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TRANSFORMATION IN THE WORK OF SMALLHOLDER FARMERS IN THE CONTEXT OF THE DIGITALISATION OF AGRICULTURE

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Abstract

The text discusses the relationship between work and digitalization, focusing on agriculture, addressing both sociological and psychological perspectives. It reflects on whether work dignifies or enslaves man, considering the transformations brought about by digitalization in various areas. Digitalization has forced workers to adapt quickly to technological changes, affecting their daily reality.

Agriculture, essential for humanity, faces significant changes with digitalization, known as agriculture 4.0. Although it brings ergonomic benefits, such as reducing repetitive work, it can also accentuate inequalities between developed and developing regions. Small farmers are especially affected by the lack of infrastructure and limited access to technology. In addition, digitalization changes the skill profile of farmers and can limit their autonomy at work.

Mutual trust between workers and companies is essential for the success of digitalization, but obstacles such as data management and the loss of autonomy of farmers can compromise this relationship. Workers' adaptation to the new digital reality brings psychological challenges, such as stress and frustration. Despite this, digitalization is an inevitable reality, requiring a complex understanding of the social and cultural implications.

It is concluded that the digitalization of work presents contradictions and uncertainties, bringing new needs and technological dependencies. Future work can focus on empirical observations of smallholder farmers to better understand these issues in practice.

Keywords: Transformation in work; small farmers; digitalization; agriculture.

1. INTRODUCTION

Does work dignify or enslave man? How can one interpret the subjectivity that governs labor relations today? These works have undergone major transformations given the digitalization that permeates several fields of knowledge. In view of this, workers are pressured to keep up with technological changes and adapt to them very quickly, what has this new reality caused to workers? In this text, these issues will be discussed from the perspective of the human factor, involving sociological (LINHART, 2000) and psychological (PULIDO-MARTÍNEZ, 2015) subjectivity, more specifically about the reality of the farmer.

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Studies that address concepts focused on work dynamics with a sociological and psychological approach in agriculture can contribute to the understanding of unique arrangements of organizations of work activities, involving the subjectivity and complexity of these relationships; in addition to helping to understand the meanings attributed to the various forms of work (DE MELO AND SCOPINHO, 2015).

Agriculture is a vital sector, as it meets a basic need of human beings, that of providing food for humanity (ISSAD, AOUDJIT AND RODRIGUES, 2019). However, the people who deal directly with planting, cultivating and harvesting, live on the margins of society, and in many cases, working in regimes similar to slavery. Rural workers suffer from social, economic and political helplessness (RIBEIRO, BRANT AND PINHEIRO, 2015). Thus, the agricultural segment was chosen as the object of study given the importance of work and the rural worker.

The urban population in general has a romanticized and distorted view of life in the context of agriculture, associating it with beautiful farms where almost everything that families need at the table is produced. However, the reality is that today, agricultural properties are managed as companies and are focused on technical food production, seeking economic sustainability. Digitalization has caused many changes in the business world, and this has been no different in the agricultural sector. With digital agriculture, producers can monitor their properties 24 hours a day (BORÉM et al.., 2022). In view of these transformations, the article aimed to discuss the new paradgmas of work in the face of the changes provided by digitalization and, subsequently, the ways in which this has affected the daily life of workers in agriculture.

To achieve the objective, a literature review was carried out with articles from the Scopus and Google Schoolar platforms. The article continues to present theoretical concepts about work in the face of digitalization, followed by the analysis and discussion of these concepts in the context of agriculture, by the conclusions.

2. DEVELOPMENT

2.1. Complexity of the new concept of work in the face of digitalization

The work has become more complex and this has made it difficult to understand it (LINHART, 2000). Rapid advances in digitalization technologies are changing modern working conditions (KÖRNER et al., 2019). Such a reality has divided the opinion of sociologists, there is no consensus among them. Some seek to understand work from the perspective of the company + a, and others through employment. For some, professional

activities have gone in a richer direction in terms of promises, demanding involvement and a feeling of autonomy on the part of the employee. For others, the multiple reforms in work continue to have as a background the principles of control in the mechanized and hierarchical management of Taylorism (LINHART, 2000).

New forms of employment that integrate man, and machines of various natures have brought transformations to the exercise of activities, to the point of questioning the concept of the job itself. In this sense, digitalization emerges as a new system that becomes the link between the technical system and work (ZARIFIAN, 1990).

In view of this, Wrzesrnewski and Dutton (2001) describe two contradictory trends towards which jobs are heading. The first refers to the technologies called: Industry 4.0, which excels in the application of technologies to workplaces, allowing extreme monitoring of workers' activities. On the other hand, there are cultural changes towards flexibility of time and workplace, making it less restrictive and more autonomous.

However, both paths presented by Wrzesrnewski and Dutton (2001) are complex to understand from the perspective of the worker. The monitoring made possible by digitalization may seem beneficial to the results of services. However, Kretschmer and Khashabi (2020) found that excessive vigilance can have negative effects on employee motivation, well-being, and even performance.

Flexibility, on the other hand, provides the notion of self-entrepreneurship, as a positive bias for the worker, however, the company no longer has responsibilities over its employees. Thus, stable definitions about the location and hours worked are eliminated, and the costs for the development of professional activities are covered by the employees themselves. In this way, self-management seen in the context of flexibility as positive shifts to the idea of self-deception (ABÍLIO, 2021).

Another aspect to be considered in flexibility is the worker's will. No monitoring system is necessary to supervise the will of those who work for them, since this has already been conquered (PULIDO-MARTÍNEZ, 2015).

In this same vein, it can be considered that digitalization has expanded its concept beyond the institution of work. It becomes increasingly difficult to accurately identify the boundaries of the organization. When someone accesses *LinkedIn*, is they engaged in professional or social activities? Or the combination of both? In these terms, digitalization makes organizations an increasingly informal and temporary concept (BEDNAR AND WELCH, 2020).

There is no point in transforming the organization of work if employees are not willing to adapt to changes (BEDNAR AND WELCH, 2020). In this sense, Mintzberg (1993) is extremist when he calls the socialization of new members of an organization as a process of indoctrination.

In all cases, the employee has become the main agent of the company, consequently, the sociology of work has undergone changes. With the individual at the center, there is a work environment full of highly complex demands and requests (LINHART, 2000).

It is in this context of dynamism that Pulido-Martínez (2015) talks about the plasticity of psychology, according to the author, throughout history, psychology has shown abilities to adapt to changes, and to the logic of rationality of these changes, in the composition of work. However, the human factor and its subjectivity have been little considered by organizations in the immediate search for economic success. To illustrate this reality, digitalization in agriculture was used as an object and study.

2.2. Digitalization of agriculture and its implications for work

The processes of planting, harvesting and surviving from the land involve the rural worker and enable him to be seen by society as a productive being and, therefore, useful (RIBEIRO, BRANT AND PINHEIRO, 2015). The executing subject is always the protagonist of his work, since it is his own life, and work is a necessary condition for his existence, which is directly linked to life in society (SZNELWAR, 2015).

In other words, the feeling of protagonism at work denotes a relationship between oneself and oneself, always dependent on and shaped by the social environment in which the worker is inserted (colleagues, supervisors and customers). Even in a context of digitalization and a high level of automation, this protagonism is observed. There is no production system that works completely autonomously without the need for human intervention, whether in the design, implementation, operation, maintenance, etc. phase (SZNELWAR, 2015).

In this context, there is the arrival of digitalization in rural production regions. Some authors call this process agriculture 4.0, a neologism derived from the concept of industry 4.0 (BERTOGLIO et al., 2021; BOUALI et al., 2021; SYMEONAKI, ARVANITIS AND PIROMALIS, 2020). In view of this new reality, the literature presents many changes in the work of the farmer, some positive and others negative.

Positively, we can consider the improvement in working conditions, since manual and repetitive interventions for small mechanical services are no longer necessary, which can free farmers from routine work, and allow them to dedicate themselves to essential tasks on the farm (example of some authors who illustrate this positive perspective: IDOJE, DAGIUKLAS AND IQBAL, 2021; MOHAMED et al., 2021; WANG, REN AND MENG, 2021; ZSCHEISCHLER et al., 2022).

In negative terms, the inequalities that digitalization can accentuate between developed and developing regions stand out, this process can restrict the scope of participation of some countries considered less wealthy, as well as limit their opportunities for updating at the global level, due to the relatively greater benefits for richer nations (MATTHESS AND KUNKEL, 2020; MONDEJAR et al., 2021). Small producers, especially those living in developing countries, are the most affected by this reality.

In these countries, most farmers reside in rural areas, do not have sufficient instructions to operate technological instruments, which puts them in a state of vulnerability (EITZINGER et al., 2019; FRIHA et al., 2021). Added to this is the difficulty of accessing an adequate internet network in agricultural regions. This infrastructure is a crucial factor for the proper functioning and implementation of digitalization (MOHAMED et al., 2021). Thus, while many farmers realize the need for change, they do not know what to do to adapt.

Small farmers, in addition to being the most affected by this lack of infrastructure, are also the main food producers in the world, about 80% of the food grown is produced by family farming (SIMS AND KIENZLE, 2017). There are more than 500 million family farmers in the world and they occupy between 70 and 80 percent of agricultural land (FAO, 2014), so it is important to assist them in order to understand and support labor activities in the new emerging context.

The arrival of digitalization in the field has had a great social and cultural impact among farmers, requiring adaptive capacities to deal with technological transformations (ZSCHEISCHLER et al., 2022). Such an adaptation process is a great challenge for those who consider themselves "digitally illiterate" (MONDEJAR et al., 2021).

In the context of adaptation needs, Linhart (2000) reports the effort of companies in the search to establish a relationship of trust with their employees in a reciprocal way. In order for the company to be able to adapt to its competitive environment, it is necessary to ensure the reliability of the worker's receptivity to change.

This relationship of trust needs to be cultivated by organizations, but this can present some *gaps*. An example of this is data management in agriculture: To feed the information networks installed on farms, various data are collected, most of them automatically, by the agricultural machines and/or robots themselves, but in many cases, farmers have little or no access to the data collected on their own land (JAYASHANKAR et al.*element.*, 2018).

Therefore, if there is no mutual trust based on a secure relationship, there is no prospect for the future, work relationships are compromised by distrust. This makes it difficult to build a healthy partnership and real participation of the worker in the activities (DE MELO and SCOPINHO, 2015).

Another aspect to consider is the implicit knowledge of farmers, they act according to customs, knowledge and learning, passed down from generation to generation. In view of this knowledge, farmers know how to act in various situations and are always seeking to anticipate already known facts that may cause them some damage, such as: rework, loss of production and equipment (SZNELWAR, MONTEDO AND SIGAHI, 2021). However, with recent digitalization and the gradual use of digital farm models, changes in the farmer's skill profile are observed (ZSCHEISCHLER et al., 2022).

The farmer who previously had different degrees of autonomy at work (SZNELWAR, MONTEDO, AND SIGAHI, 2021), has now gone through a process of limitations in decision-making as the stages of the digitized production chain are transferred to third parties. This has caused a reversal of roles, making external actors have more decision-making power than the farmer who owns the land (ZSCHEISCHLER et al., 2022).

It should also be considered that highly automated working conditions are a potential source of stress in the face of high qualification requirements and knowledge about new technologies at work. This can have a negative impact on psychological well-being, and can also cause a state of frustration, especially for employees with activities considered less qualified (KÖRNER et al., 2019), such as in agriculture.

3. DISCUSSIONS

Throughout the article, some benefits that the literature presents regarding digitalization in rural areas were pointed out. It has the potential to bring ergonomic improvements to the worker's quality of life. But for this to happen, it is necessary to rethink some technologies taking into account their limitations.

In view of this, a series of difficulties for the work of small farmers were detected in the literature read: The scarcity of infrastructure in the countryside; the lack of equity in access to information; and limitations of knowledge and skills to operate technological tools. In social terms, these difficulties have put pressure on cultural and behavioral changes at work; And in psychological terms, digitalization has offered new occupational risks and stressors that are being known and studied as they are presented by users.

In view of this, it is observed that along with digitalization, new demands related to illness at work arise. The subjectivity that surrounds the notion of time in activity; place to work in the service; and ways of developing work, are examples of new circumstances, which can offer occupational risks (GARCÍA, 2021).

Thus, it is necessary to reinforce protection against this new reality, considering that safe and healthy work is a worker's right, and is an intrinsic part of an occupation with dignity and quality. Thus, this energetic work context has been expanding the range of action of norms aimed at identifying and preventing risks that affect professional activities (GARCÍA, 2021).

Ouafiq, Saadane & Chehri (2022) report that when mechanization arrived in the field, with machines such as tractors, and harvesters, many farmers viewed them with suspicion, however, today it is difficult to imagine what agriculture would be like without these tools. In view of this, it is worth reflecting: Is humanity moving towards a future of total dependence on digitalization technologies at work? What are the implications of all this?

In any case, the institutionalization of agricultural work with or without technologies has the symbolic role of dignifying these rural workers, whose life trajectories bear the marks of exclusion from society (DE MELO AND SCOPINHO, 2015).

4. CONCLUSION

The new paradigms of work in the face of typing have presented some contradictions. On the one hand, digital technologies propose to enable ergonomic improvements for the worker; on the other hand, they can cause harm to their users, especially to small farmers who, in general, are characterized by limitations in access and operationalization of technologies.

In any case, digitalization is already a reality in the daily lives of workers in all fields of society, technology has become a strongly pursued target to the point of seeking in it the solution to most of humanity's problems.

In view of the reported context, it is concluded that there is great complexity in understanding work in the midst of the digital age. Digitalization is a reality that is emerging and has presented a series of uncertainties, operating changes in various aspects of work. In addition, it reveals issues that bring to light needs never felt before, but that are incorporated into daily life, making human beings dependent on technologies to meet such needs in practically all areas of life.

Finally, future works can be done through empirical observations of the daily life of small farmers in order to understand in practice the problem theoretically exposed in this research.

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