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# Challenges and implications of microwork in the age of artificial intelligence: A global socioeconomic analysis

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**Abstract:** This study adopts a discursive and analytical perspective to explore how technological advances are reconfiguring the dynamics of the global labour market, with special attention to the phenomenon of microwork. Microwork, characterised by short, fragmented tasks carried out through digital platforms and geographically distributed, has seen exponential growth, particularly in nations with lower economic development. This type of work shows a growing distinction between tasks of a complex and creative nature and those of a repetitive and monotonous nature that do not require advanced skills to perform. This differentiation can intensify wage disparities between developed and developing countries, as well as contribute to the precariousness of work in activities considered less complex and valued. The article highlights the emergence of unstable and poorly paid jobs that do not require specific qualifications and discusses their impact on social security systems in countries where labour regulations are insufficient. Using a theoretical-methodological approach, the research examines the role of artificial intelligence in the rise of micro-labour and its socio-economic implications. It concludes that despite the flexibility and short-term earning opportunities offered by microwork, it poses considerable challenges in terms of income security, workers' rights, and social protection, emphasising the need for regulatory measures to mitigate its adverse effects on vulnerable communities.

**Keywords:** microwork; artificial intelligence; pension systems; workers

## 1. Introduction

In recent decades, the working environment has undergone profound changes, catalysed by technological progress and increased globalisation. Of particular interest is the way in which globalisation and growth in software development have enabled the advent of remote working, especially in technology-related activities.

This article sets out to analyse the concept of micro-work, defined as a form of employment that involves carrying out specific tasks or short-term projects, usually through digital platforms. We also seek to problematise micro-work from the perspective of deepening inequalities between workers, as well as the problems that can emerge from the point of view of the social benefits offered by the state, such as pensions and financial support for people in need.

One problem we face is the possibility of further deregulation of labour, now no longer just linked to informality, but also to a process in which the contractor is not bound by the labour laws of the country in which he employs the workers (Casilli, 2017).

A notable area of demand in this context is assistance in the development and revision of generative artificial intelligence systems, representing a significant field of interest within contemporary technological occupations.

The expansion of micro-labour, especially in poor regions of Sub-Saharan Africa, Southeast Asia, and, to a lesser extent, South America, has been documented by Grahan et al. (2017).

This study highlights concerns not only about the emerging nature of work in the context of microwork, which often lacks specific professional designations and specialised qualifications, but also about working conditions characterised by extremely low pay and employment instability.

Unlike a perspective of building careers in which there are no boundaries and which can, within their fluidity, be developed in formats that meet the demands of companies and also the individual needs of workers (Kost et al., 2020), we are starting from a hypothesis in which there is a real risk that this micro-work movement will not be supported by career development or fostering new work activities and training, but will instead foster jobs that do not require educational qualifications, thus leading to greater job insecurity, especially in countries with fragile economies (Webster, 2016).

The present analysis suggests that such a scenario could result in significant long-term impacts for countries where micro-work becomes a consolidated practice, particularly in view of the absence of labour regulations or mechanisms to integrate these workers into national social security systems.

This would not only be due to the expansion of micro-work opportunities, but above all because they are predominantly repetitive jobs with little or no creativity (Ettliger, 2017), strengthening the differences between the types of workers needed in the field of technology and effectively devaluing those linked to micro-work. These conditions, when combined, can lead to a process of impoverishment in the country with limited prospects of reversal, especially considering the aging population (Grusin, 2022).

Online micro-work, shaped by the distribution of micro-tasks to workers scattered all over the world, presents itself as what Hayek (1994) claimed was the pinnacle of neoliberalism, in which knowledge is dispersed and everyone possesses knowledge that is disconnected but can be used to develop contextualised activities.

Microwork can be considered a new stage in what was previously known as the expansion of outsourcing in the labour production process, which had already led to a reduction in labour rights and an increase in occupational illness (Quinlan et al., 2001).

In addition to concerns about pay and social security, there has been a reconfiguration of labour dynamics, particularly in what can be described as a continuous cycle of waiting. In this context, workers are often connected to the internet in a state of readiness that varies from seconds to days, waiting for opportunities to engage in intermittent activities (Irani, 2015). This phenomenon reflects a significant transformation in the structure and experience of work, marking a clear distinction from traditional forms of employment (Standing, 2011).

Microwork, recognised as work offered on digital platforms on demand, appears from one perspective as a job opportunity in poor countries that have little scientific and technological development, with payment made in hard currency (dollars) and greater purchasing power. At the same time, it is extremely advantageous work for the

companies that provide it, since it costs relatively little (pay in cents to a few dollars per activity), and these companies completely bypass the social security system and labour regulations of the countries in which they hire (Kathuria et al., 2017).

This is because, unlike platforms like UBER, the services provided are generally linked to digital products, mainly teaching and correcting machines (artificial intelligence), promoting corrections in automated systems, or moderating offensive content on social networks. According to a report by the BBC (2019), this is recognised by users as extremely convenient, as it apparently improves the supply of digital services.

But this apparent convenience leads us to the main problem of this theoretical work: how the growth of micro-work could impact the future welfare systems of the countries affected and how the lack of regulation could promote an increase in wealth for the technology-producing countries and a deepening of poverty in the countries with the largest numbers of workers (Todolí-Signes, 2017).

### **1.1. Research problem**

Microwork in the gig economy reconfigures and fragments labour relations. The deregulation caused by big tech companies, especially with the expansion of microwork as the main element in artificial intelligence training, could create a future problem for countries, especially poorer ones, that don't have solid regulations to incorporate workers and contracting companies so that they can pay into the national social security system. There is a risk that these countries will soon find themselves with a contingent of elderly people who have never paid into the social security system, which could lead to further impoverishment of the countries.

### **1.2. Hypotheses**

The companies that provide global micro-labour operations, by creating mechanisms to seek out the cheapest workers, create a lack of control by states over the work activities that their citizens carry out, as well as the social and welfare conditions offered to these citizens.

Countries, including the richest, do not have mechanisms to control and monitor the supply of micro-work, so they are unable to regulate and create the conditions to incorporate workers into the social security system.

The immediate effect is that the state doesn't know how much domestic wealth its citizens generate (or don't generate), which leads to an imbalance in services to the population, tax collection, and social security planning.

## **2. Method**

This work is theoretical and exploratory, presenting provocations and analyses about the impacts that workers in poor countries may have with the expansion of the deregulated supply of digital micro-work.

Our aim is to make a provocation about the need to expand empirical research to find out the real size of the GIG economy (Tubaro et al., 2020) so that national states have more concrete data to understand the impact of deregulation and the transnationalisation of work activities.

Based on the references used, our aim is to promote a critical theoretical debate that seeks to problematise the need to better understand the impacts of micro-labour and the gig economy in the context of the economies of countries, especially the poorest ones.

Artificial intelligence (AI) emerges as the main driver of the rise of microworking, as identified by Sewpersadh (2023). This impact is not only due to the expansion of its use following the popularisation of ChatGPT at the end of 2022, when it was made available to the public, but also to the long-term corporate engagement in the development of automatic response systems. Such systems aim to give users the perception that music, video, and simultaneous translation services are offered by means of advanced AI technologies. However, these systems depend on constant human intervention, including reorganising and correcting the work done by the AI. These human activities are essential to improve the interaction between users and services, seeking to increasingly simulate a human-human interaction experience.

In this way, a view is created that intelligent software does all the work by itself, but it relies on human support at numerous stages of its responses. However, this support does not require higher qualifications from the workers and is therefore offered for extremely low wages (Muldoon and Apostolidis, 2023).

We carried out an essentially theoretical study, based on approximately 35 scientific articles that were within the scope of a more critical position on the development of micro-work, to understand the possible impacts and challenges of micro-work for the economies of national states. The results could lead to further empirical research to understand the future impact of micro-work on countries' welfare systems, as well as the implications of this type of work for workers' quality of life and their identity as workers.

The papers selected were those with the greatest impact on the academic community, measured by the number of citations, demonstrating scientific relevance.

### **3. Theoretical discussion**

The history of microworking dates to the late 1990s and early 2000s, when companies like Amazon and Microsoft began offering simple tasks to remote workers around the world.

These tasks included things like categorising images or transcribing audio. Amazon launched Mechanical Turk in 2005, which is a microwork platform that allows workers to perform simple tasks in exchange for payment.

Microwork is a type of work that consists of carrying out small remote information processing tasks, such as transcribing a piece of handwritten text, classifying an image, or categorising the sentiment expressed in a comment, according to Lehdonvirta (2016).

Work is carried out on online platforms that connect workers and employers and generally establish very simplified labour contracting relationships with little opportunity for more complex negotiations or discussions. In addition, the dimension of time and the speed with which jobs are distributed is noteworthy—due to the “uberisation” of workers around the world, companies make significant gains in setting labour prices, as essentially any value set on the platforms finds people willing

to do it (Irani, 2015).

With the current development of information and communication technologies, which see themselves in processes of automation of responses to services aimed at users who increasingly demand that applications offer options that result in experiences that generate more and more added value for the technology brand, we realise that companies are making use of millions of workers around the world to improve their applications at low cost (Fort et al., 2011).

The term micro-job comes from the fact that the contracted worker doesn't know what they will be doing when they are hired. Generally, the platforms present the task and wait for people who are qualified to do it. It could be, for example, training an artificial intelligence, analysing offensive images, helping to test a system, helping to choose colours or any other random task that might come up. Microwork is a form of flexible working and can be done anywhere and at any time (Lehdonvirta, 2016).

Each task completed earns the user-worker a small fee, usually ranging from a few cents to one or two dollars. As this is payment in international currency on a platform located in foreign countries, these workers are generally not regulated by Brazilian law, which creates a gap in legislation and monitoring of this type of work (Wood and Lehdonvirta, 2018).

The fragmentation of labour relations, driven by microwork, is reflected in the transition from stable, long-term jobs to more flexible but also more precarious forms of employment. Microwork, by allowing tasks to be fragmented into smaller components, displaces the traditional nature of employment, challenging concepts such as the workplace, working hours, and formal employment relationships (Lehdonvirta, 2016). This fragmentation contributes to the erosion of consolidated labour rights such as job security, social benefits, and legal protections since many micro-workers are classified as independent contractors or freelancers rather than employees.

Online micro-work platforms have evolved over time, including new features and functionalities. For example, some platforms have started to use matching algorithms to connect workers to the tasks best suited to their skills and experience (Sutherland and Jarrahi, 2018). In addition, platforms specialising in specific sectors have emerged, such as graphic design, copywriting, programming, and digital marketing.

Lehdonvirta (2016) argues that this flexibility, despite having an apparently positive prospect of freedom, results in a lack of territoriality and sense of belonging for workers, which can make it difficult for them to form a common identity and, consequently, to organise collectively.

However, she also points out that information and communication technologies can be used to build "sites of resistance" that bring together people prevented from organising by conventional means.

Microwork involves the execution of low-complexity tasks that require minimal qualification on the part of the workers. It also highlights the impersonal nature of microwork, where workers are rarely aware of the identity of the requester or the specific purpose of the tasks assigned. This characteristic is contrasted with the operational advantages of platforms, such as high profit margins, recurring business, low tax burdens, and scalability, accompanied by low marginal costs for providing services (Irani, 2015).

As far as workers are concerned, they are paid exclusively based on the tasks completed, with no room for negotiation, no commissions, and, crucially, no access to social protections or labour rights (Fieseler et al., 2019).

In the context of the sharing economy, companies operating through apps position themselves as intermediaries between the supply of labour and the demand for services, seeking profitability through this mediation, as identified by Howcroft (2019). Although this model has parallels with historical production practices, including similarities with outsourcing, work facilitated by digital platforms is distinguished by its innovations in labour organisation and management. These innovations include the application of algorithms to supervise tasks and the presence of information asymmetries and social inequalities. These inequalities often manifest themselves in the predominance of workers from racial groups and lower socioeconomic classes (Schor and Attwood-Charles, 2017).

There are different proposals for regulating work mediated by digital platforms. Some defend the absence of labour regulation, while others suggest classifying it as a new category of dependent work, which requires specific protection in line with constitutional principles (Colier, 2017).

This is a type of work in which the identity of those taking part in the process is not known or shared, which makes any resistance by workers or prospects of a national or international organisation impossible.

These technological transformations could lead to unprecedented changes in the global labour market, with people no longer needing to be physically distributed across territories, but technologies being available for them to access different forms of work instantly.

Added to this is an invisibility that doesn't allow governments to detect who is working for digital companies, how much they earn, and how to build mechanisms to include these people in the social and welfare systems.

On the one hand, this may seem interesting, but it could also lead to a process in which humans become more and more like machines because job opportunities are scattered around the world at different times, so people need to be "switched on" almost 24 h a day to accept opportunities for remuneration.

In addition, the lack of global regulation means that companies make derisory payments for various jobs and countries lose much of their control over labour processes that will have fundamental impacts on the future of a nation, especially when these people reach retirement age, without government support generated over the years through social security contributions.

### **3.1. Micro-labour in terms of low qualifications and expanding opportunities**

Casilli (2021) argues in his study that where there was an idea that technology would lead to job losses, recent studies have shown that the development of complex technology (high-tech) is accompanied by the generation of even more low-tech jobs. From this perspective, the author shows that artificial intelligence is beginning to be the main demand for this type of employment, above all because it requires the generation, training, and verification of large quantities of examples from which

machines must learn, and those who carry out this human-machine dialogue are generally these low-paid workers.

Digital labour is defined as dativized human activities and can be divided into three types: micro-work based on social networks, on-demand work, and micro-work. The first is perhaps the most specialised, which is like the work carried out by tutors or English teachers on large platforms. In general, micro-work is characterised by activities that require little or no qualification. Work on social networks, on the other hand, is characterised by involvement and engagement on contracted pages.

According to Casilli (2021), on online microwork platforms, workers are generally not formally contracted and are considered a disposable workforce without effective and paid contracts. According to Schussler (2021), in models like Amazon's, workers are not even paid, as they are treated as "consumer workers" and receive a "reward" rather than a salary, with their only bond being agreement to the platform's Terms of Service.

These platforms often portray the workers who accept these precarious conditions and low wages as young, educated, and coming from countries considered to be developing, but the reality is that they mostly come from low-income countries in Southeast Asia, Latin America, and Africa, where average wages are lower and the informal economy is more prevalent (Webster, 2016). Outsourcing these workers is relatively easy, as it is not necessary to establish any formal ties with the country to hire the service (Wood and Lehdonvirta, 2016).

The model implemented by Amazon makes it even more difficult to detect at what levels employment and income are being generated, especially since the relationship established between the company and the micro-workers is a consumer relationship, or a barter/exchange based on the value determined by the service that is reconfigured into consumption within the platform itself.

In the same vein, Irani (2015) states that from the perspective of the widespread development of artificial intelligence, jobs performed by human beings are being undermined in ethical and social terms—in addition to the lack of national or global regulations, micro-labour deconstructs the human function of the worker, turning them into a kind of machine that responds to the stimuli of the apps that determine the job offer.

Oliveira (2021), on the other hand, problematises the practice of gamification in microwork, which presents an apparent situation of entertainment and fun in microwork but is configured as elements of game mechanics that seek to encourage and control the work of employees. Under the gamification technique, workers are evaluated for their services, which can lead to their position on the micro-job vacancy list. It's a completely closed system in which there is no transparency about how people are evaluated or how they obtain job opportunities.

Sundararajan (2017) states that labour platforms, as well as their employer companies, gain twice as much from their business model. They win when they collect and process large amounts of user and worker data, using algorithms to generate insights and make decisions. This datafication allows companies to price labour, creating predictions about how much they can pay according to the prospects of economic dependence on workers. It's something like this: the system makes several requests and analyses which are the most popular and competitive and their respective

prices, to create the conditions for repeatedly lowering values and creating more competition between workers—which leads us to the financialization of the platforms, which want to maximise profits and market value.

On the other hand, they are winning through liberal rationality, which involves the flexibilization, individualisation and deregulation of work. Only on a global scale, far removed from the restraints and controls of nation-states, making the lack of social protection wide open.

### **3.2. National regulations and social security dimensions**

The speed with which microwork is being transformed, as well as the flexibility that makes it constantly transform and change the places where it offers microwork on a global level, is possibly based on artificial intelligence applications that define, from robust data and business simulation perspectives, which worker profiles are best and in which countries they are located in order to define, in a closed way, where and who can receive the job offer.

This movement deconstructs the whole discourse of flexibility and autonomy presented by micro-work platforms since the distribution of labour is unknown to the working users, and their financial and emotional instability puts them in an extremely fragile situation to make any demands or resist.

Webster (2016) points out that the lack of global clarity about the type of work offered by the platforms, the speed of their insertion, and the slowness of political and regulatory decision-making lead companies to make occasional migrations to places where legislation is more permissive. However, it is possible to detect that in a context in which the user-worker establishes a working relationship with an international company, it is difficult, in terms of labour legislation, to establish minimum control criteria over these working processes since they take place via the World Wide Web—therefore, outside the conventional economic legislative spheres.

For Berg et al. (2018), the problem of the gig economy is addressed. However, it is a relatively superficial approach in which they point out possible problems with digital jobs and list the need for shared conversations between society, governments, and employers.

However, in a hyper-capitalist context with a high concentration of income, especially among digital technology companies, this kind of apparently conflict-free relationship is difficult to observe, especially when we realise the immense efforts made by digital technology companies to ensure that countries interfere as little as possible in their business models.

Despite this, Berg et al. (2018) highlight the importance of adapting social protection systems to address the challenges brought about by digital labour. He suggests implementing policies that guarantee income security and access to social benefits for workers in non-traditional work arrangements, including freelancers and those in the gig economy. But, as presented above, the great difficulty is getting governments to find these workers on their own territory, given the obscurities in the hiring processes of the gig economy.

Country regulations, mostly designed for a more traditional labour market, face significant difficulties in addressing the new dynamics presented by microwork. The



global nature of microwork, with workers and contractors often located in different jurisdictions, further complicates the application of local labour laws. In addition, the classification of workers as self-employed allows companies to avoid responsibilities such as minimum wage, regulated working hours, and social security contributions, challenging efforts to ensure fair treatment of workers within this model.

It's also important to consider that in most cases, workers don't know who they're providing services for—the contracting company being a small element in the complex web of big techs involved in micro-labour outsourcing.

We can see that some countries have begun to discuss ways of tackling the micro-work dilemma, albeit in an incipient way. This is mainly because it has already been detected that maintaining this deregulated model tends to promote a significant deficit in the social security systems, which will soon have an impact on the economies of the countries involved.

The European Union has been discussing the Directive on Transparent and Predictable Working Conditions (EU, 2019) to offer greater protection to workers on digital platforms, including those involved in micro-work. It should be noted that, as explained throughout the text, it is easier to locate digital platform workers who provide services with a direct physical impact, such as deliveries and car journeys. However, it is still a mystery to locate micro-labour workers who carry out activities directly related to improving software and digital services—due to the apparent invisibility of these processes.

Anthonay et al. (2021) and Gamesh (2023) consider it important to deepen discussions on social protection for workers. However, there is a gap as to how countries should tackle this movement towards fragmentation and informality, which will lead to workers simply leaving their official social security systems without migrating to something parallel or that provides minimal conditions for survival in their old age.

What is most expected in this process is that these workers, when they reach retirement age, will be completely uncovered and will have a direct or indirect impact on poor countries. Although the legislation of countries such as Africa, South America, and Southeast Asia indicates the need for social contributions to obtain social security rights, the existence of thousands or millions of informal workers dedicated to the gig economy will come to light and will have a significant impact on these countries when their active working population ages.

Therefore, what we can expect is a movement in which these countries will need to incorporate the costs of workers who have been exploited by GIG economy companies, whose profits have been directed to their headquarters in countries with advanced technological development—serving as financial support for these countries' welfare systems or over-riching the shareholders of these companies.

Acting against this business model, which will have a negative social security impact on countries, is not an easy task for countries to carry out in isolation, especially since the pressure mechanisms of GIG companies tend to make it difficult or substantially delay any movement that seeks to bring minimum regulations to their operations.

Furthermore, the literature shows us that this is a highly complex problem and that, therefore, only an analysis at a global level can be more efficient since the control

of a country depends on the existence of similar or interconnected controls in order to detect the forms of tax evasion or flight of GIG companies from economies that impose some kind of labour and social security control on them (De Stefano, 2015).

At a global level, it is a question of determining that the transnationality of these companies requires different ways of dealing with the problem created. In terms of labour and social security, countries will increasingly need to work in a collaborative and shared manner to boost their tax collection and thus minimise the damage caused by labour deregulation, which not only affects the precariousness of workers but can also increase a country's poverty in the medium or long term.

#### **4. Conclusions**

In this article, we take a deep dive into the transformations that are reshaping the world of work globally, driven by the technological revolution and the emergence of micro-work. The latter is characterised by short, segmented activities carried out via online platforms. The theoretical reflections and analyses conducted seek to shed light on the socio-economic consequences of this emerging form of employment, with a special focus on developing economies, where both potential opportunities and challenges stand out.

Microwork, as a global phenomenon, exposes a clear contrast between, on the one hand, the promise of flexibility and opportunities for short-term income generation and, on the other, the challenges linked to income security, workers' rights, and social protection. This employment model has led to a precariousness of work, marked by job instability, low wages, and a lack of fundamental social protections. Although it offers the possibility of connecting workers from all over the world to a wide range of tasks, the impersonal and fragmented nature of microwork tends to erode conventional labour relations, placing workers in a position of significant vulnerability in the face of contractors and market fluctuations.

The rise of this work model reflects and drives profound changes in economic structures around the globe, revealing the tension between market logic—which aims to maximise efficiency and minimise costs—and the urgent need to protect workers' dignity and rights. The predominant influence of artificial intelligence on the advancement of micro-labour highlights both the opportunities for technological innovation and the ethical and social dilemmas associated with replacing and complementing the human workforce with automated systems.

Our theoretical discussion emphasises the need for a critical perspective on microwork, questioning not only the conditions in which it is carried out but also its far-reaching implications for social cohesion and wealth distribution. Specifically, the lack of appropriate regulation and the evasion of social security contributions emerge as significant threats to social security systems, especially in countries with more vulnerable economies.

Considering these reflections, we conclude that although micro-work opens new avenues for employment in an increasingly digital age, it presents substantial challenges that demand keen regulatory attention and a critical review of current labour regulations. It is essential that policymakers, in collaboration with the international community, seek a balance between the benefits of labour flexibility and

the imperative need to protect workers, ensuring that the transition to new forms of employment does not result in increased precariousness and inequality.

Finally, we advocate a collective reflection on the future shape of work in the context of the digital economy, underscoring the importance of developing inclusive strategies that value the dignity of human labour and foster a fairer distribution of wealth arising from technological innovations. With this article, we aim to enrich the academic and political debate on micro-labour, encouraging further research and the development of policies that effectively tackle the challenges posed by this ever-changing phenomenon.

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