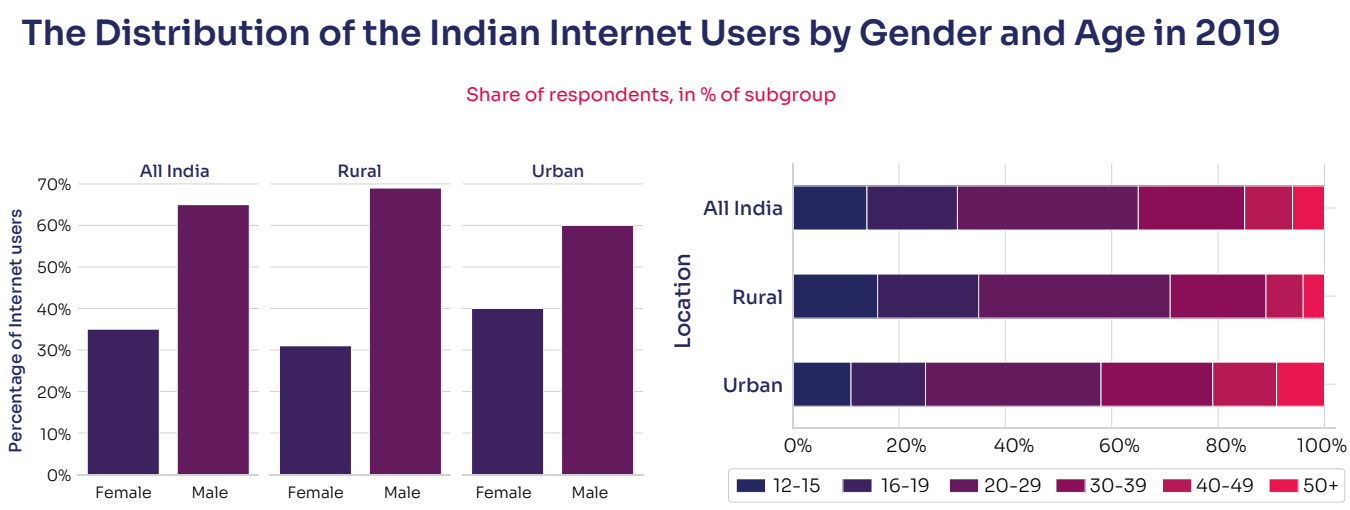
Given the potentially important job opportunities offered by platforms, there is a need to understand how Indian platform workers view their skill portfolios in relation to their platform work, and where existing training initiatives may need to be amended with novel resources. The emergence of the platform economy and an associated rise in the platform workforce has certainly been met with both policy and research interest in India. Estimates by the Indian Readership Survey (MRUC, 2020) suggest that with 560 million internet users, India is the second largest digital market in the world. With people between 20 and 39 years of age representing just over half of the country's internet users (**Figure 1**). Men make up two-thirds of the country's internet users, with the gender gap being more marked in rural areas (**Figure 1**). For many of these young internet users, platforms provide an essential income and much-needed opportunity to improve their livelihoods.

Whereas agriculture formed the base of India's economic activity three decades ago, employment has been steadily shifting towards industry and services, which together account for over half of employment in 2016 and contribute approximately 95% to gross value-added (Fairwork, 2020). The country has a large population of highly educated English speakers, and earning a livelihood from cloud-based gigs is an opportunity that appeals to many Indians. In a country with a working-age population of nearly 900 million (Office of the Registrar General and Census Commissioner, 2018) job creation is a key issue, in particular for the younger cohorts joining the workforce, which grows by approximately one million new workers every month.

While it is difficult to estimate the size of the Indian cloud-based workforce, the ILO (2021) assessed the distribution of the global cloudwork supply and demand on four major cloudwork platforms, finding India to be the largest supplier of labour on Fiverr, Freelancer, Guru, and PeoplePerHour. Using data collected by the Online Labour Observatory, the report notes a growth in India's share of the labour supply on these platforms from 26% in 2018 to 34% in 2020. The country also provides the fifth-largest share of labour demand, having increased from 5% in 2018 to 8% in 2020. The jobs posted by clients based in India tend to mainly concern roles in software development and technology, creative and multimedia, writing and translation, and sales and marketing support. The jobs carried out by Indian workers also mainly include tasks in software development and technology, creative and multimedia, and sales and marketing support, with the proportion of jobs carried out within the two first categories increasing over the two-year period.

The ILO report also analyzed the gender of a random sample of workers from the Online Labour Observatory across occupational categories and found that Indian women accounted for about a fifth of the country's labour supply across the four platforms, which is lower than the other countries included in the study—Ukrainian women formed

Figure 1. The Distribution of the Indian Internet Users by Gender and Age in 2019. Source: MRUC, 2020



39% and women from the United States 41% of the collected sample. While Ukrainian and American women tend to dominate men in jobs related to writing and translation, and reach parity with men in jobs related to creative and multimedia, the proportion of Indian women participating in these categories remains comparatively low at 47% and 21%, respectively.

Much of the research on the Indian platform economy focuses on the Indian workers and clients on the largest global platforms, based in the United States (Upwork), Australia (Freelancer), the United Kingdom (PeoplePerHour), and Israel (Fiverr). Guru.com is a leading platform partially based in India and there additionally exist smaller Indian cloudwork platforms, such as Truelancer, which contract work globally. Despite their global outlook and importance for Indian freelancers and clients, even less is known about these local platforms, which is why we have included Truelancer in our study.

4.4. Skills Training Systems in India

The Technical and Vocational Education and Training (TVET) sector in India is complex, and comprises a wide array of programmes and organisations. In this project, following UNESCO-UNEVOC (2015) definition, TVET is understood as 'comprising education, training and skills development relating to a wide range of occupational fields, production, services and livelihoods'. As such, TVET includes the full gamut of skills development activities undertaken at secondary, post-secondary, and tertiary levels, and includes work-based learning, and continuous training and professional development. This section provides a brief and general overview of the various organisations involved in imparting skills training in the country, distinguishing between government-led initiatives, platform-led initiatives, private initiatives, and self-driven skills training that happens outside these organisational pathways. Section 9, drawing on our fieldwork, delves more deeply into recent developments and priorities in the Indian TVET ecosystem, particularly as pertaining to cloudwork.

4.4.1. Government-led Skills Training

Skills development has been a core priority for the Indian government since the mid-2000s, and the institutional structures servicing this priority have evolved substantially over this period. India's Eleventh Five-Year Plan (Government of India, 2008), spanning the 2007-2011 period, foregrounded this priority, with an entire chapter devoted to 'Skill Development and Training'.[2] Prior to 2009, some skills training was imparted via formal TVET channels, though most was done informally; across both, only about 10% of the Indian labour force was estimated to have received vocational training (Singh, 2012). The formal channels were multiple, involving vocational education in secondary schools, higher technical education through professional colleges (teaching engineering, medicine, agriculture, etc.), technical training at specialised institutions, and apprenticeship programmes. These were managed by numerous governmental bodies spanning central ministries and departments, and state governments.

The Eleventh Five-Year Plan deemed this system not fit-for-purpose in many respects (pp. 87-89): the skills development system was judged to be non-responsive to labour market needs, in that there was a demand-supply mismatch in numbers of people trained, quality of training and skill types; skills curricula were 'inflexible and outmoded', and unsuited to market needs in the absence of systematic industry-faculty interaction; training programmes resulted in low labour market outcomes for graduates; and there were poor testing, certification and accreditation systems for formal training, and a complete lack of certification for informally acquired skills (which was the case for the majority of the workforce). There has since been substantial government investments and institutional reorganisation to reform this fragmented and ineffective system.

The skills ecosystem in India is now centrally coordinated, with a clearer division of responsibilities across different bodies. 2014 saw the establishment of a separate Ministry for Skill Development and Entrepreneurship (MSDE, n.d.), tasked with coordinating all skills development efforts across the country. The MSDE coordinates and works with the following key organisations:

- *Directorate General of Training (DGT):* The DGT develops and coordinates long-term vocational training programmes across the country, through a network of around 15,000 private and governmental Industrial Training Institutes (ITIs), and 33 National Skills Training Institutes (NSTIs), National Skills Training Institutes for Women (NSTI-W) and other national-level institutes (MSDE, n.d.). DGT also oversees the 'Bharat Skills' portal, an online self-learning platform for ITI students and teachers.

[2] Between 1947 and 2017, the Indian Economy was organised through a series of Five-Year plans that outlaid the government's priorities and the allocation of state resources for the respective five-year period

- *National Skill Development Corporation (NSDC)*: The NSDC is a public-private partnership that seeks to bridge industry and government in the skills ecosystem. A key role of the NSDC is to coordinate and liaise with the 38 Sector Skill Councils (SSCs) that it established in 2015. SSCs are non-governmental trade associations in different economic sectors, ranging from construction and agriculture to Information Technology (IT) and IT enabled Services (ITeS). The NSDC works with SSCs to link the skills ecosystem to industry needs, for example through the development of industry-specific occupational standards, skills gap analyses, and training curricula. Particularly relevant for this report is the IT-ITeS SSC NASSCOM, which is the national standard-setting body for IT skills across the country. The NSDC additionally aims to play the role of a 'market-maker' by providing subsidised financing for private training providers, and ensuring that they make use of industry-developed standards, curricula and resources (The Pathways for Prosperity Commission, 2019).

- *National Council for Vocational Education and Training (NCVET)*: NCVET acts as an overarching regulator to provide quality assurance across the skills ecosystem, by recognising and regulating assessment agencies and awarding bodies, and overseeing and updating the National Skill Qualification Framework (NSQF). The NSQF oversees a "nationally integrated education and competency based skill framework that will provide for multiple pathways, horizontal as well as vertical, both within vocational education and vocational training and among vocational education, vocational training, general education and technical education, thus linking one level of learning to another higher level" (NSDA, n.d.).

- *Other government agencies and third sector organisations*: The MSDE also collaborates with other central ministries and state governments, private sector companies, international organisations and NGOs on skills development initiatives.

In accordance with the high priority that the central government places on skills development, union budgets have also seen increasing yearly allocations for jobs, skill development, and livelihoods schemes (see **Figure 2**).

The government, under Prime Minister Narendra Modi's stewardship, has in recent years also launched numerous skills initiatives, including the 'Skill India' mission, the National Policy for Skill Development and Entrepreneurship 2015, and the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) scheme (Press Trust of India, 2015). As recently as in July 2020, PM Modi underscored the skills development priority for his administration, announcing in an address,

> **"People ask me that in these times when businesses and markets are changing so fast how to stay relevant. This question is even more important during this COVID-19 pandemic. The mantra to be relevant is to skill, reskill and upskill" (ANI, 2020)."**

4.4.2. Platform-led Skills Training

Previous research on skills development in the gig economy indicates that digital platforms may provide certain minimal forms of direct skills training to workers or other users. This has been referred to as 'platform-led upskilling' (PLU) (Donner et al., 2019) and 'last-mile training' (Craig, 2019).

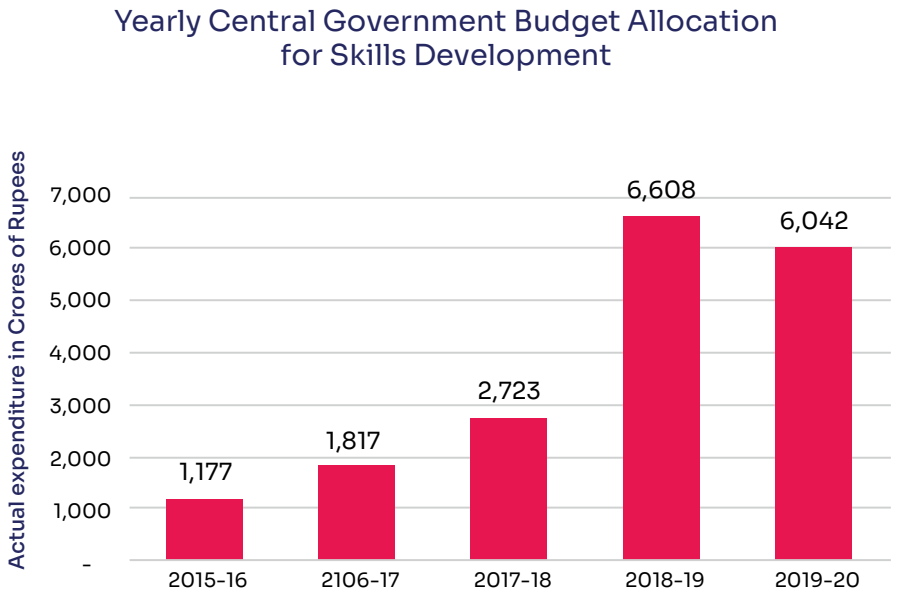
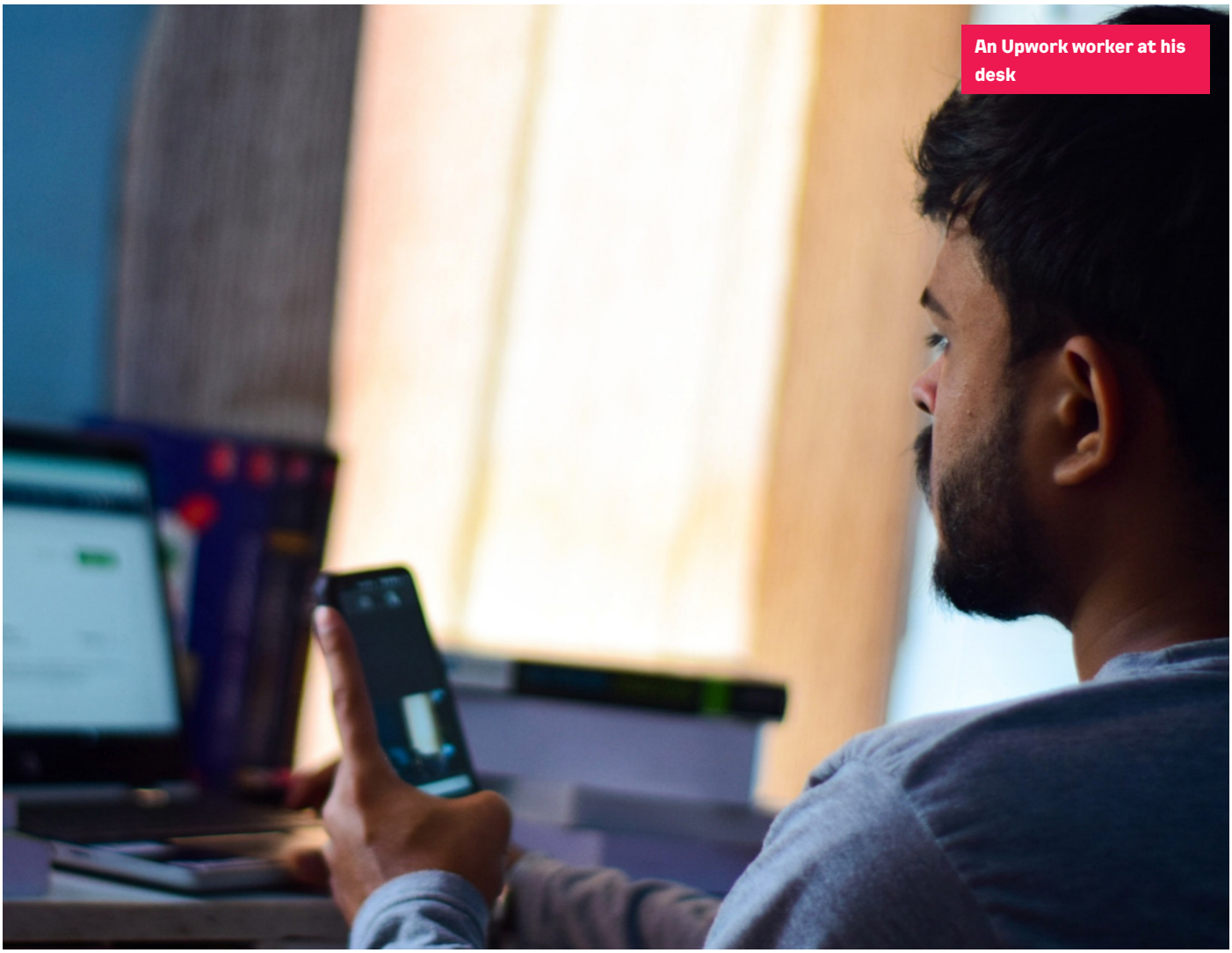


Figure 2. Yearly Central Government Budget Allocation for Skills Development
Source: Compiled from Union Budgets (The Government of India, 2017; 2018; 2019; 2020; 2021).

Such an approach to skilling workers finds historical parallels in employer-led upskilling where companies train their employees in occupational and workplace skills. Access to in-work training varies vastly across workplaces, based on factors like the nature of the employment contract (where longer-term 'employees' doing higher-skill work receive more training), the flexibility workers have over their work processes, and the degree to which workers are involved in decision making (Unwin, 2017). Most employers, at a minimum, meet a 'training floor' (if only to comply with regulatory requirements) where they may impart information to workers on orientation, safety, employee benefits, and other specific aspects of the organisation and operations (Felstead & Jewson, 2014). Beyond this minimum level, it has been argued that ultimately, "employees' access to and involvement in meaningful training and skill formation will be contingent on the power relations which characterise the employment relationship and the quality of the job" (Unwin, 2017: 222).

As explained in Section 4.1, cloudworkers—who are typically classified as self-employed workers or independent contractors—often face poor job quality, and rarely have a say in how work is organised and managed on platforms. Platforms are careful to maintain an arms-length relationship with workers, so as not to become embroiled in questions of worker misclassification. One way that this arms-length relationship manifests is in platforms' limited involvement in direct skills training. The recent Cedefop study on digital work and learning found that online platforms usually skill workers only in *indirect* ways, such as by publishing information on which skills are in demand (so workers can better develop their profiles), getting clients to provide feedback on submitted work, referring workers to off-platform training resources, and facilitating worker communities where peer learning may take place (Cedefop, 2020). Concurrently,



An Upwork worker at his desk

however, platforms limit engagement in direct skills training activities:

"Online labour platforms generally do not see a business case for more direct involvement in training their workers [...] training such workers is expensive and risky, because they may take their skills elsewhere. Rather than investing in directly supporting freelancers' skill development, platforms therefore invest in their crowdworkers' satisfaction, community promotion and marketing initiatives to attract and retain skilled workers from outside. Platform companies are also concerned that too much involvement in skill development and training could risk them being potentially reclassified as employers, which they wish to avoid. This is because, in many jurisdictions, the provision of training is considered one of the hallmarks of an employment relationship; it could potentially be used to argue that platform workers should be classified as employees in a lawsuit challenging their employment status. Overall, the platforms see themselves as having only a limited and indirect role to play in supporting crowdworkers' skill development" (Cedefop, 2020: 36-37).

Despite there being little incentive for platforms to engage in extensive direct skills training, other researchers have found some examples of such training. Donner et al., (2019) studied a range of geographically tethered and e-commerce platforms in Sub-Saharan Africa and Asia, and found instances of 'platform-led upskilling' (PLU) that happened face-to-face, through online training, and through in-workflow moments, that is, through 'a subset of nudges or other cues in which interface and experience design has been deployed specifically to transfer skills to the user'.[3] Training subjects ranged from platform proficiencies, financial and digital literacies, technical skills, and soft skills, and examples of such PLU included webinars, Facebook live sessions, video tutorials, and Frequently Asked Questions (FAQ) webpages. However, such training appears to be less frequent in the case of the cloudwork platforms that are the focus of this project and the Cedefop study discussed above.

4.4.3. Private Skills Training

Alongside government-led efforts, numerous private education technology companies have emerged in the past decade, offering Indians an array of 'e-learning' opportunities. Examples include companies like UpGrad, Coursera, Udemy, Skillshare and SimpliLearn, where learners can pay for certified courses on a variety of subjects. There are also an increasing number of global technology companies that have developed platforms to impart technical skills to learners, such as Cisco's 'Networking Academy' which was developed as a corporate social responsibility undertaking, or Google's Developer Students Club. There also exist collaborative ventures between private training companies and the Indian government; for example, the Director General of Training (DGT) and MSDE signed an agreement with Cisco and Accenture in late-2019 to make available a digital skills module to ITI students through the Bharat Skills portal. Another notable collaborative venture is the 'e-Skill India Portal', a multilingual e-learning aggregator platform that the NSDC coordinates and maintains. The e-Skill India portal is a web-based platform that consolidates free and paid digital learning content created by private companies like Microsoft, IBM, SimpliLearn, and others.

4.4.4. Skills Training beyond Organisations

While not typically thought of as forming a part of the TVET ecosystem, previous research indicates that there are myriad informal ways that platform workers acquire the skills, knowledge, and resources they need for their work, without reliance on government, private training providers, or platforms. They can learn the skills they need for their work from free resources like YouTube tutorials, or by relying on advice from friends, family, and mentors (Partnership for Finance in a Digital Africa, 2019). Workers also rely on communities of other workers found on messaging apps like Whatsapp, and social media websites like Reddit or Facebook; for example, the 'Turker Nation' subreddit caters specifically to MTurk workers, as does the 'Turkers 101' Facebook group (Sherry, 2020). These avenues of self-organised, self-driven learning can be crucial for workers who lack access to formal and institutionalised channels for skills development.

[3] It should be noted that 'in-workflow moments' where workers are 'nudged' to change their behaviours also has the potential to be manipulative and detrimental to workers' welfare; Noam Scheiber (2017) discusses how Uber nudges drivers to pursue work and earning targets that may be inimical to their interests.

5. Methods

5.1. Research Questions

While the burgeoning platform economy offers the promise of jobs for India's growing workforce, it also entails sweeping challenges for how Technical and Vocational Education and Training (TVET) programmes can be developed and implemented for these workers. Given that cloudworkers are typically classified as independent contractors rather than employees, there is a lack of formalised upskilling pathways officially accredited by India's National Skills Development Cooperation (NSDC). Additionally, the diversity of cloudwork is difficult to contain within clearly defined occupational standards and job roles, which tend to underpin many TVET initiatives and projects in the country.

The increase in job opportunities on cloudwork platforms, and the multiplicity of platforms through which freelancers can find opportunities, pose important questions for the actors involved in the TVET landscape. For instance, how can skills training programmes be reformed and expanded in ways that account for this shift online when it comes to requesting, accessing, and performing jobs and tasks? Which parties should be involved in shaping policies, projects, and initiatives? Is a new social contract between labour, business, and society required, as global institutions like the International Labour Organisation and the World Economic Forum have implied? How does the overall structure of the Indian cloud-based workforce look, including the types of jobs that cloudworkers perform, and the skills needed to perform them? How has the global upheaval caused by the COVID-19 pandemic impacted these structures? What lessons does the intersection between TVET, digital labour platforms, and (in)formal employment hold for development cooperation in a post-pandemic context?

In order to begin addressing these broad questions and examine the socio-economic factors grounding the perceptions, choices, and actions of Indian cloudworkers' education, training, and skills development, our project adopted five research questions:

RQ1: What are the impacts of the COVID-19 pandemic on Indian cloudworkers and the cloudwork landscape?

RQ2: What skills are particularly relevant for cloudworkers in India and how are they acquired?

RQ3: What factors support or limit cloudworkers in acquiring the skills they need for their work, and what strategies do they use to overcome obstacles?

RQ4: What connections and interactions exist between the platform economy, informal work and skills training?

RQ5: What conclusions can be drawn for future skills training approaches, in particular for development cooperation?

5.2. Research Design

We structured our inquiry of the five research questions around a mixed-methods research approach, combining quantitative and qualitative methods to collect and analyze our data and an initial theoretical phase consisting of desk research to ground our inquiry. We included four cloudwork platforms in our research, representing the two different types of cloudwork: microwork and freelancing. We included one microwork platform (Amazon Mechanical Turk) and three freelancing platforms, with two global platforms (Upwork and Freelancer) and one Indian platform (Truelancer). **Table 1** describes the main types of tasks carried out on the included platforms.

The quantitative phase involved development of a novel survey instrument, which was administered to over 400 Indian platform workers across the four platforms. We required the survey respondents to have worked for at least one month on one of these platforms, be based in India, and be at least 18 years of age. Beyond comparing the populations working on the four included platforms, we were interested in interrogating whether inequalities arise along other metrics that are relevant to the Indian context and may explain why some gig workers are able to acquire skills and progress along cloudwork career pathways while others are not. Given the gender disparities among Indian cloudworkers that previous research has highlighted, we recruited roughly equal numbers of respondents who identified as 'male' and as 'not male' (including female, non-binary, and other genders) in order to be able to compare these groups as well.

The qualitative phase included 10 semi-structured interviews with leading TVET stakeholders, including experts from India's National Skill Development Corporation (NSDC) and Sector Skill Councils, and platform managers, among others. We additionally carried out 31 in-depth interviews with Indian cloudworkers from across the four platforms that we researched. The interviewees were drawn from the sample of survey respondents. A more detailed description of the interview and survey methodologies, and the list of stakeholder interviewees is presented in Appendix A, while **Table 2** describes our sample. In addition to the surveys and interviews, we also commissioned ten Indian cloudworkers to take photographs of their working environments (home office, desk space, etc.), for use in this report. None of the survey or interview participants were among these ten workers, in order to protect the former group's confidentiality.

Throughout the report we draw our findings from these varied levels of data and we discuss insights from the survey data in terms of the entire sample, and comment on averages across platforms or between men and women where particular patterns emerge along those divisions. Where our survey questions have recorded open-ended responses, we have identified common themes among the respondents, which we employ to add insight into the patterns we see in the quantitative data. We additionally address our research questions with more subjective reflections arising from the interviews with workers from the four platforms, which allow us to further explore the central themes that emerge from the survey data. Finally, we spread the stakeholder interviews through the research project and used them to gain insight into the central themes, processes, and stakeholders related to skills development of Indian platform workers.

Table 1. Summary of Included Platforms. Source: Project data set

Platform	Headquarters	Platform Type	Main Task Types
Amazon Mechanical Turk	Seattle, Washington, USA	Microwork	Surveys, image identification, transcription and annotation; content moderation; data collection and processing; audio and video transcription and translation, etc.
Freelancer	Sydney, Australia	Freelancing	Web and software development; web and graphic design; content and research writing; business services (e.g. accounting, HR, legal, etc.); sales and marketing, etc.
Truelancer	New Delhi, India	Freelancing	
Upwork	Santa Clara, California, USA	Freelancing	

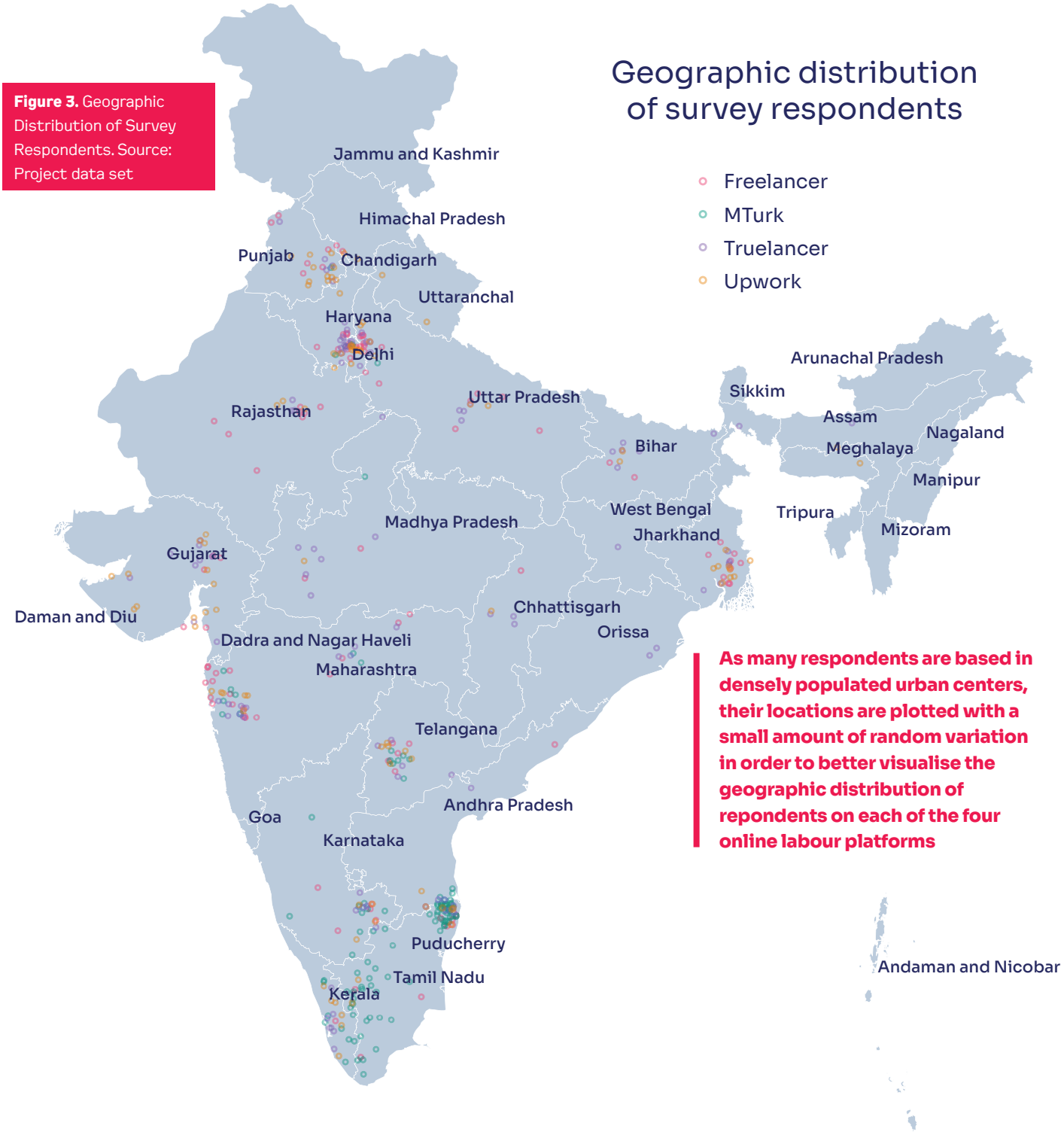
Table 2. Platform and Gender Distribution of Survey Respondents. Source: Project data set

	MTurk	Freelancer	Truelancer	Upwork	Total
Female	53 (51.9%)	47 (46.5%)	50 (49.5%)	50 (49.5%)	200 (49.4%)
Male	49 (48.1%)	54 (53.5%)	51 (51.5%)	51 (51.5%)	205 (50.6%)
Total	102 (25.2%)	101 (24.93%)	101 (24.93%)	101 (24.93%)	405 (100%)

5.3. Sample

Due to our recruitment strategy our survey sample is well balanced across the four platforms and in terms of gender (49.4% women and 50.6% men). The gender distribution on each platform is also fairly evenly divided between men and women, with MTurk having 1.9% more women and the other platforms having more men (3.5% on Freelancer, and 1.5% on Truelancer and Upwork). **Figure 3** shows the geographic distribution of our survey respondents. While the respondents are fairly evenly distributed across the country, and cover most of the Indian states, there is a slight majority of respondents from Amazon Mechanical Turk based near southern urban centers. Similarly, respondents from Upwork tend to be based in the urban centers of primary cities. The respondents from Freelancer and the India-based Truelancer are distributed more widely in both Tier I and Tier II cities.

Figure 3. Geographic Distribution of Survey Respondents. Source: Project data set



As many respondents are based in densely populated urban centers, their locations are plotted with a small amount of random variation in order to better visualise the geographic distribution of repondents on each of the four online labour platforms

6. Impacts of the COVID-19 Pandemic

In this section, we elaborate how the COVID-19 pandemic has impacted the cloudworkers whom we surveyed and interviewed. The pandemic appears to have had substantial negative impacts on many platform workers' ability to secure online work, and concomitantly, their platform earnings. Respondents reported that this has been the result of greater competition among workers (caused by a surge of new workers searching for work via cloudwork platforms, and by existing workers spending more time working on platforms) as well as a decrease in the availability of work. At the same time, it appears that there is greater legitimacy ascribed to cloudwork platforms as a livelihood strategy for workers, and as a staffing strategy for companies.

6.1. The COVID-19 Pandemic's Impacts on Cloudworkers and Cloudwork

Since the pandemic started, there has been a marked surge in new sign-ups on cloudwork platforms. Across platforms, 18% of the survey respondents reported that they only started working on the platform where they were surveyed after the pandemic started (see **Figure 4**). It should be noted that there have been no new Indian workers on Amazon Mechanical Turk during the pandemic, as the microwork platform has not approved new accounts for Indian workers since 2017. Many in this group reported that they were motivated to sign up to do cloudwork because of difficult circumstances such as salary cuts or salary delays, losing their jobs altogether, losing an income stream from their businesses due to lockdown restrictions, or other family financial crises. Dipesh Garg, Truelancer's CEO confirmed to us that there was a substantial increase in the numbers of new freelancers signing up to use the platform, estimating that Truelancer saw a 30% increase in the number of new daily sign-ups over the pandemic period - this corresponds with the survey results, where 29% of Truelancer survey respondents reported that they started working on the platform after the pandemic started.

Among veteran cloudworkers [4] who filled in our survey, 62% (on average across all platforms) reported that they are spending more time working or looking for work since the pandemic started (see **Figure 5**).

Respondents reported that the reasons for spending more time on cloudwork platforms included that they were spending more time at home due to lockdowns, work-from-home requirements, online schooling and other changes, which enabled them to focus more on their platform work. Numerous respondents noted that they transitioned from doing cloudwork part-time to full-time. Gurmeet*[5], a freelancer on Upwork, observed that just the fact of 'working from home' allowed him to become a freelancer:

"Before COVID-19, I was working from the office, so when I came back home, I was always tired. So, I never got time to work as a freelancer. In the pandemic I brought an office computer to my home and after office hours, I am able to work as a part-time freelancer."

A minority of workers (11% on average across platforms) reported that they have been spending less time working on platforms. How the pandemic impacts workers' available time depends on workers' home (and) working environments and other contextual factors. This is seen when we compare, for instance these two responses, from Sudeshna*, a woman who works on Truelancer, and Rifah*, a woman who works on Upwork:

"Before COVID-19 I had more time to work as a freelancer. Because I am a homemaker. Before COVID, my husband and my children were out of my house for a job and education. so I had more time than today."
Sudeshna*, Truelancer

"I had more time with [my] husband [being at home] to support household work and childcare, [I] could spend more time to look for work, [I] learned new skills that help to look for jobs, [I did]

[4] Here we use 'veteran' to refer to workers who did not report that they started working on the platform after the pandemic started.
[5] Name changed to protect worker anonymity. All subsequent quotes drawn from survey responses and workers interviews are similarly attributed to pseudonyms, indicated by an asterisk.

Figure 4. Sign-ups on Cloudwork Platforms during the COVID-19 Pandemic. Source: Project data set

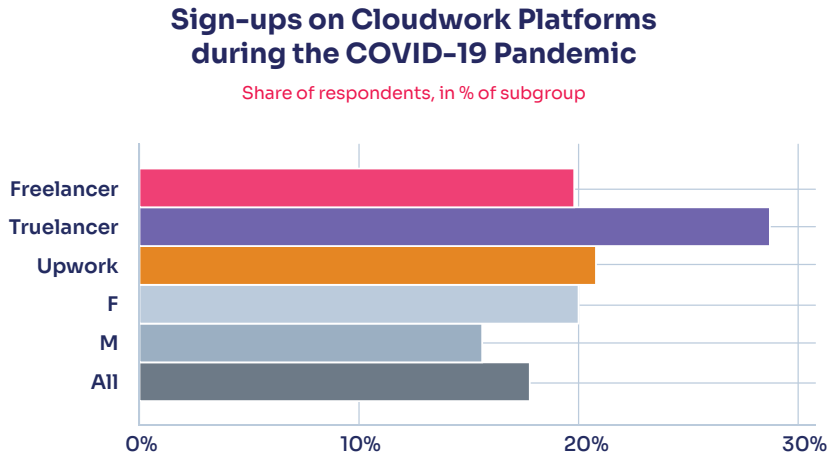


Figure 5. Time Spent on Cloudwork Platforms during the COVID-19 Pandemic. Source: Project data set

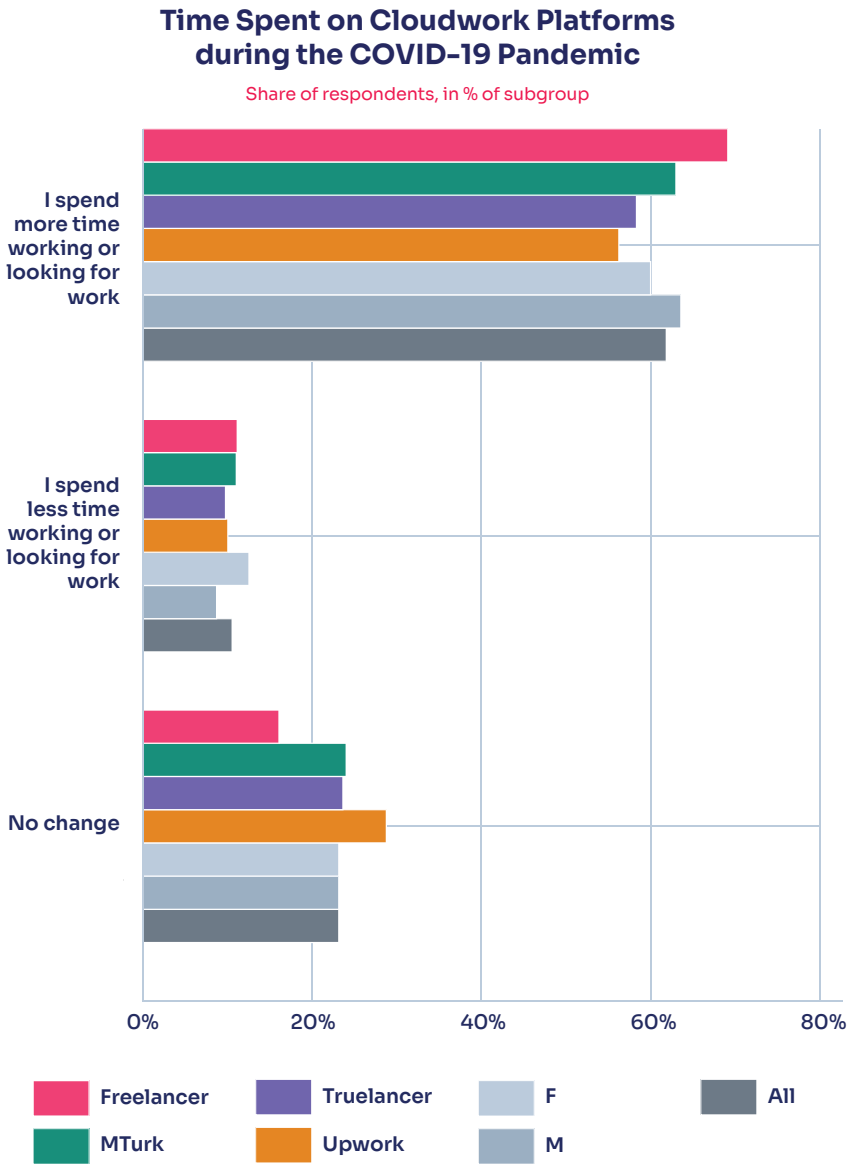


Figure 5 excludes the small minority of workers who reported that they did not know whether the amount of time they spent on cloudwork platforms had changed during the pandemic.

one skill test about looking for jobs, sorting them, look for good employers, sort past the fake jobs, this helps to look for jobs. I have more time available on the computer because more help at home."
Rifah*, Upwork

Thus, it appears that not all workers have the freedom and flexibility to spend more time working on platforms. People with increased caring responsibilities—a burden borne disproportionately by women during the pandemic, in India and beyond (Chauhan, 2020; Power, 2020) —may in fact find that the opposite is true. Among survey respondents, a marginally higher proportion of women compared to men (13% compared to 9%) reported that they are spending less time working on platforms since the pandemic started.

These two trends—of new sign-ups and, on balance, increased working hours among veteran cloudworkers—indicates that there may be greater reliance on online platform work as a livelihood strategy since the pandemic began. It may additionally be no surprise then, that, when asked how the pandemic affected their work, a recurring experience that survey respondents and interviewees from across all platforms reported was that they were facing substantially more competition, and were able to secure fewer jobs. Gita*, a worker on MTurk recounted her experience:

"I used to work for MTurk for nine years, but [in the] last eight months we are not getting any work. Only we are spending our time for getting work, simply sitting in front of the computer and checking, refreshing, every time if we are getting any work or not. But, very rare [...] sometimes we get some good work, where requesters pay more than our pay rate. But most of the time, ninety percent of the requesters, they

underpay only. In that, also, we should get heavy competition on that. We are facing a lot of unemployment."

Numerous respondents speculated that the clients' capacity to post jobs on platforms was reduced due to the pandemic's deleterious impacts on the global economy, observing that even their long-term clients (on freelancing platforms) posted fewer jobs in this past year. Mr. Garg, Truelancer's CEO observed that client demand on the platform had increased over the course of the pandemic, but not at pace with the number of new freelancers.

Whether due to clients posting fewer jobs, or due to there being many more competitors, numerous interviewees and survey respondents noted that they were spending more time looking for work during the pandemic period—be it bidding for jobs, or sorting through 'good' and 'bad' tasks. Bisanpreet*, who works on Freelancer, noted that there has been a surge in 'fake' or 'scam' tasks in the past year:

"I get more unworthy projects during this time. I am getting lots of fake projects [...] few of them ask money as a deposit fee. They will tell you it's refundable. As a freelancer we need not pay anyone but these people offer projects for fraud earnings through freelance platforms. I guess many people might have lost money if they don't understand their strategy."

A large number of respondents noted that their earnings from cloudwork has reduced over the course of the pandemic. This is a concerning, yet unsurprising finding, given that there appears to be greater competition among freelancers for fewer available jobs. This does not however, seem to be a uniform trend. There were a number of respondents who reported that they faced no negative impacts on work availability or earnings. Nevertheless, reduced earnings and low work availability does emerge as a more frequently occurring experience, as Seher*, an MTurk worker, summed up:

> **"I solely depend on mturk for my income but the opportunities are limited for India. I spend more than 5 hours but I'm not able to earn a single dollar. Many people have started to work online because of COVID-19 pandemic. so there is a heavy competition and less earning chance."**

Notwithstanding these reported experiences of increased precarity among cloudworkers, a crosscutting theme that emerged from survey responses and worker interviews was the increasing legitimacy ascribed to cloudwork as a livelihood strategy in the context of the pandemic. 79% of all survey respondents agreed or strongly agreed that cloudwork will grow in importance compared to traditional employment arrangements. Some respondents speculated that cloudwork compared favourably to place-based work, particularly in the context of the broader uptake of remote working. Bimal*, a freelancer at Upwork, explained to us:

"Seeing and hearing of other people losing jobs or having their places of work shut down makes me realise how working online is in certain ways more stable. I could work from the safety of my home, in much the same way as I did pre-COVID. Seeing other people struggle to get permission to work from home, or have to return to office when they felt it wasn't safe, made me realise that I was fortunate to be able to work remotely with no questions asked."

Mr. Dipesh Garg, Truelancer's CEO, concurred that online working will likely continue to grow in importance, especially given that more companies are beginning to outsource parts of their business operations to temporarily engaged cloudworkers:

"COVID has definitely given a positive impact to freelancing and the remote hiring industry in general. If we talk about large enterprises, they were hesitant to work with gig workers or freelancers, but now they have realised that when the entire one hundred percent of their workforce were working from home were able to get similar productivity, so now they are very open to hire freelancers. And this has also resulted in many enterprises reaching out to us now, saying '*Okay, we want to try hiring gig workers*'."

In fact, a number of multinational corporations in India have signed agreements to engage freelancers via the Truelancer platform over the past year. About this increasing reliance on cloudworkers, Mr. Garg speculates, "It will be a permanent shift. Enterprises are able to get talent faster and also generate an average additional two months in billing revenue, as hiring employees may involve a two-three months' notice period before they can begin working". Recent research by Altman et al. (2021) has also noted this shift towards heterogeneous 'workforce ecosystems': "*Organizations' workforce agendas no longer revolve solely around hired employees performing work along linear career paths. Workforces today comprise a range of internal and external parties including employees, contractors, gig workers, professional service providers, application developers, crowdsourced contributors, and others.*" Beyond these preliminary indications of a broader

shift, there is limited research in the Indian context on the extent to which different companies (of differing sizes, sectors and locations) are relying on cloudworkers in their workforce strategies; further research on this subject is needed to better understand the nature of this shift in India.

6.2. Interpreting Research Findings

Data collection for this study was conducted during the COVID-19 pandemic, and thus, we must be cognisant of how this unique historical moment has conditioned our data, and findings. First, 18% of the survey sample only began working on cloudwork platforms after the pandemic's start, and so their presence in our dataset must be noted. Second, Section 6.1 outlined some of the ways in which the COVID-19 pandemic has impacted the cloudworkers whom we surveyed and interviewed, and the cloudwork landscape in India. The ways in which the pandemic has radically disrupted our rhythms of life and work will continue to become more clear with time, and it cannot be said now with any certainty if, and to what degree, some of these impacts on cloudwork and cloudworkers will persist beyond this exceptional time. While neither of these factors diminish the validity of the results we present in subsequent sections, we ask readers to bear them in mind while reading onwards.

An Upwork worker at his desk

7. Skills for Cloudwork

In this section, we focus on the skills that workers discuss as being particularly relevant for cloudwork, and how they are acquired through learning activities. Our research indicates that a broad range of skills are relevant to Indian cloudworkers, and that they acquire these skills both while working and by undertaking different kinds of learning activities in their free time. Skills can be grouped into hard skills, soft skills, platform-related skills, and learning skills. This an imperfect division, as these skills tend to overlap and be used together, but the categories nonetheless provide insight into the broad types of skills that workers both acquire as part of their work, and what they choose to further develop.

Here, soft skills are taken to refer to personal qualities, attitudes, and habits that are not job-specific, while hard skills tend to mean job-related technical and procedural abilities (UNESCO International Bureau of Education, 2013). Platform and learning skills refer to skills that facilitate success on cloudwork platforms, and skills that facilitate learning and learning activities, respectively. In structuring these skill categories, we used the skills typology developed by Cedefop's (2020) study as our basis, and added an additional category of 'financial skills' based on previous research on platform-led skills training approaches in global South contexts (Donner et al., 2019), as previously discussed above in section 4.4.2 and in more detail in Appendix A. **Table 3** presents the skill typology.

We asked our survey respondents about what skills are useful for their work on the platform as well as to reflect on their on- and off-platform skills development, and why they chose to invest in learning particular skills. Whereas skills developed while working are either needed to complete the job successfully or otherwise directly benefit platform work, developing skills during leisure time entails a further investment of resources into training skills that are more challenging to develop during platform work, but which have expected utility for platform work.

Table 3. Typology of Skills

Typology of skills	
Hard skills	**Soft skills**
Technical skills Computer literacy Financial skills Analytical skills	Communication skills Language skills Personal dispositions Organizational skills
Platform-related skills	**Learning skills**
Skills in being a freelancer Skills in obtaining work on platforms	Learning skills

7.1. Useful Skills for Cloudwork

Our survey respondents indicated a variety of skills to be useful for their work on the platforms (see **Figure 6**). Communication skills were indicated to be useful by 75% of the respondents, while 73% indicated the importance of technical skills, and 67% percent found learning skills useful for cloudwork. Platform-related skills were also noted as valuable with 60% of respondents acknowledging skills in obtaining work on the platform and 56% valuing skills in being a freelancer. Financial skills and language skills were indicated as useful least often among the included skill categories, but it is worth noting that a third of respondents mentioned both categories to be important for their work on the platform. The responses between men and women were fairly similar with slightly more women finding soft skills and platform-related skills to be important for platform work. 7% more men than women indicated technical skills to be important and 6% more men noted analytical skills as useful in comparison to the female respondents. The largest gender gap was recorded for skills in being a freelancer, which 11% more women found to be important for cloudwork in comparison to the male respondents.

While the responses across the four included platforms resemble the general pattern of responses across the group, there are some differences as well. The majority of respondents from MTurk find most skills to be beneficial to their work and tend to value analytical skills, computer literacy, and language skills relatively more than the respondents from the other platforms. Relatedly, MTurk respondents also develop these skill categories more often than the respondents on the other platforms. In the following sections we will review the patterns of skill development that cloudworkers undertake during cloudwork as well as at their leisure.

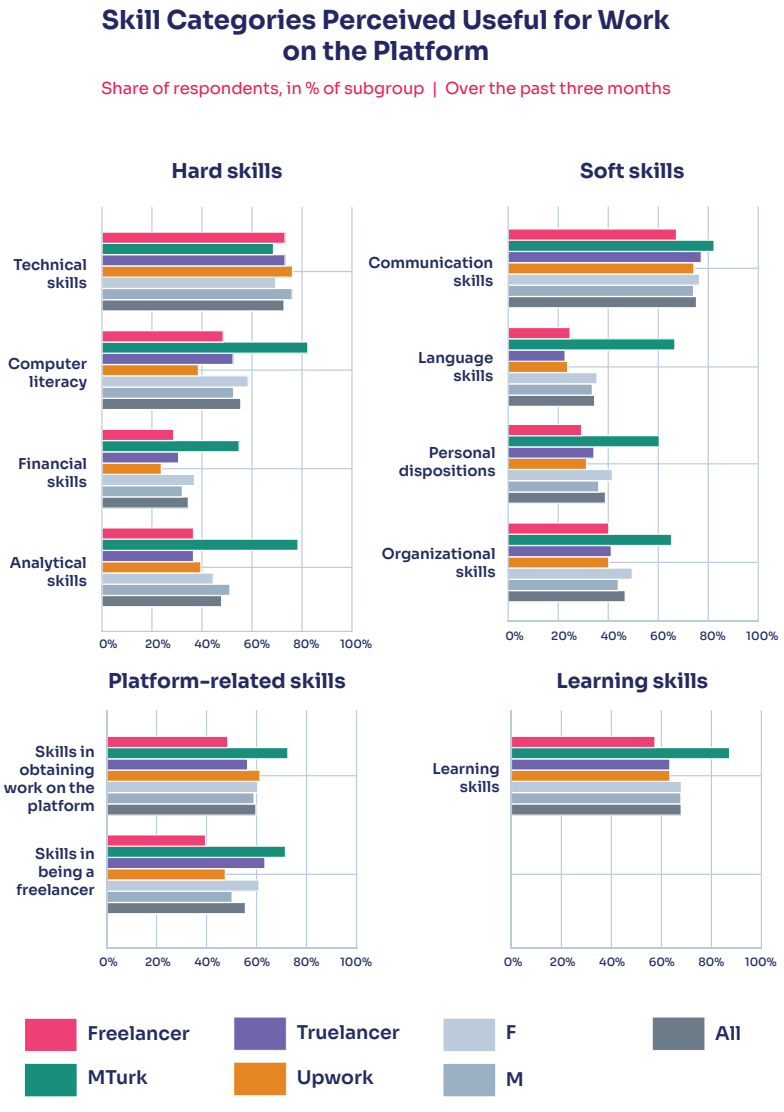
7.2. Skills Developed on-the-job

Our interview and survey respondents all underscored the potential of on-platform learning, with interviewees emphasising the need for practical experience. Mary*, a Truelancer worker who did not seek any off-platform learning said:

"I haven't watched any video on YouTube, to look for how to use the platform. I just explored the platform every day, the most visited website by me was Truelancer.com [...] I had gained a lot of experience too."

In terms of skills developed while working on a platform, respondents reported developing soft skills generally more often than hard skills. As indicated in **Figure 7**, communication skills, personal dispositions, and organizational skills were reported to be developed at least weekly by over 80%

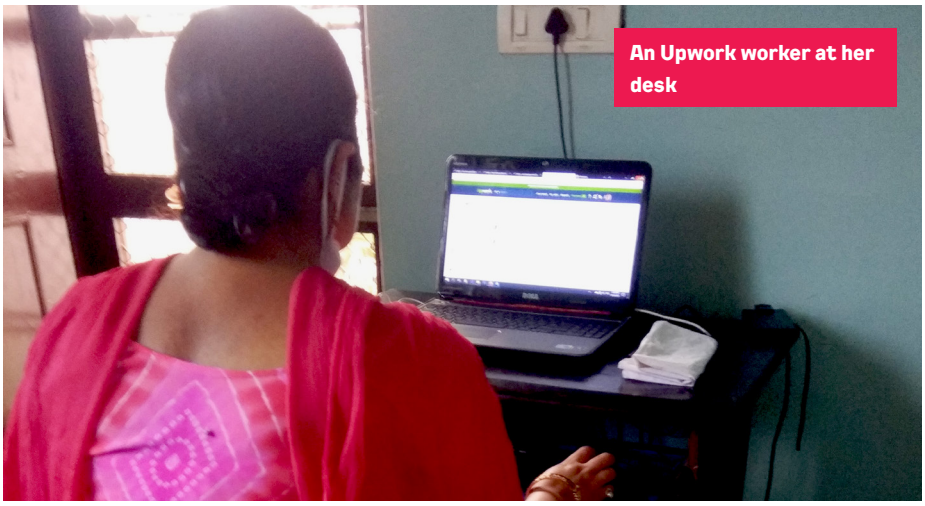
Figure 6. Skill Categories Perceived Useful for Work on the Platform. Source: Project data set



of respondents. The exception to this is Amazon MTurk workers who tend to develop hard skills more often than soft skills, apart from technical skills. 85% of participants also report developing learning skills at least weekly. While the differences between genders were not substantial, women were slightly more likely to develop both hard and soft skills on each platform, with the gap somewhat wider when considering communication and organizational skills. Across the four platforms, 20% of men said they never or rarely developed communication skills, compared to only 9% of women who said this. It is difficult to say exactly why gendered differences exist; both interviewees and survey respondents noted the perceived importance of communication, particularly as they work with clients around the world, as Atif*, who works on Upwork, explained:

> **"I believe, communication plays the most important role in getting success as a freelancer. I have managed clients from multiple countries. They have different cultures and backgrounds. I have improved a lot as far as the skills of managing clients with different culture, presentation skills and other things to manage my clients are concerned."**

Two of the skills that appeared to be least frequently developed on-platform were language and technical skills, however, workers often chose to develop these skills in their leisure time. Financial skills, by which we mean skills like setting and following a budget and having an understanding of the currency exchange system, also did not appear to be developed on-the-job: around 36% of survey respondents expressed that they never or rarely developed financial skills by working on platforms (31% on



An Upwork worker at her desk

Amazon M Turk, 32% on Freelancer, 43% on Truelancer, and 39% on Upwork). This is despite the fact that platform work can often require specific financial knowledge, for example, knowing when best to withdraw earnings depending on exchange rates (Martin et al., 2016) and calculating complex and differing fees across platforms. Managing taxes was cited as a critical skill by both interviewees and survey respondents. As noted, this goes beyond understanding Indian regulations to having a more global overview. Sameer*, a Freelancer worker noted:

"Many projects require [us] to understand the taxation system to accept the project. As Freelancer allow to take projects from anywhere in the world so [we] need to understand the business permits, taxation of the different countries."

Somewhat paradoxically, the category 'skills in being a freelancer', which we define to include skills like getting business permits and working alone appeared to be less developed through gaining experience on the platform. 26% of workers indicated that this skill was never or rarely developed through platform work (30% on MTurk, 27% on Freelancer, 28% on Truelancer, and 21% on Upwork).

While there are differences in skills development between platforms, these differences are not very pronounced. The workers on MTurk tend to differ in relation to the workers on the other three platforms, developing language skills and computer literacy relatively more often and technical skills and most soft skills less often than the workers on other platforms.

7.3. Skills Developed during Leisure Time

The skills developed during leisure time were notably different to those typically developed on-platform, with workers, in general, being interested in developing their technical, communication, organizational, platform-related, and learning skills. Personal dispositions, financial skills, and computer literacy were among the least developed skills during leisure time. In this section, we discuss which skills survey respondents selected as developing in their leisure time, and their reasoning for choosing to develop those skills.

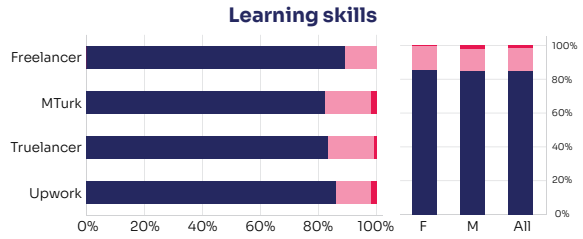
While the broad patterns of skills development are related across the four platforms, we saw more variation between platforms in terms of skills developed during leisure time than with skills developed on-the-job. Workers on

Figure 7. Skill Categories Developed While Working on the Platform. Source: Project data set

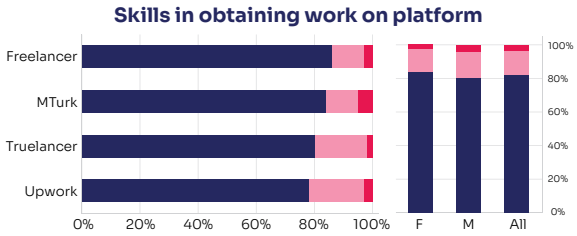
Skill Categories Developed While Working on the Platform

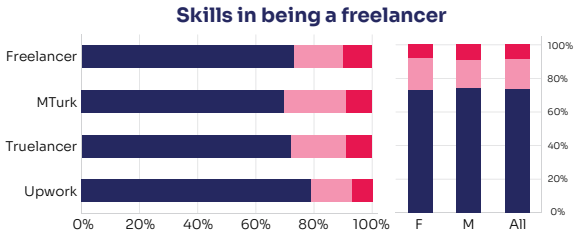
Share of respondents, in % of subgroup
Over the past three months

Learning Skills

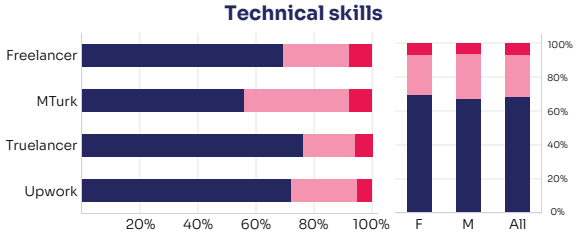


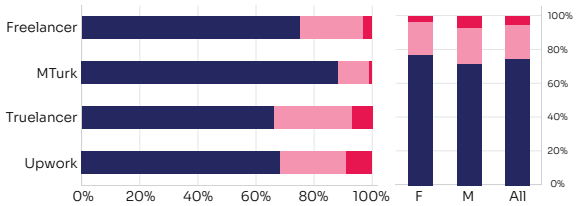
Platform-related Skills

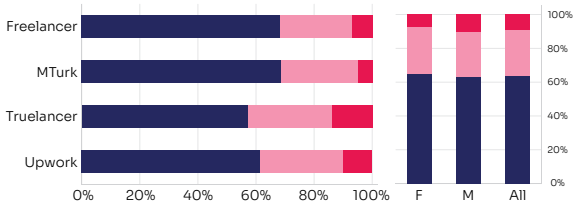


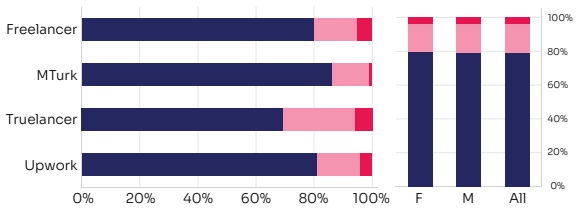


Hard Skills

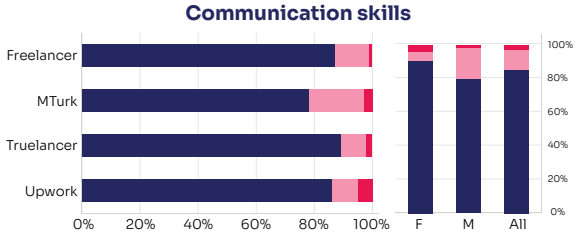


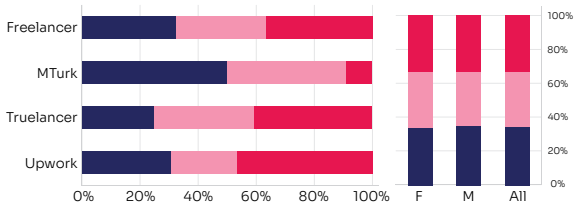


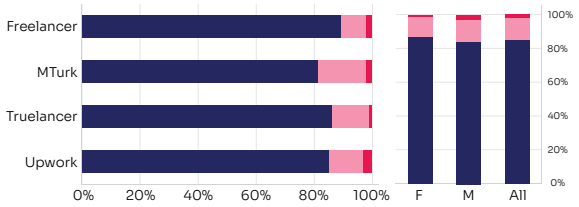


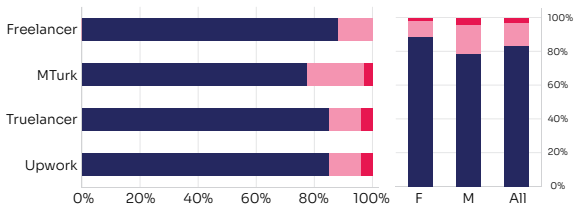


Soft Skills









Truelancer tended to focus on soft skills, workers on Upwork focusing on learning skills, and MTurk workers spending their leisure time developing computer literacy and analytical skills relatively more often than workers on the other platforms. Gender differences were also somewhat more pronounced for skills developed during leisure time with female survey respondents focusing on language skills, computer literacy, and organizational skills, while the men tended to focus on improving communication, analytical, and technical skills (**Figure 8**).

While language skills were developed much less often than the other skills on-platform, they appear a more popular choice off-platform with 19% of respondents noting developing them during free time, as seen in **Figure 8**. Survey respondents indicated a need to learn languages to be able to compete for and complete jobs. These findings are consistent with previous research undertaken with Indian MTurk workers that found that the majority of HITs,[6] particularly the higher paying ones on MTurk, are posted in English (Martin et al., 2016). The workers in that study were aware of the importance of English language skills, and reported that they either do not apply for certain HITS, or have been rejected due to language mistakes.

Respondents also expressed the desire to learn languages other than English (especially French, German, Spanish and Russian), and to connect to other non-English speaking countries. The motivation to develop language skills was often to facilitate finding work in these areas and building better rapport with clients, shared by both women and men. This suggests that while more women in our sample reported that they developed their language skills, both women and men may have similar reasons for doing so. Respondents also noted that languages were a transferable skill that could be used in many lines of work and in study. The transferability of many of the skills developed through cloudwork is echoed in Barnes et al. (2015) and was reiterated by survey respondents in this study as being a reason to develop certain skills.

Across platforms, workers also had similar reasons for developing technical skills, namely the belief that it would lead to more clients and higher paying jobs. Respondents described how technical digital skills evolved at a fast pace necessitating consistent learning to keep with latest methods and developments in technology. This was reiterated by interviewees who noted that they tried to keep up with evolving technologies and find cheaper and more effective tools to complete their work. Increased competition for other technical skills

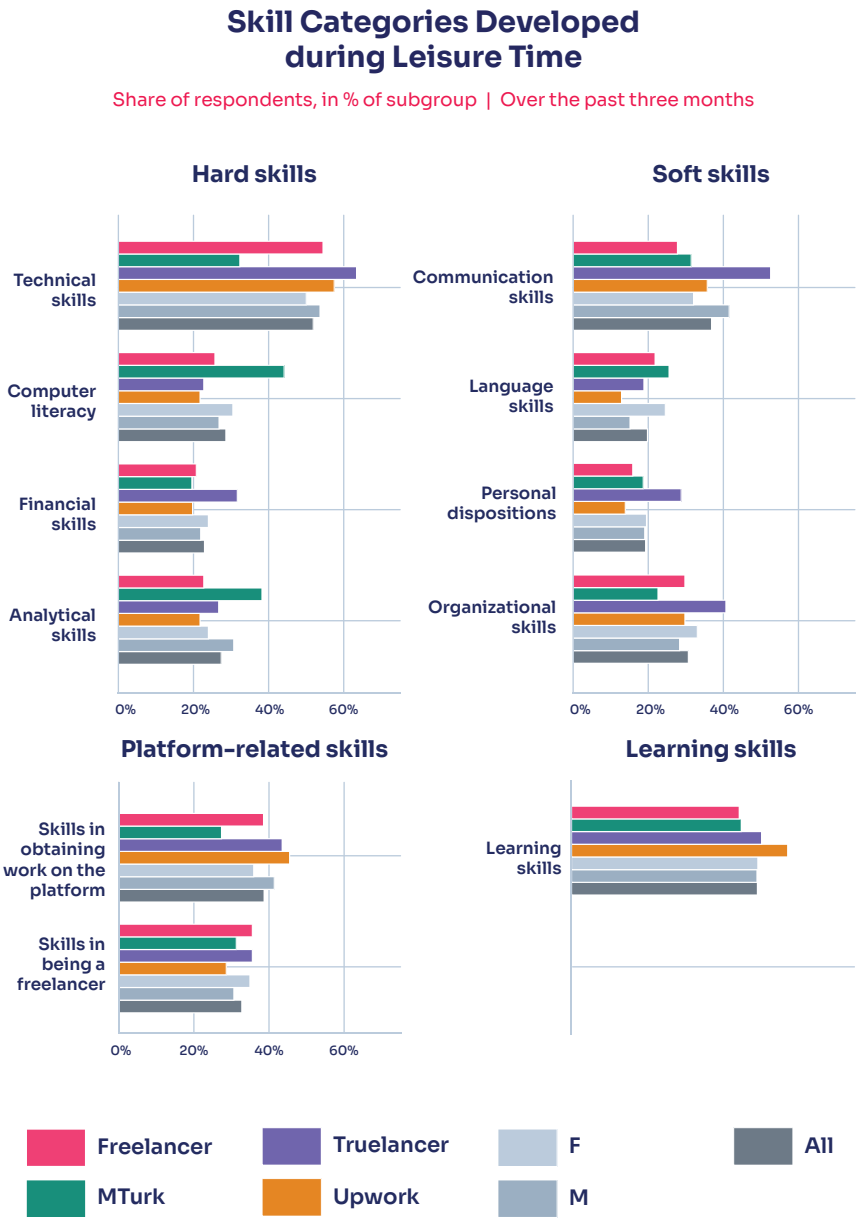


Figure 8. Skill Categories Developed During Leisure Time. Source: Project data set

[6] On MTurk, a Human Intelligence Task (HIT) is a single self-contained task that a worker should complete, for example, identifying an object in an image.

like writing and translation were also a motivating factor, as Deb* who works on Upwork describes:

"I worked on my writing skills because the competition on platforms like Upwork has increased a lot in the last few years. With the increasing number of freelancers on these platforms, the writing quality has to be top-notch to command a good price."

Respondents also indicated personal interest and background experience as a motivating factor for developing technical skills. Simon*, a Freelancer worker with several years of language teaching experience noted that:

"Through a range of projects on the platform, I got to brush up, un-learn, and re-learn several aspects that I wasn't honestly 100% sure about, but passive memory helped for sure."

Survey respondents also highlighted transferability between on-platform and off-platform work in regards to other skills. Organizational skills were also a popular set of skills that workers chose to develop because they viewed them crucial to on-platform work. However, these respondents also understood these skills, particularly time-management, to be critical to work and study in general. Respondents emphasised the same sentiment around learning skills, which were seen as something that would improve platform work but was also relevant to long-term career development in general.

This sentiment was echoed across worker surveys; responses emphasised that workers are proactive in developing skills and are motivated by a range of reasons from meeting the specific demands of platform work, from earning opportunities to long-term career goals. This follows similar findings by Barnes et al., (2015) that indicates that workers readily invest in their own development, which as Margaryan (2019) points out, stands in contrast to research on training activities in more conventional offline employment settings where employees do not as often invest their own resources in learning activities. As the next section illustrates however, workers face significant challenges accessing and undertaking learning activities, particularly in the absence of support from platforms. Furthermore, learning outside of platform work hours can come at a high cost to workers who are aware of the trade-off between investment and income, one that does not always even out. The willingness to invest in developing skills in leisure time can be tied to the limited development opportunities offered by platforms, and is indeed one area where workers expressed significant interest in having the third sector provide support.

A Freelancer worker at his desk

Table 4. Typology of Learning Activities

Typology of Learning Activities	
Individual self-directed learning activities	**Collaborative learning activities**
Acquiring new information for platform tasks Reading articles or books to acquire knowledge or skills Following new developments in my field Thinking deeply about my work Finding a better way to do a job or task by trial and error	Collaborating with others Asking others for advice Observing or replicating other people's strategies Learning from online community forums Participating in collaborative or competitive events
Individual study-related learning activities	**Platform-specific learning activities**
Taking free online courses, webinars or tutorials Taking paid online courses, webinars or tutorials Attending in-person (offline) training courses or workshops	Following advice, tips, and suggestions displayed on the platform Searching for advice in the online materials provided by the platform Receiving feedback on my jobs on the platform

7.4. Learning Activities

Our research indicates that Indian cloudworkers undertake a variety of learning activities (see **Figure 9**). Learning activities could be considered falling into four groups: individual self-directed, individual study-related, collaborative, and platform-specific (see **Table 4**). In defining these learning activities, we used the three categories developed by Cedefop's CrowdLearn study (Cedefop, 2020) as our basis and added a fourth category of platform-specific learning activities based on research on skills training approaches in global South contexts (Donner et al., 2019), as previously discussed above in section 4.4.2 and in more detail in Appendix A.

Our respondents reported favouring self-directed learning activities over collaborative learning activities. Comparing the groups of learning activities, workers engaged most often in individual self-directed learning activities and in platform-specific learning activities. Among the most frequently used learning activities were thinking deeply about one's work, which 85% of the respondents use at least weekly, as well as receiving feedback on the jobs or tasks carried out on the platform, which 75% of the workers report doing at least weekly. The least frequently used learning activities include attending in-person (offline) training courses or workshops, which 52% of the respondents report never engaging and an additional 29% engaging only on occasion. This may also partially result from the widespread impact of the ongoing COVID-19 pandemic. Among the least popular learning activities are also taking paid online courses, webinars, or tutorials as well as collaborating with others and participating in collaborative or competitive events. It is perhaps not surprising that the uptake of cloudworkers' learning activities favours approaches involving self-paced modular learning that are different to the approaches that would most often be included in formal education such as collaborative or classroom-based learning. This may be for instance due to supplementing already completed formal education or to substituting formal approaches that are unavailable or unattainable for the cloudworker. The popularity of platform-specific learning activities was echoed in the worker interviews, as many respondents noted how the specific platform dynamics required developing detailed understanding of the platform functionalities. The '**In Focus: Platform Profile Ratings**' Box on Pg. 31 describes the view of a respondent on the importance of managing the profile ratings. The story may shed some light to the dynamics that drive the survey respondents to report a high uptake of the platform-specific learning activities.

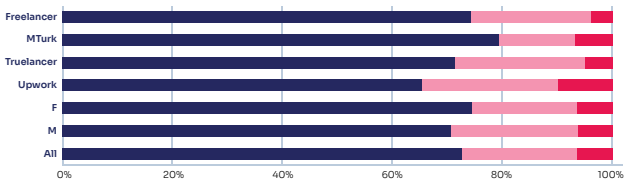
Figure 9. Learning Activities Undertaken by Workers. Source: Project data set

Share of respondents, in % of subgroup

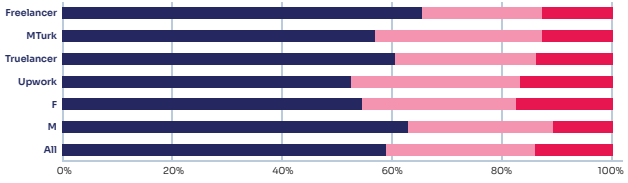
Over the last three months

Individual, self-directed learning activities

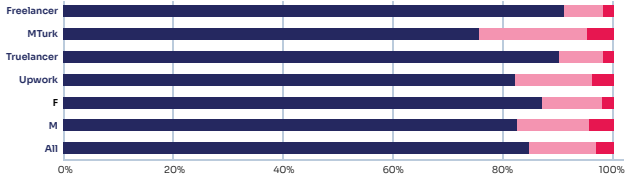
Acquiring new information for platform tasks



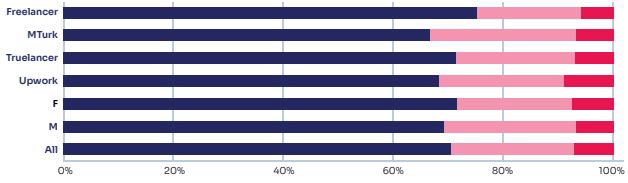
Finding a better way to do a job or task by trial and error



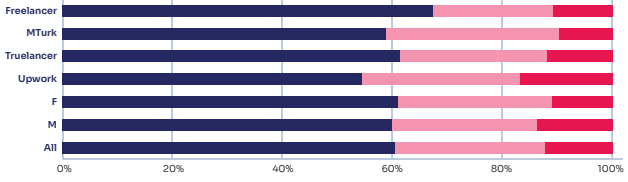
Thinking deeply about my work



Following new developments in my field

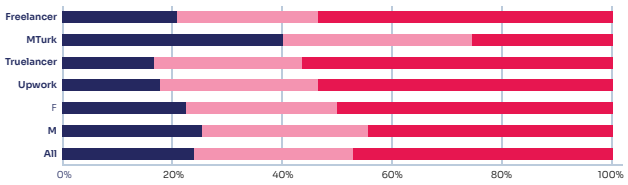


Reading articles or books to acquire knowledge or skills

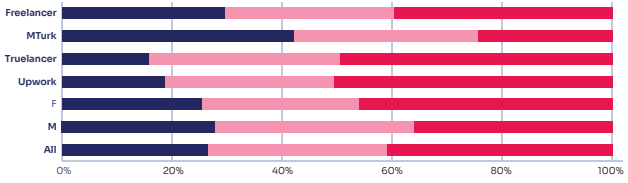


Collaborative learning activities

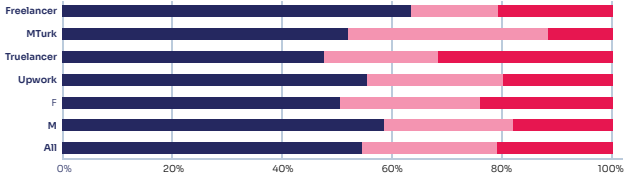
Participating in collaborative or competitive events



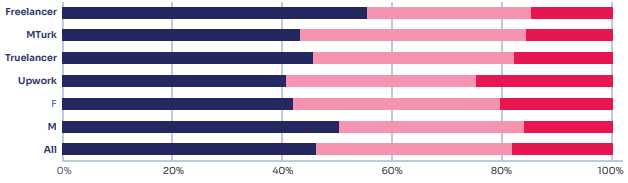
Collaborating with others



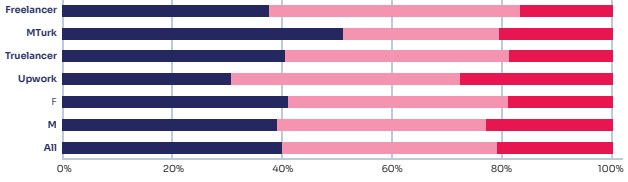
Learning from online community forums



Observing or replicating other people's strategies

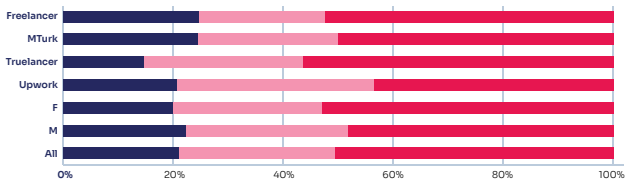


Asking others for advice

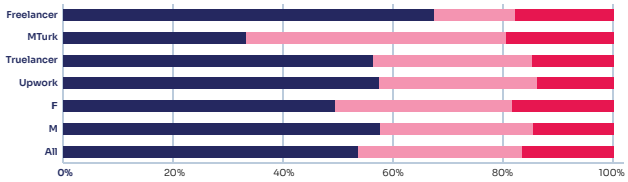


Individual, study-related learning activities

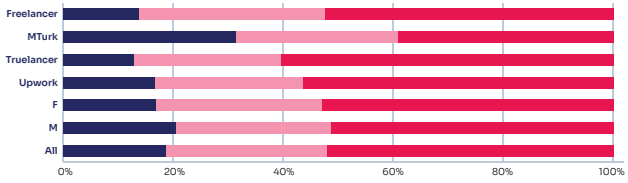
Taking paid online courses, webinars or tutorials



Taking free online courses, webinars, or tutorials

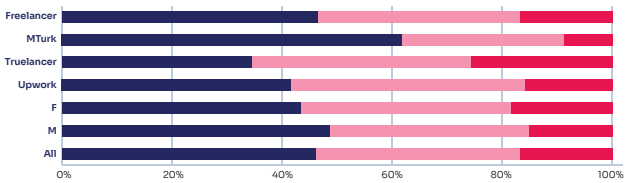


Attending in-person (offline) training courses or workshops

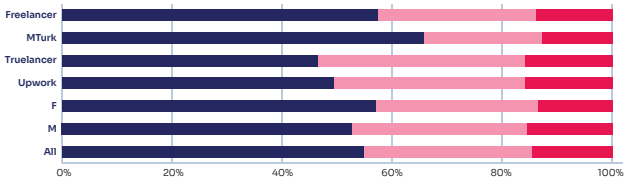


Platform-specific learning activites

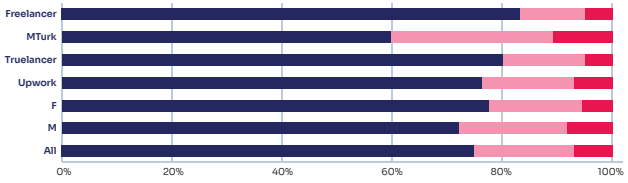
Searching for advice in the online materials provided by the platform



Following advice, tips and suggestions displayed on the platform



Receiving feedback on my jobs or tasks on the platform



At least weekly | On occasion | Never

There are some distinct patterns in the take-up of learning activities between the four platforms. The workers on Freelancer report using individual self-directed learning activities more often than the workers on other platforms, while the workers on MTurk report using the majority of the collaborative and platform-specific learning activities more often than workers on the other platforms. The workers on Upwork and Truelancer use most of the learning activities less frequently than their counterparts on Freelancer and MTurk. The workers on Upwork steer away from individual self-directed learning activities in particular while those on Truelancer use individual study-related learning activities least among the four platforms.

The distribution of employed learning activities differs also between the gender of the cloudworkers. Women report using individual self-directed learning activities more often than men. Men report engaging in more individual study-related learning activities as well as collaborative learning activities, but women more frequently ask for advice than men. In terms of platform-specific learning activities, men report searching for advice in the online materials provided by the platform more frequently than women, while women more often follow platform-specific advice, tips, and suggestions that are displayed on the platform as well as receive feedback on the completed jobs.

In Focus: Platform Profile Ratings

There are key differences in the way different platforms function, with significant implications for skills development. For example, while ratings are an important feature of many platforms, determining the likelihood of securing further work, interviewees disagreed about whether learning to manage ratings was crucial to their work.

Geeta*, who has worked on MTurk for a decade, expressed intense anxiety around maintaining her ratings: "I didn't know MTurk workers when I first joined there was no social media, no YouTube, nothing was there so I had to figure it all out myself." When she was still new to MTurk she accepted a few jobs that turned out to be scams, and her approval rating immediately fell to 95%. She continued: "it took me 2 years to get my rating to 99% in 2012, and then I made sure it never went down after that [...] I had to work a lot for this to happen. Most of the jobs will be like for a penny, and I have to do these jobs for night and day only to improve my approval rate. I was like a monster, not sleeping for hours, just sitting in front of the computer waiting for HITs".

This can be contrasted with Aruna's* experience working with Upwork for eight years. While not minimising the importance and benefit of having a higher star rating, she didn't worry about star ratings when starting out on the platform, and "didn't know how this worked. So I wasn't very much worried about the star ratings, the feedback, anything". Now that she has an established profile, Aruna* isn't that worried about how her ratings will change. She has the ability to decide who she works for, and she has the skills to negotiate the terms of work to some degree.

These experiences highlight how the types of work carried out on Upwork and MTurk have fundamentally different implications for how skills are acquired and how ratings shape individual experiences. Upwork tends to be more focused on freelancing work, while MTurk is focused on microwork. The operational logic of the two platforms have different implications for how skills are acquired and how ratings shape the experiences of the two interviewees. While Aruna's* experience shows that profile ratings didn't carry a lot of importance for her, previous research would however highlight that profile ratings tend to matter a great deal for precarious workers in contexts where there is an imbalance between the supply and demand of online work (Woodcock & Graham, 2019).

8. Strategies and Obstacles for Skills Development

While workers expressed willingness to develop skills they also noted significant challenges to being able to undertake learning activities. Again, these challenges are discussed in reference to the broad categories of individual self-directed learning activities, individual study-related learning activities, collaborative learning activities, and platform-specific learning activities. As discussed in section 6, surveys were completed in a context of the COVID-19 pandemic. The obstacles to learning we discuss here, such as limited financial opportunities or time to undertake activities, were noted by some respondents to have been exacerbated by the socio-economic impacts of the pandemic. Respondents reported increased financial pressure as family members fell ill, and naturally, in-person learning activities were deemed more unfeasible. However, many respondents made mention of structural obstacles to learning activities that are applicable even outside the pandemic context. While acknowledging the potential effects of COVID-19, this section speaks to these obstacles broadly.

Across these categories, platform-specific learning activities, like following or searching for advice in the materials provided by the platform, seemed to pose less of a challenge for workers, with only 7% of respondents selecting this as a learning activity they were unable to undertake. The exception to this is learning through receiving on-platform feedback which as will be discussed later in this section, more respondents viewed as generally challenging. Other categories of activities point to areas where learning activities may be less accessible.

8.1. Self-directed vs Collaborative Learning Activities

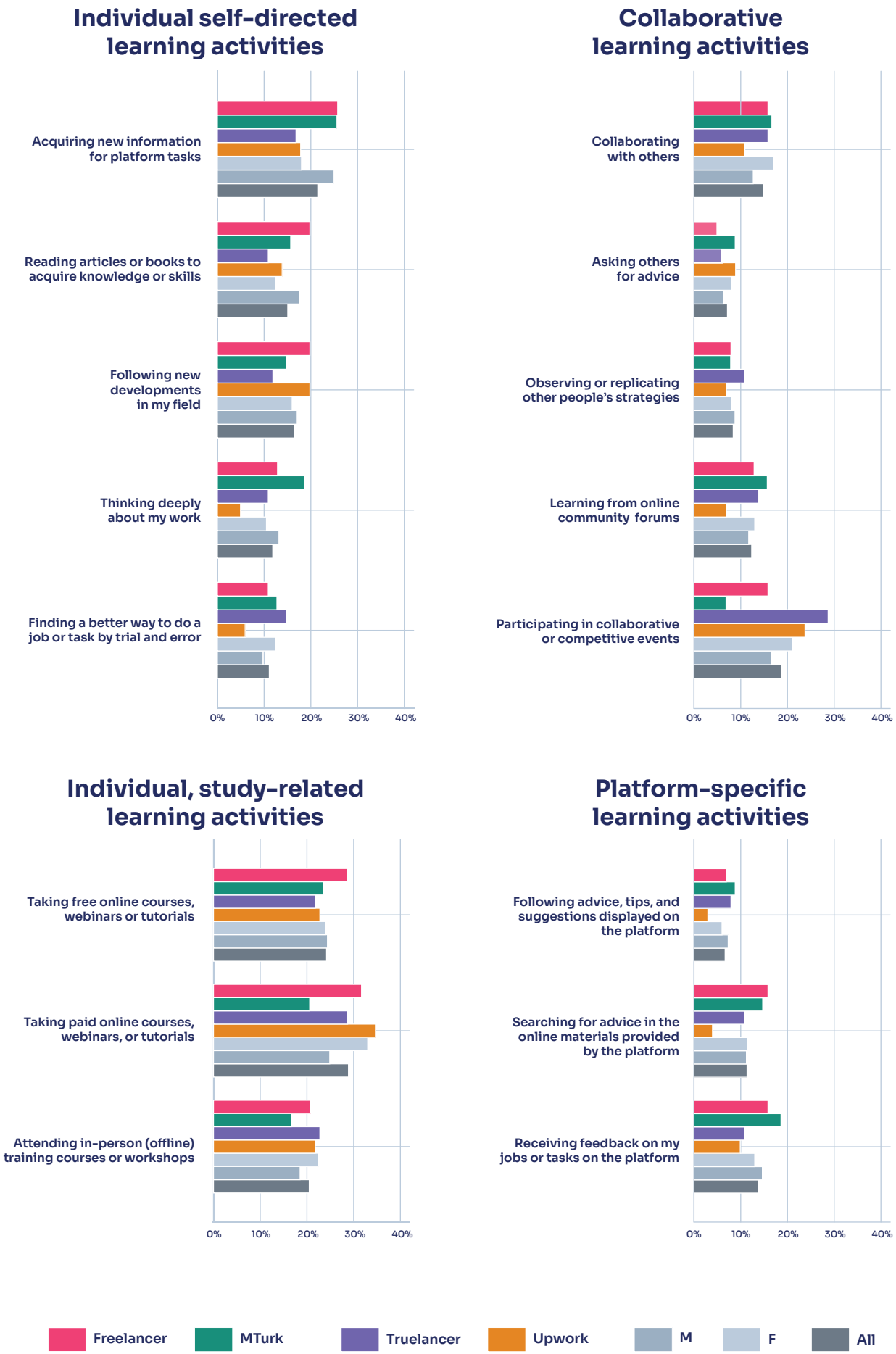
Among the four groups of learning activities, individual study-related learning activities were particularly difficult to achieve for respondents across each of the four platforms. Taking paid online courses, webinars or tutorials was a specific challenge, and one that was also particularly felt by female survey respondents. Compared to 25% of men, 33% of women reported that they wanted to, but were unable to take paid online learning activities. There was also across-platform divergence: around 35% of Upwork workers reported being willing but unable to undertake paid online activities, compared to 21% of MTurk workers. It is worth noting that the number of respondents unable to take free online courses, webinars or tutorials was not much lower, although this category too varied across platforms: 29% of Freelance workers versus 21% of Truelancer workers.

In terms of collaborative learning activities, 21% of women across platforms reported being willing, but unable to participate in collaborative or competitive events, 5% more than men. This was also a particular problem for workers on Truelancer, where 29% workers reported they were willing, but unable to participate in these events compared to 7% of MTurk workers reporting this issue. On the whole however, MTurk workers reported more challenges to other collaborative learning activities than Truelancer workers. 15% of respondents noted collaborating with others as an activity they were unable to undertake, while 12% indicated challenges with learning from online community forums. Other research has indicated that online forums are places where workers go to learn and share information and advice about how the platform works, and how to work effectively on the platform (Martin et al., 2016). MTurk forums may represent a particularly significant resource for workers to use when other collaborative activities are challenging (Sherry, 2020).

Figure 10. Learning Activities that Workers were Unable to Undertake. Source: Project data set

Share of respondents, in % of subgroup

Over the last three months



8.2. Obstacles to Undertaking Skills Development

Survey respondents were also asked to reflect on the reasons why they were unable to undertake the learning activities they indicated they wanted to take. Time emerged as the central constraint to undertaking learning activities across all platforms. Time in these instances referred to several issues including a lack of time due to caring responsibilities and the need to make an income (further elaborated in the '**In Focus: Working while Having Caring Responsibilities**' Box on Pg. 35). This is followed closely by financial constraints to undertaking paid activities or missing work opportunities. Another key issue was a lack of information and awareness of potential places to undertake learning activities, which was also linked to a lack of time to look for these resources. Together, these three reasons were given, in combination or alone, by the majority survey respondents when asked why they were unable to undertake the learning activities despite expressing an interest in doing so. Throughout responses there was a sense of uncertainty about undertaking learning activities, the link between learning and working was far from clear-cut to many workers. Interest in and satisfaction with the potential of online training was tempered with concern that spending money on online courses and certificates, or learning activities more generally, may not result in an increase in earning on the platform. Chitra*, who works on Upwork explained:

"It was both time and money for me. I am hoping to get a project for a similar skill that I want to develop so that I can put it to work at the same time while learning. It will help me get better at it. I fear that if I learn a skill now and don't get work for it, I might forget and the money will be wasted."

In this context, time spent on learning was expressed as entirely unavailable to workers, or as an uncertain trade-off for working and managing existing work. Any investment of time and money into learning would be a potential loss if it did not translate into getting and completing jobs which was the priority for workers. Several workers did not know where to begin learning or which skills would be the most beneficial. A lack of knowledge of which skills to learn, and how, was reported by respondents from a mix of educational backgrounds. Unless they had friends who also worked online, respondents expressed being unable to access this kind of support. Given the imbalance of power between workers and clients on the platforms, getting this type of guidance from clients was also seen as untenable. Dinesh*, an Upwork worker spoke to these dynamics:

> **"I can say that [the] type of work I do varies every time and learning is a constant part of the job. I was not able to ask client directly for feedback because I thought that if he gets to know that I lack knowledge then he may fire me and I was constantly looking up for material required."**

In the same vein, respondents cited a lack of mentorship and opportunities to get advice from other workers as a barrier to learning. In these cases, respondents indicated that they want to seek advice and guidance from other workers and that discussing and collaborating around learning would be a useful exercise for platform workers. Since cloudwork can be highly independent, the exchange of tacit knowledge, like strategies for managing cloudwork through on-platform interaction can be limited. Platforms tend to be designed to support individualised, not collaborative work. Nonetheless, the value of community to workers was also emphasised in both surveys and interviews, as Manav*, a Truelancer worker described:

"I started with Glug MVIT—a GNU [operating system] open source community, I was a second-year student and used to see few events being organized, few friends taking part in hackathons. They are teaching how to create a mobile app etc. It was interesting, I was able to see it, ask questions, people who are volunteering to teach to others [...]. I believe everyone should be part of communities; it is an important way to learn something and people ask you questions [...]. I don't see any community on Truelancer, no forums or learning."

In summary, even when respondents indicated the desire to undertake learning activities, they faced challenges finding the financial and logistical support to develop skills, an investment that workers did not always feel able to make. This may indicate that workers require more structural forms of support to enable them to locate and access low-cost learning activities that align with their goals.

In Focus: Working while Having Caring Responsibilities

Concerns about the financial cost of learning are sometimes linked to caring responsibilities. Our survey respondents and interviewees often highlighted the ways that cloudwork provides opportunities to work, but also that it can involve significant challenges and stress when paired with caring responsibilities.

Geeta*, who is the only breadwinner for her family of three (herself, her daughter and her mother) told us about her schedule and the negative effects this has on her health: "I sleep at 3 am and then wake up at 6:30 am again to send my daughter to school at 9, then I sit at the computer and then break at 12 again for some household work till 2pm, then come back at sit at computer again till 2 or 3 [am]. When I started working on this platform I was just 22 and I didn't know what kind of health effects this could have on me then. Now at 33, I suffer from insomnia as my body has shifted to US timings and am now on medication for it and I am always anxious about getting HITs everyday. When compared to men, I think women suffer more because we want financial independence but jobs like this affects our health and we lose our health."

This experience was different to Aruna*, who quit her job as a journalist to care for her kids and says that Upwork provides an opportunity to work again: "After, once I started getting the freelancing job, it was like whenever I want I can start working and whenever I want time I can take time. So it's very convenient for me. Family is very supportive in that sense [...]. Because kids are grown up now, so that is possible. "

Aruna's experience highlights the support that can be needed to facilitate work alongside care responsibilities. In Geeta's case, the pressure of cloudwork has had significant negative effects on her health. In this context, the potential for skill development and undertaking learning activities appears limited.

8.3. Strategies to Overcome Obstacles

Our findings highlight the centrality of informal support networks and the exchange of experiences between workers. While the survey responses indicate that not all workers can make use of collaborative learning options like forums, many workers are already engaged in, and part of, various support networks. These range from online forums and Facebook groups to YouTube channels of more experienced workers that provide guidance to newcomers and can facilitate learning and knowledge exchange between workers. In the case of Kumar*, a Freelancer worker, a friend that already worked for the platform offered their guidance, helping Kumar* to learn platform-specific skills:

"My friend gave me tips like in the beginning he would just go ahead and work for clients and would work for a very low amount as well because the importance of reviews is there. When your profile has positive reviews and your overall ranking is five, and he's a preferred freelancer as well [...] and of course I keep reading up on it from time to time, whatever is there, and being on the platform also, like many of the projects that I have done, they required articles on freelancing as a whole."

There exist numerous Indian online communities associated with platform work, ranging from informal community groups formed using messaging apps like WhatsApp or social media platforms like Facebook, to more formally organized communities such as the Yada Yada Collective, which crowdsources and makes publicly available information about contracts and commissions from among Indian creative freelancers (The Yada Yada Collective, 2021). As Ramesh* an MTurk worker notes:

> **When the platform won't help us, we have some private forums and discuss the use of plug-ins so that we will know whether a particular requester has not been paying and decide if we want this task or not."**

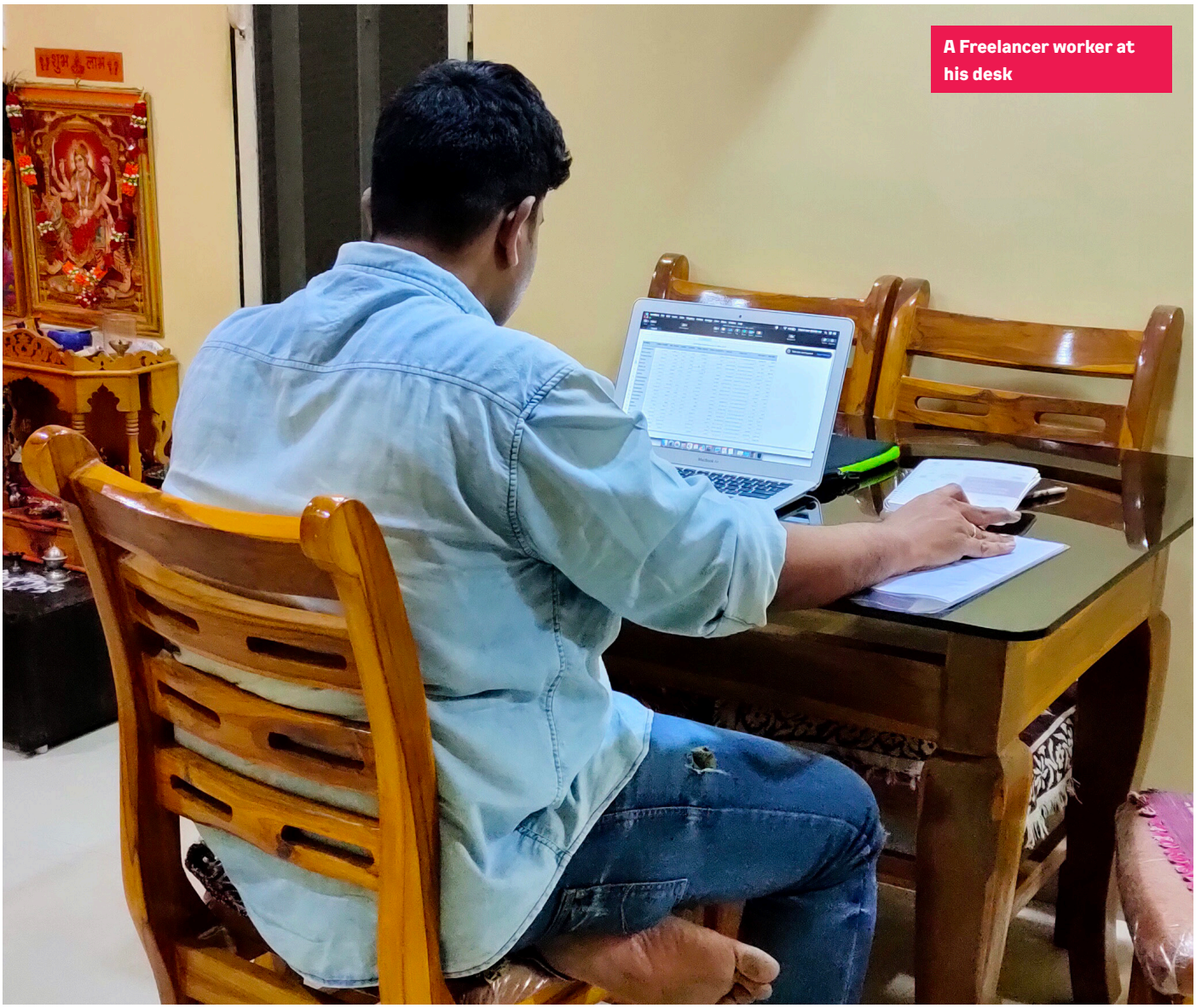
However, some workers also pointed to discriminatory practices towards Indian workers in online community spaces, and stressed the need for a forum where Indian workers can comfortably participate. For example, Raghav* described their experience on MTurk:

"Suppose I am talking on a forum, and they find out I am Indian just by my name or something, they will kick me out. Nobody answers our questions and

they treat us very badly. Turkopticon is also only for US workers and doesn't let us even sign up[7]. Even on Reddit, we can see and read what they are posting, but we can't participate and they will kick us out if we participate. They used to say publicly, 'you guys are robbing us of our work' . Right now, very very few Indian workers are there on MTurk. On a few Facebook groups, a lot of people have complained that their accounts get suspended, and all of them are Indians."

This illustrates that off-platform learning resources might not be an accessible option to all workers, particularly those new to cloudwork who do not have access to other workers and are not immediately aware of and feel comfortable using online resources. Additionally, as workers expressed the desire to develop transferable skills and work towards more long-term career goals, learning activities through institutions may be desirable.

Survey respondents also tended to point to an issue of access to and lack of knowledge of which type of training to complete, rather than to a lack of training material in general. This may indicate that more than new learning content, workers need support to access and make choices of what will be of most benefit, keeping in mind the concern workers expressed that skills development may not necessarily amount to more work. Given that off-platform resources may not be accessible to all, workers might benefit from more on-platform, structured, chances for learning, a point similarly made by Margaryan's in an analysis of the learning activities of online crowdworkers (Margaryan, 2019).



A Freelancer worker at his desk

[7] The authors were unable to verify this statement at the time of writing.

9. The Platform Economy and Skills Training

9.1. Cloudwork and the Indian Skills Ecosystem

In light of concerns that a large proportion of India's workforce is unemployable, and that there exists a severe mismatch between workers' skills and market demand—problems that are being exacerbated by the proliferation of internet-based technologies across the economy—the Indian Government has been placing increasing importance on the development of digital skills and the fostering of digital work opportunities in the country. Despite this, we found that there has been an absence of concerted skills development initiatives targeted specifically at Indian cloudworkers. That said, our interviews with TVET stakeholders indicate that there is growing recognition of the importance of cloudwork as a livelihood strategy for Indians, and an eagerness to develop targeted initiatives to address the skills needs of the growing cloud workforce.

9.1.1. Government-led Approaches to Digital Skills Development

Two-thirds of the Indian population, or almost 900 million people, are of working age (15-59 years), with an additional 10-12 million people joining this group each year (Office of the Registrar General and Census Commissioner, 2018; Datta, 2020). Government and third sector actors have long considered 'harnessing the demographic dividend' to be crucial for inclusive development in India (The Government of India, 2007; UNFPA, 2018; WEF, 2018), and soon after starting his second term of office in May 2019, Prime Minister Narendra Modi set his administration's sights on improving India's position on the world stage, setting the lofty goal of making India a "US$ 5 Trillion GDP" country by 2024. In this pursuit, the country's expanding working-age population is seen as conferring great advantage relative to other large economies, and is a key vehicle by which the government hopes to realise its economic agenda.

At the same time, if education systems and skills development infrastructures are not adequately responsive to labour market demands, the very same demographic opportunity could become a demographic challenge, as it may result in higher unemployment rates. The skills levels of the country's working population is one major factor that will determine whether the demographic dividend can be harnessed. In this regard, many commentators have warned of severe skills shortages in India's labour force, characterising a large proportion as essentially 'unemployable'. One influential report from Aspiring Minds (2013) declared that 47% of graduate degree holders in India were 'not employable in any sector of the knowledge economy', and the 'India Skill Reports' from the HR Tech company PeopleStrong reported that employers were finding low skills to be a substantial barrier in hiring.

This concern is magnified in the context of internet-based technologies making incursions into ever more corners of society, and radically impacting how companies in the organised sector conduct business. Recent years have seen the emergence of narratives about how the 'Fourth Industrial Revolution' is exacerbating skills gaps, resulting in large swathes of the Indian labour force needing to be reskilled or upskilled. A report by the World Economic Forum (2018), for example, predicted that "more than one-half of India's workforce will need to be reskilled by 2022 to meet the demands of the Fourth Industrial Revolution", and that "talent availability is the single most important factor in determining job locations for international businesses with operations in India, [with] 67% of businesses surveyed expected to outsource functions by 2022 in response to changing skill requirements".

While basic and intermediary digital skills are expected to become part of the day-to-day repertoire of an increasing number of workers across all sectors of the organised economy, it is also foreseen that workers in the IT sector will require proficiencies in advanced digital skills such as web and app development, big data analytics, cybersecurity, etc. These growing concerns about skills shortages in the Indian IT and Information Technology enabled Services (ITeS) sectors were echoed by Kirti Seth of NASSCOM (the Sector Skill Council for the IT/ITeS sector), who told us:

"India, as you know, is a big exporter of IT services and serves the globe. So, when the IT industry started seeing the requests coming from their clients for applications that required the use of the digital technologies, it was quickly identified that the talent shortfall would be a problem; they would not be able to serve the needs of their clients if they didn't have the people. It was also recognised that this is going to be a universal problem. Every company will face it. So, if we, as an industry, have to reskill two million of our four million [IT/ITeS] workforce, with each company doing it individually, the cost of it is going to be just huge. There needs to be a better way, a more collaborative way."

Accordingly, a particular focus on digital skills and the IT/ITeS sectors has taken primacy. For instance, in 2019, the government committed to spending ₹436 crore (more than 60 million USD) on the 'FutureSkills Prime Platform', a NASSCOM initiative that imparts skills relating to 'emerging technologies' and select 'professional skills'. Debjani Ghosh, NASSCOM's President, sums up the Government's motives and hopes underlying this move in a blog post:

"By taking this huge step, the Government of India has shown a very serious commitment and is walking the talk on digital talent development. For NASSCOM, this is a dream come true! Our vision is to ensure that when the world thinks Digital, the world will think of India, and this important step forward will strengthen India's focus on Digital Talent Development which is key to the realization of our vision. We are committed to working hand in hand with Government to make Digital Talent one of India's key competitive advantages, and establish India as THE Hub for Digital Talent, globally."
(Ghosh, 2019).

Another example is NSDC's 'e-Skill India Portal', which aggregates learning content created by private training providers. While this portal includes a wide range of course categories (see **Figure 11**), the vast majority of available courses in this platform fall under the 'IT-ITeS' category.

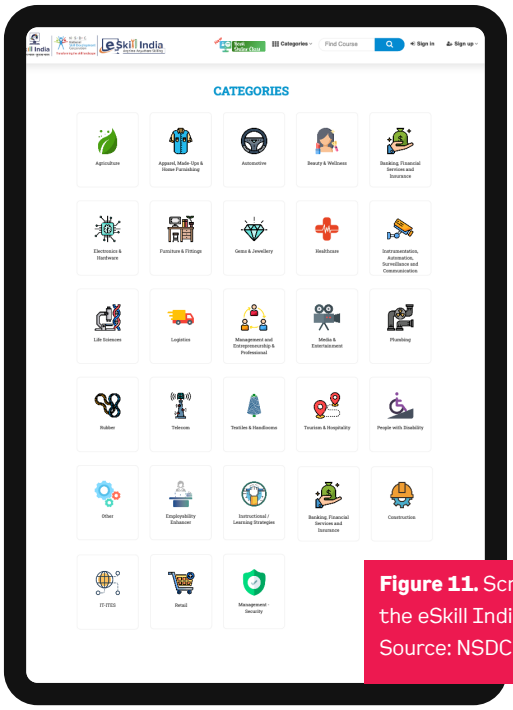


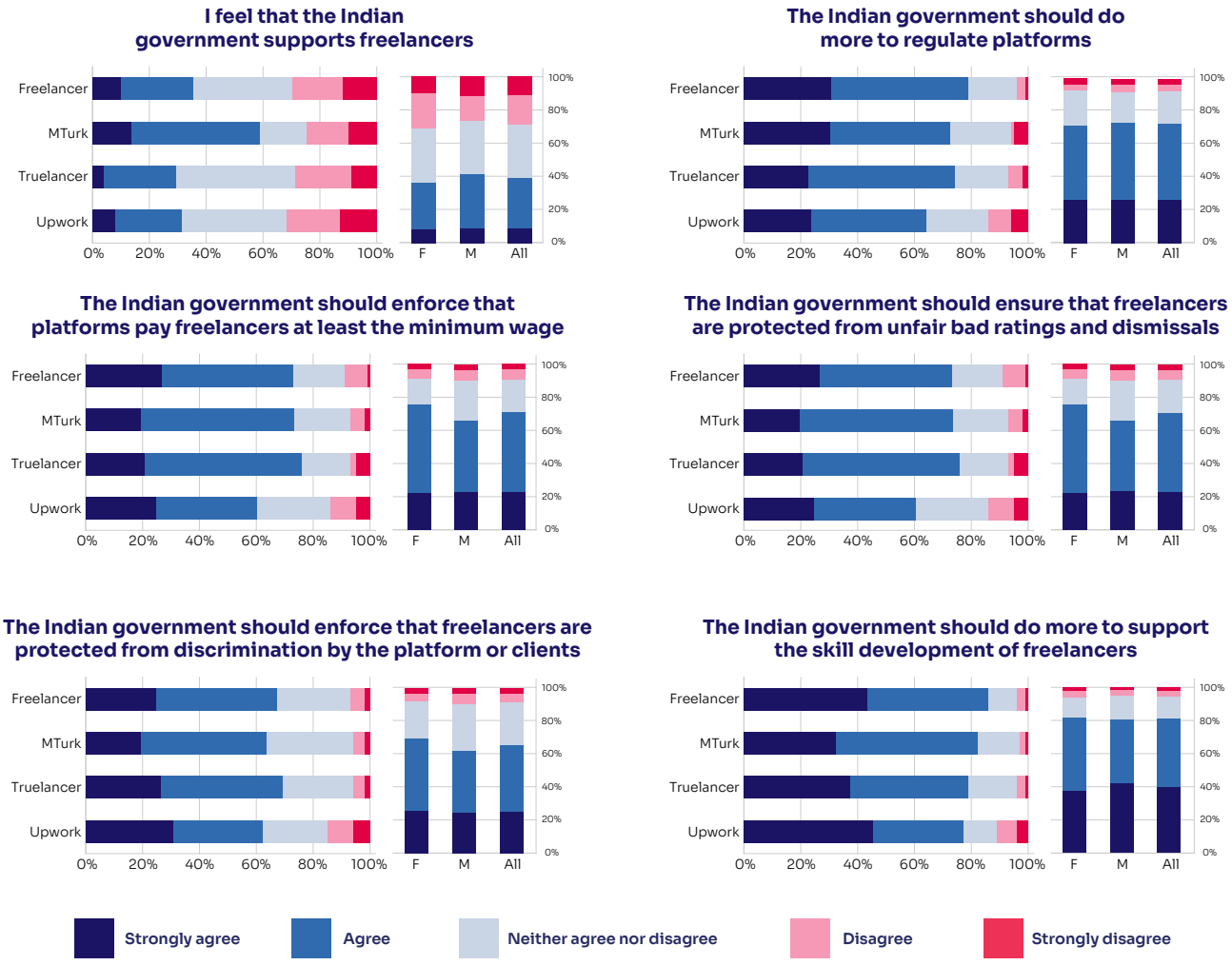
Figure 11. Screenshot from the eSkill India portal website. Source: NSDC, n.d.

These skills development initiatives—especially those coordinated in partnership with NASSCOM—are geared towards imparting technical digital skills related to 'emerging technologies', and caters to aspirants and workers in the organised IT/ITeS sectors. However, as explored in previous sections, cloudwork encompasses a range of work types, and requires an array of digital and non-digital skills, of which technical digital skills are only a subset. This concern was echoed by the former Head of the UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training, in reference to government-led approaches to date:

"Digitalisation is an issue that is being tackled sector-wise, like a mono skilling approach. But when we talk about online workers, it is not just domain skill [that is needed]. They need a more holistic approach [...] A set of core technical, digital and professional skills including communication, organization, self-regulated and resilient skills are prerequisites for cloudwork. These can be partly acquired through initial VET but largely through continuous lifelong learning at work. Strong policy support is needed to compel platform providers to collaborate with continuing VET organisations to offer short online programmes that are tailored to meet the needs of cloudworkers."

It seems that so far, cloudworkers have been a blind spot in government-led approaches to skills development. While there appear to be numerous initiatives spread across the Indian skills ecosystem aiming to impart digital skills, none of them are targeted specifically at cloudworkers. This finding corresponds with what survey respondents and interviewees told us, when asked how the Indian government should engage with them. As Akash* from Upwork explained,

Figure 12. Attitudes about the Indian Government. Source: Project data set



"If you look at all the sectors, there are schemes from the government of India, everywhere - if you want to start a start-up for instance, they have the Startup India scheme, and for manufacturing, they have Making India. [But] they don't have any schemes for supporting or encouraging platform work. I have been searching to see if they [the Government] have any such schemes, but actually they don't. So, what is the repercussion in the wake of the gig economy booming? They should have encouraged this business, and I think they are losing [their share of] it to Pakistan now. When I was researching, I saw that Pakistan had the fourth position, India at the seventh, as far as [the number of] freelancers is concerned.[8] In Pakistan they [the government] have provided some support for the freelancing,[9] which India didn't, and which I highly recommend that India should do."

78% of survey respondents across men and women, and all platforms, agreed or strongly agreed that the government should do more to encourage cloudwork as a livelihood, and support skills development of cloudworkers (See **Figure 12**). Evidently, there is broad consensus among cloudworkers that government-led skilling initiatives should incorporate and cater to cloudworkers. 67% of survey respondents additionally agreed or strongly agreed that the government should enforce minimum fair work standards on platforms, such as helping to protect workers from discrimination and unfair bad ratings and dismissals. At the same time, some respondents expressed reservations about the prospect of the Indian government regulating cloudwork platforms, worrying that this may disadvantage Indians compared to their competitors

[8] Akash (name changed) is referring to 'The Global Gig-Economy Index' published by Payoneer, the financial services company, in 2019. Payoneer's index is based on analysis of freelancers' financial transactions made through its platform (Payoneer 2019)
[9] In 2018, the Pakistani government launched a training initiative called 'DigiSkills' to train freelancers (Attaa 2018). More recently, the 'National Freelance Training Programme' was rolled out in May 2020 (Ali 2020).

in the planetary labour market, which as Section 4 explained, is a defining characteristic of cloudwork. Akash* from Upwork explained:

"So, as of now, all the platforms they're highly biased towards the clients [...] which has to be regulated from the government side. I don't think it can be regulated by the government of India alone, because these platforms are global platforms and if you regulate it, it will put Indian freelancers in a disadvantage as well, right? Because if some restrictions are posed on Indian freelancers, Pakistan, Bangladesh freelancers will reap the benefits of that. There needs to be [regulations], but I don't know how the regulations would happen as far as platforms are concerned, because these platforms don't have any borders and obviously, governments are restricted to borders."

Even though cloudworkers have not been a focused target group for government-led skills development initiatives so far, the TVET stakeholders we interviewed expressed enthusiasm for expanding skill offerings to better serve this group; in fact, the NASSCOM officials we spoke with specifically identified that preliminary conversations about developing skills courses for cloudworkers were under way within their organisation. Section 10 further discusses the potentials for collaboration and synergies between development actors and government-led skills training approaches.

9.1.2. Platforms' Role in Skills Training

We briefly consider here how cloudwork platforms have been engaged in upskilling Indian cloudworkers. Mirroring the findings of previous research (Cedefop, 2020)—discussed in Section 4.4—we found few instances of cloudwork platforms engaging in extensive direct skills training on their platforms.[10] As the Truelancer platform's CEO, Dipesh Garg, explained,

"So Truelancer is not actively engaged in training the freelancers but we do occasionally publish blogs to share resources already available over the internet [...] The primary reason being our primary motive at this point is to connect the existing skilled talent with the job opportunities."

This statement closely mirrors what Cedefop researchers were told by a platform executive, *"As a platform at the moment, it's not our goal to develop freelancers to learn new skills. It's our goal to find freelancers with the right skills"* (Cedefop, 2020: 37). It appears therefore that many platforms tend to refrain from engaging in direct skills training, due to their having little incentive to train workers whom they do not employ, and who are not bound to their platforms, as Sabina Dewan, Founder and CEO of the JustJobs Network speculated:

"There need to be strong incentives to make platform companies invest in the first place. Who would invest, and why? There is definitely the risk of high attrition—which might remove the incentive for those companies to invest in workers' training."

We found that, in the absence of direct skills training, the platforms we researched provided other indirect forms of support to assist workers in acquiring and showcasing skills. For instance, Upwork published a blog titled *'Set Yourself up for Success: Learn the Most In-demand Skills'* (See **Figure 13**), which advised freelancers on which skills were in high demand, and where they could learn or update these skills.

Such a curation service—where cloudworkers were advised on which skills to acquire, and how—was something that Paresh* from Truelancer identified would be a useful service:

"People have a wrong focus. More than skill development, first they [cloudworkers] need to have some sort of awareness protocol where they learn what industry requires and where they can fit in [...] I don't see any lack of good content. There is a lot of content, everyone is creating content but then which content at which time, which direction is something which only skilled professionals can guide you."

Several platforms additionally have in place mechanisms to enable cloudworkers to display their skill credentials on their profiles, to signal their proficiencies to potential clients. For instance, cloudworkers on Freelancer can take 'exams' for a fee, through which they can distinguish themselves against competitors (see **Figure 14**). It should be noted that Freelancer does not directly impart the skills needed for these certifications, but merely the certifications. Moreover, a significant concern with platform-specific certifications such as here is that they are not portable to other platforms or work contexts, and therefore result in cloudworkers becoming 'locked in' to this platform.

In light of the specific difficulties that newcomers face on cloudwork platforms in getting their first jobs—given that they do not yet have a well-developed profile, past experience, or rating—some platforms provide specific

[10] We contacted platform managers from the four platforms studied in this project, but were only able to interview Mr. Dipesh Garg, the CEO of Truelancer. We additionally examined platform websites to understand what resources were made available to workers.

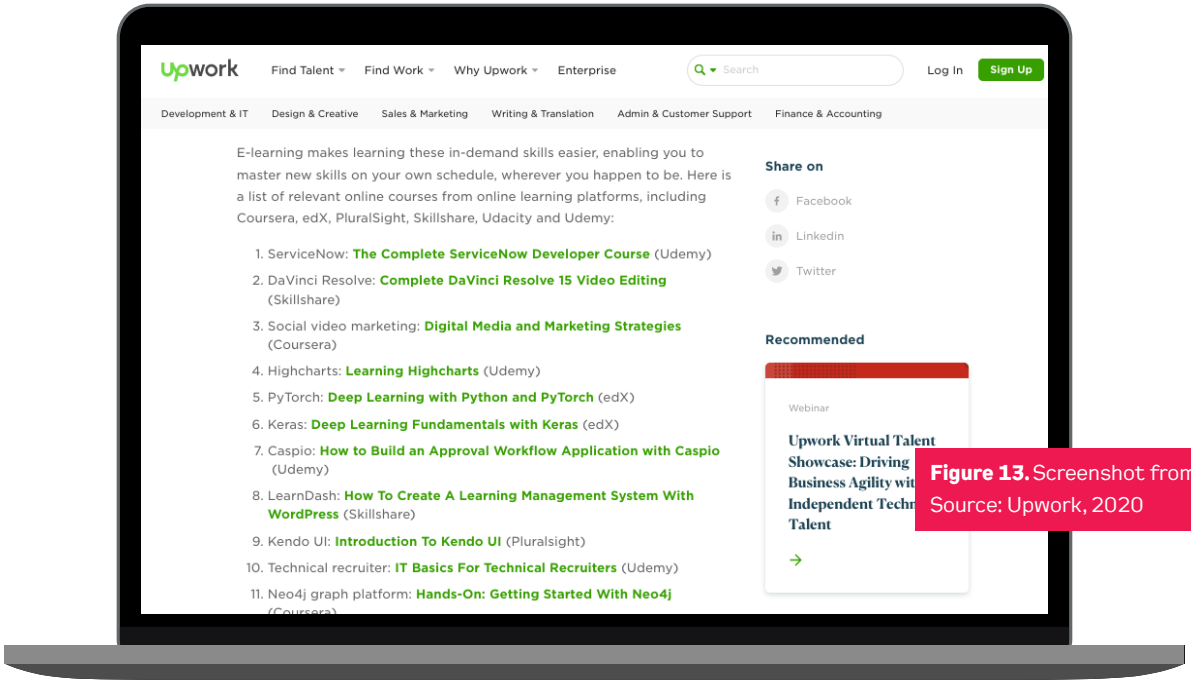


Figure 13. Screenshot from Upwork blog. Source: Upwork, 2020

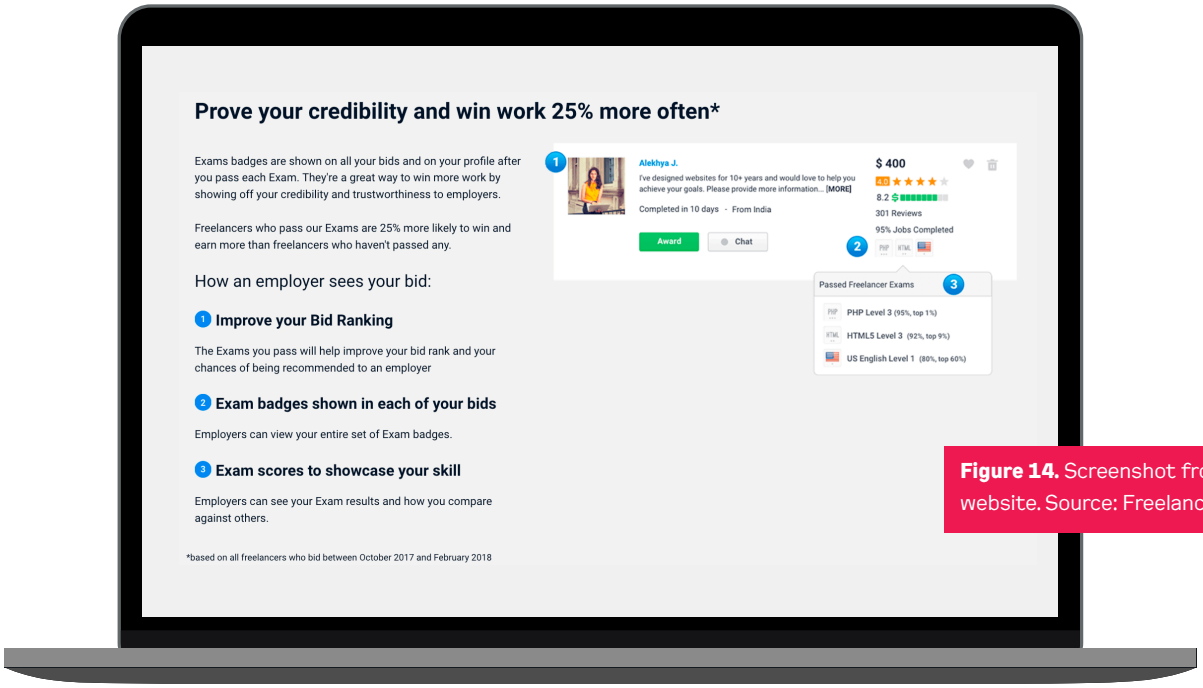


Figure 14. Screenshot from Freelancer website. Source: Freelancer, n.d.

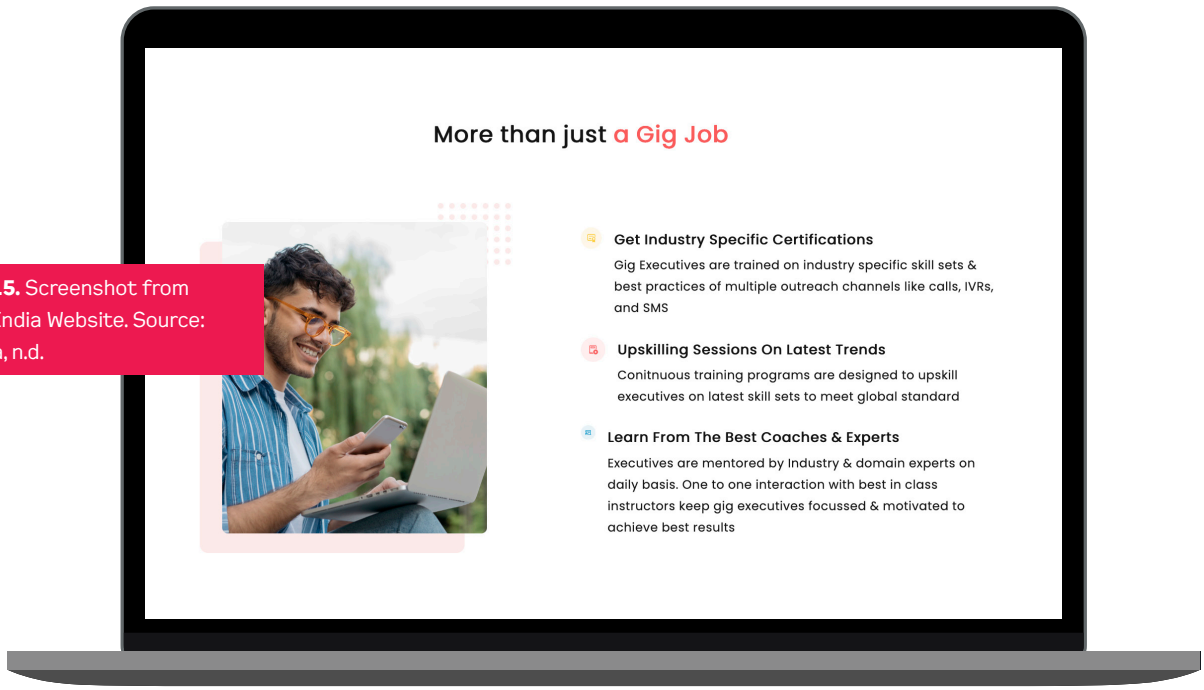


Figure 15. Screenshot from the GigIndia Website. Source: GigIndia, n.d.

assistance to help them find their feet. Truelancer's CEO Dipesh Garg told us:

"[...] when it comes to new freelancers who do not have ratings or reviews on our platform, our internal teams review the profile of these new freelancers and if they find that they have sufficient skills to get a job then our team helps them and connects them with the client to get them the initial new job, so that once they get reviews and ratings they can navigate through the platform more easily."

The platform mechanisms highlighted here—links to third parties, platform-specific certifications, and assistance to newcomers—are not an exhaustive listing of how platforms assist cloudworkers in acquiring and showcasing skills, but rather an indication. Other cloudwork platforms may take a more proactive approach to skills development, as seen in the case of GigIndia (a smaller Indian platform that we did not include in this study). GigIndia claims to provide direct skills training and customised mentorship to cloudworkers (see **Figure 15**). This indicates that there is a diversity of platform models and practices, and potentials for collaboratively identifying and bolstering good practices.

9.2. Continuities and Discontinuities

With the country's complex skills ecosystem in mind, our findings demonstrate that it is important to recognise both how the rise of cloudwork platforms echoes previous patterns of skills development in the context of freelancing and informal work (continuities) and how it breaks with them (discontinuities). While platforms are often analysed on the basis of their transformation or disruption of conventional forms of economic exchange, our study shows that they share commonalities with more established patterns of informal work, and the challenges that they pose to improve skills training in such sectors. By analysing both sides of the coin, we set the scene for the evidence-based policy recommendations in our conclusion. We differentiate between three analytical categories: education and experience; reputation and certification; inequalities and reintermediation (see **Table 5**). However, these categories should not be seen as being in isolation from each other. For example, our interviews underline workers' educational background and practical experience is closely related to cross-cutting skills of communicating with clients and reputation management.

Category	Continuities	Discontinuities	Implications for Skills Training
1. Education and Experience	Educational background and experience as foundational skills	Platform-specific role of so-called "off-platform" skills, varying expectations of clients	Tailor skills training courses to particularities of platform types and tasks
2. Reputation and certification	Continued importance of managing one's reputation and build trust with clients	Digital profiles, gamified ratings and new "lock-in effects" because of non-existent portability between platforms	Actively support workers in being able to migrate between platforms and showcase their experience to prospective employers
3. Inequalities and re-intermediation	Persistence of inequalities in affecting workers' livelihoods and chances of skills development	Mixed evidence on discrimination, platform-based subcontracting and the role of new intermediaries	Given that platform centralise economic exchange, make use of network effects to provide opportunities to underserved workers

Table 5. Continuities and Discontinuities of Platforms: Implications for Skills Training

9.2.1. Education and Experience

In line with previous research on the relationship between vocational training and informal work in India (Singh, 2012; Agrawal, 2012), workers' educational background and experience remain pivotal in an age of digital labour platforms. However, our mixed-methods study shows the ways in which these foundational skills shape workers' livelihoods on an everyday basis vary significantly across platforms and sub-sectors. Some workers choose to work with skills they are already comfortable with or studying at the moment and also view this as experience practice for jobs taking place outside of platforms, while others complete tasks that are not directly related to their education and experience. A number of workers perform cloudwork while pursuing higher education or gaining experience in more traditional jobs, particularly in the diverse IT sector. Aryan*, who is working part-time on Truelancer while also pursuing his law degree after finishing a diploma course in creative writing, told us,

"I mostly take up content writing gigs, research, blogs. Apart from that I would also look for proof-reading, writing and editing tasks [...] I used to mention in all of my proposals that I am enrolled in a creative writing course offline, it showed clients I was serious and related to my field. Being closer to the field will give you an advantage over the other people who are building on very general stuff. Recently, I have also started to pitch to clients that I'm pursuing my law degree along with the fact that I have a diploma in creative writing to broaden my scope of gigs so that they include legal tasks as well."

Two things are remarkable about Aryan's quote. First, the fact that he benefits from his experience outside of the platform and that his preferences for gigs have changed in the light of his educational trajectory. Second, the fact that he actively uses his "off-platform" skills for attracting clients on the platform. While foundational skills gained through more traditional pathways of education remain paramount, the ways in which these skills and experiences can be presented to clients are transformed by the characteristics of digital labour platforms. In other words, there is not a split between "offline" and "online" skills development but rather a dynamic, two-sided relationship that might change over time and that relates to a rich diversity of skills. Juxtaposing Aryan's* experience with the claims by Dipesh Garg, CEO of Truelancer, the Janus-faced nature of platforms becomes evident:

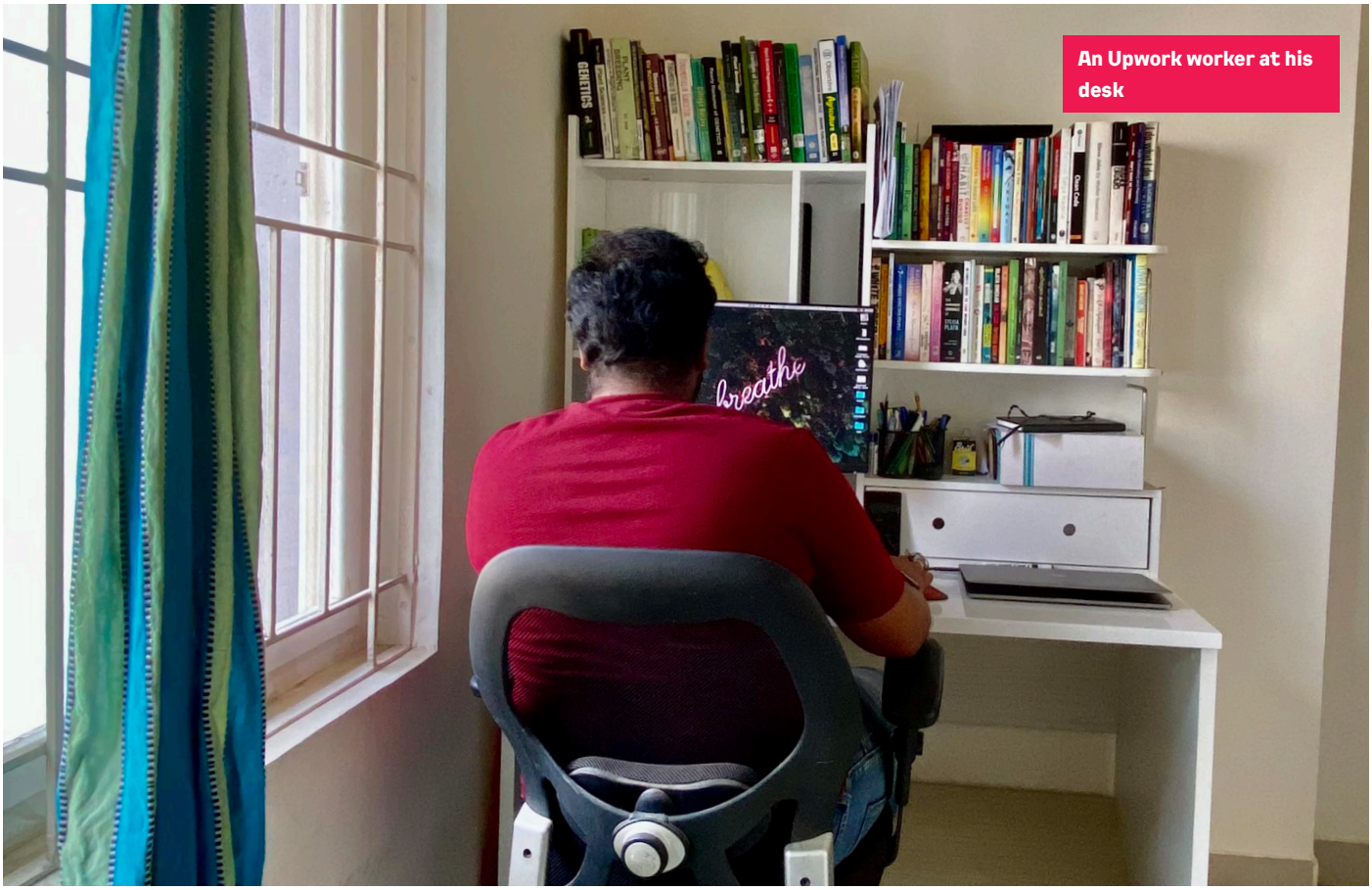
"Let me talk about the different skills sets. Truelancer have freelancers with two thousand plus different skills, right. But if we broadly classify these skills, obviously 'software development' is a category but it can have at least fifteen hundred plus different skillets in software development itself. Same, 'graphic designing' is a category but it can have at least two hundred plus different skill sets in graphic design [...] So you have broadly there five, six categories, let's say graphic designing, software development or web development, data processing, marketing [...] You have broadly six, seven categories but if we talk about skill sets, [there are] at least two thousand plus different skill sets."

While Truelancer's platform interface entails a complex multitude of skills and sub-categories, not all participants share Aryan's* perspective. In some cases, "off-platform" experience and "on-platform" tasks seem rather unrelated, as in the case of Freelancer. Swathi*, who works on various cloudwork platforms including Freelancer and Upwork, told us when asked about comparisons:

"On Upwork we get jobs very relevant to our experience and jobs. But on Freelancer we can do anything, we don't need any job experience. You can completely show your capabilities, you are not confined to anything. I could never do a HR job with my education and experience, why would I normally get the chance to do HR? Digital marketing also, voice over also? Freelancer is a good platform for voice over kind of jobs cause I didn't know casual talking also paid money. I got singing projects and I am just some bathroom singer. I didn't take any training for voice overs and singing, time passes kind of job. HR was probably exception cause it was startup and maybe they were on low budget"

While Upwork relies on project-based work of varying duration and skills, such as design, editorial writing, professional services and external consultancy, Freelancer's mechanisms of allocating work are less skill- and sector-specific. Adarsh*, an architect working for Upwork, echoes Swathi's* insight and refers to the expectations of clients in shaping her decisions to take up tasks:

"I try to pick jobs that suit my skills, or something I can learn with a basic study of using my education. I don't try to take up jobs that are completely irrelevant to my education, skills, etc., because that way I don't think I can



An Upwork worker at his desk

truly provide what the client wants. Upwork works based on the reputation [...] it's important to have a very good reputation for freelancers. If I take up jobs that are not in any way relevant to me, I might end up with very negative reviews or feedback from the client, and that can put me down on the platform. For that reason, I have never really focused on something other than architecture, or any other expertise. So far, I've not really gone, 'maybe these skills would have helped me.' But I really feel maybe more experience on the platform can get me better gigs or offers because there are clients who want very experienced clients from the platform, so maybe that is where I have really thought maybe I need more experience, but I've not really thought about any additional skills."

In summary, our findings reveal that whether workers can make use of their "off-platform" experiences and their educational background to increase their success "on-platform" depends on a variety of aspects: the platform interface and its work allocation method; the type of task or gig; the expectations of clients; and the form of education or experience. There is no simple answer to the question of how education and experience shape, and are shaped by, the interactions between the platform economy, informal work and skills training. Therefore, our analysis shows that future training approaches might consider developing new courses and curricula for building one's profile when joining a platform and fostering upskilling practices in ways that are tailored to different platform types.

9.2.2. Reputation and Certification

Adarsh's* quote already hinted at the crucial role of managing one's reputation while performing cloudwork. Our results underline the continued importance of reputation and trust in order to receive and complete more tasks—which is not to claim that this is a novel phenomenon that emerged with the rise of digital labour platforms. Reputation management has always been a key feature of freelancing (Fraser & Gold 2001). What is new, however, is the modes of digital reputation and gamified rating systems that platforms facilitate and benefit from. Such reputation and feedback systems have been the subject of previous platform research (Tadelis, 2016, Gandini, 2016; Cedefop, 2020). Building on this body of research, a key insight of our study is that newcomers have significant difficulties making use of the opportunities of skills development while performing cloudwork due to their un- or underdeveloped profile, which has sweeping implications for how skills training could help workers to sustain their livelihoods with platforms. Kavya*, an interviewee who signed up on Upwork after being unable to travel back to the Netherlands due to the pandemic, told us

"In the initial stages of working on the platform, freelancers have it quite bad, and these websites are really tailored for the customers. Developing a profile was very challenging, very different from working in a full time office, for example how should we price a bid only for customers in India versus for customers in other countries because the rates are very different. So I studied other freelancers and their profiles [...] my knowledge and my awareness was through my friend who was already on the platform and he guided me initially. But I built my profile through research, YouTube and some other videos. Upwork also has certain guidelines like always better to have profile pictures, their blogs saying how to keep up to date. Apart from this, I looked up some free blogs and articles."

Irrespective of workers' education and background, and significant differences between platforms when it comes to reputation systems, a common theme to emerge from these interviews is the need for a standard, preferably platform specific, vocational training course that provides basic information about profile building. Some even refer to this as a form of on-boarding training where the platform can guide the freelancer in navigating the platform, how to price first bids, screening for 'bad' clients, and stressing the importance of the rating system to both the freelancer and the client. Amit Aggarwal, CEO, IT-ITeS Sector Skill Council NASSCOM, when asked about how such cross-cutting digital skills could be promoted, made the following comparison:

If you can teach every Indian digital marketing, that small tailor shop, the kid doesn't want to go and join his dad because it's not a cool business. But the minute you say the business is on the web, it changes. All you are doing is actually helping them to sell online. It completely changes. You have gone from being a tailor shop to a start up, which for the young person has changed their mentality. The second one is, how do you personally market yourselves? What we learn in business is that you sell ahead of your capability. So, if you know three things, you say that I can do five and then [...] your operation then stretches to reach it, that is how the world works. But many times in our country, we tend to underwhelm. It's not I know three, it's I know one. So many times I may not get the contract or the deal because, for various confidence or other reasons I have undersold myself.

Our study also shows that the nexus between skills development and

cloudwork is complicated by the lack of portability of profiles, ratings and reputations between platforms, preventing workers from easily migrating to a new platform. Here we can draw parallels to the lack of skills certification in India's informal sector. India's 11th Five Year Plan contains the following passage:

There is no certification system for a large chunk of workers, who do not have any formal education but have acquired proficiency on their own or through family tradition/long experience. In the absence of a proper certificate, these classes of workers in the informal sector are subjected to exploitation and they do not get avenues for better employment in the market and their mobility is very restricted." (The Government of India, 2007)

> **While the fact that workers cannot transport and showcase their profiles to other platforms reflects existing patterns in the informal economy, the distinct ways in which this limited mobility expresses itself presents new challenges for vocational training systems.**

So-called "lock-in effects" are widespread in the platform economy (Cedefop 2020), also affecting the livelihoods of workers that make use of geographically-tethered labour platforms. For example, a care worker who built their profile over years while taking care of elderly people might have difficulties moving their profile to a new platform if their platform leaves the country. Our interviews show that such lock-in effects bring into being veritable power asymmetries and dependencies between workers and the platform, which can result in immense psychosocial pressure, as Ramesh* told us in an interview:

"I simply request, don't depend on MTurk, unless you don't have any other work. MTurk will block you, you cannot move away from MTurk once you start depending on that. You cannot say to someone that I'm working for MTurk, you don't have any experience on that, even if you work for nine years or ten years, it doesn't add to your profile. In your portfolio you can't say that, nobody cares about that because you're not working in a particular industry. It's like a slavery job. In any other work, your seniority increases and your pay will be increased, but in Mturk it's reversed. If your approval HITs are going up and if you get any five to ten HITs that are rejected by the requester, your overall approval rate will be going down by 0.01%, so for just nearly around ten to 50 HITs that get rejected, you will be pulled down by 0.1%. To that 0.1%, you need to gain again, you have to complete around 5,000 to 10,000 HITs."

Against the backdrop of workers' lived experiences, a general recommendation for policy-makers is that it is vital to improve the portability of their profiles and reputation, or create external portals in which workers can show off their qualifications and experiences, without being restricted to one particular digital labour platform like MTurk. However, it is not surprising this task is rather challenging and

A Freelancer worker at her desk

constrained by a range of factors, including "a lack of a business case for large platforms [to increase portability], the constantly evolving nature of skills signalling systems across platforms, hampered standardisation of taxonomies, differential technical infrastructures, and interoperability principles used by platforms and data protection regulation" (Cedefop 2020: 65). We are firmly convinced that these constraints should not be seen as obstacles that cannot be overcome in development cooperation. As we will recommend in the conclusion, the actors in development cooperation do not have to reinvent the wheel, as institutional and infrastructural mechanisms are already in place and would simply have to be supplemented to better cater to cloudworkers.

9.2.3. Inequalities and Reintermediation

Workers' ways of managing their reputation and ratings cannot be disentangled from the economic, social, gendered and geographic inequalities that provide the context in which cloudwork takes place. Those factors influence obstacles to skills development and cloudworkers' strategies (see section 8) as well as the modes of communication with clients. As Sanjay* puts it, "I learnt how to communicate well with clients through trial and error methods, I used to write angry emails to clients and now I am more polite. Earlier, I didn't even know I could communicate with requesters on MTurk only came to know after a while on the platform." Sanjay's* experience shows that he consistently developed his communication skills vis-à-vis clients over the years and that there has not been a predetermined blueprint for him of what the correspondence with clients ought to look like prior to getting started. The importance of cultural capital and digital etiquette for building trust with clients and getting tasks has been brought up by numerous participants. Riya*, who works on Upwork, echoes Sanjay's* sentinment and brings in another relevant aspect; geographic discrimination by clients:

"Generally, communication skills are extremely important and freelancers might be very skilled at what they do but there is no use to that if they can't find a way to communicate their ideas well. Also, this might be the reason why although Indian freelancers are good at what they do, some countries do not trust Indians and only ask for American origin or European origin freelancers [...] I would recommend including some training related to communication and presentation skills [when designing vocational training courses]."

Yet when asked about other forms of discrimination and inequalities, Riya* states that she hasn't encountered any gender discrimination. As she puts it, "I think online work depends on your skill, so you will get it. But offline, gender bias exists and I have experienced this at times because no one wants to take orders from a woman, especially one in a managerial role." While a couple of women have reported feeling unsafe while using platforms like they would in a physical workplace and reported incidents of sexual harassment, some have said that the digital workplace is less discriminating and less unequal with respect to both work allocation and assessment. Brinda*, for example, has been working on Freelancer as a graphic designer on a part-time basis since August 2020. While she appreciates the opportunities to gain experience that platforms like Freelancer provide, a few minutes into the interview, she shared that she had to face unwanted approaches by male clients messaging to ask for her number and not to offer her any project. Still, it is remarkable her overall impression of cloudwork is rather positive—despite disruptions of her work flows caused by other family members:

"Freelancer is especially useful for girls who are studying. As you know the society we live in, it does not allow women to work where we want, when we want but here there is much more freedom. Freelancer is my first job [...] because I am a girl, I am expected to do certain things at home, like answer the doorbell or fetch a glass of water for someone even when I am working. They [family members] never ask my brother [younger] to do anything and he doesn't even work but I have to stop my work midway and attend to the task."

At first glance, what unites cloudwork and other types of freelance-based informal work is the atomised and fragmented nature of work. The development literature has frequently highlighted the relationship between expanding informal sectors and atomised workforces (Chen, 2005). Several cloudworkers that we interviewed have even started "community", "group" and "company" type networks of workers who share a single account on the same platform. As Kumar* explains:

"My friend has also gone ahead and he also outsources some of the work to some other reliable freelancers of his, he has created this whole mini network of two, three more freelancers who are associated with him. So, he goes ahead and gives them the smaller work and the main clients he himself handles. So, after seeing all of that process and how he has created this whole mini network for himself and of course he wanted to

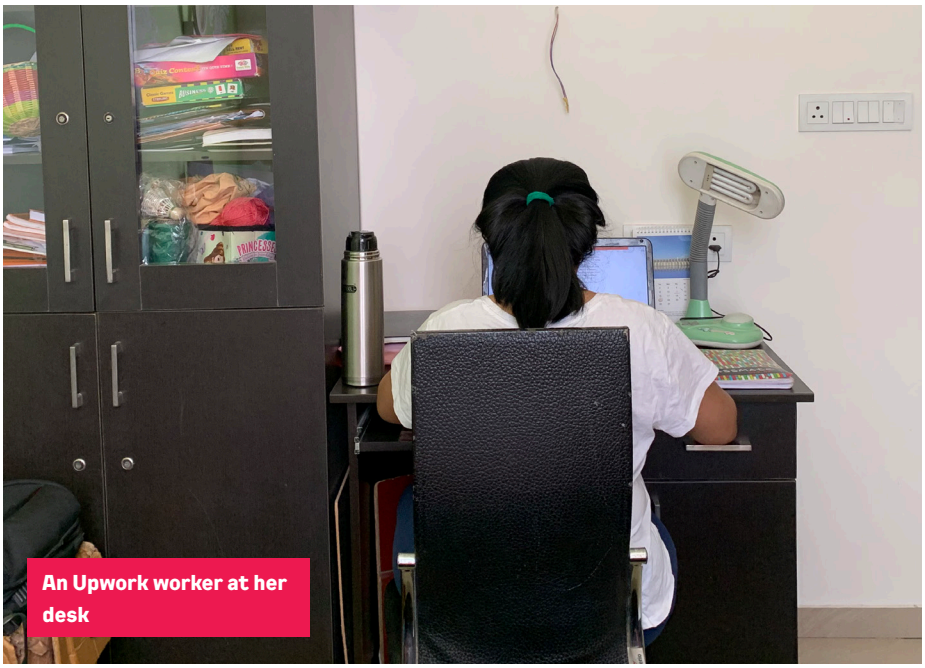
live this whole nomadic traveller lifestyle, so he had been travelling in 2018 and 2019, he had been travelling around to Southeast Asia, and all that stuff, because all you need is a reliable internet connection and your laptop. So, that was also inspiring to see you can station yourself anywhere and work from there."

These instances of subcontracting, sharing platform profiles and the creation of new intermediaries have been featured in previous empirical research, challenging notions that cloudwork platforms cause a disintermediation of economic activities (Graham et al., 2017). In many ways, however, the *very nature* of cloudwork platforms brings to light those covert forms of reintermediation in the first place. By centralising exchange between workers and clients, platforms enable researchers and development practitioners to cast a light on the role of various inequalities (e.g. gender, geography, caste) and their implications for skills development and approaches to vocational training that would be much harder in other, "off-platform" contexts of informal work. As we will argue in the conclusion, those features of platforms can provide relevant points of leverage for development cooperation as reintermediation also is closely related to skills development in other parts of the digital economy, including e-commerce. Sameer Narasapur, Head of Assessments & QA at the Retailers Association's Skill Council of India (RASCI), told us in our interview about RASCI's work in upskilling sellers using Amazon:

"In our work, we've noticed that the craftspeople who produce products are unable to sell their products directly to the customers, as a result they tend to miss out on potential earnings that they would have otherwise made by selling it directly on the e-commerce / e-retailing platforms. RASCI as a Sector Skill Council has enabled the Skilling Ecosystem in India by providing relevant Occupational Standards that enable skilling of such craftsmen (irrespective of the sector they belong) to sell their products directly to consumers and hence draw better profit margins on e-commerce platforms whilst gaining a global reach too. RASCI through these initiatives welcomes collaborations to promote such skilling interventions to strengthen the socio-economic wellbeing of the craftsmen."

Ultimately, the categories of education and experience, reputation and certification, and inequalities and reintermediation show that some aspects of the skills development process on cloudwork platforms remain informal (e.g. advantages due to "off-platform" experience), some are being formalized (e.g. showcasing of ratings through digital profiles), and still others are being informalized (e.g. lock-in effects). As such, our analysis point to the need to scrutinise both the *exaggerated disruption rhetoric* (i.e. "platforms reshape the relations between vocational training and informal work in unprecedented ways!") and *claims that platforms are not distinctive at all* (i.e. "platforms are not worth studying as they are just another incarnation of informal work!").

Overcoming this dichotomy, we argue that the study of cloudwork platforms is highly relevant to problematizing the shortcomings of contemporary infrastructures of skills training in a digital world of work. In the final section of this report, we synthesise the survey results, worker interviews, stakeholder interviews, and desk research to provide evidence-based recommendations for how development cooperation can address these shortcomings.



An Upwork worker at her desk

10. Conclusion: Policy Recommendations for Developent Cooperation

Policy Recommendations for Development Cooperation

1. Engage with, and encourage the growth of, cloudworker networks and communities.
2. Convince platforms to support and invest in cloudworkers' skills development.
3. Support the adjustment of existing institutional mechanisms to better cater for cloudworkers.
4. Support the creation of platform-specific training courses.
5. Advocate for a jurisdiction-spanning policy environment that would improve cloudworkers' access to skills development.
6. Include access to skills development for cloudworkers in legislative action to foster due diligence in global supply chains.
7. Support further research and develop pedagogical tools to share knowledge about cloudwork.

Policy recommendation #1:
Engage with, and encourage the growth of, cloudworker networks and communities.

Numerous worker communities with varying degrees of institutionalisation that we encountered in the course of this study exhibited a deep knowledge of the opportunities and challenges that cloudworkers face every single day. A central insight has been that the nature of such support networks is closely related to the particular platform or sub-sector of cloudwork from which the communities emanated in the first place. The challenges that workers in those sub-sectors face shape the priorities for communities, and provide the basis for mutual care and support. While there are sectoral differences, there are also common themes. Platform policies and supply/demand dynamics are often in a process of flux, and what has worked in the past might be outdated tomorrow due to platform changes.

We found that worker groups possess rich insights about the needs of cloudworkers that are highly relevant for the development and implementation of training curricula and approaches. Crucially, worker communities might also be able to help with disseminating knowledge of skills training opportunities, such as through online forums and social media groups. As such, they should be able to create multiplier effects when circulating particular skills training courses on, for example, the role of pricing in design work. When it comes to the role of development cooperation in engaging with cloudworker networks and communities, consistency and continuous exchange about skill requirements and key obstacles that workers are facing is key.

However, despite the existence of numerous worker communities, our evidence shows that many cloudworkers remain relatively atomised. Finding ways to incentivise and encourage

cloudworkers to see and shape their common interests and goals is a crucial challenge for development cooperation. In so doing, it is pivotal to recognise that workers and their communities are sometimes geared towards divergent and occasionally even conflicting goals. In light of the heterogeneity of cloudwork, there is a need to go beyond the replication of industrial-era blue collar trade unionism and appreciate that new forms of mediating jobs and tasks go hand in hand with new forms of worker organising.

Policy recommendation #2:
Convince platforms to support and invest in cloudworkers' skills development.

Cloudwork platforms have substantial power and influence over skills acquisition among their workforce, and could be important partners for development and government actors seeking to skill, reskill and upskill cloudworkers. Platforms should be encouraged and incentivised to play a more proactive role in cloudworkers' skills development. They are well-placed to help develop training curricula; disseminate information about skills development opportunities to workers on their platforms (e.g. through direct communication to workers; blogs; FAQs, etc.); institute positive incentives for workers to undertake self-driven learning activities (e.g. through mechanisms that enable workers to showcase skills certificates on their platform profiles, or other platform-based reward structures); and even to directly invest in training their workers.

Previous sections have pointed out that many cloudwork platforms tend to maintain an arm's length distance from their self-employed workforce—investing little, if anything, into directly skilling cloudworkers. However, as online freelance work arrangements become increasingly normalised, there is a growing business case for platforms to invest in their workforce's skills, to help attract and retain a skilled pool of workers, and thereby gain a competitive edge over other platforms. For instance, the platform, GigIndia, seeks to attract cloudworkers by claiming to be '*more than just a gig job*' because it offers skill certifications, continuous learning opportunities, and mentoring services (GigIndia, n.d.). It appears, therefore, that some platforms may be more likely and willing to invest in directly skilling Indian workers—particularly, those Indian platforms like GigIndia, which have to compete with well-established, globe-spanning platforms like MTurk or Freelancer to attract Indian workers, and which, moreover, rely substantially more upon the Indian cloud workforce. In partnership with such platforms, development and government actors could foster formal institutionalised channels for graduates of TVET programmes to access work through these platforms. On a macro level, such an approach may set off multiplier effects within the Indian economy by boosting employment, and contributing to value creation and circulation within the Indian economy.

Notably, we found that workers' capacity to develop their skills is significantly constrained by a lack of time and financial challenges. Platforms have substantial power over workers' pay and working conditions—for example, by instituting policies to better manage job availability and allocation, and improving pay (Fairwork, n.d.). Doing so would reduce the problem of overwork and afford workers more time and financial flexibility to engage in learning activities. There exists a diversity of cloudwork platform models—with some platforms providing 'fairer' conditions (Fairwork, 2021) and more opportunities for skills development than others. In choosing which platforms to partner with, development and government actors should adopt an active stance against the precarious and exploitative work conditions that persist on many cloudwork platforms, and ensure that the platforms they support meet minimum fair work criteria, such as those identified by the Fairwork project's evaluations of platforms.[11] Such a policy would not only help incentivise platform-led upskilling, but additionally contribute to the many voices calling for fairer working conditions on cloudwork platforms. Platform work need not be characterised by exploitative and unfair relationships between workers, platforms, and clients. Training initiatives should therefore be considering how to prepare workers for decent rather than indecent jobs.

Policy recommendation #3:
Support the adjustment of existing institutional mechanisms to better cater for cloudworkers.

There are numerous extant government-led institutional mechanisms to impart digital (and other) skills to Indian workers, such as NASSCOM's FutureSkills Prime platform, or NSDC's eSkills India platform. However, we found that existing organisational skills programmes and TVET systems in India do not directly target or cater for cloudworkers. Government initiatives in other contexts that do directly impart skills training to cloudworkers include, for example, the Kenyan 'Ajira Digital Program', which comprehensively aggregates relevant skills courses and information about platform work (Ajira Digital, n.d.), and the Pakistani 'National Freelance Training Programme', which provides a training course for aspiring online workers (NFTP, n.d.).

Development actors would be well-placed to support the adjustment of India's existing institutional mechanisms to better cater for cloudworkers. One approach could be to support the development of new training curricula geared towards cloudworkers, in conjunction with a partner like NASSCOM's FutureSkills Prime platform, which has an established training infrastructure and intends to better target cloudworkers in the future. An additional approach in conjunction could involve supporting the development of a digital skills certification system for cloudworkers such that it is indexed to India's National Skill Qualification Framework (NSQF). We have found skills certification to be a salient need for cloudworkers, given that many platforms' mechanisms for skills credentialing (where they exist) are platform-specific—creating a lock-in effect whereby workers cannot port their accreditations, credentials and work history to other platforms. However, it is crucial that any such centralised repository prioritises and builds in robust privacy features to protect worker data, particularly if—over and above skills certification—workers' platform work history, ratings, and social security information are also to be contained within this solution.

Policy recommendation #4:
Support the creation of platform-specific training courses.

In order to design and implement appropriate and effective skills development and vocational training approaches, there is a need to take into account platform- and task-specific conventions and client expectations. As our results have indicated, while the broad aspirations for upskilling and the learning activities undertaken are fairly similar across the four platforms included in the study, there are differences, in particular where the platforms host different kinds of work (microwork vs freelancing). In order to design training approaches that effectively translate into positive outcomes for workers, the particular dynamics of each platform in question should be carefully considered.

Our respondents report a keen interest to develop platform-related skills and platform-related learning activities, but also note the difficulty of finding appropriate training resources as well as a paucity of knowledge about how to navigate such content. These challenges are compounded by the lacking informal mentorship, as support networks or informal communities of peers are not accessible to all cloudworkers. The development of platform-specific training courses that are accessible to workers with varying levels of experience or with more basic English skills could address these challenges and support workers to overcome some of the upskilling barriers they currently experience.

By virtue of their role in centralising exchange between workers and clients, platforms enable researchers and development practitioners to potentially assess where inequalities arise, for instance based on gender, geography, or caste, and design reintermediation approaches which address these inequalities. In other areas of the digital economy such features have been noted and translated into practices. For instance the Retailers Association's Skill Council of India (RASCI) currently runs upskilling programs for Indian craftspeople and artisans to photograph, catalogue, and sell their products on digital marketplaces in order to reach customers directly and avoid middlemen siphoning part of the profit. Relatedly, Amazon India hosts over 150 learning modules (in English

[11] See www.fair.work for up-to-date principles for fair cloudwork, as well as scores and rankings of platforms.

and Hindi), online training and recorded sessions on a site it terms its Indian "Seller University", which it claims to impact lives via generating economic profits for Indian vendors selling products on its site (Amazon India, 2019 & 2021). The closest competitor, Walmart-owned Flipkart, also offers sellers a site with resources including workshops, webinars, training, and a self-paced learning platform, Smart Learn (Flipkart, 2021).

Similar approaches have been adopted in the context of digital marketplaces in other Asian countries such as China's "TaoBao villages", where rurally-based individuals and households (forming e-households) and e-commerce firms (e-shops) have engaged with e-commerce, reaching wider markets for their goods via platforms such as TaoBao (Wei et al., 2019). While the business models employed by these initiatives may differ from the cloudwork platforms included in this study, they nevertheless offer potential pathways into digitally-based economic activities and an opportunity for reintermediation approaches to upskill cloudworkers who may not have access to these opportunities.

Policy recommendation #5:
Advocate for a jurisdiction-spanning policy environment that would improve cloudworkers' access to skills development.

Regulatory frameworks can have a significant effect on cloudworkers' access to skills development and their opportunities to make use of existing upskilling trajectories. As various national governments have started to put the regulation of platform work on their policy agendas, there remains a mismatch between globally-operating cloudwork platforms—like the platforms included in our study—and the lack of comprehensive global policy responses to this new world of work. In this regard, the regulation of cloudwork presents a particular challenge for supranational regulatory bodies because those types of work and its emerging social conflicts are less visible than, say, food delivery or ride-hailing work.

There are various suggestions on how to regulate cloudwork in a planetary labour market. The ILO's Global Commission on the Future of Work, for example, presented an international governance system for digital labour platforms that would require platform operators (and their clients) to respect certain minimum rights and protections (Albrecht et al., 2020). This idea is based on the model of the ILO's Maritime Labour Convention for the global shipping industry. While the role of skills development has not been explicitly mentioned in such proposals, development actors would be well-situated to play an active role in extending policy horizons by foregrounding the importance of including access to training approaches in transnational policy debates.

Nevertheless, a key problem of current supranational regulatory frameworks with regard to global labour markets is their grounding in conventional understandings of labour as necessarily being embedded in clearly distinguishable industrial sectors, which produce tangible or physical commodities. A digital world of work, however, destabilizes the boundaries between such sectors and it requires us to rethink occupational standards as frameworks for skills development. Development cooperation could help with advocating for evidence-based reformulations of what constitutes an 'occupation' in ways that account for today's cross-cutting nature of cloudwork.

Policy recommendation #6:
Include access to skills development for cloudworkers in legislative action to foster due diligence in global supply chains.

Current legislative action on due diligence in global supply chains provides a point of regulatory leverage to cast a spotlight on, and may help to improve cloudworkers' opportunities of skills development. It is commendable that Germany's cabinet has recently approved a law on due diligence to enforce the protection of human rights and environmental standards along global supply chains (Solomon, 2021). The cloudworkers included in this study are also a part of global supply chains.

However, the opacity of client–worker relations is a key problem and research gap that complicates the inclusion of cloudwork in such supply chain laws. Clients can be individuals, but sometimes middle-sized and larger companies make use of cloudwork platforms

to commission Indian workers. We therefore recommend that development cooperation could help improve the evidence-base on the economic geography of platform work by focusing on the client side. Key questions include: Where are clients of cloudworkers based? How could a client or a company based in, say, Germany be incentivised to use cloudwork platforms in a way that is not detrimental to an Indian workers' access to skills development? How can international bilateral policy corporations—for example, between Germany and India—shape and improve cloudworkers' access to training approaches?

These questions exemplify the need to grow the evidence base about cloudwork while also rethinking and reworking existing understandings of supply chains by taking into consideration digitally mediated work. Development cooperation can play a proactive role in this process, as many important policy interventions in the domain of fair global or bilateral standards are a result of successful development policy. It is in this tradition that we encourage future policy efforts that not only take seriously the social responsibility of clients and consumers, but that produce legislative outcomes entailing legal requirements for companies to protect and improve workers' livelihoods.

Policy recommendation #7:
Support further research and develop pedagogical tools to share knowledge about cloudwork.

There is limited knowledge among workers, policymakers, and the broader public in India about cloudwork, its shifting place in the Indian economy, and its embeddedness in the planetary labour market. Development actors are well-placed to support further research on under-researched topics relating to cloudwork—for example, the extent to which different Indian companies are increasing their reliance on cloudworkers in their workforce strategies; policy options for governments in the global South to effectively tackle unfair cloudwork and encourage platform-led upskilling; and how skills mismatch and the underutilisation of workers' skills on platforms could be addressed (ILO 2021).

Finally, development actors could support the development of pedagogical resources and tools for different audiences, to share knowledge about cloudwork. For instance, cloudworkers, cloudwork aspirants and worker associations would benefit from increased general knowledge about the contextually-specific risks and rewards, opportunities and challenges relating to cloudwork as a livelihood strategy. Such resources could be developed utilising, for instance, e-learning and game-based learning platforms like Atingi. Companies seeking to outsource parts of their business operations via cloudwork platforms would benefit from guidance on ethically engaging cloudworkers; as would cloudwork platforms which intermediate such work. Legislators and policymakers would benefit from policy briefs that present options on how best to tackle the myriad challenges posed by this new sector of work. Development actors are well-placed to become a key knowledge node in the networks of cloudworkers, clients and platforms.

Appendix A: Methodology Note

The data collection for the project consisted of desk research, semi-structured interviews with stakeholders, surveys administered to cloudworkers, and semi-structured interviews with cloudworkers. In the following subsections, this appendix discusses the methodology related to the quantitative and qualitative phases of data collection focusing on sampling and recruitment, structure of the collected data, and its analysis. A research approach combining mixed methods allows for 'multiple ways of making sense of the world' (Greene 2007, p. 20) and helps to evaluate both observed activities as well as attitudes and perceptions towards them. Beyond the complementarity of the approaches utilized in the four research phases, we also used the mixed methods research design as an iterative process where findings from one stage informed the development of the next phase (Greene et al., 1989) (see **Figure 16**).

Ax.1. Stakeholder Interviews

Throughout the duration of the project, we interviewed members of various stakeholder groups. These interviews provided us with insight into the broader context of skills development and technical and vocational training in India as well as into perceived opportunities and challenges of cloudwork within this landscape (addressing RQ2 and RQ3) and in the context of the COVID-19 Pandemic (addressing RQ1). We were particularly interested in how the various organizations and policies related to upskilling view their approaches in relation to the dualistic nature of the Indian labour market with a large informal sector (addressing RQ4), and how do they perceive the role of development cooperation in relation to their mandate (addressing RQ5).

Ax.1.1. Sampling and Recruitment

We aimed to interview individuals representing various organizations and holding diverse viewpoints into skills development and technical and

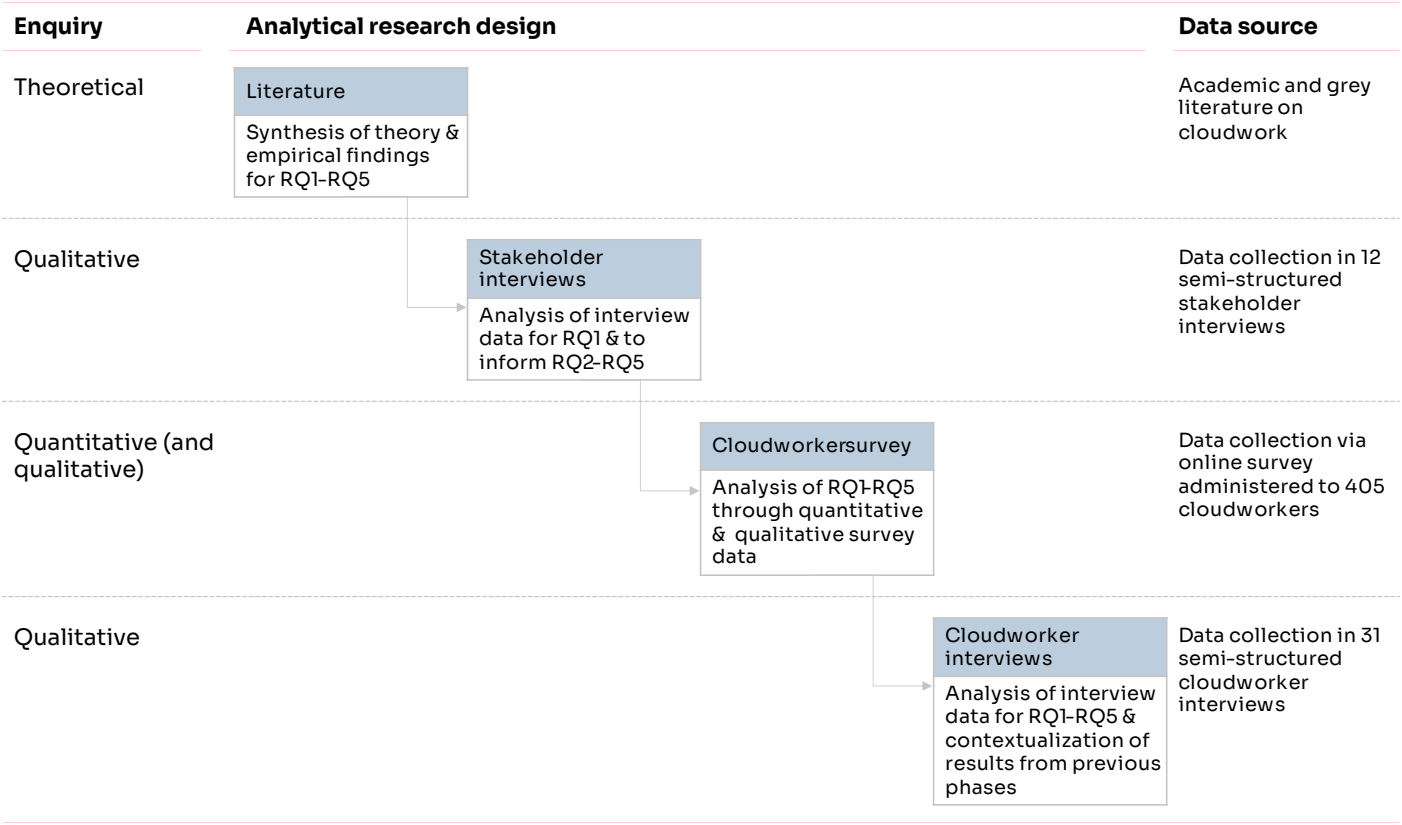


Figure 16. Mixed-Methods Research Design

vocational training in India, such as experts from India's National Skill Development Cooperation, sector skill councils, and platform companies. In order to identify appropriate stakeholder organizations and representatives whom we could contact for interviews, we tapped into our own networks and reached out to individuals identified by the GIZ. We additionally searched for relevant organizations and individuals in academic and policy literature on the topic as well as in related conferences and events. Finally, we used snowball sampling to identify potential interviewees based on our research participants' advice.

Through these avenues we identified potential research participants, among whom we were able to arrange interviews with 12 participants representing 10 organizations. The stakeholders we interviewed are listed in **Table 6** to the right.

The main selection criterion for being included in the sample was the level of knowledge and expertise in skills development and technical and vocational education and training in India and familiarity with cloudwork. The Indian skills development and TVET landscape includes various actors and initiatives, but many of them are not directly relevant for cloudwork, which limited the number of potential research participants. Further, many of the stakeholders we identified were very interested in the research topic, but more familiar with geographically-tethered platform work and less acquainted with cloudwork, which on one hand highlights the prevalence of the former in the Indian context and on the other, the need for further information and research in the nexus of skills development and cloudwork.

Table 6. Overview of Stakeholder Interview Participants

Name	Job Title and Organization	Type of organization
Ravishankar V Korgal	Advisor, Indo-German Programme for Vocational Education and Training – Cluster Aurangabad Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH	Development agency programme focusing on TVET
Sameer Narasapur	Head Standards, Assessments & QA Retailers Association's Skill Council of India (RASCI)	Sector Skill Council (SSC)
Sabina Dewan	President and Executive Director, JustJobs Network	Private Research Organisation
Shyamal Majumdar	Former Head, UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training	UNESCO Centre that supports member states improve their TVET systems
Samriti Sood	Management Consultant and Senior Product Manager, Office at National Skills Development Cooperation (NSDC)	Public-Private organisation (see more about NSDC in Section 4.4)
Kirti Seth	Co-Architect and Head, FutureSkills Prime Platform at NASSCOM	A skills initiative of the IT-ITES Sector Skill Council
Vidya Gopal	Co-founder, Yada Yada Collective	Freelancer professional association
Megha Vishwanath	Co-founder, Yada Yada Collective	Freelancer professional association
Shubhashree	Co-founder, Yada Yada Collective	Freelancer professional association
Amit Aggarwal	CEO, NASSCOM	IT-ITES Sector Skill Council
Dipesh Garg	CEO and Founder, Truelancer	Cloudwork platform
Pamela Baijal	Senior Policy Officer, BMZ Division 310: Policy issues of cooperation with Asia, South Asia	Development agency programme focusing on TVET

Ax.1.2. Semi-structured Video-conferencing Interviews

We conducted the interviews in a semi-structured format via video conferencing software such as Skype and Zoom. The participants indicated which platform they preferred to use as well as whether the interview took place via audio or audio and video. While we had envisioned conducting some of the interviews face-to-face, this was not possible due to the travel restrictions imposed by the COVID-19 Pandemic. Semi-structured interviews involve following an interview guide, but also enable the researcher to embark on topical trajectories which may depart from the guide thus facilitating comparability in the context of non-repeated interviews, while also allowing flexibility and probing (Creswell & Plano Clark, 2011). Semi-structured interviews were an ideal choice for our stakeholder interviews because due to the diversity in the participants' background, we did not always know how familiar they would be with cloudwork. Further, as many of them had particular viewpoints into organizing skills development or technical and vocational training and education, this method allowed for the interviews to proceed flexibly and accommodate topics and discussions that we may have unanticipated, but that were highly relevant to the Indian context. The interviews lasted between 45 minutes and one hour, though in some cases the participants were willing to share more of their knowledge and the longest interviews lasted for up to 75 minutes. In the interviews we asked mainly open-ended questions pertaining to five foci: skills development and TVET landscape in India, opportunities and challenges of skills development for cloudworkers, links between the informal economy and cloudwork, implications for development cooperation, and mapping of relevant stakeholders. Prior to each interview we researched the profiles of the stakeholder and the organization represented in order to tailor the interview questions to their context. Where new topics emerged during the interview, the interviewers made sure to ask further questions in order to integrate unexpected, but relevant findings.

Ax.1.3. Data and Analysis

The stakeholder interviews were carried out by two or three members of the research team, who also noted down the central insights after each interview. The audio recordings of the interviews were recorded and transcribed. A member of the research team read through the notes and the transcripts and extracted insights that addressed the research questions or otherwise helped to frame the introductory sections of the report. Where necessary, further desk research was carried out to supplement the interview insights. The findings from the stakeholder interviews were then reviewed against the findings from the survey and the interviews with cloudworkers before the central conclusions were outlined for the report.

Ax.2. Cloudworker Surveys

In the third phase of the project, we administered an online survey to 405 cloudworkers in order to collect data on their skills development related to their platform work (addressing RQs1-3, but also touching on RQ4 and RQ5). Our survey instrument was distributed online via Qualtrics, a prominent independent software platform for online surveys. The survey took between 25 and 50 minutes to complete by non-native English speakers. Participants were compensated between $6.5 and $14 for completing the survey depending on the platform fees and their preferred payment option.

Ax.2.1. Survey Instrument

We collected information about cloudworkers' skills development by using a bespoke survey, which we developed by using the survey designed by the CEDEFOP's CrowdLearn project as a foundation. The CrowdLearn survey is designed to collect information on European cloudworkers' skills development and learning practices, which is why it was well-suited for the purposes of our project. We modified the survey instrument substantially to better fit our research questions by removing and adding sections and by altering some of the survey questions to better fit the context of cloudwork in India.

Among the most marked changes to the CrowdLearn survey questions we decided to keep were the adaptation of the skills typology and the set of learning activities. We modified the skills typology by adding an additional category of financial skills. One could conceptualize the original typology also containing an element of financial skills under the skill categories 'obtaining work on platform', which the authors note including skills such as pricing one's own work, or 'organizational skills', which the authors mention include project management, or 'setting up as a freelancer', which the authors note includes skills such as taxes. Given that they CrowdLearn skill typology was developed based on the experiences of a sample of highly educated European cloudworkers (36% of the sample noted bachelor's degree, and 21% master's or a doctoral degree as the highest level of education they have attained), financial skills may not have been identified as a skill that the cloudworkers would

have developed before joining the platform or during cloudwork. However, based on our desk research on skills development of the Indian workforce and on Indians engaged in cloudwork or geographically tethered platform work, financial skills were highlighted as one of the central abilities. For instance, Donner et al. (2019) note financial skills as one of the main content types in skills development initiatives related to cloudwork and geographically tethered work in Asia and Africa. Relatedly, surveying online freelancers in India, Sri Lanka and Myanmar, Galpaya & Senanayake (2018) note that due to the nature of cloudwork, workers on these platforms need to navigate various financial challenges from not being able to qualify for loans due to the irregular payment schedule of cloudwork to restrictions on inward remittances complicating the withdrawal of earned income from the platforms. We felt that adding a separate category for financial skills helped us to better capture data on respondents' attitudes about their importance. Another notable adaptation in our survey was the amendment of the types of learning activities with a fourth category of platform-specific learning activities. In this category we added three learning activities: 'Following advice, tips, and suggestions displayed on the platform', 'Searching for advice in the online materials provided by the platform', and 'Receiving feedback on my jobs on the platform'. The inclusion of platform-specific learning activities was inspired by Donner et al.'s (2019) survey of skill training approaches in the African and Asian contexts, where training content located on the platform was identified as one of the key types of training available and useful to workers. Based on the types of learning activities identified by Donner et al. (2019) we also added two additional activities in the collaborative learning activities, namely 'Learning from online community forums' and 'Participating in collaborative or competitive events' and divided the individual study-related learning activity of taking online courses, webinars or tutorials into 'paid' and 'free' activities, as we wanted to assess the difference that a payment associated to these learning activities may have. We also included a 'Not applicable' category to some of the survey questions collecting data on Likert-scale, as during the piloting phase of the survey we identified a need for including these categories in order to accurately reflect respondents' views.

In terms of the structure of the survey instrument, we omitted the CrowdLearn survey section on learning strategies, as they were not as central to our research questions, and included a novel section with questions about the environment where the freelancer worked as well as a bespoke section with questions about the impact of COVID-19. We drafted the questions in these sections on the basis of a survey carried out by the Fairwork Foundation as part of their research for the report entitled The Gig Economy and Covid-19 and research on Indian cloudworkers (Bandaranayake et. al., 2020; Newlands & Lutz, 2020, Galpaya and Senanayake, 2018; Gupta et. al, 2014). In the section on the interaction of cloudworkers with stakeholders we added new questions on development cooperation. We also included further questions in the section on personal and demographic information and adjusted the existing questions to better reflect the context in India.

We developed four versions of the survey instrument in order to include terminology specific to each platform. However, the data collected by the instrument remained comparable across each platform.

Ax.2.2. Sampling and Recruitment

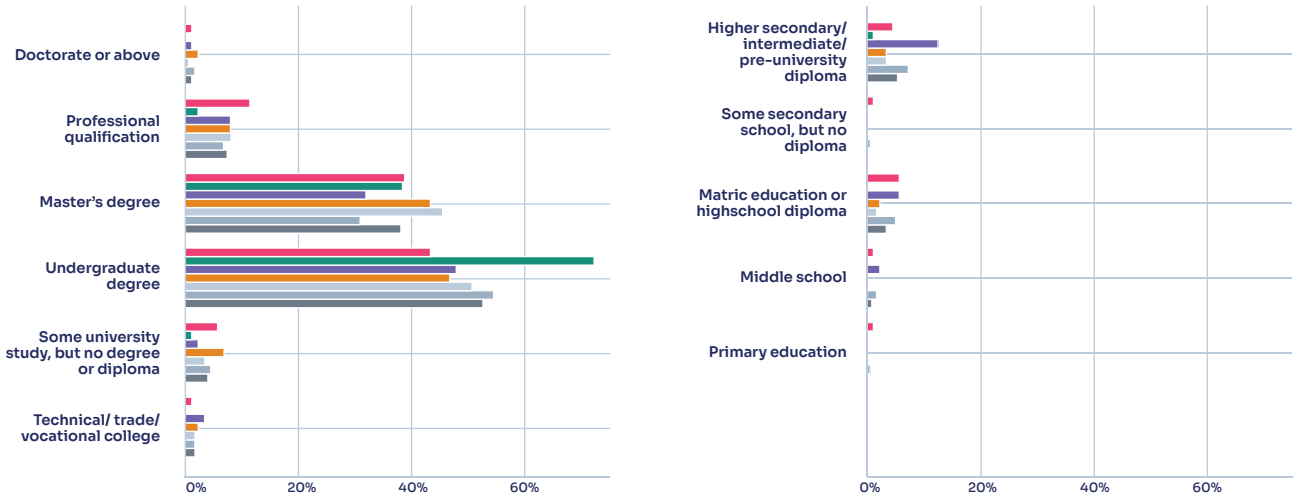
Our population of interest includes Indian cloudworkers selling work on online labour platforms. Owing to the practical limits of the project in terms of time and remuneration available for recruiting research participants, we defined our sampling frame to include four platforms: Amazon Mechanical Turk, Freelancer, Truelancer, and Upwork as discussed in section 5. We selected these platforms based on estimations of website traffic to them from Indian users and the prevalence of them in existing research about cloudwork in the Indian context, both indicating high numbers of Indian cloudworkers using these platforms. Our survey sample consists of 405 valid responses across the four platforms. We reached out to between 1,000 and 3,000 cloudworkers and our mean response rate thus varies between 10-20% on Freelancer, Truelancer, and Upwork. On Amazon Mechanical Turk the survey participants were recruited by posting a batch of jobs, which were taken up by the respondents and we did not therefore reach out to participants in the same way we did on the other three platforms. The sample includes workers who hail from different backgrounds in terms of their education, age, experience on the platform, and their reliance on income from the platform (see **Figure 17**).

We obtained a balanced sample between cloudworkers from the four included platforms and in terms of gender across the entire sample as well as within the group of respondents from each platform (see Figure 1). In order to be eligible to take part in the survey we required the respondents to be 18 years of age or above, be based in India, and have worked on the platform for at

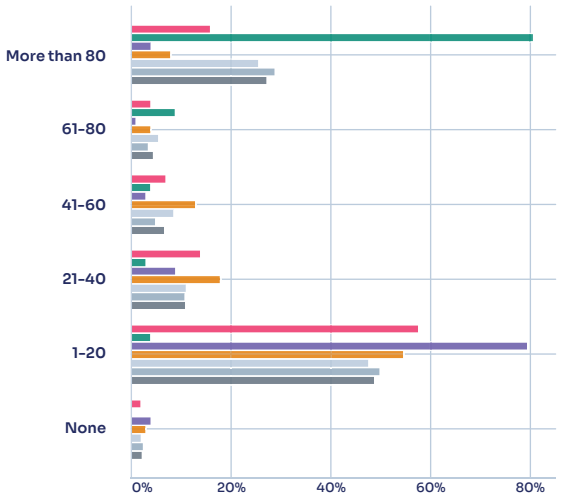
Figure 17. Sample Charicteristics.
Source: Project data set

Share of respondents, in % of subgroup

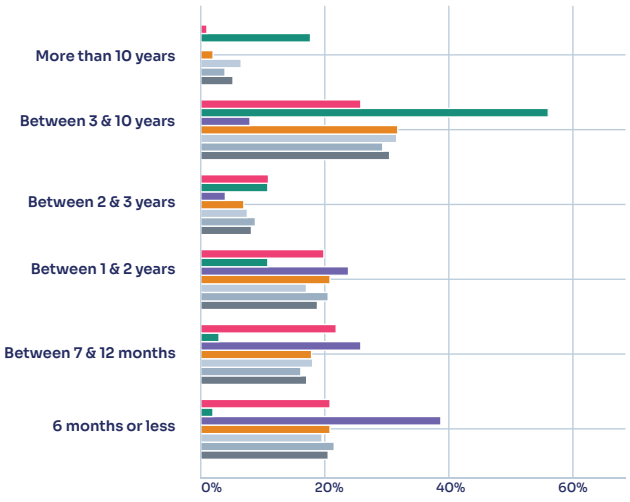
Distribution of educational attainment



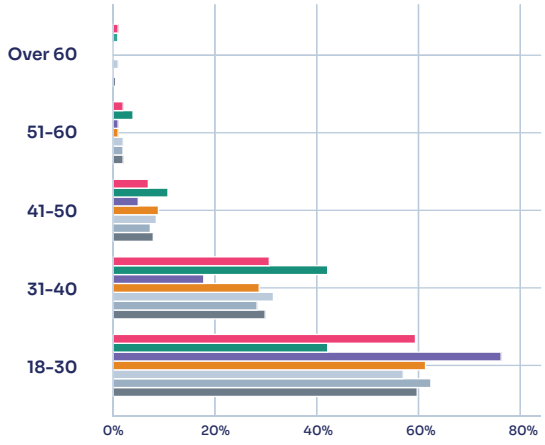
Distribution of completed jobs on the platform



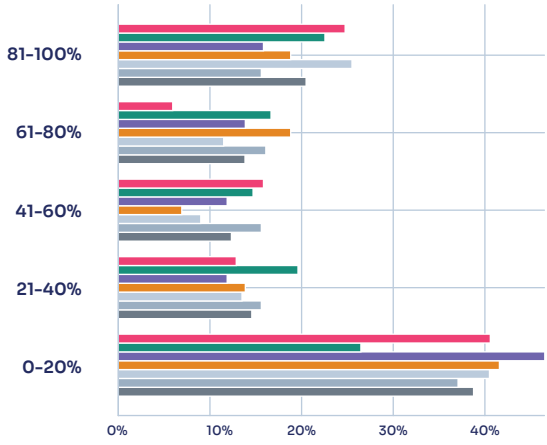
Distribution of work experience on the platform



Distribution of age groups



Distribution of share of income from cloudwork



least one month. Our sample was well balanced between the platforms as well as between genders, as Figure 1 shows.

Our sampling strategy on Freelancer, Truelancer, and Upwork included equal quota sampling, which was complemented by snowball sampling to a minor extent. On these platforms, we randomly invited cloudworkers to take part in the survey while maintaining equal quotas for gender as identified based on the cloudworker's profile photo and subsequently confirmed by their survey responses. This approach required spending substantial time on the platforms, but it allowed us to describe our project and the survey in detail, be clear about the time commitment required, and transparently post the compensation amount in an escrow fund while the cloudworker completed the survey and we reviewed the responses before releasing the payment. This method also allowed us to contact the cloudworkers directly and respond to any questions they had while taking the survey.

There were a few instances where we had an opportunity to snowball the sample for instance through cloudworkers who had taken the survey and were able to refer their colleagues to take it. However, we only received a couple of additional research participants through this avenue.

Ax.2.3. Data Analysis

We did not weigh the variables collected in the survey according to any demographic features, as the features of our population of interest---Indian cloudworkers---is unknown. We aimed to collect a sample that was well balanced in terms of the equal quotas of participants across the four platforms and in terms of gender both within and between these groups. While we additionally tried to recruit participants, who represented various sub-groups of cloudworkers of interest for instance in terms of age, experience on the platform, and type of work, achieving this variation was limited by the size of our sample. The data cleaning and manipulation, statistical analysis, and plotting of figures was carried out using Python. A selection of results is presented in this report.

Ax.3. Cloudworker Interviews

We wished to explore some of the central themes emerging from the stakeholder interviews and the analysis of cloudworker survey data further by inviting a select number of survey participants for a follow-up interview.

Ax.3.1. Sampling and Recruitment

We invited 31 survey participants for follow-up interviews. We aimed to have a balanced representation of interview subjects across the four platforms and in terms of the gender of the participants while prioritizing interviews with individuals whose survey responses had indicated insight into one of the themes that emerged from the survey data and stakeholder interviews. We interviewed 7 workers on Amazon Mechanical Turk, 8 on Freelancer, 8 on Truelancer, and 8 on Upwork. 42% of these interviews were carried out with female cloudworkers and 58% with males.

Ax.3.2. Semi-structured Video-conferencing Interviews

The interviews were similarly semi-structured as the stakeholder interviews, but we developed a more detailed interview guide to help us navigate the key themes more efficaciously. Our interview guide therefore included both closed and open-ended questions to encourage a rich understanding of the participants' views (Arksey & Knight, 1999). In the interviews we asked mainly open-ended questions pertaining to four main themes: skills development, learning activities, working environment, and working during the COVID-19 pandemic. The interviews lasted between 45 minutes and one hour, though in some cases the participants were willing to share more of their knowledge and the longest interviews lasted for up to 90 minutes. Prior to each interview we reviewed the survey responses of each interviewee in order to tailor the interview questions to their specific context. Where new topics emerged during the interview, the interviewers made sure to ask further questions in order to integrate unexpected, but relevant findings.

Ax.3.3. Data and Analysis

The cloudworker interviews were carried out by one or two members of the research team, who also noted down the central insights after each interview. The audio recordings of the interviews were recorded and transcribed. Several members of the research team read through the notes and the transcripts and extracted insights that addressed the research questions and expanded on the themes identified in the survey data. The findings from the cloudworker interviews were then reviewed against the findings from the survey and the interviews with stakeholders before the central conclusions were outlined for the report. Owing to the subjective

nature of the data retrieved from the cloudworker interviews, we included summaries of some of them as worker stories, which are separated from the main text of the report into free-standing text boxes. These worker stories exemplify some of the mechanisms and processes related to the key themes from a viewpoint of one or two interviewees thus helping to contrast the report findings that we mainly develop on the meso and macro level with subjective experiences of cloudworkers.

Ax.4. Conceptual, Methodological, and Ethical Challenges

The research project was reviewed by, and received ethical clearance through the University of Oxford Central University Ethics Committee. The main ethical considerations concerned obtaining informed consent, appropriate data protection, preventing worker exploitation, and responsible research in developing countries.

All research participants granted their consent before participating in the research activities. While the participants in the stakeholder and cloudworker interviews gave their verbal consent at the start of the interview, the survey participants granted written consent. At the start of the interviews, we informed the participants about the purpose of the project and the interview before recording their consent. Before the survey participants took the survey, they were presented with a page for informed consent, which similarly explained the purpose of the project and of the survey to them and recorded their written consent before allowing willing participants to proceed to taking the survey. In the information presented to the participants before recording informed consent we also included the contact information for a person who could provide the potential participants with further information.

Throughout the three phases of collecting data from the research participants, we complied with the guidelines and regulations set by the General Data Protection Law (GDPR, which is the European Union's privacy and security law), GIZ, the German International Development Agency, which funded the research, and the host institution, the University of Oxford. Data was only seen by the project team, stored in a secure drive in an anonymized format, and held in accordance with GDPR. Survey data included in our research outputs such as this report is presented on an aggregate level or anonymized to prevent identification of respondents. Similarly, any references to qualitative data collected via open-ended questions in the survey or during the cloudworker interviews are attributed to respondents via pseudonymized first names, which correspond to the participant's gender and thus prevent their identification from the data.

While the stakeholder interviews were not remunerated, the survey participants were paid between $6.5 and $14 depending on the platform and payment fees, and cloudworker interview participants were paid between $20 and $25 depending on the length of the interview. While we received some criticism for the level of payment, the compensation exceeded minimum wage in India as well as the minimum wage in the UK in the majority of cases. Given that the survey took between 25 and 50 minutes to complete for a non-native speaker of English, and some respondents reported they had exceeded the expected time due to providing detailed answers to some of the open questions, we additionally paid small bonuses on a case-by-case basis. Similarly, where the cloudworker interviews stretched beyond one hour, we compensated the respondents with an additional $5.

We developed the project's research activities while also carefully reviewing the sensitivities related to the research context. As the respondents' command of English language varied, we made sure to use accessible language and added descriptions of key concepts and constructs in the survey. The cloudworker interviews were carried out by researchers based in India who are proficient in Hindi and could help participants where English terms may have posed a challenge. We additionally provided contact details for a researcher whom the participants could contact if they had any questions. We made full use of the variety in question formats offered by Qualtrics in order to make the survey questions intuitive to respond both in terms of language and the visual experience. Finally, we have also ensured to engage in benefit-sharing initiatives where possible during the research, and shared preliminary findings of the research in non-academic venues. We offered to share the results of the research with every participant and many of them have requested to receive a copy of the project report.

The main conceptual and methodological challenges included the unknown population of Indian cloudworkers, self-selection bias related to the volunteered sample, the elusive nature of some of the survey constructs, data quality, integration of theoretical, quantitative, and qualitative research findings, and responding to worker expectations of platform dynamics.

While the Indian cloudworker population is unknown and we could not therefore draw random samples from it nor from our sampling frame of the four included platforms, we obtained a sample with equal quotas for the variables of interest: the four platforms and gender. We then recruited the research participants to reflect the diversity of Indian workers in the four platforms as much as possible.

Our sampling strategy produced a volunteered panel, which is not free from self-selection bias. This bias entails the possibility that by its volunteered nature our sample may contain more cloudworkers who are interested in completing surveys than the true population of Indian cloudworkers. We don't have a way to measure the extent to which this bias may have an effect on our sample, but we did not receive many comments from our participants that would have indicated them having completed similar surveys in the past. Choosing to participate in our survey may also be impacted by the invited cloudworker's level of earnings on the platform. While previous research on the topic led us to expect that cloudworkers who earn very high salaries on the platforms may not be incentivised to participate in the survey, we sent invitations also to high-earning workers. While we received responses from workers with a range of hourly wages, some of our invites were declined due to the price point in a few cases, which indicates that this bias may have excluded some of the cloudworkers who earn comparatively high wages through the platforms.

Some of the constructs in our survey concerned topics that may be challenging for the respondents to recall—for instance, estimating an average frequency of developing a certain kind of skill during leisure time or whether they followed advice, tips, and prompts displayed on the platform. As the Cedefop study notes, informal learning activities are more challenging to recall than for instance attending a formal workshop (Cedefop, 2020). To help the respondents grasp the survey questions and answer truthfully, we always indicated a concrete time frame that did not extend too far in the past, such as three months, and included explanations of the kind of construct we prompted the respondent to consider where we suspected it to be challenging to conceptualize or recall them.

We strove for high data quality by seeking feedback on the survey instrument and interview guides from fellow researchers experienced with research on online labour platforms, adapting existing and relevant scales and questions into our survey instrument, conducting pilot surveys before launching the surveys on the four platforms, and receiving and reacting to feedback from research participants throughout the project. We also verified each survey response in detail and sometimes requested clarifications from the respondents, which helped us to further ensure high quality of data.

Our four phases of data collection generated theoretical, quantitative, qualitative survey-based, and qualitative interview-based data and insights. We ensured the integration of these findings by writing up results on each level and having frequent iterations to ensure that quantitative findings were interpreted in light of the qualitative data while the themes emerging from the qualitative data were investigated with respect to the relevant quantitative data. The theoretical findings informed the direction of the research and also offered a helpful framing for the discussion of the results.

As we recruited the survey participants via the four platforms of interest, in most cases the respondents completed the surveys as jobs posted on the platform. This led to us as recruiters taking the role of a client while the respondents gained another project to their portfolio. Many of the respondents asked us to provide a rating and feedback for taking the survey, as the job would appear in their profile history. While this positioned us to take an active role in the platform dynamics that we researched, we wanted to act as a responsible client would, and left a positive rating as well as a standard text of public feedback describing the job and the role of the cloudworker thanking them for the completed project.

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