Swedish Agency for Work Environment Expertise

Platform work: what it is and how it works from an occupational safety and health perspective

Report 2025:14

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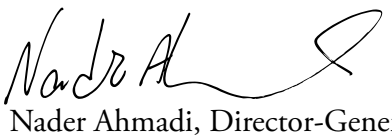
Foreword

The digital transformation of society has not only changed how we communicate, consume, and organize our lives but has also reshaped the way we work. The rise of digital labor platforms, where work is arranged and performed through online systems, has created entirely new opportunities for flexibility, innovation, and access to the job market. At the same time, this development presents challenges for workers, employers, lawmakers, and regulatory agencies alike. Questions that once could be answered within the framework of traditional employment now need to be reformulated. Who is responsible for the working environment when work is done through a platform? How are health and safety affected when work is managed by algorithms and performed in environments often lacking physical oversight? And how can fairness, security, and well-being be maintained in an economy where work is more fragmented, flexible, and global than ever before?

To promote a better understanding of these issues, the Swedish Agency for Work Environment Expertise commissioned this report, 'Platform work: what it is and how it works,' from an occupational safety and health perspective. The report examines the rise of digital labor platforms, their impact on the labor market, and the specific occupational health and safety risks linked to this new employment form. It shows that platform work is not just a technological or economic trend but a significant structural shift in the relationship between work, technology, and people.

The authors of this report are Professor Dr. Adrian Todolí-Signes (Project Leader), Assistant Professor Dr. Ángela Martín-Pozuelo, Doctoral Candidate David Crespo-Ortiz, and Doctoral Candidate Paula López-Aguado, all from the Department of Labour Law and Social Legislation at the University of Valencia. Professor José María Peiró-Silla of the University of Valencia and Simon Taes of the University of Leuven provided valuable insights. The report was peer-reviewed by Professor Bengt Sandblad of Uppsala University. The responsible project leader at the Swedish Agency for Work Environment Expertise is Associate Professor Robert Ljung, and Axel Wiman served as communications lead. I would like to extend my sincere thanks to the external researchers, peer reviewers, and colleagues at the Agency for their dedication and professional contributions to the development of this important report on platform work and the work environment.

Gävle, December 2025



Nader Ahmadi, Director-General

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Abstract

Digital platform work is reshaping global labour markets by altering how work is defined, delivered, and regulated. Its rapid expansion, enabled by technological developments such as artificial intelligence and mobile applications, has introduced novel forms of employment that depart significantly from traditional models. This transformation holds deep implications for social protection systems, job stability, and occupational safety and health (OSH). Understanding platform work from an OSH perspective is critical to developing informed policies that ensure safe, healthy, and equitable working conditions in the digital age.

Aim of the study

This report analyses digital work platforms and how they have emerged as key intermediaries between workers and clients, reshaping not only the nature and organisation of work, but also changing the terms of social protection and job security.

This report builds upon the findings of the systematic review *"OSH in Digital Labour Platforms"* (The Swedish Agency for Work Environment Expertise 2025:13), complementing it with additional literature to expand definitions and address overlooked aspects. It also offers an in-depth understanding of the structure and dynamics of a novel area of economic activity.

Analytical contributions of the study

The report expands upon the systematic review with several key contributions:

1. **Conceptualisation.** It clarifies the heterogeneous nature of digital labour platforms, highlighting the lack of a universally accepted definition. It sets a standard for national-level regulatory interpretation by adopting the EU's legal concept.
2. **Platform classification.** Different types of platforms are categorised according to two main criteria:
   - **Mode of work:** online vs. on-site
   - **Skill level:** skilled vs. unskilled work

This classification facilitates comparative OSH analysis and reveals that precarity is often more tied to employment status than the job's skill level.

3. **Occupational hazards.** The study identifies a wide array of OSH risks common to digital platforms, including:
   - **Economic precarity** due to income volatility and lack of benefits
   - **Algorithmic pressure,** leading to increased pace of work and loss of autonomy
   - **Surveillance and stress** from continuous monitoring
   - **Extended hours** and irregular schedules that harm work-life balance.
   - **Technostress** from excessive digital interface interaction
   - **Isolation** and absence of collective representation

These factors exacerbate traditional sector-specific risks and call for targeted OSH strategies.

Findings

1. Benefits and opportunities

Digital platform work offers several advantages that contribute to its popularity:

- **Flexibility.** Workers can manage their schedules and combine work with other responsibilities, attracting students, parents, and part-time job seekers.
- **Accessibility.** Platforms lower labour market entry barriers for migrants, ethnic minorities, young people, and people with disabilities, offering income-generating opportunities otherwise unavailable in traditional employment.
- **Income diversification.** Many engage in platform work to supplement unstable incomes or fill gaps during periods of unemployment.
- **Skill development.** Workers may acquire digital and professional skills that are transferable to other sectors.
- **Global connectivity.** Digital platforms provide access to clients and markets beyond local and national boundaries, expanding job opportunities in both skilled and unskilled sectors.

2. Risks and detrimental aspects

Despite these benefits, platform work is fraught with significant OSH and regulatory challenges:

- **Job insecurity.** By classifying workers as self-employed, they are denied key labour rights, such as unemployment protection, sick leave, and pensions, leading to economic instability.
- **Algorithmic management.** Workers are often managed and assessed by automated systems that allocate tasks, rate performance, and impose penalties, without transparency or a mechanism for contesting decisions. This fosters high stress, emotional fatigue, and a loss of autonomy.

- **Work fragmentation.** Platform work is frequently broken down into microtasks, which undermines professional identity and reduces motivation, while increasing monotony and psychological strain.
- **Health risks.** Many platforms do not provide adequate health and safety guarantees. Examples include traffic accidents in ride-hailing services and ergonomic issues among remote digital workers.
- **Technology overload.** Continuous use of digital devices and multitasking between apps can lead to burnout and cognitive fatigue.
- **Lack of representation and isolation.** Workers generally lack union representation, social support, and workplace networks. This increases their vulnerability and limits their ability to influence working conditions.

These risks underline the urgent need to adapt OSH frameworks to the platform economy.

Conclusions

This report highlights that platform work is not merely a technological innovation but a structural transformation of labour relations. The key conclusions are:

1. **A clear definition.** While literature offers varied descriptions of platform work, the EU Directive provides a practical regulatory definition based on four essential characteristics. This supports harmonisation across Member States.
2. **Classification for OSH analysis.** Grouping platforms by service modality (online/on-site) and skill level helps isolate occupational risks and understand their determinants. However, skill level often masks deeper inequalities tied to legal status and precarity.
3. **Identification of unique hazards.** This report isolates the hazards directly linked to the platform model (algorithmic control, isolation, fragmentation), which compound those inherent to the specific sector of work. These factors should inform future OSH risk assessments and preventive strategies.
4. **Urgent need for regulation.** There is a pressing need for comprehensive policies that integrate digital labour platforms into existing labour and OSH protection. This includes ensuring social security access, enforcing limits on algorithmic control, and empowering workers through representation.

This report offers a foundational perspective for policymakers, regulators, OSH professionals and researchers to engage with platform work critically and constructively. Protecting platform workers involves more than regulatory adjustments. Instead, it calls for a broader commitment to human-centred work policies that promote well-being and fairness.

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1. Introduction

Digital platform work has become a disruptive phenomenon that is transforming the global labour economy and raising fundamental questions about how employment in the digital age is defined and regulated. Digital platform work refers to labour mediated through online platforms that connect workers with tasks, often in a gig-based or on-demand model. This form of work includes ride-hailing, food delivery, freelance digital tasks and other services facilitated by digital applications.

This paper analyses digital work platforms and how they have emerged as key intermediaries between workers and clients, redefining not only the way we work and how work is organised, but also changing the terms of social protection and job security.

Digital platforms represent much more than technological advances. They are characterised by their ability to connect people around the world in real time, facilitating access to flexible, diversified job opportunities. However, this also brings complex challenges, such as lack of regulation, job insecurity and increased occupational safety and health (OSH) risks. This new reality breaks work down into specific micro tasks, as well as introducing a triangular relationship model between workers, clients and the platform itself, which redefines the traditional rules of employment.

Since its inception, platform work has experienced accelerated growth, especially in Europe, which had over 500 active platforms in 2021, with 28 million workers (Groen et al., 2021). This growth has been driven by advances in technologies such as artificial intelligence, cloud computing and blockchain, which have enabled unprecedented connectivity between workers and customers.

Working on digital platforms offers several advantages that explain their growing popularity among diverse groups of workers. The main benefits include flexible working hours, enabling workers to manage their own time and combine employment with other activities and personal responsibilities. Platforms also reduce entry barriers into the labour market, bringing opportunities for groups that traditionally face greater obstacles, such as migrants, people with disabilities and young people seeking their first job. In fact, although the profiles of platform workers are highly varied, data show that migrants and ethnic minorities are overrepresented due to low entry barriers, as these platforms provide accessible job opportunities for these groups (Urzì Brancati et al., 2020).

Another significant advantage is that they are a way to generate income, either as a main or complementary activity. This is especially attractive for those who need to diversify their sources of income or who face unstable economic situations (Hauben, Lenaerts, & Waeyaert, 2020). In addition, platform work can serve

as a gateway to develop technological and professional skills that can be useful in other work contexts (ILO, 2021). In some cases, platform work can act as a stepping stone to more stable, better paid work.

Finally, the digital nature of these platforms facilitates the connection between workers and clients globally, significantly expanding employment opportunities and enabling workers to access markets that would otherwise be off limits. This globalisation of digital work has created a dynamic ecosystem that benefits those seeking to adapt to an ever-changing work environment.

Despite these benefits, working for digital platforms poses significant disadvantages for and is detrimental to workers. One of the most significant challenges is job insecurity. Most platforms classify their workers as self-employed, which excludes them from access to basic labour rights such as protection against dismissal, unemployment benefit and access to social security. This contributes to major economic instability and makes long-term financial planning difficult.

Another critical aspect is the lack of transparency and control exercised by algorithms that manage tasks and evaluate performance. Loss of self-control is a major factor in experiencing stress. While this is not restricted to algorithmic management, this risk factor is particularly intensified by it. These algorithmic management systems can lead to inequalities, discrimination and an increased workload, as well as limiting workers' autonomy. Moreover, constant supervision and fierce competition can negatively affect employees' mental health and general well-being.

Additionally, working for digital platforms introduces significant occupational safety and health (OSH) risks due to their unique characteristics and lack of specific regulation. This paper explores the main occupational risks specific to digital platform work. It highlights the **fragmentation of work,** which reduces tasks to specific activities, affecting the professional identity and psychological well-being of workers. In addition, **economic insecurity**, generated by variable income and the absence of social protection, increases stress and anxiety.

Algorithmic management, which monitors and evaluates performance in real time, adds further pressure, prioritising productivity over safety. This, coupled with constant surveillance, can lead to fatigue, stress and mental health issues. In addition, the **lack of control over working conditions** exposes workers to unregulated and hazardous environments, such as traffic accidents for delivery drivers and ergonomic challenges for remote workers.

Intensive use of technology also leads to **technology overload**, affecting workers' ability to manage multiple systems, which increases burnout. Finally, **lack of union representation** and lack of social support and isolation at work exacerbate workers' vulnerability by limiting their ability to shape their working conditions and access support networks.

These risks highlight the urgency of implementing measures to ensure safe and fair working environments when working on digital platforms.

In the light of these challenges and the growing relevance of digital work platforms, the European Union has led regulatory efforts by adopting several directives and initiatives aimed at ensuring fair working conditions in the digital platform environment. One of the most relevant is Directive (EU) 2019/1152 on transparent and predictable working conditions, which establishes basic rights for all workers, including those working in more precarious jobs. It introduces safeguards such as clear information on employment conditions and limits on abusive working practices.

In 2021, the European Commission went a step further with the proposal for Directive (EU) 2024/2831, specifically designed to improve working conditions for digital platform workers. This directive, adopted in 2024, addresses critical issues such as job classification, establishing clearer criteria for determining whether a worker should be considered an employee or a self-employed individual. It also imposes obligations on platforms to ensure greater transparency in the use of algorithms that affect task allocation and performance evaluation.

At a global level, the International Labour Organization (ILO) has intensified its efforts to address the challenges of platform work. In 2024, the ILO sent a questionnaire to governments to assess the need for regulatory instruments to promote decent work in the platform economy. The results of this consultation will be discussed at the 113th session of the International Labour Conference in 2025, in the hope of developing global guidelines and setting standards to protect platform workers.

This study aims to analyse what digital work platforms are and what their effects are from an OSH perspective so as to provide policymakers with sufficient knowledge to be able to take the necessary measures to regulate the sector. This paper "Platform Work: What It Is and How It Works from an OSH Perspective", is intended to enrich the report "OSH in Digital Labour Platforms" (The Swedish Agency for Work Environment Expertise 2025:13), which presents a literature review on the specific occupational hazards inherent to platform work, their effects on the health of platform workers and the measures proposed by these authors to promote platform workers' health.

One of the objectives of the present report is to give context to the systematic review by offering clear definitions, detailed descriptions, and an analytical perspective on the concept of "platform work" within the framework of OSH.

The content of this report is primarily based on the literature reviewed in the systematic report, along with additional sources identified through references found in that literature. Furthermore, specific literature has been incorporated to address topics that were not explicitly covered in the systematic review but were deemed essential for providing more precise and comprehensive descriptions. This approach will ensure a well-rounded understanding of the risks, challenges and implications associated with digital platform work from an OSH standpoint.

Additionally, the present study focuses on analysing the evolution and impact of digital platform work from various perspectives. The next chapter discusses the emergence of this phenomenon and its rapid growth, highlighting its economic and social relevance in Europe and globally. It also explores the demographic characteristics of workers, highlighting their diversity and the specific challenges they face. The report focuses on the risks and benefits of platform work, assessing both the opportunities for flexibility and additional income, and the detrimental aspects arising from precarious work, algorithmic management and a lack of social protection. This framework is complemented by an analysis of the regulatory context, describing European and international initiatives that seek to address inequalities and ensure fair working conditions.

The third section of the study conceptualises digital work platforms by showing the lack of common agreement among experts on them and highlights the features that are common to all the concepts. The fourth section classifies platforms according to types of work and operating modes. The fifth section examines specific occupational risks, including algorithmic management, poor working conditions, irregular working hours and social isolation. These features highlight the need for a specific regulatory framework, balancing the benefits of the digital economy with protection for workers.

The paper concludes by highlighting the importance of moving towards an inclusive regulatory system that ensures safety, health and fairness in platform work, pointing to the crucial need for collaboration between governments, platforms and workers.

2. Background

2.1 The emergence of digital labour platforms

Digital labour platforms have experienced rapid growth in size and relevance in Europe over the last decade (Eurofound, 2019; European Commission, 2020). In 2015, they were considered an important emerging "new form of employment" whilst by 2020, platform work was present in almost all EU countries (Eurofound, 2020). This new reality, together with the conflicts that this new business model has generated in terms of operations, the tasks it covers and the working conditions of those providing services in the sector, has attracted the attention of researchers, the media and policymakers (Eurofound, 2019; Farrell et al., 2018; Jing et al., 2023)

This phenomenon of the global economy has redefined the way people access employment and perform work. This new way of coordinating the provision of services has been facilitated by the technological revolution (Urzì Brancati et al., 2020), i.e., its success is closely linked to advances in information and communication technologies, the development of software technologies such as artificial intelligence, cloud computing and blockchain, and the widespread use of smartphones, which have enabled the creation of digital environments connecting workers and employers (ILO, 2021a).

Platform work is part of the platform economy and centres on people accessing services and expertise, and performing tasks in exchange for payment via a digital platform (Hauben, Lenaerts, & Waeyaert, 2020). In other words, there is a triangular relationship in which the platform provides a service that is used by

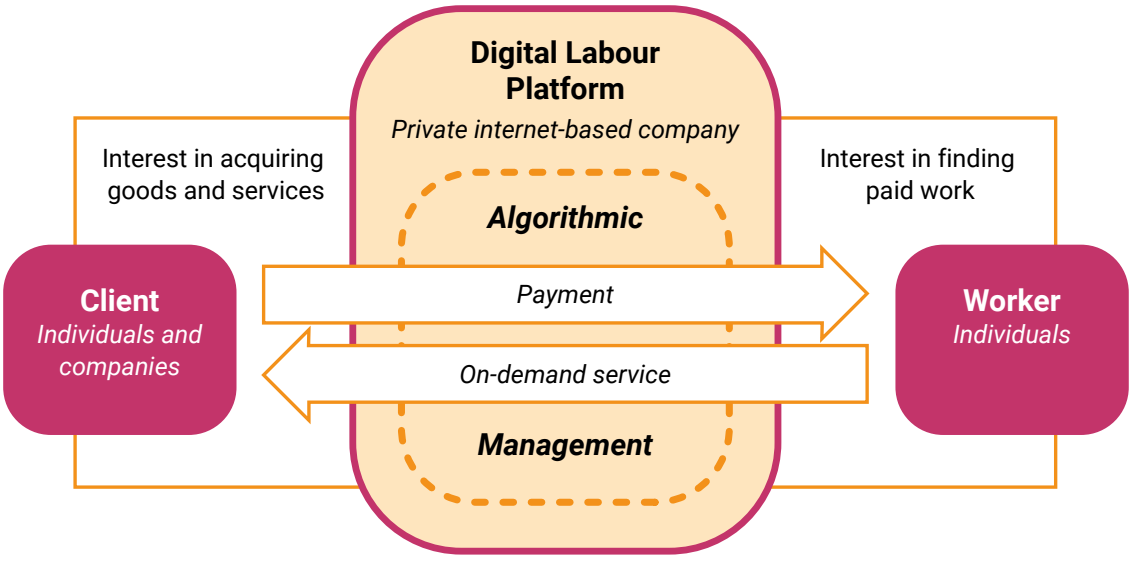


Figure 1. Conceptualisation of the triangular relationship in the digital platform economy.

workers (who provide the service and receive financial compensation for it) and the end customers (Hauben et al., 2020). This relationship is illustrated in Figure 1, which visually represents the interactions between the platform, workers and customers, highlighting their interconnected roles in the platform work ecosystem.

Platform work refers to work carried out on or mediated by a digital platform (European Commission, 2020; Garben, 2017, 2019). It is characterised by the use of mobile applications and platform-owned technology to mediate between workers and customers, to assign tasks, organise and evaluate work, and collect and analyse the data generated and provided by workers and customers (Hauben, Lenaerts, & Waeyaert, 2020).

Digital labour platforms function as intermediaries between workers and clients, either by providing services that are offered and performed online, which clients access and pay for, or by connecting the interested parties and acting as a payment tool when services are performed at a specific physical location (Todolí Signes et al., 2020). These platforms share similarities with typical labour market intermediaries in facilitating the match between workers and companies, yet they differ from these traditional intermediaries in that they manage a task or a service, not a job in the traditional sense of the word (Urzì Brancati et al., 2020).

2.2 Size of the digital labour platform sector

The lack of available data makes it difficult to estimate the total number of people working for digital platforms (Hauben, Lenaerts, & Waeyaert, 2020). In addition, the lack of a single definition of platform work, the fragmentation of tasks, the fact that some platform work is transnational, and the different approaches used by measurement surveys, exacerbate this situation (Eurofound, 2019).

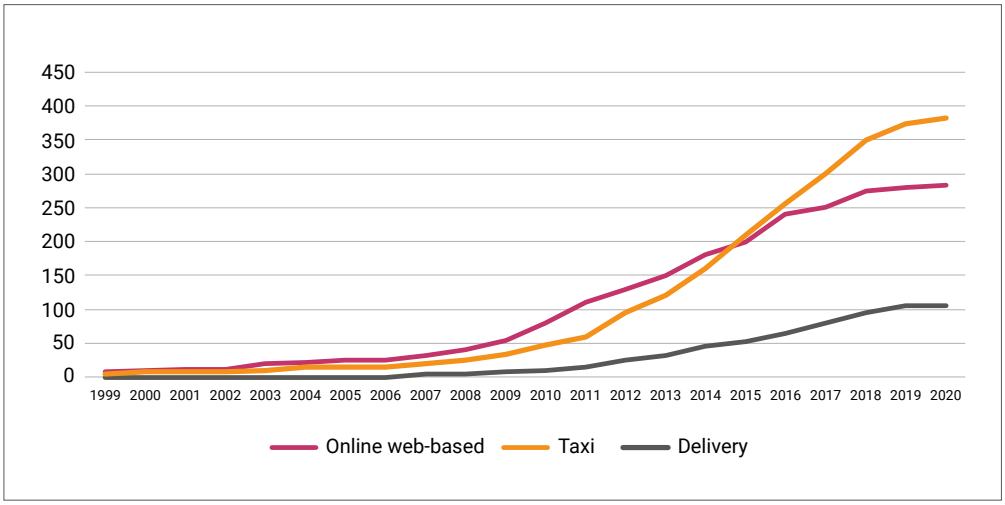
COLLEEM surveys[1] have shown that the proportion of people who provide services through platforms in the EU increased from 9.5% in 2017 to approximately 11% in 2018 (Pesole et al., 2018; Urzì Brancati et al., 2020). Working on digital platforms was the main form[2] of employment for 1.4% of the working population (those people working on digital platforms at least monthly, for at least 20 hours per week, or earning at least 50% of their income through platforms), while another 10% of people worked on these platforms to supplement other forms of employment (Eurofound, 2019; Lenaerts et al., 2022).

The Flash Eurobarometer survey also highlighted the growth of platform work between 2016 and 2018: 17% of Europeans used online services (as customers) in 2016, with this figure rising to 23% in 2018 (European Commission, 2016b, 2018). The data for 2018 also estimated that 6% of Europeans had already worked for these platforms, whilst 19% were considering doing so in the future (Hauben et al., 2020).

1 The JRC-COLLEEM (COLLaborative Economy and EMployment) surveys, launched in 2017 and 2018, respectively, were among the first surveys to estimate the size of the platform economy at the European level, and to analyse the socio-economic profiles and working conditions of platform workers in Europe.
2 The definition of platform work used in this report is the one provided in Section 3.1.3, related to digital labour platforms.

Sweden reported that 2.5% of the working-age population performed work on platforms, 4.5% had looked for work on platforms, and 10% of the population had performed work on platforms at some time before 2017 (Eurofound, 2018).

Most platforms started their operations from 2014 onwards and, although the number of web-based platforms was initially higher, in 2020 there were 235 active web-based platforms in the European Union and 355 location-based platforms (European Commission, 2021d). One year later, in 2021, the estimated figure had risen to over 500 labour-based platforms in the EU providing services or used by EU citizens to generate income with 28 million people working for platforms. The figure for Sweden stood at 791,575 platform workers (European Commission, 2021d).



Figur 2. Number of active digital labour platforms globally (selected categories). Source: World Employment and Social Outlook 2021 – The Role of Digital Platforms in Transforming the World of Work (2021) ILO. p. 47

Globally, at least 777 digital labour platforms were active in 2021. The *delivery* sector accounted for the largest number of platforms (383), followed by *web-based online* platforms (283) and the passenger transport sector (106). The vast majority of web-based online platforms were *freelance platforms*[3] (181), while 46 platforms focused on microtasks (Figure 2) (ILO, 2021a).

3 In this case, freelance platforms are understood to be platforms that function as a marketplace for professionals who are mainly highly skilled workers, though they provide all types of work. In this study, these platforms are referred to as highly skilled web-based platforms, as described below.

2.3 Characteristics of platform workers

There seems to be a consensus regarding the composition of the workforce on digital platforms in Europe. The typical worker is a young male, living in a city and with a relatively high level of education (EU-OSHA, 2023; Fernández-Macías et al., 2023; Schwellnus et al., 2019). In 2017, 61% of platform workers in Sweden were male. It had previously been stated that platform workers tended to have dependents (EU-OSHA, 2023; Schwellnus et al., 2019). However, a recent study by Fernández-Macías et al. (2023) challenged this view, concluding that the majority of platform workers are single with no children.

The number of female platform workers decreases as the proportion of total income earned through the platform increases. According to the data, 40.2% of workers who earn less than 25% of their income from the platform are women. Women account for 31.2% of platform workers who earn between 25% to 50% of their income, and 26.3% of workers earning at least 50% of their income from platform work are women (Pesole et al., 2018). However, the percentage of women working on digital labour platforms is progressively increasing (EU-OSHA, 2023).

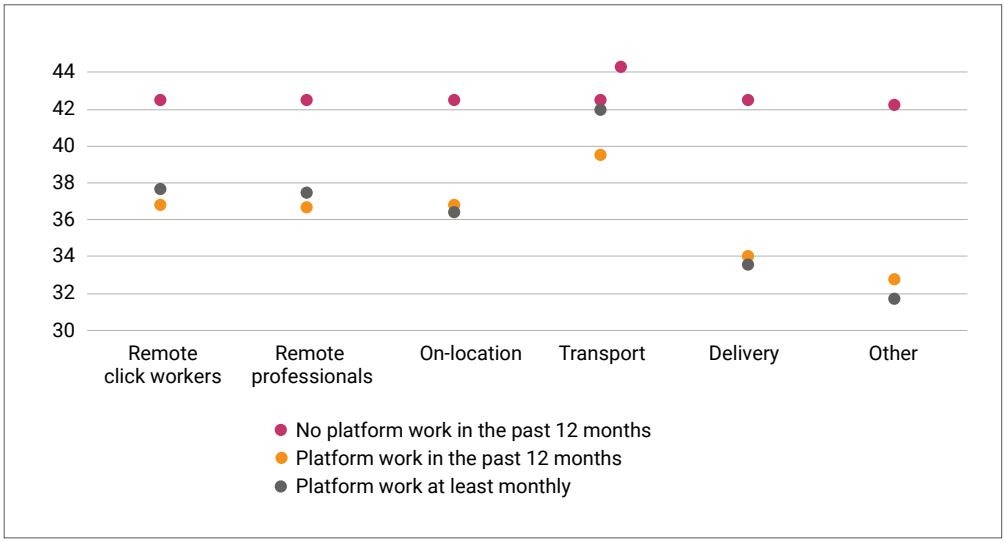


Figure 3. Average age of platform workers, by type of activity and frequency.
Source: Piasna, 2021.

Another survey conducted by ETUI (ETUI Internet and Platform Work Survey (ETUI IPWS) in spring 2021 reconfirmed this trend, although a breakdown by type of activity showed that the age of platform workers was higher in the transport sector than in other sectors (Figure 3) (Piasna et al., 2022). In terms of gender distribution, 54% of workers were men. The typical gender roles found in the traditional labour market held true: 82% of transport workers were men and 68% of remote professional activities were carried out by men. Women represented a large majority of home-based workers (64%). This category was dominated by young women providing care services (Figure 4) (Piasna et al., 2022).

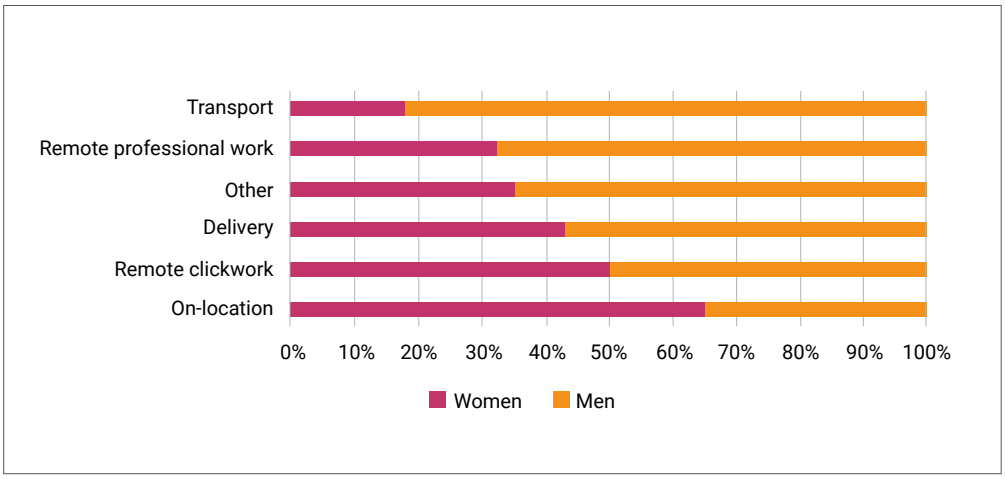


Figure 4. Platform workers, by type of activity and gender. Source: Piasna, 2021.

Migrant workers and ethnic minorities were more likely to work for digital platforms than those born in the country of residence (Piasna et al., 2022). The COLLEEM survey showed that between 16.3% and 13.3% of platform workers were migrants in the EU, 24.9% and 26.8% in the case of Sweden (Urzì Brancati et al., 2020). Similarly, a 2021 survey conducted by the European Commission found that at least 16.3% of people working through platforms on a more than sporadic basis had been born outside their country of residence (this survey was conducted in the official language of the target country and did not include migrant workers who did not know the language. Thus, the figure may be higher) (Barcevičius et al., 2021).

The over-representation of migrants among platform workers is explained by low entry barriers to work and the prevalence of undeclared work and illegal labour arrangements (Barcevičius et al., 2021). Moreover, migrant status is a key factor of vulnerability in the labour market, i.e. this group tends to access less secure and lower paid jobs (Piasna et al., 2022).

On the other hand, there is a relationship between educational level and the likelihood of working on platforms. Approximately 11% of platform workers have lower secondary qualifications at most (ISCED[4] 0-2), while around 53% have upper secondary qualifications (ISCED 3-4) and 36% have tertiary education qualifications (ISCED 5-6) (Piasna et al., 2022).

It is useful to determine the characteristics of workers because they influence occupational risks. For example, younger workers, who are typical platform workers, are more likely to suffer occupational accidents (Nielsen et al., 2022).

4 The ISCED code (International Standard Classification of Education) is a framework developed by UNESCO to classify and compare education programmes and levels across countries.

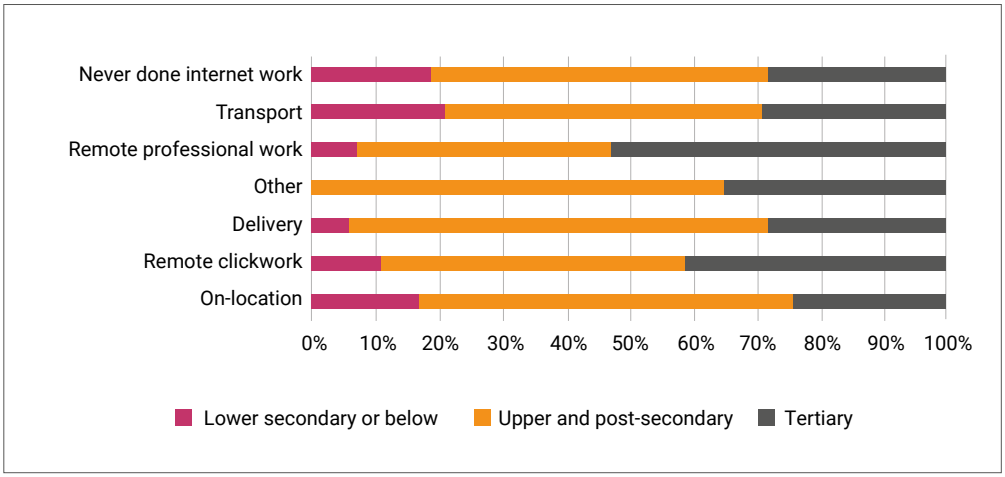


Figure 5. Educational level of platform workers, by type of work Source: Piasna, 2021.

2.4 Challenges and opportunities of platform work

The success of digital platforms can be attributed to their ability to reduce transaction costs (OECD, 2016), create economies of scale, their ability to recruit workers in locations with lower price and wage levels (ILO, 2021a), and to consider their workers as independent contractors (European Commission, 2020), among other reasons. As a result, advocates of digital labour platforms see them as "flexible", while others describe them as "precarious" (Tran & Sokas, 2017), although most of the literature has agreed that work platforms offer both opportunities and challenges (European Commission, 2020).

On the one hand, working on digital platforms usually enables people to earn extra income on top of their main job (Hauben et al., 2020), and to perform entrepreneurial activities. Digital platforms also reduce entry barriers for people who face obstacles accessing the labour market, such as migrants, people with disabilities and health challenges, young people and people with family commitments and care responsibilities (EU-OSHA, 2023; Lenaerts et al., 2021; Pulignano, 2019). Working on digital platforms offers greater flexibility and autonomy, which can lead to a better work-life balance.

Moreover, working on digital platforms can also facilitate the working conditions of vulnerable groups, which are often overrepresented in atypical forms of work (Pesole et al., 2018). The opportunity to earn an income through flexible work is actually one of the main reasons why workers choose digital platform work (ILO, 2021a). In addition, this type of work can be a stepping stone to better paid work thanks to the skills that people acquire (World Bank, 2023).

Conversely, providing services on digital platforms involves challenges affecting the welfare, health and safety of workers. These platforms often rely on independent contractors whose conditions of employment and social protection are unclear (Pulignano, 2019). This brings a range of issues such as the difficulty in determining legal employment status (which, in turn, affects the enforceability

of national and EU OHS legislation), substandard access to social protection, poor working conditions, job and income insecurity and increased occupational risks (EU-OSHA, 2021).

There are also significant legal enforcement issues in this area. In many instances, where workers operate entirely in digital environments, users (customers of the service provided by the worker) can conceal their location. In addition, workers and platform companies may be based in different countries from where the service is provided, complicating the application of labour and tax laws (ILO, 2021a).

2.5 Policy context

The European Pillar of Social Rights[5] contains six principles on working conditions and social protection that apply to platform work: the right to safe and adaptable employment (principle 5), the right to a fair wage that provides a decent standard of living (principle 6), the right to information on employment conditions and protection in the event of dismissal (principle 7), the right to social dialogue and workers' participation in matters that concern them (principle 8), the right to a good work-life balance (principle 9), and the right to a healthy, safe and well-adapted working environment (principle 10). In addition, all the principles related to social protection and social inclusion (principles 11 to 20) also apply.

In particular, according to the right to a healthy, safe and well-adapted working environment, workers are entitled to high levels of health and safety protection at work, an environment adapted to their professional needs to support prolonged participation in the labour market, and protection of their personal data in the context of employment (EU-OSHA, 2021; European Commission, 2021b).

However, platform workers face a variety of risks to their occupational safety and health that depend on the type of work performed and the way it is organised (EU-OSHA, 2021). These risks are particularly difficult to prevent and manage, mainly because the OHS legislation of the EU and Member States only applies to "employees", while most platforms classify their workers as being self-employed. As a result, platform workers generally have to take responsibility for their own health and safety, and often find themselves in poorly adapted working environments with limited access to proper equipment (Lenaerts et al., 2022).

The European Commission has been involved in policy debates on platform work for many years, promoting important initiatives which, while not directly or exclusively focused on this type of employment, have addressed key issues to ensure acceptable working conditions for platform workers (Sanz de Miguel et al., 2021).

5 See https://ec.europa.eu/social/main.jsp?catId=1606&langId=es (accessed 9 September 2024)

In 2016, the European Commission published guidelines on how existing rules affected the collaborative economy (European Commission, 2016a). Subsequently, in 2017, a proposal for a Directive on transparent and predictable working conditions across the European Union was presented. The Directive was finally adopted in 2019 (Directive (EU) 2019/1152), establishing new rights for all workers and addressing insufficient protection in more precarious jobs (Urzì Brancati et al., 2020).

In 2018, a proposal for a Council Recommendation was introduced, aiming to ensure access to appropriate social protection for all workers, including self-employed workers, across all Member States (and was formally adopted on 8 November 2019). This Council Recommendation aimed to improve social protection for platform workers[6] (Sanz de Miguel et al., 2021; Urzì Brancati et al., 2020).

Finally, after identifying the safety and health of platform workers as a key challenge that needed to be addressed (EU-OSHA, 2021), in December 2021, the European Commission launched a series of measures to improve working conditions on digital platforms (Lenaerts et al., 2021, 2022). These included a Communication setting out the EU approach and measures in relation to platform work, and a Directive[7] to improve the labour conditions of people working on digital platforms (European Commission. Directorate General for Employment, Social Affairs and Inclusion, 2021). Directive (EU) 2024/2831 on improving the working conditions in platform work was finally adopted in 2024. Specifically concerning the protection of workers' health and safety, the Directive establishes the obligation for platforms[8] to identify and assess occupational risks arising from automated monitoring and decision-making systems, with consideration given to psychosocial, ergonomic and workplace accident risks. Furthermore, platforms must determine the adequacy of existing safeguards and implement appropriate preventive and protective measures. Additionally, platforms are required to ensure workers' access to information, consultation and participation in these assessments, and the use of any automated systems that generate undue pressure or endanger workers' health and safety, whether physically or mentally, must be prohibited[9].

The European Commission has also presented the first legal framework to regulate artificial intelligence (AI), which focuses on the risks associated with "AI systems used in employment, management of workers and access to self-employment".[10] In addition, the EU social partners' autonomous framework agreement on digitisation also covers platform workers, provided that an employment relationship exists[11].

6 "The Recommendation aims to encourage EU countries to enable atypical workers and the self-employed to join social security schemes (closing gaps in formal coverage), to take measures to enable them to accumulate and obtain adequate social benefits as members of a scheme (effective and adequate coverage), and to facilitate the transfer of social security benefits between schemes, and to increase transparency in relation to social security systems and entitlements" (Sanz de Miguel et al., 2021).

7 The Directive of the European Parliament and of the Council on Improving Working Conditions in Platform Work (COM/2021/762 final) Available at: https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52021PC0762.

8 "Platform" in this context refers to the company owner of the platform.

9 Article 12 of Directive (EU) 2024/2831. Additionally, Recitals 4, 24, 50, and 57 of the Directive set out these principles in terms of occupational safety and health protection.

10 IA Act, Regulation (EU) 2024/1689 laying down harmonised rules on artificial intelligence

11 According to Directive (EU) 2024/2831 and the domestic law of the Member States.

All these measures are related to the EU Strategic Framework on Health and Safety at Work 2021-2027[12], which aims to maintain and improve risk prevention standards, taking into account the changing world of work (EU-OSHA, 2021). In this respect, it should be reiterated that Directive 89/391/EEC, the Framework Directive on safety and health at work, sets out the fundamental principles required to improve the prevention of work-related accidents, and its implementing rules. However, this Framework Directive does not apply outside the field of employment and the vast majority of platform workers are classified as self-employed. Thus, the Directive does not apply to them (EU-OSHA, 2021; Todolí Signes, 2021).

The regulation of platform work is also becoming a priority issue for national legislators and courts, which are becoming increasingly involved in issues related to digital platform work, such as employment status, working conditions and social protection (European Commission, 2021d; Lenaerts et al., 2022). The regulation of digital platform work in Europe varies significantly across states, reflecting different legal and socio-economic approaches. While some countries have opted to establish a presumption of employment, recognising platform workers as employees, other countries have chosen to maintain their self-employed status, albeit with additional rights. Furthermore, certain jurisdictions have addressed the issue through collective bargaining, allowing agreements between trade unions and platforms without altering their workers' legal status.

For instance, Spain has implemented one of the most stringent regulatory frameworks in the European Union regarding platform workers. The Rider Law establishes a presumption of employment for platform delivery workers, requiring companies to hire them as employees unless proven otherwise. Additionally, it has introduced an algorithmic transparency obligation, mandating platforms to share information on the algorithms used for task allocation and performance evaluation with workers' representatives. However, its scope is limited to the delivery sector and excludes other platform-based employment categories (Todoli, 2021b).

Italy does not explicitly have a presumption of employment in platform work. However, Article 2(c)(1), of Legislative Decree No. 81/2015 provides an important regulatory framework. This Article states that the provisions governing subordinate work shall also apply to collaborative relationships that take the form of exclusively personal, continuous work, the execution methods of which are organised by the client, including in terms of the timescales and the place of work. The provisions of this paragraph also apply when the methods of execution of the service are organised through digital platforms. The Article allows for the application of the 'discipline of the employment relationship' to self-employed collaborators if their work is organised by a platform, a concept known as 'hetero-organisation'. This provision creates a pathway for extending employment protections to platform workers when platforms exert significant control over the organisation and execution of tasks without reclassification. This

12 See https://ec.europa.eu/commission/presscorner/detail/es/ip_21_3170 (accessed 9 September 2024)

approach reflects Italy's acknowledgment of the potential for worker exploitation using a self-employed contract, aligning with broader efforts to enhance labour protections. On the other hand, France has adopted a hybrid model, where platform workers are still classified as self-employed but are granted additional rights. Law no. 2016-1088 of August 8 introduced the social responsibility of platforms, granting workers the right to unionise, access professional training, and obtain accident insurance, provided they exceed a specified annual income threshold (Lenaerts et al., 2022). In 2019 these rights were expanded by introducing the right to refuse tasks without being penalised and the right to disconnect from a platform, allowing workers to freely decide when to work (García González & Poquet Catalá, 2023)[13]. Additionally, France has established collective representation mechanisms tailored to platform workers, such as the Authority for Social Relations in Platform Employment (Autorité des Relations sociales des Plateformes d'Emploi. ARPE), created in 2021, which regulates social dialogue and facilitates collective bargaining (Ministère du Travail, du Plein Emploi et de l'Insertion, 2023).

Germany has no specific legislation for platform workers but has addressed the issue through general labour laws and case law. German courts have examined whether platform workers should be classified as employees based on the degree of control exercised by the platform over their activities. While no general presumption of employment exists as it does in Spain, some courts have ruled in favour of recognising employment relationships, thereby granting platform workers labour rights and social security benefits. In 2021, Germany also introduced requirements whereby the implementation of any AI system in areas related to human resources — including recruitment, internal transfers, or dismissals. Specifically, the introduction of IA systems requires the prior consent of the works council.

On the other hand, Sweden has taken an approach based on collective bargaining, without establishing specific legislation for platform workers. Instead of imposing a presumption of employment or creating a specific legal status, the Swedish model allows trade unions to negotiate directly with platforms to ensure fair working conditions. A key example is the 2021 collective agreement between the Foodora delivery platform and the Swedish Transport Workers' Union, which guarantees wage increases, compensation for bicycle maintenance and work clothing, as well as accident insurance coverage (Foodora, 2021). This system has proven effective in highly unionised sectors but poses challenges in areas with lower union representation.

These differences between national approaches not only reflect varied legal frameworks but also structural differences in labour markets and social protection systems. Spain and France have adopted interventionist regulations,

13 In December 2019, the French government introduced a provision in the Mobility Law that established the "Social Charter", a framework aimed at regulating platform work and enhancing legal certainty for businesses and workers. This charter mandates platforms to define rights in eight key areas, including freedom to connect, fair remuneration, professional training, occupational risk prevention, social protection, and service quality standards. It also establishes mechanisms for information sharing and dialogue between workers and platforms. While it improves working conditions, it maintains workers under self-employment status, without recognising a dependent employment relationship, following a model similar to the Professional Interest Agreement for economically dependent self-employed workers in Spain.

albeit with distinct approaches: Spain presumes employment, while France maintains self-employment with additional rights. Germany and Italy have addressed the issue through general labour laws and sectoral agreements, allowing for worker reclassification in certain cases. The ILO has also taken an active interest in finding consensual solutions to digital platform work, including occupational hazards. In this regard, in January 2024, the ILO released a questionnaire addressed to government agencies to gather their perspectives on the need for and characteristics of an instrument for decent work in the platform economy (ILO, 2024). In June 2025, the results of this questionnaire will be discussed at the 113th Session of the International Labour Conference.

2.6 Current challenges

Digitaliseringen och plattformsarbetets expansion medför en rad utmaningar
Digitalisation and the expansion of platform work present numerous challenges for social policy and welfare states. These challenges include issues related to workers' welfare rights, labour rights and social protection, stemming from the complex enforcement of the law on the employment status of workers and the power asymmetries between platforms and their workforces (Au-Yeung et al., 2024).

In addition, platform work has specific characteristics that are difficult to address within existing legal frameworks (Sanz de Miguel et al., 2021).

One of the main difficulties in studying platform work is that it encompasses a wide range of types of work and working conditions (Duggan & Jooss, 2023). Platform work has been criticised for its poor working conditions. However, it is fair to say that it is a new form of employment and that not all platform work can be categorised as being of poor quality. In fact, some types of platform work present real opportunities to increase employment and encourage flexible working patterns. Thus, it is necessary to categorise platforms according to the type of work they offer (Eurofound, 2019).

The platform economy is a growing phenomenon: around 11% of the EU workforce says it has already provided services via a platform (European Commission, 2021c). If it is to grow sustainably, greater legal clarity is required, ensuring minimum labour conditions for its workers (European Commission, 2021c) given that, while it creates opportunities for people who might find it more difficult to access the traditional labour market, as well as for those people who value flexibility, it is also a source of precarity — in terms of low income and/or job instability — due to a lack of transparency and social protection and unpredictable working conditions (European Commission, 2021c).

In this regard, platforms have been accused of using questionable and highly controversial practices in managing their workforce, such as classifying workers as independent contractors when their autonomy is often restricted in practice (Duggan & Jooss, 2023). This results in platform workers tending to be excluded from labour, social security, employee status and OHS rights.

The misclassification of platform workers' employment status has been examined in over 100 court cases in Europe alone, with outcomes varying depending on the country (and even the city) and the type of court. The most recent rulings have generally classified platform workers as employees (Eurofound, 2021), although platform management is often reluctant to comply with these decisions (Fernández-Macías et al., 2023). In fact, in recent years, this recurring challenge regarding the classification of workers has been a constant issue. In the case of Sweden, the lack of a clear legal definition of the concept of an employee has left its interpretation to the courts on a case-by-case basis. In this regard, employment relationships have been denied for individuals operating through platforms such as TaskRunner[14], Tiptapp[15] and Foodora[16], based on the argument that there are insufficient elements of dependence and subordination (Hießl, 2024).

Digital labour platforms operate through algorithmic management. This system replaces the organisational functions traditionally performed by managers and can have detrimental effects on working conditions. For example, it carries risks of bias and discrimination due to its lack of transparency, while its constant supervision and omnipresence encourage greater workloads and overtime, often disregarding occupational health standards (Sanz de Miguel et al., 2021).

However, there has been limited research specifically focusing on the occupational safety and health of platform workers (Jing et al., 2023). Thus, this report aims to contribute to the review of the literature dealing with the occupational hazards faced by platform workers, and how to prevent them.

14 Förvaltningsrätten i Malmö, 2021-06-18, mål nr 13356-20.
15 Förvaltningsrätten i Malmö, 2021-10-14.
16 Arbetsdomstolen, 2022-11-16, mål nr A 154/21.

3. Conceptual framework

3.1 The concept of a digital working platform

The study of digital platform work presents significant terminological challenges due to the diversity and constant evolution of the business models and technologies involved. The lack of consensus on the definition of terms such as “platform work”, “gig economy”, “collaborative economy” and “self-employment” creates confusion and makes it difficult to develop policies, compare studies and under-stand the impact of these forms of work on the economy and society (Codagnone & Martens, 2016). This lack of terminological clarity can also affect labour protection, workers’ rights and regulatory measures, as different interpretations can lead to different conclusions and policy approaches. It is therefore crucial to standardise terminology in order to facilitate a coherent and effective analysis of the phenomenon (Garben, 2019).

During the present report, it has become apparent that a multitude of different terms are used to refer to the same concept, though they are not always synonymous. For example, up to nine different terms have been used to refer to the concept of “platform working” in EU member states, many of which have different meanings depending on the language used (Eurofound, 2018).

Terms such as “digital economy”, “digital platform economy”, “gig economy” and “sharing economy” are often used interchangeably to describe the same reality (Görög, 2018; Ranjbari et al., 2018). However, each of these terms has different characteristics.

Figure 6 on the next page contains a list of terms used in this report, along with the meaning in which they are to be interpreted in this report.

Country	Sharing economy	Platform economy	Gig economy	Crowd employment	On-demand economy	Collaborative economy	Crowd-sourcing	Peer-to-peer economy	Freelance
Austria		plattform-basierte Arbeit*	X	X			X*		
Belgium	deeleconomie*	platform economie*						X*	
Bulgaria			X	X					X
Croatia	ekonomija dijeljenja	rad preko platformi							
Denmark	dele-økonomi	platforms-økonomi	X	X					
Estonia	jagamismajandus	platvormi majandus		töötamine koostöö-platvormi vahendusel					
Finland	jakamistalous*	alustatalous or alustatyö	keikkatalous or keikkatyö		tilaustalous	yhteistyötalous	Joukkoistaminen* or joukkouttaminen*	vertaistalous	
France	économie du partage*	économie des plateformes				économie collaborative		pair à pair	X
Germany		X*	X				X*		
Ireland			X						
Italy	X*	X	economia dei lavoretti		X	X			
Latvia	kopīgošanasekonomika or kolaboratīvā ekonomika	platformasekonomika		pūļanodarbinātība, pūļadarbs or kolektīvsdarbs	darbstiešaistesplatformās	sadarbīgaekonomika	X		X
Netherlands	deeleconomie*	platform economie	klus economie		op-afroepeconomie				
Poland		X					X		X
Slovenia	delitvena ekonomija	platformna ekonomija				X			
Spain	economía colaborativa	X			X	X*			
Sweden	X*	X	X			X*			
United Kingdom	X*		X						

Figure 6. Alternative terms for platform work in some European countries. Source: Eurofound, 2018
*Indicates where the understanding of a term differs from Eurofound's definition.

3.1.1 Digital economy

The concept of the digital economy became popular in the 1990s. The rise of the internet and new information and communication technologies created new ways of operating and organising economic activity. The digital economy brought a series of profound changes to business structures, labour markets and business practices, enhanced by digitisation and global connectivity, compared to the "traditional" economy. Tapscott (1996) identified several key characteristics of the digital economy, including the ability to create value through networks, the importance of knowledge as a primary economic resource, and the need for the workforce to acquire new competencies and skills to adapt to a constantly evolving digital environment.

This concept goes beyond the digital sector itself. In addition to the "combination of manufacturing and service industries that capture, transmit and display data electronically" (OECD, 2002), the digital economy includes sectors that adopt digital technologies in their productive and organisational structure. This blurs the boundaries of the digital economy, because as digitisation progresses, more sectors become part of it.

Although in a broad sense, any economic activity that uses or generates digital technology can be considered part of the digital economy, the concept needs to be refined. According to Bukht and Heeks (2017) (Figure 7), the digital economy refers to the part of economic production that relies primarily on digital technologies and whose business model is based on digital goods or services. Thus, traditional sectors using digital technologies can only be included in the digital economy if these technologies are central to their business model, as is the case of digital platforms. Other traditional sectors that use digital technologies but not as a core part of their business model would be part of the digitised economy, but not of the digital economy.

3.1.2 Digital platform economy

The digital platform economy is only part of the digital economy, with its inclusion lying precisely in the use of "digital" platforms as a business model. This means that it is crucial to first understand what is meant by the term "digital platform".

The OECD (2019a) defines a digital (online) platform as a digital service that facilitates interactions between two or more distinct but interdependent sets of users (businesses or individuals) who interact via the internet. A digital platform is a tool that enables users to perform various activities in an interconnected way in a virtual space. A digital platform can be used to share photos, chat, watch videos, write reports, order food, or close a deal, for example. In other words, it involves creating, consuming, modifying and managing information in a virtual environment, which may have its equivalent to a greater or lesser extent in physical reality.

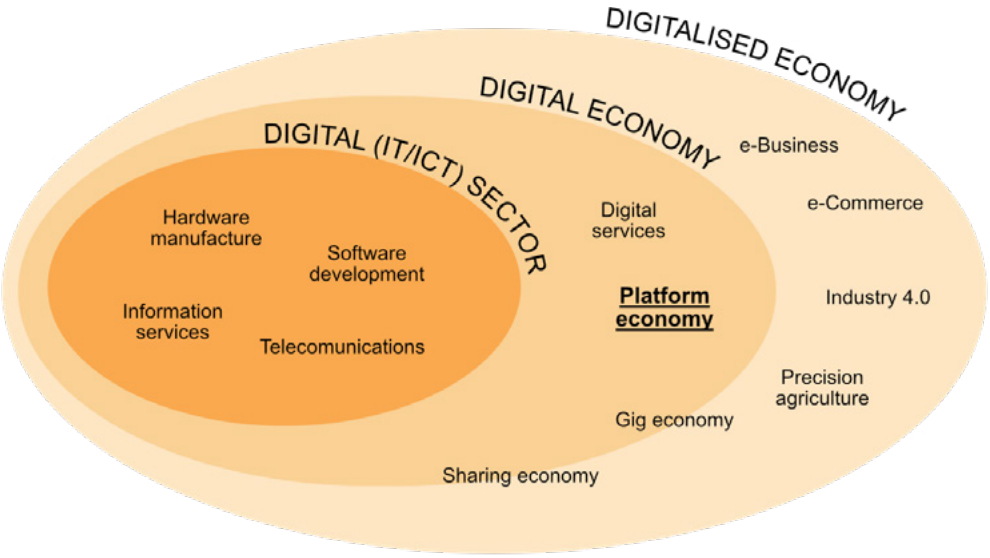


Figure 7. Scoping the digital economy. Source: based on Bukht and Heeks, 2017.

There are many different types of digital platforms that serve a multitude of purposes. For example, platforms dedicated to payments and transactions such as PayPal, social platforms such as Facebook, gaming platforms such as Steam, retail platforms such as Amazon, and so on. Although the boundaries between the different types of platforms are blurred and the same platform may provide different services depending on its business model, this study is only focused on digital labour platforms.

Figure 8. Different types of digital platforms.

3.1.3 Digital labour platforms

Digital labour platforms are defined as web-based systems and mobile applications that coordinate labour service transactions through algorithms. These platforms enable organisations and individuals to access a pool of workers to perform specific tasks, either face-to-face or remotely (Berg et al., 2018).

In turn, Article 2.1 of the European Directive on work platforms, adopted in 2024, defined digital labour platforms as natural or legal persons who 1) provide services remotely by electronic means, such as a website or mobile application, 2) at the request of a recipient, 3) arrange the work of the actual service provider who delivers it remotely or on-site for a fee, and 4) use automated monitoring or decision-making systems.

The main characteristics of digital labour platforms are set out below based on the different definitions available (Eurofound, 2018; Lenaerts et al., 2022; Pesole et al., 2018).

1) Digital mediation. Digital labour platforms take a leading role in the relationship between the final client and the platform worker who actually provides the service. This sets digital labour platforms apart from mere marketplaces or advertising websites that merely put the parties in contact. The platform largely dictates how the interaction between the customer and the worker unfolds, including the channels through which communication occurs, the information accessible to both parties, and even the various considerations involved, such as service quality, equipment and pricing.

2) Algorithmic management. An algorithm is a well-defined sequence of steps or instructions that performs a specific task or solves a particular problem. These steps are designed to be followed systematically in an automated way. A unique feature of digital labour platforms is that they use computer algorithms to organise, direct and evaluate the work being performed, including disciplining workers (Wood, 2021).

3) All types of work. Digital labour platforms are not limited to specific types of work or to traditional forms of work organisation and framing. This means the work performed must be understood in a very broad sense. Thus, there is a huge range of tasks of different types in all sectors, from repetitive and low-skilled activities to specialised services that require highly skilled workers. What is decisive is that exchanges involve the provision of services by an individual. Platform work can be classified as location-based or web-based, depending on the type of task being carried out (Todolí Signes, 2017b). The first case includes care tasks, cleaning and delivery of goods, while the second case encompasses the online translation of digital texts and online courses.

It should be noted that the legal status of service providers is not decisive, as digital labour platforms have both self-employed and salaried service providers. Thus, the fact that workers have more or less flexibility or freedom to refuse or accept different tasks may determine their legal status as employees or self-employed, according to the competent jurisdiction, but does not change the nature of the platform as a digital labour platform.

4) Compensation. The services the worker provides are in exchange for compensation, generally in legal tender, with the platform acting as an intermediary in the transactions. Payments can be made per piece of work, per time invested, and on rare occasions, for a "minimum fee" (De Stefano & Aloisi, 2018). In any case, these are not entirely voluntary acts, as individuals working on digital labour platforms often have financial interests, regardless of whether profit is their primary motivation. In this scenario, truly collaborative platforms such as Wikipedia would not be classed as a digital labour platform, even though its users perform tasks such as writing and compiling information, editing texts, etc.

For the purposes of this study, we are referring to a digital labour platform if four characteristics are present. From this point onwards, multiple sub-classifications can be made (by type and characteristics of the activity, by the place and nature of the service, by the legal relationship between worker and platform, etc.) based on a wide range of variables.

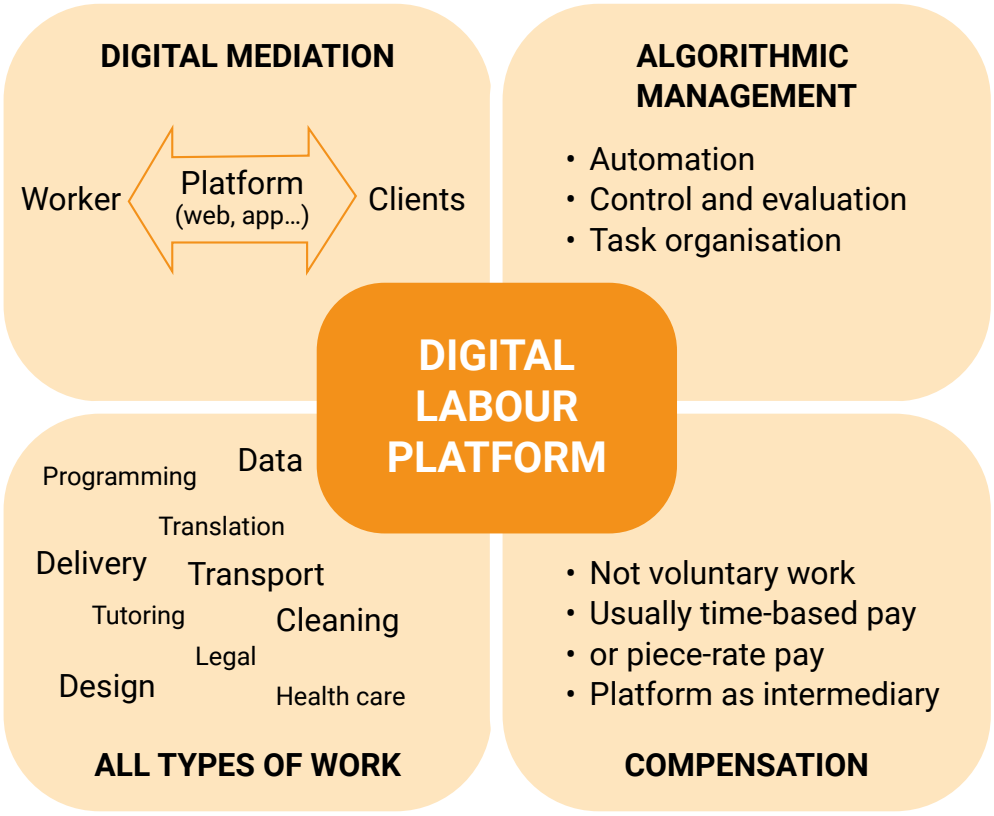


Figure 9.

3.1.4 Digital labour platform workers

Digital labour platform workers, or simply platform workers, are individuals who perform an activity for a third party in exchange for payment carried out through, mediated by or subordinated to a digital labour platform. The concept of a platform worker is not related to whether they are classed as being self-employed, dependent workers or as any other category (Lenaerts et al., 2022).

Article 2.1 of the European Working Platform Directive, adopted in 2024, defines a platform work as "work organised through a digital labour platform and performed in the Union by an individual on the basis of a contractual relationship between the digital labour platform or an intermediary, and the individual, irrespective of whether there is a contractual relationship between the individual or an intermediary and the recipient of the service".

3.1.5 Working on digital platforms

Digital platform work has established itself as an atypical form of employment in the context of the digital transformation of the labour market (ILO, 2021b). Although it shares some characteristics with other non-standard jobs, it has peculiarities that clearly make it different.

The work carried out by digital (labour) platform workers is characterised by the fact that it is performed independently of their status as employed or self-employed. According to EU-OSHA (2022b), digital platform work encompasses any paid activity carried out through, mediated by, or subordinate to a digital labour platform which:

- is organised or coordinated by the platform
- is specific, such as solving a problem and performing a specific task
- uses algorithmic management for task allocation, activity monitoring and worker evaluation
- involves a triangular relationship between three parties in the agreement (digital platform, worker and client)
- operates under non-standard working arrangements, though is not limited to them, mainly regarding workers as being self-employed.

On the other hand, the OECD (2016) provided a broader definition of digital platform work, describing it as a range of activities joined by the use of online platforms to connect supply and demand for specific services. This definition sets out two broad groups of platform services.

- Services that can be provided entirely digitally, such as administrative work, data entry, translation, design, and software development.
- Services that must necessarily be provided in person, such as cleaning and care activities, transport and delivery.

In some cases, the role of the platform may go beyond being a simple intermediary, providing workers with an online environment and tools to carry out their tasks (Lane, 2020).

Similarly, Eurofound (2018) defined digital platform work as a form of employment that uses online platforms so that organisations or individuals can access other organisations and individuals to solve specific problems or provide specific services in exchange for payment. Eurofound adds that this type of work is outsourced or subcontracted and is provided on demand.

Digital platform work is therefore characterised by being paid, performed on, through or organised by the platform through algorithmic management, involving three parties (platform, client and worker) and is focused on performing specific tasks or problem-solving. Unlike traditional work, work on digital platforms is divided into small, specific tasks that are accepted by or assigned to workers. For example, a worker is not contracted to make general deliveries, but to make a specific delivery. They are not hired to maintain a facility, but for a specific repair. This implies that work on digital platforms is performed under atypical conditions, with variable and unpredictable working hours, workplaces and incomes, depending on the next task to be performed. Those workers who perform these tasks are generally regarded as freelancers or on-demand workers.

In this context, work on digital platforms has been considered to be non-standard work, which is differentiated from other atypical types of work by three main characteristics: algorithmic management, flexibility and precarity, and vulnerability.

Algorithmic management

One of the main differences between digital platform work and other atypical work is the intensive use of algorithmic management to organise, coordinate and direct the work. While supervision is usually direct and human in traditional temporary or hourly-paid jobs, digital platform work is managed by algorithms that select the service provider, supervise and evaluate workers' performance, decide the schedules and pay for the work, and even automatically revoke a worker's access to the platform. This introduces control and monitoring dynamics that are not found in other types of atypical employment (Williams & Lapeyre, 2017).

Algorithmic management or management-by-algorithms refers to the delegation of managerial functions to automated systems. These systems use advanced technologies to coordinate and manage the workforce through the selective, predictive and prescriptive analysis of large volumes of data. The complexity of algorithmic systems, especially those based on *machine-learning* technologies, makes it difficult or even impossible for those involved to understand decision-making processes. In the context of the digital labour platform economy, algorithmic management is characterised by its ability to translate user behaviours (service providers - self-employed or workers - and service consumers - customers) into ratings and performance metrics (Stark & Pais, 2020).

Thus, an algorithmic management system can automatically assign tasks to each worker according to various criteria such as geographical proximity, the worker's skills, their availability, and its assessment of their digital reputation

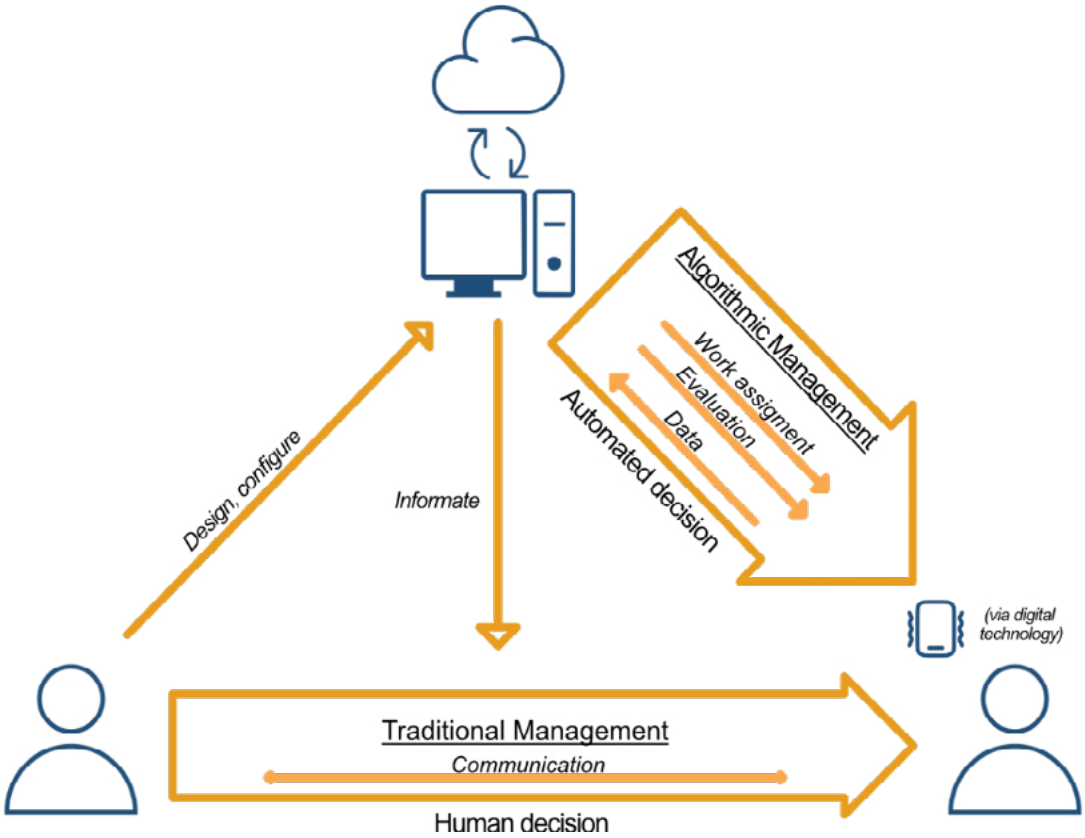


Figure 10. Algorithmic management conceptualization.

(Todolí-Signes, 2021). The system constantly evaluates each worker based on their productivity metrics (time/work), quality of service, etc., which usually results in constant monitoring and surveillance. This implies, at least potentially, constant control over the worker's behaviour and performance, and the worker is forced to interact and accept the decisions of the system without (virtually) any human interaction (Möhlmann & Zalmanson, 2017). Examples of this type of monitoring and control over worker performance and behaviour include screenshots, registering mouse clicks and keystrokes, the use of GPS, the implementation of gamification mechanics, pop-ups and constant prompts, among other measures (EU-OSHA, 2023).

Flexibility and autonomy

On paper, digital platform work offers workers greater flexibility and autonomy compared to other atypical jobs. In theory, they can choose when (temporal flexibility) and where (spatial flexibility) to work, and in many cases, which tasks to perform and which assignments to turn down (Healy et al., 2017). This is mainly due to the on-demand nature of the work and the non-existence of traditional workplaces. The flexibility of platform work lies in the fact that the worker can choose to accept or not accept work at any given time, and its spatial flexibility implies that it is up to the worker to procure their own workspace.

Studies indicate that this flexibility is one of the main attractions for those who choose this type of work (Eurofound, 2018; ILO, 2021a), especially for those with dependents (Berg et al., 2018). A survey conducted by Berg et al. (2018) for the ILO mentioned the possibility of working from home (spatial flexibility) as the second most common reason why people work on digital platforms, behind income supplementation.

However, some of the literature has criticised this flexibility. It has been argued that the control exercised by the platform through algorithmic management and the on-demand nature of platform work negatively affect the flexibility of platform work (European Commission, 2021a).

Some authors have suggested that the algorithmic control and management systems used by digital platforms significantly reduce worker autonomy (Kellogg et al., 2020; Waldkirch et al., 2021; Wood et al., 2019). Algorithmic task assignment implies that the system decides which worker(s) will have the chance to work. In order to be assigned a task, the worker must have a suitable profile according to the algorithm based on the specific needs at the time, and the data obtained from worker monitoring (Gramano, 2019). Moreover, the platform adds the use of reward and penalty mechanisms to ensure specific worker behaviour (Xu et al., 2023). It is argued that this implies a power imbalance between the worker and the platform that goes against the former's autonomy (Duggan et al., 2020).

Secondly, platform work is seen as embodying an inherently uncertain and unpredictable type of work, which prevents planning tasks in advance (Kellogg et al., 2020), meaning the nature of platform work makes it very difficult for the worker to know when their next assignment will be and under what conditions, implying that there is no certainty, security or stability in this kind of work. It has been argued that although there are formal ways to refuse assignments and to choose working hours, the temporary nature of assignments and the lack of legal guarantees as to income stability force service providers to accept all or most tasks without being able to actually exercise the theoretical flexibility offered (Kalleberg & Vallas, 2018).

In other words, flexibility for workers does not lie in their ability to autonomously manage their workload, but in whether or not they choose to be available, though there is no guarantee they will receive any work, even if they are available. In this sense, it has been argued that workers do not decide the flexibility of their working day, do not decide when to work and when not to work, and whether or not to spend time looking for or accepting new tasks, all while risking lost opportunities and potential algorithmic penalties for periods of inactivity (Mangan et al., 2023). Accordingly, the apparent flexibility needs to be qualified, especially in the context of strong competition among workers, tasks that require on-the-spot performance, and low pay (De Stefano, 2015).

Additionally, some courts have concluded that workers who exercise the flexibility offered ultimately suffer retaliation in the form of fewer future assignments or disconnection from the platform based on algorithmic

management (Spanish Supreme Court Judgement of 25 September 2020 no. 805/2020[17] and Bologna Court Judgement no. 2949/2020, 31 December).[18]

Insufficient social protection

According to studies conducted by the ILO (De Stefano et al., 2021), the OECD (2019b), European Union institutions (Eurofound, 2018; European Commission, 2021a) and various government initiatives (Mettling, 2015; Taylor et al., 2017), digital platform workers generally have insufficient social protection due to the temporary and unpredictable nature of their work and their employment status as non-employees.

Lack of employment benefit

Digital platform workers often lack access to basic employment benefits that are available to standard employees. This includes the absence of paid holidays, which means they cannot take paid time off to rest or attend to personal needs without losing income. This lack of paid leave also means they receive no compensation during periods of illness or family emergencies, increasing their financial insecurity.

Exclusion from standard social protection

These workers are often excluded from labour and social protection that provide a safety net in the event of job loss or retirement. As they do not have access to pension schemes, they do not accrue entitlement to unemployment or retirement benefits, leaving them unprotected in situations of economic vulnerability. This may also affect their ability to access health insurance and other social benefits.

Non-recognition of collective bargaining rights and freedom of association

In some countries, digital platform workers do not have the right to bargain collectively or to join trade unions, as collective bargaining is often restricted to those people classified as employees under traditional labour law. This means that they have no collective voice to defend their interests and negotiate for better working conditions. The absence of union representation can also leave these workers without any support in labour disputes and without access to legal advice and other forms of assistance. It has been suggested that a homogeneous collective bargaining framework could be established to encompass both self-employed workers and employees providing services in the digital platform economy. However, according to the CJEU ruling of 4 December 2014 (Case C-413/2013, FNV Kunsten Informatie en Media), such an option would conflict with competition law, specifically Article 101(1) TFEU, which states that agreements between undertakings, decisions by associations of undertakings, and concerted practices that may affect trade between Member States and have the object or effect of restricting competition within the internal market shall be prohibited.

17 Available at: https://www.poderjudicial.es/search/AN/openDocument/05986cd385feff03/20201001 (accessed 6 September 2024).
18 Available at: https://www.laboral-social.com/sites/laboral-social.com/files/Ordinanza_Bologna.pdf (accessed 6 September 2024).

Assumption of risks and costs associated with their work

Digital platform workers must often bear the risks and costs associated with their work. This includes maintenance and operating costs for equipment and vehicles without reimbursement. They are also responsible for their own job safety and must bear the risks associated with accidents and injuries, without the protection that would normally be offered by an employer. The need to bear these costs and risks can significantly erode their net income and increase their economic vulnerability.

4. Categorisation of digital platforms

Digital labour platforms can be classified according to the type of work performed or involved (administrative, creative, manual) and the method of work.

Type of work. Some platforms offer highly skilled online jobs, such as programming and consultancy work, while others focus on less skilled offline tasks, such as food delivery and domestic work. It is essential to differentiate between these types of work to understand the specific occupational risks inherent to such work and to try to prevent or mitigate them.

Way of working. This refers to the place of service delivery (on-location or web-based), the scope of work (large tasks or microtasks) and the level of skills required to perform the task (high or low), among other variables (EU-OSHA, 2021). The way in which work is organised through platforms influences OHS, for example, the use of algorithmic management can increase stress and workload, while platforms that offer greater autonomy and flexibility for workers can mitigate these negative effects. Thus, classifying digital labour platforms according to the way they work allows for a more accurate assessment of the occupational risks faced by workers and more effective implementation of preventive measures.

In this section, we classify digital labour platforms according to the types of work they perform. Secondly, we examine the classifications found in the literature for categorising digital platforms, followed by the establishment of the classification to be used in this study. This classification is based on two dimensions: skills needed (high skills and low skills) and the way of working (location-based and web-based). In this graph (Figure 11), we can observe how the relative weight of each platform sector, according to the mode of service delivery (web-based or

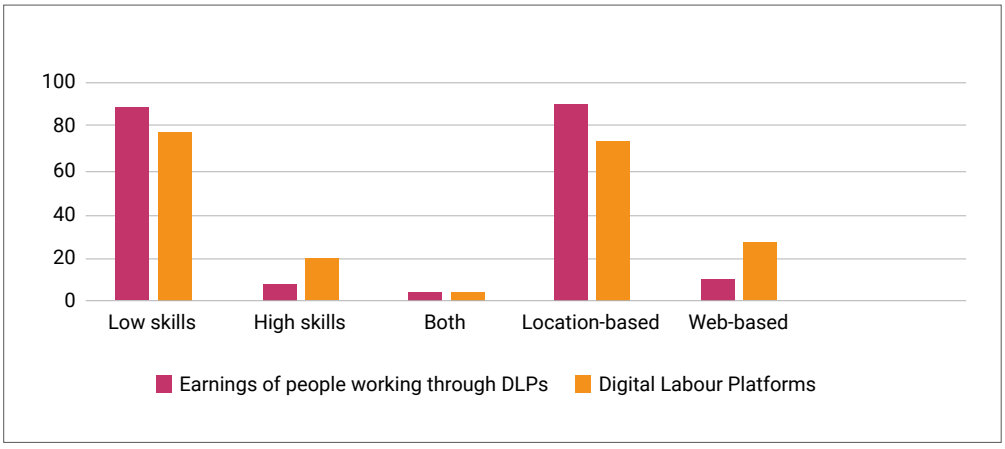


Figure 11. digital labour platforms in Europe. Source: Based on Groen, 2021. Percentage data.

location-based), or the skills required from workers, differ depending on whether the number of platforms is considered as opposed to the total income of the workers employed in that sector.

4.1 Classification by types of work

First, a distinction is made between generic crowdsourcing platforms, where different tasks are offered, and specific crowdsourcing platforms that specialise in one type of task (Todolí Signes, 2017a).

In many cases, there is no direct relationship between the digital labour platform and the specific type of task being performed. In other words, several types of tasks are carried out on the same platform, i.e. generic crowdsourcing (Urzì Brancati et al., 2020). For example, an Amazon Mechanical Turk customer can request the services of workers to perform administrative tasks, marketing support jobs, and other types of microtasks. The same applies to platforms such as Upwork and Freelancer. However, the association between platform and task is plausible in transport and delivery platforms because these are the only things they do, i.e. specific crowdsourcing, such as the cases of Glovo, Uber and Cabify.

Secondly, digital platforms can be classified according to the type of work they perform or the tasks they offer. Here, we use the classification proposed by the COLLEEM survey, which establishes the following ten types of tasks to classify the types of work carried out on digital platforms (Urzì Brancati et al., 2020):

1. **Online administrative and data entry tasks:** these are simple, repetitive tasks including data entry, customer service, transcription and database management. They generally do not require advanced skills and are accessible to a large number of workers.
   - Amazon Mechanical Turk, Clickworker and Microworkers are platforms where such tasks are performed.
2. **Online professional services:** specialised tasks that require specific academic training or certification, such as accounting services, legal services and project management.
   – These types of tasks can be found on platforms such as Upwork, Toptotal, Freelancer and TuAppbogado.
3. **Creative and multimedia online jobs:** these require advanced skills, for example, animation, graphic design and photo editing.
   - 99designs, Behance and Dribbble promote themselves as platforms offering the services of creative professionals.
4. **Online sales and marketing support work:** this category includes digital marketing tasks such as lead generation, ad posting, social media management and sales strategy needs, requiring data analysis skills and knowledge of marketing strategies.
5. **Online work in software development and technology:** these are technical, highly specialised tasks such as data science, game development and mobile development.
   - GitHUb, Stack Overflow and TopCoder have professionals offering this kind of task.

6. **Online writing and translation work:** these tasks require specific skills such as advanced writing and include article writing, copywriting, proofreading and translation.
   - ProZ, Textbroker and Fivver offer these services.
7. **Online microtasks:** these are characterised by short, simple tasks such as sorting objects, and tagging and reviewing content and comments on websites.
   - These tasks can be found on platforms such as Amazon Mechanical Turk, Clickworker and Microworkers.
8. **Interactive services:** these are characterised by real-time interaction with customers, such as language teaching, interactive online classes and interactive consultations, requiring specialisation.
   - Italki, VIPKid and Chegg offer these interactive services.
9. **Transport and delivery services:** these are physical tasks such as driving, passenger transport, food delivery and removal services.
   - Glovo, Uber, Deliveroo and Lyft are examples of platforms that perform these tasks.
10. **On-site or field services:** these include domestic service, beauty services and on-site photographic services.
    - These tasks are offered by TaskRabbit and Glamsquad, for example.

The wide variety of tasks offered means that classifying platform workers can be complex, given the versatility of the platforms. However, the categorisation proposed by the COLLEEM survey provides a useful framework to better understand the different types of work performed on these platforms. This analysis facilitates understanding of the occupational risks associated with platform work.

4.2 Classification by working method

Classifying platforms according to the way they work generally takes place using the variables of place of delivery (online or location-based), the level of qualification required to perform the platform's tasks (professional or non-professional), and the scope of work (large versus small tasks) (Urzì Brancati et al., 2020).

However, there is no standard classification. Each paper analysed makes its own classification according to the variables it wishes to focus on in its study or considers most appropriate. For this reason, a review of the main classifications used by organisations and researchers studying the platform phenomenon has been carried out providing a detailed classification for use in this study.

4.2.1 Existing classifications

In general, most studies simply divide the classification of digital platforms into online and offline according to the place of service provision. Online platforms are those whose tasks do not depend on the location of the parties

involved. Online tasks can be carried out at the worker's home. Offline tasks are performed at the client's home or in the public space, including passenger transport, food delivery and domestic work (European Commission, 2021c).

In the same vein, the International Labour Organization (2021) distinguished between web-based and location-based digital labour platforms, with the same meaning as the distinction between *online* and *offline.* It divided online web-based platforms into freelance, contest-based, microtask and competitive programming platforms and categorised location-based platforms into taxi and delivery options.

Similarly, the OECD (Schwellnus et al., 2019) considered that one of the key differentiation factors is whether the service is provided online or physically. This classification is considered important because it affects the pool of workers that the platform can call on to provide the service (those at the location or any worker globally) and also highlights the way in which they are matched (automated via algorithm or more comprehensive procedures such as interviews).

Previously, Todolí Signes (2017a) had already drawn up this classification between online crowdsourcing, i.e. offered globally, with tasks being performed completely virtually, and *offline crowdsourcing,* requiring local performance. The author then established a subdivision according to the companies that supported the virtual platform, between generic crowdsourcing, offering any type of task and specific crowdsourcing, i.e. platforms specialising in a particular type of task.

Schmidt (2017) also classified digital platforms into web-based platforms, which he called *Cloud work,* and location-based platforms, which he called *Gig work.* Within this classification he identified six types of platforms according to the type of work: cloud work was broken down into freelance work in marketplaces, microtask crowdwork and contest-based creative work, whilst Gig work was divided into accommodation services, transport and delivery services, and domestic and personal services. Similarly, De Stefano & Aloisi (2018) (Figure 12) divided platforms into two models: *crowdsourcing* and *work on-demand via a platform or app.* The latter differentiated between services for households and travellers, using the three categories mentioned above in their study. Although they also considered whether the characteristics of the platform's dimension (global or local), content (creative, repetitive or routine, manual) and payment system (according to whether the final product was paid by the hour or service) were noteworthy.

On the other hand, both Pesole et al. (2018) and Bérastégui (2021) grouped platforms into three categories: on-demand physical services and digital platforms that mediated physical services, online freelancing and professional tasks, and microwork and non-professional tasks. This upheld the standard classification of online and offline but divided online tasks into (i) microwork, i.e., work that does not require any skills, presented as short-term tasks, and (ii) freelancing, i.e., more complex tasks that usually require certain skills, abilities or qualifications.

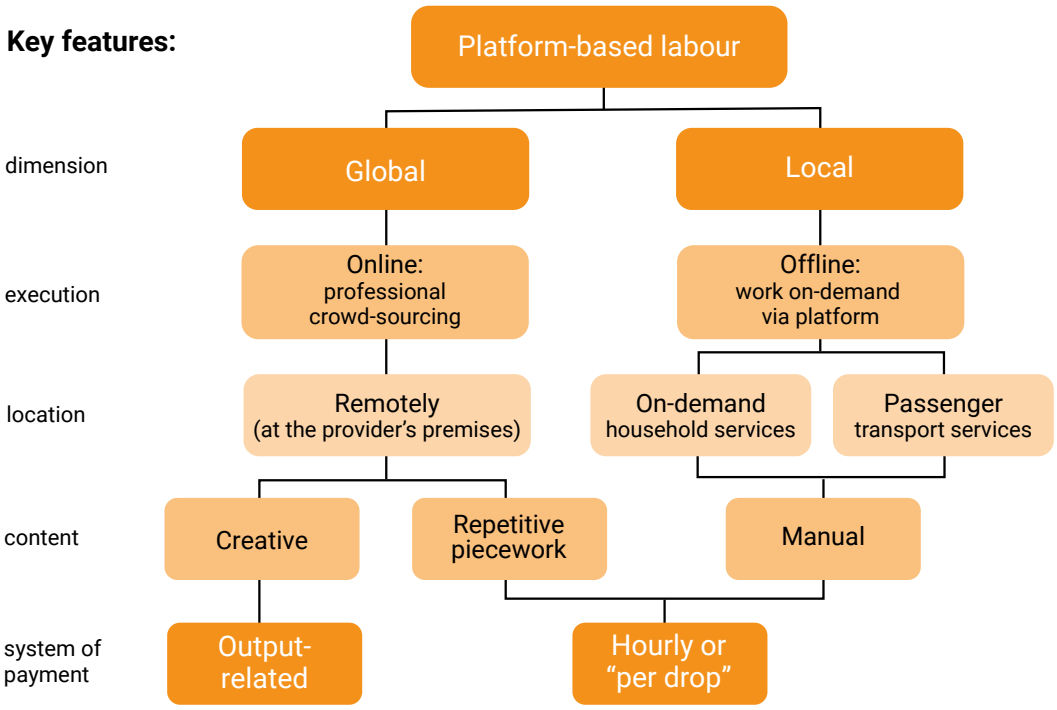


Figure 12. Classification by Aloisi & De Stefano. Aloisi, A. & De Stefano, V. European legal framework for "digital labour platforms", Publications Office of the European Union, 2018, 10.

In contrast, Eurofound (2018) used a total of five characteristics to classify digital labour platforms: the scale of the tasks (*microtasks or larger tasks*), the format of service provision (*online, offline*), the level of skills required to perform the task (*low skills, high skills*), the party assigning the task (the client, the platform worker or the platform) and the worker matching and selection process (through offers posted by clients or through competition). It also took into consideration the type of activity. Combining these characteristics led to the ten most common types of platform work: (i) routine work determined by the client at the workplace, (ii) routine work determined by the platform at the workplace, (iii) moderately skilled work determined by the client at the workplace, (iv) moderately skilled work initiated by the worker at the workplace, (v) moderately skilled online clickwork, (vi) more skilled work determined by the client at the workplace, (vii) more skilled work determined by the platform at the workplace, (viii) more skilled work determined by the online platform, (ix) specialised work determined by the online client, and (x) specialised work of the online entrant. However, this study shows that the predominant characteristics vary depending on the country and the development and rollout of platform work in that country (Eurofound, 2018).

Following this classification, the European Commission (2020) selected the level of skills required to perform the task (*low or high*), the location of the tasks or format of service provision (*online, offline*) and the selection process (decision taken by the platform, the platform worker or the client) as the main

characteristics. In a study commissioned by the European Parliament, Lenaerts & Waeyaert (2020) endorsed this classification and based the importance of these characteristics on the fact that the skill level required determined whether the task could be assigned to anyone or only to workers with a specific qualification. The format of service provision influences working conditions and occupational risks, and the way tasks are assigned quantifies the level of control the platform or clients have over the worker.

The determinants selected by the European Commission and the European Parliament established four types of platform work: low-skilled offline or face-to-face work (type 1), highly skilled offline or face-to-face work (type 2), low-skilled online work (type 3) and highly skilled online work (type 4).

The main characteristic used by the different authors to group digital labour platforms was the place of delivery, i.e. online or offline, although they sometimes used other attributes such as the level of skill required.

However, authors such as Howcroft & Bergvall-Kåreborn (2019) used other distinguishing platform features for their classification. In this case, platforms were classified into online crowdwork tasks (offered by the client and remunerated), *Playbour* crowdwork (offered by the client and not remunerated), asset-based services (offered by the worker and remunerated) and profession-based freelance crowdwork (offered by the worker and not remunerated). The classification depends on whether payment is set by the platform or speculative (when the worker performs the task without knowing the terms), as well as on the actor who initiates the work (client or platform worker).

Digital labour platforms have specificities that make them different from each other. This is why they need to be grouped into categories using similar or equivalent characteristics to study working conditions and health and safety risks at work, thereby making the object of study manageable. Each author chooses the digital platform characteristics they consider to be of greatest interest or most accurate for the study to be carried out. From the analysis carried out in this work, it can be concluded that there is a criterion that is unanimously used in the literature: *online* and *offline* (also called *location-based and web-based*). The other classifications depend on the object of the study being carried out. Thus, studies that aim to analyse the employability of platform workers differentiate between skilled and unskilled platforms, while studies that aim to analyse the legal status of platforms differentiate between generic and specific platforms, and so on. This study and the report it complements, "OSH in Digital Labour Platforms" (The Swedish Agency for Work Environment Expertise 2025:13), focusing on the occupational risks of platform work, uses the following classification.

4.2.2 Classification for studying OSH in digital platforms

For the purpose of this study and the report it complements, "OSH in Digital Labour Platforms" (The Swedish Agency for Work Environment Expertise 2025:13), the following characteristics have been selected to classify digital

labour platforms: the location of the tasks (*location-based, web-based*) and the level of skills required to perform the task (*low skill, highly skilled*). In addition, special reference is made to microtasks in web-based, low-skill platforms.

The rationale for the choice is as follows: the taxonomy cannot cover all the specificities that make up the complex world of digital platforms, and the more characteristics we include, the more fragmented the picture becomes. This makes it difficult to systematically analyse the available literature on preventing occupational risks in the platform economy (EU-OSHA, 2021).

The core factors of location and skill level are widely regarded as essential in addressing the key elements that shape the health and safety of platform workers.

- Place of provision of services

  The terms *web-based* and *location-based* are used instead of the more common online and offline because there is no work that is completely virtual, and both types of provision require the presence of workers to carry out specific tasks (Carelli et al., 2021). In addition, it corresponds to the terminology used by the ILO (Berg et al., 2018; ILO, 2021a).

  Web-based work is mostly carried out in a digital environment. Tasks are performed using an electronic device. Workers can perform their work from anywhere as long as they have an internet connection. Greater flexibility in terms of location and schedule is presumed. These types of tasks are offered globally, which means more competition. For example, programming, marketing tasks and microtasks.

  Location-based platforms, on the other hand, require the physical presence of the worker at a specific location. Tasks are performed in a physical environment, connect workers to local tasks and often require direct interaction with customers or the use of machinery. The only digital element in this category is the fact that the worker has to consult the platform or app to find out which activity they are to be assigned (Garben, 2017), and maintain contact with the company or customer via the app. For example, food delivery, passenger transport and domestic work.

  It is estimated that in the European Union, 90% of platforms offer location-based services, of which 63%, in terms of revenue, are engaged in taxi and delivery services. Thus, web-based services account for less than 10% of work (Eurofound, 2021). In contrast, the COLLEEM survey of platform workers showed that most of them provide web-based services (Urzì Brancati et al., 2020). In Sweden in particular, the most common platforms are those offering web-based, location-based, micro or small tasks, with the most common type of activity being professional services, and transport and household tasks (SOU, 2017).

From an occupational risk perspective, the location where the work is performed largely determines the risks to which workers are exposed (EU-OSHA, 2021), as well as the difficulties encountered by the specific group in terms preventing these risks.

- Level of skills required

  The level of qualifications or skills required indicates the nature, scale and complexity of the task to be performed and, in many cases, its remuneration. In addition, this difference usually indicates whether the task is offered to a multitude of workers, as they are interchangeable, or to a particular worker because of their special skills. It is worth noting that this categorisation does not indicate the range of training or skills of the worker, but rather the skills required to perform the task (Florisson & Mandl, 2017), meaning a worker with a university degree may be making food deliveries and therefore performing a low-skill job.

  The term highly skilled refers to any activity requiring specific technical knowledge. Technical knowledge is defined as any medium or higher education qualification, including intermediate vocational education and training, and university degrees. Sometimes a distinction is made between medium skilled work, such as administrative tasks, and highly skilled tasks, encompassing legal services, for example (Florisson & Mandl, 2017). However, in most studies, both educational levels - highly and medium skilled - are considered as highly skilled in order to avoid excessive splitting of the categories.

  Studies have shown that the remuneration of complex and higher-skilled tasks is greater than that of unskilled tasks (Florisson & Mandl, 2017), meaning that remuneration is generally high or satisfactory, and tasks are varied and complex (Schwellnus et al., 2019). For example, the average hourly wage on the Upwork platform is estimated at USD 16 for software tasks, USD 8 for writing and translation, USD 4 for administrative support and USD 5 for both customer service and sales and marketing (Codagnone et al., 2016). Highly skilled workers tend to have considerable autonomy and responsibility and a remuneration commensurate with the complexity of the task performed (Eurofound, 2019). Highly skilled tasks include technical repairs, consultancy and programming (ILO, 2021a).

  Low skill tasks are those that require minimal or no specialised training. The doctrine usually associates them with routine or repetitive tasks where compensation is low, workers are usually given specific instructions and they have little autonomy (Codagnone et al., 2016). These tasks include food delivery, cleaning and data entry.

  The vast majority of services offered on platforms require low skills. In the European Union, highly skilled tasks account for only around 6% of platform work (Eurofound, 2021).

Four types of platforms are obtained from the confluence of the two dimensions chosen to classify the platforms: highly skilled location-based platforms, low-skill location-based platforms, highly skilled web-based platforms and low-skill web-based platforms; within the latter, microtask platforms will be analysed separately.

- **Highly skilled location-based platforms:** these involve tasks that require medium to advanced skills and are performed in a physical environment (e.g. maintenance technicians, appliance repair, tutoring). The training required allows for higher compensation and the tasks are not repetitive and provide workers with more autonomy in decision-making (Codagnone et al., 2016). Examples of these platforms are MyHammer, RingTwice, Care.com and Takelessons.
- **Low-skill location-based platforms:** only minimal skills are needed to perform this type of work in physical environments. They include jobs such as delivery riders, drivers and cleaning assistants. Generally, the pay is low, there is a higher risk of accidents at work due to the environment and there is less autonomy in decision-making (Eurofound, 2019; ILO, 2021a; Nielsen et al., 2022). Examples of these platforms are Uber, Glovo and Helpling. Working conditions on these platforms are often associated with a high risk of accidents, physical stress and work-related health challenges, as well as lack of job security, and precarity (Keith et al., 2020).
- **Highly skilled web-based platforms:** jobs require specific and advanced skills. High flexibility in terms of location and schedule is allowed and it is presumed that workers manage their schedules and projects. Pay is higher, depending on the complexity of the task, and work can include complex projects (ILO, 2021a). Lawyer for Project, 99designs and Freelancer are platforms offering this type of work.
- **Low-skill web-based platform:** roles that are performed in a digital environment, requiring few or no specific skills or qualifications. There is flexibility in the worker's location, but financial compensation is generally low due to competition among workers globally (Eurofound, 2019). For example, Appen and Clickworker are platforms that fall into this category, which includes microtasks, and simple or repetitive jobs which are very small in scale, of short duration and low complexity, and which are distributed to a large pool of unskilled workers who are interchangeable (Florisson & Mandl, 2017; Schmidt, 2017). For example, online surveys or audio transcription. Payments per task are usually very low, but workers can perform a multitude of tasks in a short period of time. The paradigmatic platform in this category is Amazon Mechanical Turk.

On the other hand, clarifying the employment status of platform workers, i.e. their classification as employees or self-employed, is one of the central issues affecting their working conditions and OHS (EU-OSHA, 2021). Much of the protective legislation is only applicable to workers who are classified as employees, with this legal status determining access to social protection, the prevention of occupational risks, job security and minimum income mechanisms (EU-OSHA, 2023). Despite this, data indicate that 90% of workers using digital labour platforms are classified as self-employed (more than 90% in the European Union, according to Eurofound (2021)). In the same vein, less than 5% of the total income generated by the platforms comes from people with an employment contract (Eurofound, 2021).

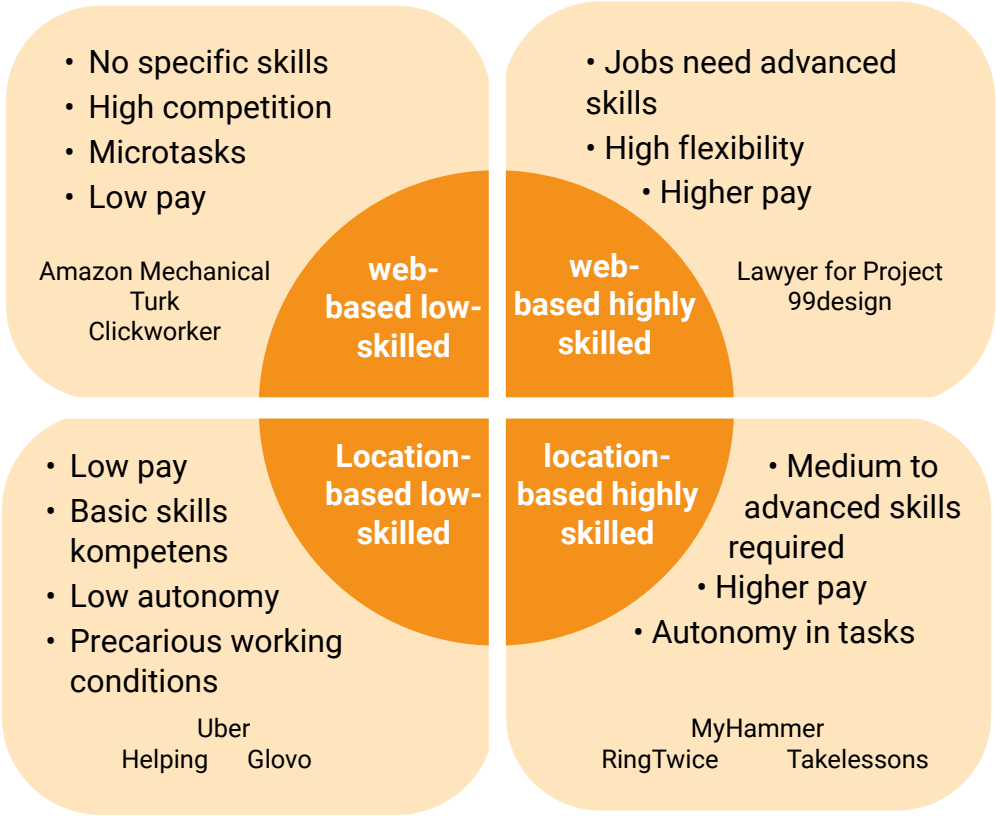


Figure 13. Types of platform work.

However, the literature does not classify digital platforms according to whether they use employees or self-employed workers because the same task is sometimes performed by both these groups. Classification in one category or the other depends on national regulations, so the workers' status may vary depending on the country in which they provide services.

In addition, demand for the reclassification of self-employed workers providing services on platforms to employees is common, so that many platforms group people in both classifications performing the same tasks together (EU-OSHA, 2021). For this reason, this study does not classify digital labour platforms according to whether they use employees or self-employed workers.

In short, as already mentioned, the classification of digital platforms by place of provision and required skills enables platform grouping that facilitates the study of the occupational risks of workers providing services on digital labour platforms.

5. Specific characteristics of platform work in terms of occupational risks

Digital platform work has unique characteristics that directly influence the occupational risks faced by workers. While many of these characteristics are present in other forms of work organisations, their combination in the context of digital platforms amplifies their significance and associated risks (De Stefano, 2015; De Stefano & Aloisi, 2018).

In addition, it is important to consider that, depending on the type of work performed and the type of platform used, these characteristics may be present to a greater or lesser extent (Eurofound, 2018).

The specific characteristics of these platforms that generate risk factors for the safety and health of workers are described below.

5.1 Nature of work and employment relationship

5.1.1 Unbundling of tasks

One of the defining characteristics of work on digital platforms is what the literature has called ”unbundling of tasks”. This refers to breaking down traditional work into smaller, more specialised tasks (Figure 14). This breakdown deepens the Fordist division of labour and implies a reorganisation of traditional productive activity and processes (Pesole et al., 2018).

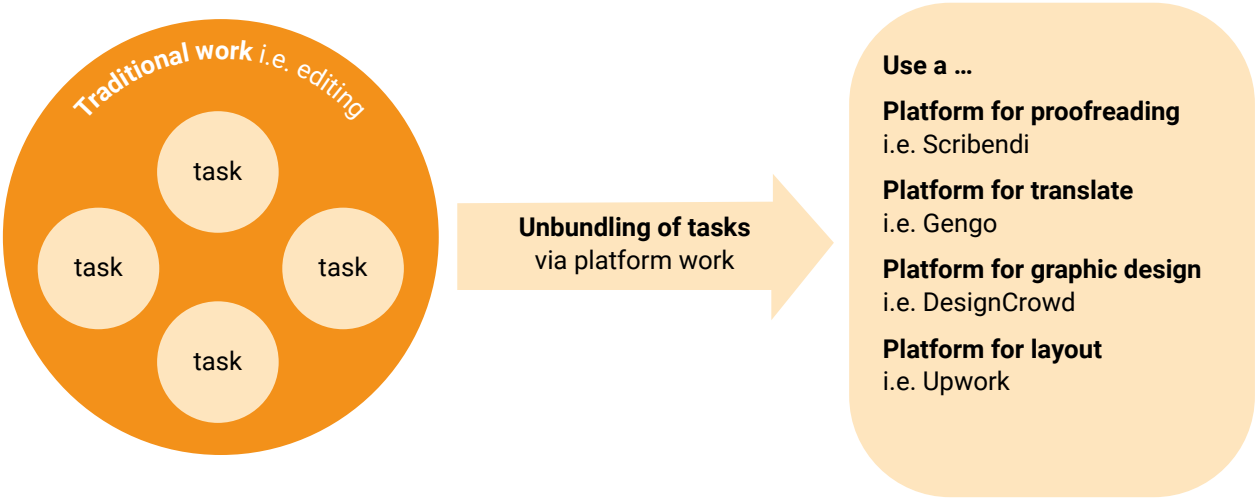


Figure 14.

In sociology and psychology, work transcends the mere provision of services. For the individual, it is a means of access to economic and social resources, and a source of identity and recognition. In this sense, the breakdown of work into atomised tasks can undermine the role of work as an element of identification and self-fulfilment (Pulignano, 2019), affecting the worker's self-perception and well-being.

5.1.2 Income insecurity

According to studies on the subject, in most cases, work on digital platforms involves the performance of on-demand tasks, paid by the piece or by the hour (EU-OSHA, 2021; ILO, 2021a). In this model, workers have no guarantees regarding the amount of their income or its stability, as the existence and characteristics of the paid work they can access depend on factors beyond their control and are, a priori, indeterminable. The quantity and characteristics of the work depend on three factors: 1) existing market demand for their tasks, 2) competition from other workers and 3) the mediatisation of the platform (Derave et al., 2021; Eurofound, 2018; Smith & Leberstein, 2015). Studies have also highlighted how insecure income from work is exacerbated by the lack of other forms of protection, such as guaranteed minimum income, severance pay and unemployment benefits (Cherry, 2016; EU-OSHA, 2021; Hauben et al., 2020). This has led to platform work being considered as an objectively unsafe form of employment, which can lead to physical and mental health challenges for platform workers (Bérastégui, 2021).

5.1.3 Limited professional development

The concept of "boundaryless careers" (Arthur et al., 1999) defines career paths marked by high "physical" and "psychological" mobility which, unlike traditional careers, are not defined by performing a specific activity with a single employer throughout a person's professional life.

Boundaryless careers involve the construction of a professional figure through frequent changes of employers, organisations and work locations (physical mobility), learning new skills, modifying ways of working and changing occupations (psychological mobility). This type of career requires greater individual ownership, and responsibility as well as risk-taking in managing a career. With no established organisation or structure on which a person can anchor themselves, planning for the future becomes uncertain. It is therefore essential to develop three types of competences: knowing what to do, i.e. skills, knowing why to do it, i.e. motivation and professional identity, and knowing who to relate to, that is, creating your own professional networks (Parker & Arthur, 2004).

Work on digital platforms is often performed through short-term agreements with no guarantee of continuity which, according to some authors, results in high job transience and a lack of clear career paths (Ashford et al., 2018). Moreover, given the role that platforms generally take on as mere intermediaries, there are few career development opportunities on the platforms themselves, such as through promotions, as is the case in traditional work organisations

(Kost et al., 2020). This implies that platform workers are left out of typical work structures, and even out of being part of a continuous, specific occupational group. In this context, career development can only take place by following boundaryless career models (Kost et al., 2020).

However, the literature has pointed out that there are a number of intra-organisational and inter-organisational barriers in platform work that hinder or prevent the development of the three core competences of boundaryless careers (Bérastégui, 2021; Kost et al., 2020). This is exacerbated among those who are more financially dependent and less skilled, because they are trapped in a cycle of precarious, low-skilled and low-paid work with no option to advance their careers (Perera et al., 2020).

5.1.4 Worker status

Another characteristic of platform work that can have an impact on occupational risks is the worker's status. Studies show that very few workers are directly employed by the platforms (Figure 15), and even when they are they are mainly tasked with the maintenance, creation and updating of the platform itself (ILO, 2021a). In most cases, platform workers are classified as self-employed or come under other categories that deny the existence of a formal employment relationship with the platform (EU-OSHA, 2021; ILO, 2021a).

In addition, platform workers are immersed in a particular context, marked by algorithmic management and by the mediation of the platform between them and the market. This situation means that platform workers experience varying degrees of dependency and subordination that are considered incompatible with self-employment (Adams-Prassl & Gruber-Risak, 2016; Aloisi, 2016; Berg et al., 2018; Davidov, 2017; De Stefano, 2015; Lehdonvirta, 2018; Todolí Signes, 2017b; Todolí-Signes, 2017).

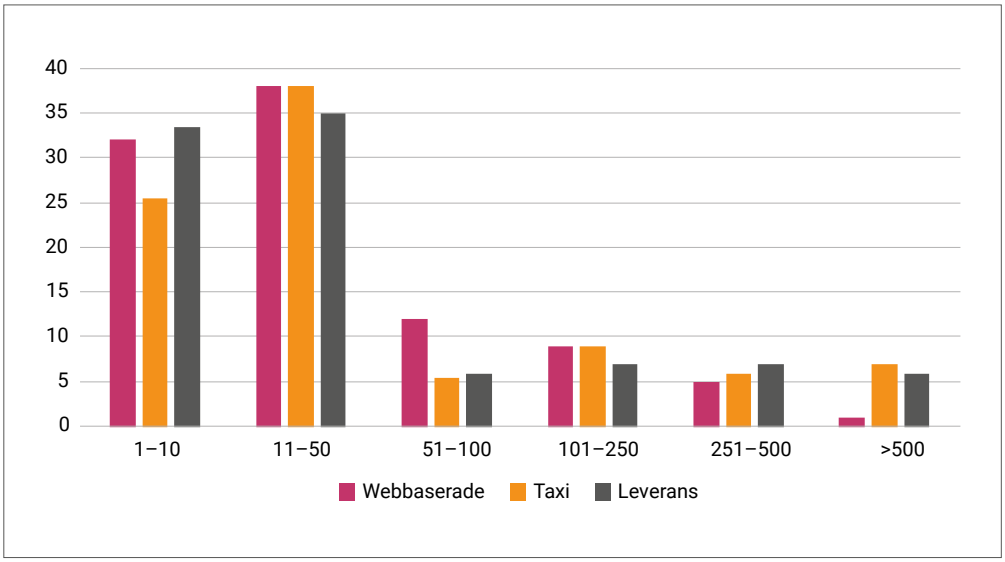


Figure 15. The low number of employees on platforms indicates that the vast majority of their workforce comes under other categories, such as self-employed individuals and independent contractors. Source: ILO, 2021, data from Crunchbase database.

As a result, some authors have pointed out that platform workers tend to show greater similarities with non-standard employment situations, such as bogus self-employment, on-call workers and even temporary workers (Sanz de Miguel et al., 2021) rather than freelancers or employees.

When these situations occur, they create a double lack of protection for platform workers that makes them more vulnerable to occupational hazards. On the one hand, their non-legal status as employees excludes them from the protection afforded by labour laws, such as social protection and the application of OHS regulations (EU-OSHA, 2021; Williams & Lapeyre, 2017). In addition, they are forced to bear the costs and responsibilities of their activity, including occupational self-protection, but without being able to exercise real control over their working conditions (Eurofound, 2018).

5.2 Algorithmic management

Artificial intelligence-based workforce management (AIWM), also called algorithmic management, is a workforce management system that collects data, often in real time, about the work environment, employees, tasks performed, and digital tools used. These data are fed into an AI-based model that generates automated and semi-automated decisions or provides useful information to workforce managers for decision-making (EU-OSHA, 2022a, 2024; Moore, 2018; Ponce Del Castillo, 2020).

The literature has pointed out that algorithmic worker management can provide many benefits in preventing occupational risks (Cockburn, 2021; EU-OSHA, 2019; Todolí Signes, 2021). However, attention is also drawn to how the use of these management systems can entail numerous risks to OHS (Baiocco et al., 2022; Cabrelli & Graveling, 2019; EU-OSHA, 2019). The main factors that can lead to risks to workers' health and safety include the loss of workers' control over their jobs, increased work intensity and performance pressure, reduced social support from managers, individualisation and dehumanisation of workers, the creation of an unhealthy competitive environment, a lack of transparency and disempowerment of workers and their representatives, mistrust, low participation and involvement, and blurring of work-life balance. (EU-OSHA, 2022a). These factors are closely aligned with the key elements of the Demand-Control-Support (DCS) model (Karasek & Theorell, 1990). According to this model, workers experience the highest levels of stress and adverse health outcomes when exposed to high job demands, combined with low control over their tasks and insufficient social support. The progressive loss of autonomy and decision-making power, increased pressure to perform, and the weakening of social support structures, directly reflect this "iso-strain" scenario described in the DCS framework. In particular, platform work and digitalised work environments can exacerbate these conditions, as workers often face algorithmically determined demands, limited opportunities to influence their working conditions, and reduced interpersonal interactions with colleagues and supervisors.

5.2.1 Algorithmic evaluation and control

Digital platforms use algorithms to evaluate and monitor worker performance as a part of an algorithmic management model. Through automated systems, these platforms collect and process real-time data on work activity, not only enabling them to measure individual efficiency, but also to optimise task allocation and work organisation based on productivity criteria. This algorithmic management is not limited to performance evaluation; it also enforces constant control over workers, establishing labour dynamics in which technology dictates the pace, performance standards and conditions under which work is carried out. This can generate constant pressure to meet high standards of efficiency and speed, leading to work practices that prioritise productivity over safety (Wood et al., 2019).

The studies have shown that digital platforms often subject workers to constant, real-time control and monitoring, not only to obtain data to maximise the algorithmic management of the workforce and economic activity itself, but also to evaluate their performance (Duggan et al., 2020; Kellogg et al., 2020; Pesole, 2021). To this end, platforms record, for example, the time the worker spends connected to the platform, the moment of connection and disconnection, and the speed and level of activity (Gerber & Krzywdzinski, 2019) using various methods including registering typing and mouse movements, screenshots, the use of GPS, and accessing the worker's webcam (Ajunwa et al., 2017; Wood et al., 2019).

The information obtained through continuous worker monitoring is used by the system to classify workers according to their productivity and behaviour, and thus determine what tasks they are assigned or how visible they will be on the platform, which significantly impacts the conditions, quantity and therefore the remuneration they receive for their work (Jarrahi et al., 2021; Rosenblat & Stark, 2016; Wood et al., 2019). The literature argues that this constant vigilance affects a platform's OHS in two ways. Firstly, workers adapt their behaviour to the platform's standards: working times, work performance methods, etc., to reduce the risk of receiving a bad rating that harms their income and working conditions (Cram et al., 2020; Florisson & Mandl, 2017), even if this means increasing health and safety risks (EU-OSHA, 2022a). Secondly, the perception of being constantly monitored increases the risk of workers suffering from stress, fatigue and anxiety (EU-OSHA, 2019; Jarota, 2021), which can lead to the development of mental health challenges (Bérastégui, 2021).

5.2.2 Digital reputation

The use of online reputation systems based on customer feedback, whether through ratings, reviews or other types of evaluations, is also a very common feature of digital labour platforms. These systems often influence how algorithmic management classifies workers, establishing hierarchies and determining their access to better opportunities, visibility or task allocation. (EU-OSHA, 2021; ILO, 2021a). However, the way these evaluations impact the worker's rating within the algorithm may be inadequate, as customer feedback does not equate to professional and responsible supervision.

Unlike a trained evaluator, the customer lacks in-depth knowledge of the work and the context in which it is performed, which limits their ability to make fair and well-founded judgments. Moreover, the relationship between the customer and the worker is usually brief and sporadic, without the continuity needed to assess performance objectively and with proper criteria. Added to this is the fact that customers receive no specific training regarding the work or how to evaluate it appropriately, meaning their ratings may be based on subjective perceptions rather than defined quality standards. Furthermore, these evaluations may be influenced by cultural, ideological or personal biases, introducing arbitrary factors into the algorithmic classification process and negatively impacting workers' stability and working conditions (Todolí-Signes (2021).

Studies indicate that rating and reputation systems have a major impact on the working conditions of platform workers (Urzì Brancati et al., 2020). Poor ratings can lead the algorithm to offer fewer jobs or tasks with worse characteristics (lower paid, particularly difficult, etc.). Several authors have highlighted that platform workers are more likely to tolerate abusive behaviours and requirements from clients, taking both physical and psychological risks, when faced with the risk of their income and working conditions being negatively affected (Cherry, 2016; Rosenblat & Stark, 2016).

5.2.3 Incentives and penalties

Platforms use algorithmic management systems to discipline workers, so they adapt their availability and ways of working to serve the interests of the platform (Kellogg et al., 2020). Although these are not direct impositions, the platforms use reward to make workers adopt specific behaviours through soft-control mechanisms, such as nudging techniques, gamification and the threat of disconnection (Baiocco et al., 2022; Bérastégui, 2021).

The literature has demonstrated that incentive and gamification practices are commonly used to stimulate worker productivity (Bérastégui, 2021). For example, workers on digital platforms are eligible for financial rewards if they agree to work at certain times (peak times, night or weekend hours, etc.), if they perform a certain number of tasks in a certain amount of time, or if they work in unsafe locations or in unfavourable conditions (Ivanova et al., 2018; Shapiro, 2018). These rewards do not always consist of financial bonuses. Instead, the platform promises to reward the worker by assigning them more and better jobs in the future, or to improve their positioning and visibility to the platform's customers, giving them a "superior (winning) status" compared to other workers (Gerber & Krzywdzinski, 2019; Griesbach et al., 2019). These systems motivate platform workers to take risks, accept high workloads and work long hours (ILO, 2021; Rosenblat & Stark, 2016).

Along with reward systems, platforms also retain the right to limit or terminate workers' access to the platform and thus to the income derived from their activity on it. Temporary or permanent deactivation is often triggered automatically due to low customer ratings, complaints, bad reviews or unfavourable evaluations, without the worker receiving an explanation from the

platform regarding the reason for such measures (Baiocco et al., 2022). Studies suggest that, in many cases, workers do not really know how platforms make the decision to limit their activity. This leads to them having to speculate and form their own theories about how they should act to prevent such consequences. This can end up shaping the behaviour of workers, who perceive themselves as being permanently under the threat of being disciplined (Bucher et al., 2021).

5.2.4 Transparency and the right to explanation

Studies also point to the fact that workers often have limited or no knowledge of how the algorithms that assess their performance actually work (Rahman, 2021). Furthermore, it is noted that platform workers rarely have the right to discuss the decisions made by the system (De Stefano & Aloisi, 2018; Kaminski & Urban, 2021).

This means that, in many cases, workers are unaware of the reason behind a specific decision that directly affects their ability to work. They are unable to determine whether the origin and reasoning behind a particular decision, such as a reduction in task allocation, a loss of visibility within the platform, or even the deactivation of their account, — is due to ratings from third-party clients, autonomous evaluations carried out by the algorithm based on information gathered through continuous monitoring and control, or other external factors, such as changes in platform policies, market strategies, or fluctuations in the economic situation. According to several authors, the lack of transparency in algorithmic management can lead to increased insecurity and stress among workers, who do not know how their income is calculated and how their performance scores are determined (Wood & Lehdonvirta, 2021). The lack of knowledge and opacity in the criteria used to assign tasks and evaluate work can lead to a perception of unfairness and distrust in the system (Rosenblat & Stark, 2016). This can lead to a working environment that can provoke feelings of frustration, insecurity, anxiety and stress with negative effects on the mental health of workers (Bérastégui, 2021).

The doctrine has also pointed out how the impossibility of understanding the reason for decisions made by the algorithm is compounded by the lack of explanations furnished by the platform (Baiocco et al., 2022), and of the mechanisms to challenge these decisions (De Stefano & Aloisi, 2018). Kaminski and Urban (2021) pointed out that the lack of a ”right to explanation” not only affects the worker’s perception of fairness but can also have serious implications for their well-being and mental health.

5.3 Working conditions

5.3.1 Varied and potentially unsafe work environments

Platform workers often operate in a variety of environments that may be uncontrolled or unsafe, something which, while equally true of other types of work, is exacerbated in the digital platform environment by the precarious

nature of the work and the lack of social protection inherent to platform work (EU-OSHA, 2021). Some authors pointed out how the lack of control over present and future work environments increases the stress and emotional exhaustion of platform workers (Howcroft et al., 2019).

This is particularly relevant for location-based platform workers, who may be pushed to work in adverse weather conditions, heavy traffic and unfamiliar or dangerous areas (Eurofound, 2018). However, it also affects those workers working on web-based platforms who face similar risks to those faced by traditional teleworkers because they work in environments not specifically suited to the work (Eurofound & ILO, 2017; Tavares, 2017).

Studies have also indicated that a lack of clear responsibility for occupational safety and health regulations can lead to increased exposure to occupational hazards (EU-OSHA, 2021). By not assuming the role of employer in most cases, digital platforms can evade the legal responsibilities associated with this role, leaving workers in a vulnerable position (De Stefano, 2015).

Other factors noted in the literature include the lack of direct human supervision, and reliance on technology for task allocation and constant monitoring. These factors can create gaps in the implementation of effective security measures. Vallas (2019) highlighted that while these platforms can provide basic safety tools, such as information on weather conditions and traffic alerts, they rarely offer comprehensive support in terms of safety training and personal protective equipment. This may be exacerbated by the fact that many platform workers operate as independent contractors, meaning they do not have access to the same benefits and protection as traditional employees. The lack of mandatory health insurance and workers' compensation can lead to increased stress and financial insecurity, negatively impacting the mental and physical health of these workers (Berg et al., 2018).

5.3.2 Use of own equipment

As a specific characteristic of platforms, the literature points out that they rarely provide the equipment or materials necessary to carry out work or to prevent occupational risks (Eurofound, 2018). This implies that platform workers must provide their own work tools and take responsibility for their maintenance and safety. In this context, the use of poorly maintained or unsafe equipment due to lack of resources or worker training has been identified as a significant risk to OHS (Huws, 2017).

While this occurs in other forms of atypical and independent work (Howard, 2017), the issue is exacerbated in digital platform work for several reasons. The business model of digital platforms, characterised by high turnover and labour flexibility, can lead to workers being less motivated to invest in training or update equipment, as they do not see these investments as being viable (ILO, 2021a). Additionally, the pressure to accept tasks quickly and meet tight deadlines may push workers to use unsuitable equipment or ignore safety procedures to maximise their earnings (Wood et al., 2018).

Thus, the lack of clear responsibilities regarding OSH and the self-management inherent to platform work create a working environment in which risk prevention Is the responsibility of the worker, who may not have sufficient knowledge to maintain a safe and healthy workspace and/or may not be trained or financially motivated to do so. This results in the use of non-ergonomic furniture, unsuitable vehicles and protective equipment, or even dangerous tools and substances, depending on the type of work performed in each case (Lenaerts et al., 2022).

5.4 Working hours and workload

5.4.1 Irregular and long working hours

Irregular and long working hours have been identified as one of the characteristics of platform work. Uncertainty of income and the fear of missing out on good job opportunities or being penalised for low productivity leads to the need to work unsocial hours, such as nights and weekends, and to extend working hours, thereby neglecting the need for rest (European Commission, 2020; de Eurofound, 2018). This way of working increases the risk of fatigue which, in turn, can lead to accidents (Lehdonvirta, 2018). Likewise, the lack of a structured work environment and the constant need to be available at all times can negatively impact workers' mental health (Wajcman, 2016).

Prolonged exposure to irregular schedules and long working hours has been linked to health challenges such as sleep disorders, chronic fatigue and cardiovascular disease (Caruso, 2014; Dugan et al., 2022). Moreover, the need to be continuously connected and available for work prevents platform workers from fully disconnecting and recovering properly, which is essential for maintaining good mental and physical health (Albulescu et al., 2022).

5.4.2 Intense competition and work overload

Work on digital platforms is characterised by high competition among workers due to several factors inherent to these systems. First, the global availability of online work enables platforms to recruit workers from various regions, increasing competition (De Stefano, 2015). In addition, the low entry barriers of these platforms provide access to a large pool of workers. This creates an environment in which workers must constantly compete for available tasks, and pay rates are often pushed down due to the abundant supply of labour (Graham et al., 2017).

It is also common for the platform itself to encourage competition among workers through rating systems, qualifications, allocation of rewards and bonuses, etc. This intensifies competition to maintain high levels of performance and customer satisfaction (Rosenblat & Stark, 2016).

The high competition and precarious nature of platform work can lead to excessive and irregular working patterns (Piasna et al., 2022). This means that platform work is also characterised by its propensity to cause periods of significant

overload due to the need to work faster, provide quick responses, multi-task and complete several projects simultaneously, which increases the risk of fatigue and stress (Bunjak et al., 2021; Cram et al., 2020; Ingusci et al., 2021).

5.4.3 Intensive use of technology

Work on digital platforms is also characterised by the intensive use of technology, where dependence is generally very high, resulting in the need for workers to use multiple technological tools and information systems (Bunjak et al., 2021). In the case of work on digital platforms, this stems not so much from the nature of the work itself, but from the structure in which it is performed, driven by algorithmic management in a digital environment (Cram et al., 2020).

This means that platform work is particularly prone to so-called *techno-overload*. Techno-overload is a phenomenon that occurs when the demands associated with the use of information and communication technologies exceed the capacity of individuals to manage them effectively (Ragu-Nathan et al., 2008). This refers to situations in which workers are faced with an excess of information, digital tools and technological requirements, which they are not able to cope with and process correctly, which increases the pressure and cognitive load on workers, leading to higher levels of stress and burnout (Ingusci et al., 2021; Karr-Wisniewski & Lu, 2010) (Figure 16).

Figure 16. Overload conceptualisation.

Authors such as Bunjack et al. (2021) argued that the work environment of digital platforms can lead to a significant information overload for workers, who receive a large amount of data from various sources, which can make it difficult to integrate new information and can reduce their creative performance. Ingusci et al. (2021) also pointed out that the continuous availability and pressure to respond quickly to work requests inherent to these systems contribute to work overload and behavioural stress.

This information overload becomes even more harmful when combined with poor usability of the technology itself. The usability of technological support systems plays a crucial role in shaping workers' cognitive load and overall well-being. However, the quality and design of digital tools are often overlooked. Poorly designed interfaces, fragmented and non-integrated systems, and the use of overly compact devices whose small size compromises ergonomic comfort and usability, can disrupt the work process, increasing mental fatigue and errors. These usability issues not only exacerbate cognitive strain, but also contribute to frustration and disempowerment among workers, who must constantly adapt to complex and sometimes unintuitive digital environments. As a result, platform workers are particularly vulnerable to the combined impact of high demands, low control over technological tools, and insufficient support, reinforcing the dynamics described by the Demand-Control-Support model (Pansini et al., 2023; Wirkkala et al., 2024).

5.5 Isolation and lack of representation

5.5.1 Occupational isolation

Some authors like Vandenbulckle (2022) pointed out that platform workers find themselves in a special situation of work isolationism due to the lack of direct human contact between workers and the organisational structure. In addition to the lack of support from colleagues or supervisors, who are replaced by algorithmic management, there is a lack of common physical workspaces, high turnover and worker anonymity, which makes contact with other platform workers difficult (Vandenbulcke, 2022). This is aggravated when competition is encouraged among the workers themselves, further increasing the sense of isolation (Piasna et al., 2022).

This phenomenon has major consequences in terms of workers' health and well-being. Lack of social and emotional support at work is a major source of stress and has a negative impact on job satisfaction and job tenure (Bérastégui, 2021; Eurofound, 2018). Studies show that lack of social contact can lead to feelings of loneliness and depression, which is particularly relevant in platform work, where long and antisocial working hours are common (EU-OSHA, 2021; European Commission, 2020; Eurofound, 2018).

Lack of human contact with colleagues and superiors leads to a dehumanisation of work, which can result in lower job satisfaction, as the tasks lose their human and social aspect and become less varied (Stacey et al., 2018). Furthermore,

the rise of algorithmic management can intensify these effects by reducing opportunities for human interaction and increasing the perception of being constantly watched, which contributes to job stress (Wood et al., 2019).

5.5.2 Lack of trade union representation

Studies have pointed to significant imbalances in the employment relationship between workers and digital platforms, favouring the latter, which have the upper hand in negotiating working conditions (European Commission, 2021a; Jin et al., 2021; Maffie & Gough, 2023; OECD, 2019b; Taylor et al., 2017). Most digital platforms run their business model by hiring people as freelancers rather than formal employees, which means they can avoid many of the traditional labour obligations and adjust the supply of workers according to demand (Sanz de Miguel et al., 2021). This situation, in which workers are considered self-employed or independent contractors, severely limits and often excludes the exercising of trade union representation and collective bargaining rights, which are traditionally reserved for employees (European Commission et al., 2019; Rodríguez Fernández, 2022). Although various initiatives have been launched by different states and the EU to extend these rights, this protection does not extend to many platform workers (Bertolini, 2024). In addition to these legal limitations, there is a lack of interaction among platform workers, which makes it difficult to create social networks of support and assistance and to take collective action (Bertolini & Dukes, 2021).

The literature has shown how the lack of representation and bargaining power in a context of inequality has important consequences for occupational safety and health (Underhill, 2022). This is because the absence of union representation and collective bargaining leaves platform workers in a vulnerable position, where they have no voice and no power to influence the safety and health policies implemented by the platform, which unilaterally decides working conditions (Aloisi, 2019; European Commission, 2020; Prassl, 2018). This can lead to working conditions that do not comply with minimum OHS standards, with no clear responsibility for risk prevention (Bertolini, 2024).

6. conclusion

This paper conceptualises digital labour platforms by defining them and establishing key characteristics, enabling us to better understand the phenomenon we aim to study and regulate. The first conclusion of this paper is that there is a huge variety of definitions in the literature, given the heterogeneity of existing digital labour platforms. In fact, there is not even any consensus on the definition and terms used to identify platform work. The Directive on digital platform work provides a concept based on four characteristics (article. 2.1): (i) it is provided, at least in part, at a distance by electronic means, such as by means of a website or a mobile application; (ii) it is provided at the request of a recipient of the service; (iii) it involves, as a necessary and essential component, the organisation of work performed by individuals in return for payment, irrespective of whether that work is performed online or in a certain location; (iv) it involves the use of automated monitoring systems or automated decision-making systems. Work on digital platforms will only be considered as such under European regulations when these four characteristics are present.

Thus, it is considered that, despite the heterogeneity in the literature on the concept, of platform work, Europe already has a definition, at least of a legal nature, which allows for a regulatory starting point at national level.

Secondly, this paper classifies digital work platforms according to their typology. The aim of the classification in this paper is to be able to group the different types of platforms into clusters so they can be studied for OSH purposes. This paper considers that digital platforms can mainly be grouped by two of their characteristics: first, whether the work provision is online or physical, and second, whether the platform offers skilled or unskilled work. In line with this, the literature has pointed out that the occupational risks faced by workers on online versus on-site platforms differ, as do the risks associated with varying levels of qualification. However, it is worth noting that this paper highlights that the classification of platforms based on skills is often a proxy for precarity. In other words, the varying levels of occupational risk between skilled and unskilled work are less about the nature of the work itself and more about the different degrees of precarity involved. This dual classification serves as a way to group different types of platforms for analysis, thereby facilitating further exploration of the occupational risks associated with platform work in the future.

Thirdly, this paper has identified a range of occupational hazards specific to platform workers. It has focused on pinpointing the particular characteristics of digital platforms that either create or exacerbate these risks. In this regard, several key factors have been highlighted, such as work fragmentation, economic insecurity, algorithmic management, constant surveillance, lack of control over working conditions, excessive working hours, technological overload, lack of union representation and isolation at work. Thus, future studies on preventing

occupational risks and assessing those risks faced by platform workers should specifically consider these hazards, alongside the inherent risks associated with the work itself. In other words, workers on a digital platform in the transport sector will be exposed to both the traditional hazards of the transport sector and the unique risks associated with digital platforms. Understanding these factors will enable a more comprehensive assessment of all the risks affecting platform workers.

Based on the conclusions of this study, policymakers, risk prevention experts and labour enforcement authorities should now be better equipped to analyse and mitigate the occupational risks faced by platform workers. However, further targeted research on these risks is required.

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