

From traditional informality to digital informality. Transformations in work and pending occupational health

Abstract

In recent decades, we have witnessed transformations in the world of work resulting from the implementation and expansion of digital platforms that operate through algorithms. These platforms have become an immediate alternative for entering the workforce for a large segment of the working population that lacks access to formal employment. However, far from reducing informal employment, these new forms of work organization have contributed to reproducing and deepening the precarious conditions prevalent in the informal sector, directly impacting working conditions, job security, and the health of working populations.

In this context, the objective of this document is to understand, through a literature review of empirical articles and grey literature published in the last five years, how digital platforms and automation processes are reshaping working conditions, the mechanisms for controlling and monitoring the workforce, and the unequal distribution of risks and harms among the working population. Specifically, it seeks to analyze how this type of work constitutes an extension of informal employment, where conditions such as job insecurity, lack of social protection, and the transfer of risks to workers persist, such that digital platforms reproduce and perpetuate the labor inequalities that persist in the current world of work.

Keywords: digital platforms, informal employment, psychosocial risks, health damage

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Introduction

Discussing informal employment means acknowledging a persistent and structural phenomenon that permeates labor markets globally. Far from being a temporary condition, informality has become the predominant form of labor market participation in various productive sectors, both in developing countries and advanced economies, shaping employment and income dynamics characterized by the absence of labor rights, economic instability, and the systematic transfer of risks and demands onto workers. In this regard, the International Labour Organization (ILO, 2025)¹ has indicated that informality is one of the main problems worldwide, given its profound economic and social implications.

In general, informal employment is represented by the working population that has a job without a formal employment relationship linked to an employment contract; therefore, it lacks basic labor rights such as access to health services, vacations, an old-age pension, a regulated work schedule, among other benefits contemplated by law.²

However, conceptualizing informal employment today involves ongoing discussion about a complex and multidimensional phenomenon, marked by its persistence and expansion. This concept is no longer limited, as it was originally, solely to self-employment activities linked to subsistence; in the contemporary context, its definition transcends these boundaries and extends to sectors traditionally considered formal, as well as a wide variety of self-employment occupations.¹

The persistence of this phenomenon in the labor market reveals the structural limitations of contemporary development models, since informality not only exposes workers to vulnerable and precarious conditions due to the lack of decent working conditions, but also negatively impacts their physical and mental health.

Within the framework of an international agenda, reducing informality is included as a Sustainable Development Goal, particularly in indicator 8.3.1, which aims to promote productive employment and decent work.³ However, in several Latin American countries, the presence of large sectors of the working population in informal conditions reflects a persistent structural problem in the region regarding the guarantee of stable jobs with social security and decent working conditions.

In this context, the rapid advancement of work platforms and digital technologies regulated by algorithms has disrupted the way thousands of people enter the workforce, especially in countries where unemployment, underemployment, and precarious work are commonplace. While these new forms of work are touted as a flexible and innovative employment alternative, in reality they represent a continuation of informality due to the lack of social benefits, unstable income, long working hours, and hidden digital control, which transfer potential risks to the health of the working population.⁴

In the case of Mexico, recent data demonstrate the magnitude of the problem: during the first quarter of 2025, 54.3% of the employed population worked in the informal sector.⁵ This situation not only segments the working population but also shapes life trajectories marked by economic uncertainty and social precarity. In this sense, informality is closely linked to working poverty, understood as the inability of a household's labor income to guarantee food for all its members,⁶ and consequently, it jeopardizes the physical and social well-being of the working population.

With the exception of the most critical period of the COVID-19 pandemic, the informality rate in Mexico has remained above 54%, demonstrating its structural nature within the economic model.⁷ In this context, the widespread adoption of artificial intelligence (AI) and digital platforms in the world of work does not occur in a vacuum, but

rather is embedded within a previously precarious labor market. This exacerbates the growth of informality.

For the purposes of this study, the contributions of Tubaro et al., are taken into account, who define digital platform work as all work activity that is organized and managed through a digital platform, which can be executed both online and offline, synchronously and asynchronously, under conditions of coordination, supervision and algorithmic control.

Although in recent years there has been an increased academic interest in developing studies on its use and implementation in economic activities,⁸⁻¹¹ most articles identify an analytical gap regarding its articulation with structural informality and, particularly, from a critical perspective of occupational health.

In this context, the present work aims to analyze the relationship between informal employment and the use of artificial intelligence, particularly through digital platforms, in order to understand how these technologies reconfigure working conditions, control mechanisms and the distribution of risks to workers' health.

Materials and methods

To achieve this objective, the task consisted of reviewing and analyzing empirical articles published in the last five years in specialized databases such as PubMed, SciELO, and Scopus, as well as Google Scholar. The aim was to produce a document that, from a critical perspective, accounts for the changes in forms of labor organization under precarious conditions that lead to the continuation of informality, now digital, which can impact the health-disease process, burnout, and death of the working population. Document analysis is a qualitative method that allows for immersion in the context and provides a detailed understanding of the phenomenon under study¹²

Statistical data from secondary sources of official agencies were also consulted to contextualize the Mexican case, particularly regarding the extent of informality and working poverty. The search criteria focused on keywords such as informality, informal employment, platform economy, gig economy, artificial intelligence, health damage, and psychosocial damage.

Initially, documents were filtered according to inclusion criteria, focusing on issues of informality, working conditions, and health risks to platform workers. The information from the retrieved articles was then analyzed to review themes and content, aiming to understand and contextualize the information. Categories were predefined based on the study's objective, with the intention of identifying and organizing the information coherently.

The abstracts of the articles were reviewed and selected based on the inclusion criteria. Articles that addressed the concepts and themes being sought were then chosen. Subsequently, the search was refined by reading the selected documents in full. The analysis of the articles focused on identifying transformations in labor relations mediated by digital platforms, emphasizing algorithmic control mechanisms, the reorganization of working time, risk distribution, and the potential health risks for the working population. Recurring patterns, central concepts, and relationships were identified according to the established inclusion criteria. Finally, 20 articles were selected.

Results

Once the selected articles were reviewed, the content analysis of the research suggests that the incorporation of digital platforms

and artificial intelligence systems does not eliminate informal employment, but rather transforms and reconfigures it under new forms of organization and control. In characterizing the themes, the first thing identified is a reconfiguration of informal work based on the fragmentation of tasks and the expansion of activities mediated by digital platforms, such as delivery, app-based transportation, micro-jobs, and marketplaces.¹³⁻¹⁵ These forms of work are usually developed in hybrid spaces such as the street, the home under a digital environment, which blurs the traditional imaginary boundaries between work and everyday life.

Secondly, the consolidation of algorithmic control mechanisms is highlighted, which operate as instances of work organization that assign tasks, evaluate performance and regulate the permanence of workers in this new modality of labor insertion, configuring new forms of subordination not legally recognized.¹⁶⁻¹⁸

An important finding is the concept of what can be called "digital informality," understood as a form of labor market integration characterized by the absence of labor rights, combined with the presence of structured systems of algorithmic control. Unlike traditional informality, where deregulation predominates, digital informality implies privatized regulation, mediated by platforms that establish rules, metrics, and sanctions without institutional intermediation.¹⁹⁻²¹

Third, a significant transformation in the organization of working time is identified. The distinction between paid and unpaid time becomes blurred, as activities such as waiting for tasks, commuting, or adapting to changes in digital systems are not recognized as part of work.^{8,22} This "invisible time" reduces effective hourly income and deepens precarious conditions.²³

Fourth, a health profile is identified and configured for the working population in platform jobs, characterized by musculoskeletal disorders, visual damage, psychological disorders such as stress, anxiety, depression, as well as psychosomatic disorders, techno stress and road accidents, among others.²⁴⁻²⁶

Given these considerations, it is appropriate to continue delving deeper into the pathologies that arise from the execution of work activities under digitalization in precarious and informal scenarios in order to regulate working conditions and prevent possible health damage that may result from them.

Finally, a significant information inequality is observed between platforms and workers. The concentration of data in the hands of digital companies increases their capacity for control and limits negotiation possibilities, consolidating unequal labor relations.²⁷⁻²⁹

Discussion

Based on the content of the reviewed articles, the findings suggest that artificial intelligence does not, in itself, represent a solution to job insecurity, but rather a mechanism that can intensify and refine pre-existing forms of inequality, increasing the health risks for the working population employed in the informal sector. In contexts characterized by high levels of informality, such as in Latin America, the incorporation of digital technologies tends to reinforce structural conditions of vulnerability.^{20,30,31}

From a critical perspective, the platform economy cannot be understood solely as a space for innovation, but as a new form of labor organization that reconfigures power relations in the workplace. Algorithmic management introduces new forms of control that, far from eliminating subordination, make it less visible and more difficult

to regulate.¹⁷ Similarly, the introduction of artificial intelligence deepens existing inequalities. Unequal access to devices, connectivity, and technological training creates gaps that exclude large sectors of the working population.³² Added to this are possible algorithmic biases, which can reproduce discrimination based on gender, age, or socioeconomic status.^{29,33}

In the case of Mexico, recent attempts to regulate work on digital platforms reflect important progress, but also highlight the difficulties of intervening in highly flexible and dispersed labor models.³⁴ The lack of clarity surrounding the employment relationship and the limited algorithmic transparency constitute central challenges for guaranteeing labor rights.³⁵

In this context, the debate on the impact of artificial intelligence on employment needs to be nuanced. While there are risks of automation of certain tasks, there are also possibilities for the creation of new activities. However, these processes are not neutral, as they depend on political, institutional, and economic decisions that determine the distribution of benefits and costs.³⁶⁻³⁹

Conclusions

The interaction between informal employment, digital platforms, and artificial intelligence reveals a complex and contradictory process, in which technological innovation is intertwined with precariousness. On the other hand, the concept of digital informality offers a valuable insight into how new technologies do not eliminate persistent precarious working conditions in the labor market, but rather reconfigure them through sophisticated mechanisms of work control and organization.

In this sense, the role of artificial intelligence should not be understood as an inevitable destiny, but as a tool whose impact depends on the ways in which it is regulated and socially appropriated. Given the lack of regulatory frameworks that guarantee algorithmic transparency, social protection, and decent working conditions, there is a risk of consolidating a model of advanced precarity, managed and legitimized by digital technologies.

Given the scarcity of published empirical documents that address informality in digital platforms and the harm to the health of working populations, it is pertinent to continue delving deeper into the role that the use of digital platforms plays in the transformations of work and in the health of people who are involved in this type of employment, specifically in those regions of the world where more than 60% of the working population is involved in informal employment.

The limited production of scientific and popular articles on the relationship that could exist between the main concepts of this writing, artificial intelligence, informality and the health of working populations, puts into balance the need to build critical and interdisciplinary perspectives that allow us to make visible the daily experiences of those who work under these conditions.

Understanding these processes involves not only analyzing technological transformations, but also recognizing the structural inequalities that continue to shift labor and social risks towards the most vulnerable working populations. Therefore, it is necessary to document the working conditions and health of workers in this form of informal digital work, considering different sectors and social contexts, as well as incorporating, in these studies, the analysis of psychosocial risks, work overload, surveillance and digital control.

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Conflict of interest

The author declares that there is no conflict of interest.

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