

Threats for popular cooperativism: the crisis in recycling in the city of Londrina

Ameaças ao cooperativismo popular: a crise da reciclagem na cidade de Londrina

Amenazas al cooperativismo popular: la crisis del reciclaje en la ciudad de Londrina

Benilson Borinelli¹

Lilian Aligleri¹

Luís Miguel Luzio dos Santos¹

Reginaldo Fidelis²

Received on November 1th 2024; Last review on August 16th 2025; Final acceptance on August 16th 2025

DOI: <http://dx.doi.org/10.20435/inter.v26i2.4742>

Abstract: The article analyzes the configuration of the crisis in the urban solid waste selective collection system in the city of Londrina, Paraná, and its implications for popular recycling cooperatives, based on the institutional framework established by the National Policy on Solid Waste (PNRS) and the strategic action field theory of Neil Fligstein and Doug McAdam. This qualitative and exploratory research relied primarily on official documents, research reports, academic papers and newspapers. The sectoral crisis reflects a destabilization of the selective collection field resulting from a combination of changes in related fields, invasions, macro-events, and the weakening of traditional actors. The decline in the volume of material sorted by cooperatives, under the incipient implementation of the PNRS, is the most striking expression of the instability, growing privatization, and competition in the field, which has facilitated the externalization of socio-environmental costs and the precarization of waste pickers' labor.

Keywords: waste pickers; selective waste collection; solid waste management; strategic action field; recycling; Londrina.

Resumo: O artigo analisa a configuração da crise no setor de coleta seletiva de resíduos urbanos na cidade de Londrina, Paraná, e suas implicações para as cooperativas populares de reciclagem, a partir do arcabouço institucional estabelecido pela Política Nacional de Resíduos Sólidos (PNRS) e da teoria do campo de ação estratégica de Neil Fligstein e Doug McAdam. A pesquisa qualitativa e exploratória usou como principais fontes documentos oficiais, relatórios de pesquisa, trabalhos acadêmicos e jornais. A crise setorial expressa uma desestabilização do campo da coleta seletiva decorrente da combinação de mudanças em campos correlatos, invasões, macroeventos e a fragilização dos atores tradicionais. A queda no volume de material triado pelas cooperativas, sob a incipiente implementação da PNRS, é a expressão mais contundente da instabilidade, da crescente privatização e da competição no campo, favorecendo a externalização de custos socioambientais e a precarização do trabalho dos catadores.

Palavras-chave: catadores; coleta seletiva; gestão de resíduos sólidos; campo de ação estratégica; Londrina.

Resumen: El artículo analiza la configuración de la crisis en el sector de recolección selectiva de residuos urbanos en la ciudad de Londrina, Paraná, y sus implicaciones para las cooperativas populares de reciclaje, a partir del marco institucional establecido por la Política Nacional de Residuos Sólidos (PNRS) y la teoría del campo de acción estratégica de Neil Fligstein y Doug McAdam. La investigación cualitativa y exploratoria utilizó como fuentes principales documentos oficiales, informes de investigación, trabajos académicos y periódicos. La crisis sectorial expresa una desestabilización del campo de la recolección selectiva resultante de la combinación de cambios en campos relacionados, invasiones, macroeventos y el debilitamiento de los actores tradicionales. La caída del volumen de material clasificado por las cooperativas, bajo la incipiente implementación del PNRS, es la expresión más llamativa de la inestabilidad, la creciente privatización y la competencia en el campo, favoreciendo la externalización de los costos socioambientales y la precariedad del trabajo de los recolectores.

Palabras clave: coleccionistas; recogida selectiva; gestión de residuos sólidos; campo de acción estratégica; Londrina.

¹ Universidade Estadual de Londrina (UEL), Londrina, Paraná, Brasil.

² Universidade Tecnológica Federal do Paraná (UTFPR), Curitiba, Paraná, Brasil.

1 INTRODUCTION

Urban solid waste management is one of the most challenging issues on the local public policy agenda, as it combines patterns of production, hyper-consumption, poverty, environmental degradation, and inequalities at various scales and social levels. Poverty and misery in urbanized societies have always had a close relationship with "waste", as it is one of the last resources available for the survival of excluded segments, relatively abundant, "freely" accessible, and with some use and exchange value. From the 1980s onwards, Brazilian waste pickers, individually, in associations and cooperatives, many organized under the principles that guide solidarity economy enterprises (Singer, 2002), began to interact and dispute, almost always in a subordinate and stigmatized position, spaces, rights and resources with capitalist companies and public bureaucracies in what we can call the recycling field. In countries with low incomes and great inequality, waste pickers stand out as one of the main actors in the local selective collection system, providing a source of work and income for some of the most vulnerable groups in society (Kain *et al.*, 2022).

Since the beginning of SE in Brazil, waste pickers' organizations have stood out due to the wide scope and ease of the activity, given the large volume of urban waste produced and accessible to the excluded and miserable segments and the low qualifications required to carry it out. Individually or organized into groups, associations, and cooperatives, waste pickers have become part of complex relationships of cooperation and hierarchy with a large number of public and private organizations on different geographical scales. They are thus part of what we define as the recycling field.

The most important regulatory framework for the governance of this field in Brazil is Federal Law No. 12.305 de 2010 (Brasil, 2010), which defines the National Policy on Solid Waste (PNRS). However, the procrastination in implementing the policy has revealed the enormous challenges of articulating and coordinating the new governance arrangement, the strong asymmetry of economic, political, and symbolic power between the actors, and the resistance of powerful economic actors (Besen; Fracalanza, 2016). In this context, waste picker cooperatives almost invariably find themselves in a situation of great instability, dependence, precariousness, and vulnerability, thus reproducing their marginalized integration and subjection to the capitalist logic of the recycling chain (Gonçalves-Dias, 2020).

Given that the field is a strategic space for disputes and negotiations in specific contexts, relative autonomy allows actors to produce relatively varied results over time and space. As the case of Londrina currently illustrates, the selective application of the law, in a context animated by macro-events such as the economic crisis, the advance of neoliberal theses in public management, and the valorization of waste, can promote a crisis in the field of recycling, the outcome of which suggests the possibility of setbacks in the achievements of waste pickers in recent decades. Although pointed out in some studies (Teodósio; Gonçalves-Dias; Santos, 2016), the risk of a setback in the participation of popular cooperatives in the field of recycling has not been studied in specific cases in the literature.

This article analyzes the period from 2016 to 2019, when the crisis in the field of selective urban waste collection in Londrina took shape, and discusses some of its implications for popular waste picker cooperatives. Through the theory of fields of strategic action, it is possible to understand, by analyzing the interactions and actions of social actors and the state, the emergence, stability, and changes that a group of actors go through (Fligstein; McAdam, 2012). The crisis in the field described here has a heuristic value in that, given the complexity of the

object, it allows us to relate historical factors, recent changes, possible setbacks, and reflections on the future of popular cooperativism and solidarity economy in a peripheral capitalist context.

With an estimated population of 555,937, Londrina is the fourth-largest municipality in the southern region and the second-largest in the state of Paraná (Brazilian Institute of Geography and Statistics [IBGE], 2022). Its economy, the third largest in the state, is mainly based on commerce and services (IBGE, 2022). In 2020, the city produced 136.4 tons of solid urban waste, with 6.1% of this total being processed in the selective collection system (Municipal Transit and Urbanization Company [CMTU], 2022). Household collection, segregated door-to-door by waste pickers, was set up in Londrina in 2001, nine years before the PNRS was enacted. The model was considered a benchmark for selective collection movements in Brazil and has won several national (Instituto Ethos, 2015) and international awards (Fundacion Avina, 2012). However, since 2016, the field has experienced several setbacks, such as a drop in the volume of recyclable material processed by the cooperatives and unsuccessful attempts at reform by the local government (Aligleri, 2022). The accumulation of problems, with no solution in sight, can be characterized as a crisis given that the main actors find it difficult to reproduce their positions and the rules that governed the recycling field in the city (Fligstein; McAdam, 2012).

This article is divided into four parts. In the next part, we present the methodological procedures and the theoretical-methodological perspective of the constitution of the recycling field. In the results, we describe the multiple sources of the current recycling crisis in Londrina. In the last part, of the discussion, we briefly summarize the findings and their implications for solidarity cooperatives in the recycling field.

2 THEORETICAL PERSPECTIVE

Below, by way of a theoretical perspective, we present some notes on understanding the notion of fields of strategic action and the constitution of the recycling field.

The municipality's recyclable waste management can be understood as a field of strategic action, i.e. "the mixture of pre-existing rules, resources and social skills of actors that combine to produce fields, in the first place, make them stable for a period and produce transformation" (Fligstein; McAdam, 2012, p. 109).

A field of strategic action is characterized by a constructed social order in which individual or collective actors, state and non-state, interact with each other at all times based on shared understandings of purposes, relationships, and rules. Strategic action implies the creation of identities, political coalitions, and interests that seek to gain resources and disputed positions in the field. Fields of strategic action are made up of a) dominants also referred to as incumbents, main groups or historical operators (incumbents), those actors who have mastery of the resources and shape the purposes of the field with their influence and who thus work to reproduce their advantage and/or position, and their points of view tend to be strongly reflected in the organization of the field of strategic action; b) challenger groups, those that have fewer resources and/or less influence and more often need to submit to the dominant logic; c) governance units, or general rules, both formal and informal, which establish relations of cooperation and competition and seek to maintain stability and order in the fields of strategic action (Fligstein; McAdam, 2012).

The field goes into crisis when the main groups find it difficult to reproduce their privileges because the rules that governed the interactions no longer work. The sources of these crises

can be internal and external. Crises can originate from relations between groups in a given field, derive from other fields, from the invasion of groups into a specific field, and from macro-events such as economic and political crises and regime changes (Fligstein; McAdam, 2012).

As the main representatives of the challenger groups, waste pickers and their organizations are part of the SE movement. This movement emerged in Brazil as a political, ideological, and practical project for an alternative mode of production, distribution, consumption, and coexistence to capitalism, associating the principles of unity between the ownership and use of the means of production and distribution and political and economic democracy (Singer, 2002). The Solidarity Economy encompasses a variety of workers' organizations, such as cooperatives, associations, networks, incubators, public policies, and other mechanisms for popular collective empowerment (França Filho; Laville, 2004).

The field of recycling, linked to other fields, deals with the collection, sorting, packaging, transportation, and transformation of waste into new materials for future use by industries. In general, waste pickers are responsible for the initial, riskiest, most dependent, and worst-paid stages of the process. Generally occupying the position of challengers, waste pickers interact with powerful actors from within and from other fields, such as state organizations, including the Public Prosecutor's Office, large companies in the recycling and municipal solid waste collection chain, and, after the PNRS, companies and business associations representing large waste producers. In other words, in general, waste pickers are the dominated group in the dominated field, since recycling still occupies a position of little prestige among waste treatment alternatives (Candido; Soulé; Sarcomano Neto, 2018). Although there are some exceptions, such as the cooperatives of the Landless Workers' Movement, forged from a movement solidly built on strong identity bases, high social capital and emancipatory ideals (Souza; Luzio-dos-Santos, 2019), the latest mapping of the Brazilian Solidarity Economy showed the dominance of initiatives with strong traces of economic, organizational, social and political precariousness.

This situation compromises the autonomy of the enterprises, resulting in chronic dependence, whether on government entities' promotion and advisory organizations or economic relations with companies ("middlemen") that buy recyclable material. One of the biggest challenges for solidarity economy is to overcome a culture of passivity and alienation and move towards a proactive and emancipatory condition (Singer, 2002), especially in a context marked by historical and extreme economic and cultural inequalities, as is the case in Brazil (Dowbor, 2017).

It is worth noting that the positions of the actors in the recycling field were legally established in the changes to governance structures or rules (governance units) brought about by the National Solid Waste Policy which, among its principles, brings important advances to structure the field: prevention and precaution; the polluter pays principle; the systemic vision in solid waste management; the recognition of reusable and recyclable solid waste as an economic good with social value, a generator of work and income and a promoter of citizenship; society's right to information and social control. The legislation also made municipalities take a central position in planning waste management systems, which materialized in the Municipal Plan for Integrated Solid Waste Management (PMGIRS). In both its objectives and its instruments, the PNRS guarantees, respectively, the priority of integrating collectors of reusable and recyclable materials in actions involving shared responsibility for the life cycle of products and the material and financial incentive for the creation and development of cooperatives and associations of collectors (Brasil, 2010).

Several studies have shown that the procrastination of this law is linked to several factors, such as the greater complexity of the new governance arrangement, the low priority of the issue on the public agenda, the scarcity of municipal public resources, the strong asymmetry of economic, political and symbolic power between the actors and the resistance of large companies benefiting from the previous (“disorganized”) model and/or new market niches- such as waste incineration- resulting from the growing commodification and privatization of recycling (Candido; Soulé; Sarcomano Neto, 2018). In this context, the combination of the selective implementation of the PNRS, the growing economic importance of recycling, and the increased institutional complexity of the governance arrangement would bring new challenges to recycling cooperatives and a greater risk of “being expelled or placed in a secondary role in recycling” (Teodósio; Gonçalves-Dias; Santos, 2016, p. 32).

Although these conditions and challenges are presented as general and structural trends, the actual forms of insertion into the relations of forces, and the resulting achievements, depend on strategic action (Fligstein; McAdam, 2012) and the ability of waste picker cooperatives to benefit from the power structure established through the rules and resources available in each context. The field of recycling is a complex and dynamic subject, the analysis of which can make more progress in concrete cases such as that of the city of Londrina.

3 METHODOLOGICAL ASPECTS

To present the formation and crisis in the recycling field in Londrina, we have mainly used Fligstein and McAdam's (Fligstein; McAdam, 2012) proposal of a field of strategic action. This theoretical-methodological perspective allows us to recognize different actors, their resources, interests, identities, and strategies, as well as the patterns of power relations, the interdependence between fields, and the state of the field, such as stability and crisis. Given the limitations of this approach to dealing with structural aspects of social relations (Hidaka, 2021), we complemented our analysis with other authors who also take this perspective.

We developed a qualitative and exploratory study with a time frame from 2016 to 2019, a period in which the evidence and sources of the current crisis manifested themselves more strongly. The work is based on participatory research experiences (Kidd; Kral, 2005) and is the result of various academic and advisory interactions between the authors and actors and processes in the field of recyclable waste management in Londrina, such as members and managers of cooperatives, public administrators from the environmental and urban services sectors and the Public Prosecutor's Office of the State of Paraná. This dynamic has taken place mainly through events, participation in the municipality's collegiate bodies technical discussions, and informal interviews with representatives of the public sector, cooperatives, and associations of companies linked to the reverse logistics agreement. The study also made use of a range of documents, such as research reports, official documents, and academic papers.

The crisis in the field was approached using the three external sources mentioned by Fligstein and McAdam (2012) as categories: changes in related fields, invasion of the field by external actors, and macro-events. As macro-events, we chose and worked across the economic crisis and the validity of neoliberal premises in public management. In addition, we point out internal aspects of the field which, in conjunction with external sources, constitute and deepen the situation, as well as making it difficult to overcome.

4 THE MANAGEMENT OF SOLID RECYCLABLE WASTE IN LONDRINA

The constitution and trajectory of the selective waste collection field in the municipality began in the early 1990s, when around 100 people spent the day at the "dump" scavenging among the household waste dumped, those with potential for sale. In 1999, the death of a waste picker, run over inside the dump by a compacting machine, put the issue on the local public agenda (Horta, 1999). Faced with pressure from the Paraná State Public Prosecutor's Office (MP-PR), the city government, through the Municipal Transit and Urbanization Company (CMTU), the authority responsible for municipal waste management, implemented the "Recliclando Vidas (Recycling Lives)" Program in 2001. Again at the behest of the MP-PR, better conditions were achieved in 2009 with the "Londrina Recicla (Londrina recycles) Program", established by Municipal Decree No. 829. The program extended the scope of the selective collection to 100% of the urban population and instituted contracts and payments for the public collection service carried out by the cooperatives. The program confirmed the centrality of CMTU, which offered training and capacity-building in cooperativism and management and paid for the rental of sheds for sorting and storing materials.

The law required the associations to be transformed into a single cooperative, but dissent among the associations prevented the change (Instituto Ethos, 2015). The split and the competition for resources continue to this day. Fourteen of the thirty-five associations formed the Cooperative of Recyclable Materials and Solid Waste Pickers of Londrina – Coopersil (COOPER REGIÃO, 2018). Between 2011 and 2014, the workers of the dissident associations, together with new waste pickers, created five more cooperatives which also signed service contracts with the City Council (Instituto Ethos, 2015).

A comparison of some of the indicators presented reveals the differences and inequalities between the cooperatives, such as the number of households served, the number of cooperative members, and income, which indicates a strong asymmetry between the organizations. There are also significant differences between the cooperatives in terms of adherence to the principles of the solidarity economy, since authoritarian and centralizing practices prevail for the most part (Luzio-dos-Santos, 2014).

In summary, the recyclable waste management model set up in Londrina in the "pre-crisis" period is organized based on door-to-door selective collection and the sorting of materials by 7 cooperatives with 360 members who sold 13,238 tons in 2016, mostly to middlemen in the region (CMTU, 2017).

The aims and structure of the field have been shaped almost exclusively by state actors, especially the municipal body that manages the selective collection and the MP-PR, which are considered to be the actors with the most power in the field. More subject to party political injunctions, CMTU has generally behaved conservatively and reactively. Its prominent role in public policy puts CMTU in recurrent situations of tension and conflict with the MP-PR and the cooperatives, also due to their dependence on the company. Over the years, MP-PR has been active in promoting social and environmental rights (Ministério Público do Paraná [MPPR], 2011) and the stability of the countryside in episodes of conflict containment, through coercion and negotiation of agreements between state and non-state actors. As a skillful social actor, i.e. one with the capacity to induce cooperation (Fligstein; MacAdam, 2012), the MP-PR was, in the pre-crisis period, the most important ally of the cooperatives, which can be understood as challenging actors and the weakest in the field.

In any case, until 2015 the recycling field had achieved a certain stability, which has been shaken by the combination of external and internal factors since then. The established order, relationships, arrangements, and existing meanings have been challenged and the cumulative effect of these factors seems to herald a transformative change in the field, both due to the destabilizing force of external changes and the disputes and conflicts within the field.

More striking evidence of the imbalance in the field emerged from 2017 onwards. The selective waste collection system set up in Londrina lost efficiency in terms of the amount of waste per capita sent for sorting, the number of households with regular weekly door-to-door collection, the total number of cooperative waste pickers, and the average monthly income of these workers. Between 2016 and 2018, the total mass of waste sent to the city's selective collection system fell by 45%, while in the same period, the mass of waste destined for the city's landfill fell by 2% (CMTU, 2017; 2018).

Assuming the economic situation and the rise of neoliberal and politically conservative theses as the most important sources of macro-events that can explain the crisis in the field, below we describe the tensions in Londrina's recycling field, highlighting the changes in related fields, the invasions in the field and the internal exhaustion of a historical pattern of relations.

4.1 Changes in related fields and invasions in the recycling field

The principle of shared responsibility for the product's life cycle, combined with the obligation to structure and implement reverse logistics systems, has produced new agreements and innovative social ways of structuring the field at a national level. Provided in the PNRS, the sectoral agreement reached in 2015 to implement reverse logistics for packaging between the Ministry of the Environment and associations of large companies in the sector, as well as the agreements that followed in the following years between state governments and companies, created an intricate network of interdependence and legitimized rules and social groups with the ability to exploit organizational technologies and found new arenas for action.

In Paraná, in addition to the various business unions that have begun to act in the field, two new trade associations of large companies emerged, created in 2016 and 2017 respectively, the Institute of Reverse Logistics and the Paraná Institute of Recycling. Thus, business associations with post-consumer packaging collection targets have become important players with high economic, cultural, and political capital in the field of recycling on a local and regional scale. The most important initiative of these associations with a local impact was the creation of the Recyclable Materials Recovery Center (CVMR) in Londrina, which only operated for seven months in 2017 (June to December). The frustrated experience, as we will discuss later, illustrates the challenges of articulation and coordination between traditional and new actors, as a rule presupposed by the "shared responsibility" outlined in the PNRS. It also confirms the recurrence of justifications for postponing the responsibility of large companies for recycling their packaging waste in the state's second-largest city. It can be said that the disorganization of the countryside and cooperatives has contributed to the success of the corporate strategy of reducing costs by transferring them to municipalities and waste pickers.

At the same time, the economic crisis that has plagued Brazil since 2014 has manifested itself in Londrina in the retraction of consumption and the loss, from 2015 to 2017, of almost 13,000 formal jobs (Rambalducci, 2018). Since 2016, there has been a considerable increase

in the number of informal waste pickers, the "pirates". Anticipating the collections scheduled by the cooperatives, they "scavenge" and subtract from the sidewalks those materials with the highest resale value, resulting in a reduction in revenue for the cooperatives and an increase in large irregular waste disposal points, which has contributed to annual dengue epidemics in the city (Marconi, 2023). Some of these waste pickers are dissidents from their cooperatives, which, dissatisfied with the conditions offered, have opted for individualized collection, thus building their own rules, work structure, and income (CMTU, 2016).

Since 2019, the field has also been confronted by professionals and environmental management companies creating a parallel structure for the collection of recyclables, challenging the contracts between City Hall and the cooperatives. They make direct contact with large high-end residential condominiums, offering to buy the waste sorted by residents. Given the lack of supervision and monitoring of the situation, this phenomenon, although little evaluated, has been crowding out and threatening the cooperatives' resources.

Another phenomenon has been the expansion of activities by urban cleaning companies to collect, sort, and sell recyclable waste from large local generators. These companies, from a nearby field, have started to compete for materials with the cooperatives, as is the case with the two invaders mentioned above, benefiting from the greater organization generated by the population's adherence to the educational and symbolic work carried out by the cooperatives.

In short, business organizations and invaders have been contributing to the dehydration and destabilization of the recycling field. In different ways, they extract economic resources from the field, jeopardizing the reproduction of the rules that govern it. Recycling, as a field dominated by and subordinated to more powerful fields (Fligstein; MacAdam, 2012), faces serious restrictions in coping with the competition and disorganization of relations in the selective collection system. Many of these restrictions are internal to the field.

4.2 The crisis as an expression of the exhaustion of historical characteristics of the recycling field

Despite their achievements, the cooperatives' infrastructure for collecting and sorting recyclables is generally still precarious and inadequate. Cooperative members have little schooling (5% are illiterate and 75% have primary education), which leads to a lack of trained staff for routine and management activities. In addition, there is no investment on their part in technical and managerial training, and they often don't use the Personal Protective Equipment (PPE) needed to carry out their activities or fumigate the workplace to prevent the proliferation of rats and other disease vectors. Internal controls over-collection, sorting, and marketing are often limited to loose records, written down in notebooks without adequate methodology, which often results in a lack of control over the number of materials collected and marketed, as well as the unfair distribution of individual earnings (Aligleri *et al.*, 2019).

In general, the degree to which cooperatives adhere to the principles of the solidarity economy is still quite incipient. There are internal relationship difficulties in cooperatives, with some members taking authoritarian positions, establishing asymmetrical and hierarchical relationships, and low turnover in management positions, partly due to the low social capital that underpins the enterprises (Souza; Luzio-dos-Santos, 2019).

Cooperatives have always been highly dependent on state power and its economic, informational, and technical capital. In 2018, most of their revenue came from the service contract with the city government, accounting for 55.5% of total turnover (Aligleri *et al.*, 2019). This dependence on state power reproduces the low autonomy of organizations in exchange for access to scarce economic resources, under a quasi-monopoly regime by the state.

In addition to the drop in the mass of recyclable material collected door-to-door by the cooperatives, the economic crisis has also caused a significant reduction in the market value of sorted post-consumer materials. In 2017, one of the cooperatives, to reduce electricity costs, turned off the processing conveyor belt, and sorting was once again carried out on a table (Saris, 2017), compromising the efficiency and quality of the work.

There is also the inability of the cooperatives to work together on common agendas, leveraging their strengths and gaining ground in the dispute with the other actors involved. Historical personal conflicts between leaders and asymmetry in the allocation of areas of the city between the cooperatives weaken and fragment efforts to build a collective project. The failed attempt to set up a Recyclable Materials Recovery Center (CVMR) in the city illustrates this situation, since three of the seven cooperatives in the municipality, including COOPER REGIÃO, did not send the sorted material to the CVMR due to the low amount paid, the lack of legitimacy of the leaders at the head of the Central's administration and personal differences (Aligleri; Borinelli; Luzio-dos-Santos, 2020).

The administrative, economic, and political fragility of cooperatives compromises not only their potential economic gains in scale but also their ability to understand the crisis and mobilize collectively and politically to present alternatives and oppose others.

Another event that further reduced the defense of the cooperatives' demands was the dismissal of a local prosecutor from the MP-PR who had made a name for herself as an important local actor in the field of recycling. Since the beginning of the field, the MP-PR, in the person of an environmental prosecutor, has acted ostensibly to enforce legislation and improve the working conditions of the cooperatives (MPPR, 2011). The prosecutor's position and personal profile made her an important historical operator with social power and knowledge of the field. She contributed decisively to important changes and advances, provoking, negotiating, and demanding, for example, in 2011, detailed measures such as a ban on the collection of recyclable waste mixed with organic waste; a ban on collecting and disposing of waste with mandatory reverse logistics in the landfill; and encouragement from the municipality for recycling cooperatives to be contracted by the generators of reverse logistics waste to provide collection, transportation, and temporary storage services for these materials, for a specific fee (MPPR, 2011). The dismissal of the prosecutor in 2017 created a huge vacuum and disorientation in the sector, but more importantly, it was the loss of a decisive ally for the cooperatives.

The role of the MP-PR cannot be understood without considering the systematic inability and disinterest of the local public sector to deal with the problem of urban waste: Londrina has not yet developed its PMGIRS, as recommended by the PNRS, allocates insufficient financial and human resources to manage and supervise the local waste system and does not use indicators to assess the social, economic-financial and environmental costs and benefits caused by the current management model (Aligleri, 2022). Between 2010 and 2018, seven incumbents held the presidency of the CMTU (2018), accentuating the problems of discontinuity and the lack of a comprehensive project for the sector. The void left behind has reinforced neoliberal theses, also supported by prejudice against the economic and administrative capacity of waste pickers.

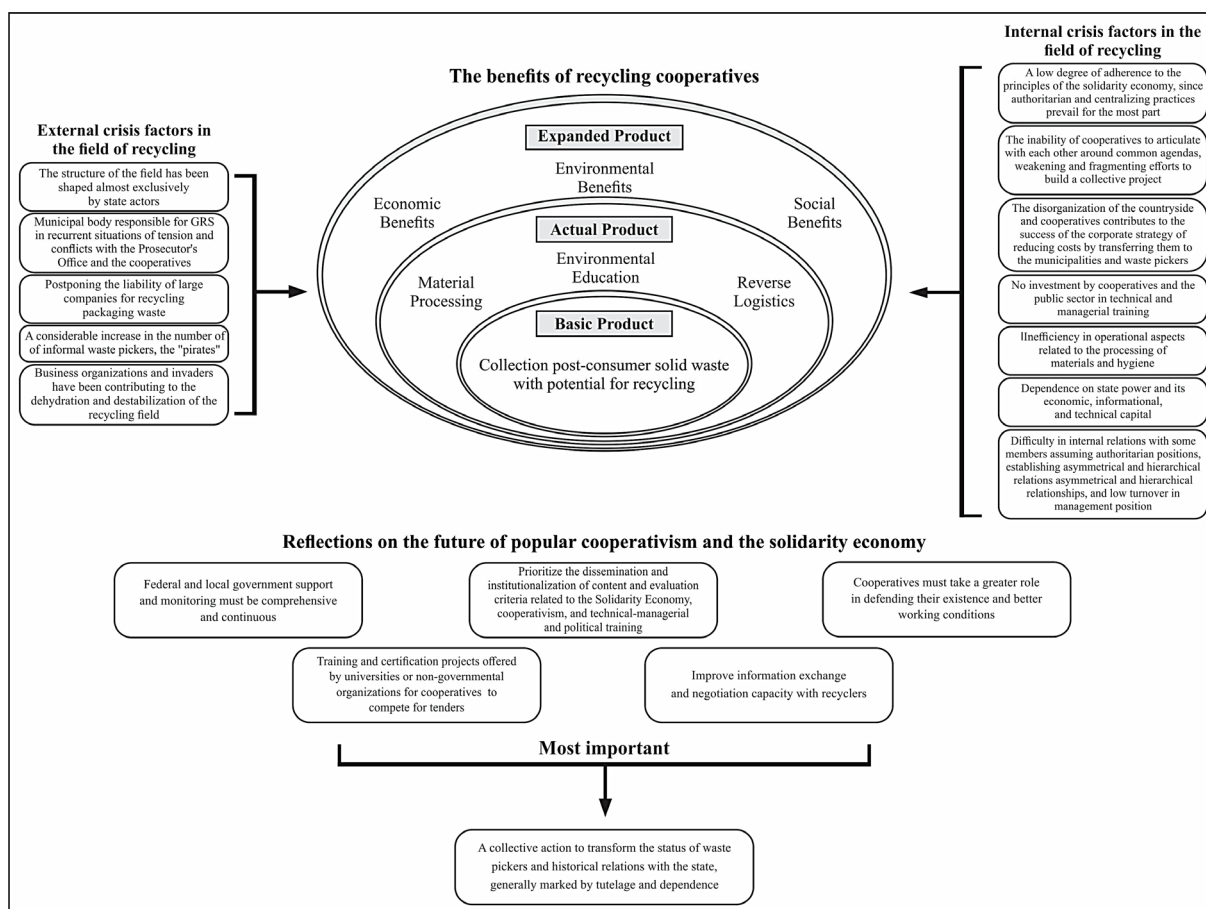
The privatizing discourse in the field, aspiring to a new symbolic and material order (Fligstein; MacAdam, 2012), confronts and challenges the practices and discourses of the solidarity economy. However, the game remains open; the greater complexity and dynamics of the field, together with the vacuum of skilled actors, prolong the uncertainty about the future and put pressure on for answers.

5 REFLECTIONS ON THE FUTURE OF POPULAR COOPERATIVISM AND THE SOLIDARITY ECONOMY

Recycling promoted by waste pickers has been widely identified as a key strategy in MSW management due to its potential environmental, economic, and social benefits (Gutberlet, 2021). These benefits can be summarized in three levels of generated products: 1) basic product (recyclable MSW collection activities); 2) real product (environmental education activities, processing of materials, and reverse logistics), and 3) extended product (reduction in the amount of waste in landfills, generation of income for waste pickers, reduction in costs for industries, reduction in maintenance/creation costs for landfills or dumps, inclusion of waste pickers in the job market, improvement in quality of life) (Marco-Ferreira; Fidelis, 2022). However, as we pointed out in our analysis of the Londrina case, there are internal and external factors that affect the possibility of cooperatives generating these benefits and compromise their performance in the recycling field, as summarized in Fig. 1.

Londrina's selective collection crisis illustrates the enormous complexity, tensions, and impasses that characterize countries marked by great inequality and economic and power asymmetries. That's why there are no easy, immediate, or lasting solutions. However, we think that a more favorable situation for building a new level of organization that is conducive to stabilizing the countryside with a project clearly committed to productive inclusion could be facilitated under certain conditions.

Figura 1 – Internal and external factors affecting the possibility of cooperatives generating benefits and compromising their performance in the recycling field



Source: Prepared by the authors.

Firstly, the crisis described here stems mainly from political and ideological tensions. The deepening of the selective waste collection crisis took place in an adverse economic and political climate, given the serious crisis that hit Brazil in economic, political, and social terms during the 2010s, which had a major impact on the most vulnerable strata of society. Conservative forces set out to dismantle a large part of the gains made by popular sectors in the 2000s, during the rise of a progressive local and federal government that structured the field and ensured some relative advantages for recycling cooperatives. The dismantling and setback in the social gains of the last decade could be better tackled with the return of a progressive government to power, pointing to new advances in the project for the productive inclusion of waste pickers.

Secondly, given the complexity and scope of promoting sustainable and effective selective waste collection, public support and monitoring must be comprehensive and continuous, anchored in public policies that are independent of four-year government cycles (Gutberlet, 2015). The existence of contracts with cooperatives, support, and remuneration for services are not enough. Other conditions must be met, such as relations with society, institutional aspects, working conditions for waste pickers (Guabiroba *et al.*, 2023), and the fulfillment of medium- and long-term goals. Other institutional actions should also include defining criteria for fair remuneration for the services provided, a municipal policy for productive inclusion that is based on the nature and time of grassroots organizations, and encouraging the collective representation

and coordination of cooperatives. These actions would be important to reaffirm the commitment to the project of sustainable productive inclusion and not to groups and people, changing the growing perception, often unfair, that the selective collection program is a privilege granted to people and groups who provide low-quality services.

Finally, the void left by the retraction of the MP-PR, the neglect of the public authorities, and the inability of the cooperatives to defend a collective project also portray the absence of a skilled actor to protect the cooperatives' rights. The crisis that has arisen could be an opportunity for cooperatives to take on a greater role in defending their existence and better working and living conditions for waste pickers. In general, they deal with various management problems, heterogeneity, low quality of services provided, scrapping of equipment and means of transport, underpayment for services provided, excessive internal centralization, and historical inter-organizational conflicts. This situation compromises not only the stability and dignity of the cooperative members but also the legitimacy of their existence and their demands in the field before the government and other local civil society organizations.

Management and participation problems could be tackled by calling for training, financing, and contract management programs. Training and certification projects for cooperatives able to compete for tenders could be offered by universities or non-governmental organizations. This mechanism should prioritize the dissemination and institutionalization of content and evaluation criteria related to the Solidarity Economy, cooperativism, and technical-managerial and political training.

The chronic conflicts and mistrust between the leaders of the waste pickers have caused enormous damage and are the biggest obstacle to strengthening the position of the cooperatives in the field of selective waste collection. This is most evident in the various failures – such as the case of the CVMR in Londrina-PR – of experiments in networking that could reduce operating costs, improve the exchange of information and the ability to negotiate with recyclers (Pisano; Demajorovic; Besen, 2022). Most importantly, collective action is indispensable for transforming the status of waste pickers and historical relations with the state, which are generally marked by tutelage and dependency. As Samson (2016, p. 51) argues, the challenge for waste pickers is to build strong, democratic demand organizations with "the capacity to develop demands and political strategies rooted in clear visions for transforming the state and the mobilization capacity to achieve their goals". Of course, this challenge does not depend solely on cooperatives, but it will not happen without their effective commitment. The situation is all the more worrying given that opting for individual action greatly reduces the ability to resist the threatening consequences of the crisis in the countryside.

The advance of an increasingly dynamic and competitive scenario in the recycling production chain could lead to the extinction of most of the current cooperatives (Silva, 2020). In this sense, it is essential and urgent to invest in and demand that current and future cooperative leaders receive both technical and political training in line with the principles of a solidarity-based, democratic, and cooperative economy.

6 FINAL CONSIDERATIONS

The crisis in Londrina's recycling system has called into question the model built up over the last few decades. The increased pressure for efficiency and better working conditions for

waste pickers, however, should not underestimate the importance of the solidarity economy as an important alternative. If we agree that emancipation is never achieved once and for all, the desired changes should not only be judged in terms of how they improve the living conditions of marginalized groups, "but also in terms of how and to what extent they create conditions conducive over time to a break with existing relations of domination" (Jessop; Sum, 2016, p. 68). What is at stake in the current crisis in Londrina's recycling field is also the form of social and economic insertion and overcoming of waste pickers that keep alive the hope that it is possible to build a dignified and fair alternative to the existing mode of social organization.

The complex nature of the subject and the plurality of actors involved in the field suggest a broad spectrum for further research. The case of Londrina shows that, beyond the romanticism that commonly shrouds the theory and practice of SE, the predatory competition between cooperatives needs to be better studied, as well as the heterogeneity of organizations, many in complete disagreement with its principles.

On another front, there needs to be a better understanding of the chronic institutional weakness of the Brazilian municipal power to deal with solid waste management, and what the economic and political forces and interests are that paralyze and benefit from policies for the sector. Also, comparative studies, in which different municipal experiences can be analyzed, could be a particularly fruitful field for understanding the crisis and potential setbacks of popular cooperativism and the PNRS in the context of growing conservatism and attacks on alternative and popular initiatives.

REFERENCES

ALIGLERI, Lilian. Modelo de gestão da coleta seletiva no município de Londrina-PR: estruturação, resultados e desafios. In: GONÇALVES-DIAS, Sylmara; ZIGLIO, Luciana; CSEH, Amanda (Org.). *Coleta seletiva de resíduos sólidos urbanos: experiências internacionais e nacionais*. Cidade: Blucher, 2022. P. 167–88.

ALIGLERI, Lilian; BORINELLI, Benilson; LUZIO-DOS-SANTOS, Luis Miguel. Cooperativismo solidário, universidade e a crise no campo da coleta seletiva de resíduos urbanos na cidade de Londrina, Paraná. In: MUÑOZ, Colombia Perez; ARTEAGA, Isabel Hernandez (Ed.). *Economía social y solidaria en la educación: un espacio para la innovación*. Bogotá: Universidad Cooperativa de Colombia, 2020. p. 191–226.

ALIGLERI, Lilian; HEADLEY, Samara da Silva; VERNI, Marli de Lourdes; TSAY, Cassio; SILVA, Patricia de Oliveira Rosa. Desafios atuais do sistema de coleta seletiva da cidade de Londrina. In: SEMINÁRIO INTERDISCIPLINAR DE PESQUISAS EM RESÍDUOS, 1., Londrina, 2019. *Anais [...]*. Londrina: Universidade Estadual de Londrina, 2019. Disponível in: <https://sites.google.com/prod/view/1sipruel/trabalhos-cient%C3%ADficos/anais-do-evento>. Access in: 2 jul. 2019.

BESIN, Gina Rizpah; FRACALANZA, Ana Paula. Challenges for the sustainable management of municipal solid waste in Brazil. *DISP: The Planning Review*, Zurich, v. 52, n. 2, p. 45–52, 2016.

BRASIL. *Lei nº 12.305*, de 2 de agosto de 2010. Institui a Política Nacional de Resíduos Sólidos; altera a lei nº 9.605 de 12 de fevereiro de 1998; e dá outras providências. Presidência da República, Brasília-DF, 2010. Disponível in: http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2010/lei/l12305.htm. Access in: 16 jul. 2019.

CANDIDO, Silvio Eduardo Alvarez; SOULÉ, Fernanda Verissimo; SACOMANO NETO, Mario. The Emergence of “Solidarity Recycling” in Brazil: structural convergences and strategic actions in interconnected fields. *Organization and Environment*, v. 32, n. 3, p. 1–23. 2018.

COMPANHIA MUNICIPAL DE TRÂNSITO E URBANIZAÇÃO [CMTU]. CMTU [Planilhas Power BI], Londrina, 2022. Disponível in: <https://app.powerbi.com/w?r=eyJrIjojNTI5MTFINDEtZjJkYi00YmE0LWJhOGUtMTA1Yzg2MThjZGE0IiwidCI6ImQwODAzNDUxLTc5MDAtNDNmMS05Zjk3LWQ2OGE1ODA1NDFmNyJ9&pageName=ReportSection9f2d5c44a74ca60d7e33>. Access in: 20 jun. 2022.

COMPANHIA MUNICIPAL DE TRÂNSITO E URBANIZAÇÃO [CMTU]. Companhia Municipal de Trânsito e Urbanização. *Relatório da situação atual das cooperativas de reciclagem*. Londrina, 2018. [Acesso restrito].

COMPANHIA MUNICIPAL DE TRÂNSITO E URBANIZAÇÃO [CMTU]. Companhia Municipal de Trânsito e Urbanização. *Coleta Seletiva 2016*. Londrina. 2017. Disponível in: <http://www.cmtuld.com.br/index.php/coleta-reciclavel.html>. Access in: 10 maio 2019.

COOPERATIVA DOS CATADORES DE MATERIAIS RECICLÁVEIS E RESÍDUOS SÓLIDOS DA REGIÃO METROPOLITANA DE LONDRINA [COOPER REGIÃO]. *Quem Somos*. Londrina, 2018. Disponível in: <http://www.cooperregiao.com/site/QuemSomos.aspx>. Access in: 10 maio 2019.

DOWBOR, Ladislau. *A era do capital improdutivo: a nova arquitetura do poder*. São Paulo: Outras Palavras / Autonomia Literária, 2017.

FLIGSTEIN, Neil; MCADAM, Doug. *A theory of fields*. New York / Oxford: Oxford University Press, 2012.

FRANÇA FILHO, Genauto Carvalho; LAVILLE, Jean-Louis. *Economia Solidária: uma abordagem internacional*. Porto Alegre: UFRGS, 2004.

FUNDACION AVINA. *Contratação pública de uma cooperativa de catadores: o caso da COOPER REGIÃO – Cooperativa de Catadores de Materiais Recicláveis da Região Metropolitana de Londrina-PR*. Salvador: Inspirar Ideias, 2012. (Série Cata Ação, v. 1).

GONÇALVES-DIAS, Sylmara Lopes Francelino; SAKURAI, Tatiana; ZIGLIO, Luciana (Org.). *Catadores e espaços de (in)visibilidades*. São Paulo: Blucher, 2020.

GUTBERLET, Jutta. Grassroots waste picker organizations addressing the UN sustainable development goals. *World Development*, Londres, v. 138, p. 1–12, 2021.

GUTBERLET, Jutta. Cooperative urban mining in Brazil: collective practices in selective household waste collection and recycling. *Waste Management*, Amsterdã, v. 45, n. 1, p. 22–31, 2015.

GUABIROBA, Ricardo; JACOBI, Pedro Roberto; BESEN, Gina Rizpah; ABEGÃO, Luis Henrique. Sustainability indicators applied to a local strategy context: proposals to improve selective waste collection systems involving waste picker organizations. *Cleaner Waste Systems*, Amsterdã, v. 5, n. 1, p. 1–13, 2023.

HIDAKA, Gustavo Setsuo. *Disputas em torno do “lixo”: a coleta seletiva em São Paulo à luz da Teoria dos Campos de Ação Estratégica*. 2021. 237 f. Dissertação (Mestrado em Ciência Ambiental) – Instituto de Energia e Ambiente, Universidade de São Paulo, São Paulo, 2021. Disponível in: <https://www.teses.usp.br/teses/disponiveis/106/106132/tde-25112021-105033/>. Access in: 6 abr. 2022.

HORTA, Lucio. Delegado de trânsito investiga morte de garimpeiro no lixão. *Folha de Londrina*, Londrina, 1999. Disponible in: <https://www.folhadelondrina.com.br/cidades/delegado-de-transito-investiga-morte-de-garimpeiro-no-lixao-195133.html>. Access in: 10 mar. 2019.

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA [IBGE]. Cidades e Estados: Londrina, 2020. Rio de Janeiro: IBGE, 2022.

INSTITUTO ETHOS. *Princípios e critérios para implementação de alianças público-privadas na gestão de resíduos sólidos*. São Paulo: Instituto Ethos, 2015.

JESSOP, Bob; SUM, Ngai-Ling. What is critical? *Critical Policy Studies*, Abingdon-on-Thames, v. 10, n. 1, p. 105–9, 2016.

KAIN, Jaan-Henrik; ZAPATA, Patrik; AZEVEDO, Adalberto Mantovani; CARENZO, Sebastian; CHARLES, Goodluck; GUTBERLET, Jutta; OLOKO, Michael; REYNOSA, Jessica Perez; CAMPOS, Maria Jose Zapata. Characteristics, challenges and innovations of waste picker organizations: a comparative perspective between Latin American and East African countries. *Cranfield University*, San Francisco, v. 17, n. 7, p. 1–27, 2022.

KIDD, Sean; KRAL, Michael. Practicing participatory action research. *Journal of Counseling Psychology*, Washington, v. 52, n. 2, p. 187–95, 2005.

LUZIO-DOS-SANTOS, Luis Miguel. *Socioeconomia: solidariedade, economia social e as organizações em debate*. São Paulo: Atlas/Salta, 2014.

MARCONI, Guilherme. Região de Londrina volta a liderar números da dengue no Paraná com 193 casos. *CBN Notícias*, Londrina, 2023. Disponible in: <https://cbnlondrina.com.br/materias/regiao-de-londrina-volta-a-liderar-numeros-da-dengue-no-parana-com-193-casos>. Access in: 15 set. 2023.

MARCO-FERREIRA, Antonio; FIDELIS, Reginaldo. Analysis of the implantation of a system for the sustainable management of solid urban waste in Brazil. In: BASKAR, Chinnappan; RAMAKRISHNA, Seeram; SHARMA, Rashmi; CHINNAPPAN, Amutha; SEHRAWAT, Rashmi (Ed.). *Handbook of solid waste management: sustainability through circular economy*. Springer: Springer Nature Singapore, 2022.

MINISTÉRIO PÚBLICO DO PARANÁ [MPPR]. *Recomendação administrativa conjunta nº 01/2011*. 20ª Promotoria de Justiça da Comarca de Londrina. Promotoria de Defesa do Meio Ambiente, Pessoas Portadoras de Deficiência e Fundações. Londrina, 2011.

PISANO, Viviane; DEMAJOROVIC, Jacques; BESEN, Gina Rizpah. The Brazilian National Solid Waste Policy: perspectives of the waste pickers' cooperative networks. *Ambiente & Sociedade*, São Paulo, v. 25, p. 1–21, 2022.

RAMBALDUCCI, Marcos. O Mercado de trabalho formal em Londrina nos últimos 5 anos. *Folha de Londrina*, Londrina, 2018. Disponible in: <https://www.folhadelondrina.com.br/blogs/marcos-rambalducci/o-mercado-de-trabalho-formal-em-londrina-nos-ultimos-5-anos-1003631.html>. Access in: 20 fev. 2019.

SAMSON, Melanie. Old trash, new ideas: public waste management and informal reclaimers. In: MCDONALD, D. (Ed.). *Making public in a privatized world: the struggle for essential services*. London: Zed Books, 2016. p. 41–8.

SARIS, Simoni. Recicladores pedem mais investimento. *Folha de Londrina*, Londrina, 2017. Disponível in: <https://www.folhadelondrina.com.br/cidades/recicladores-pedem-mais-investimentos-969135.html>. Access in: 20 jan. 2023.

SILVA, Maria de Fatima. *Movimento dos catadores de materiais recicláveis no Brasil: Organização e luta pela valorização do seu trabalho*. 2020. 199 f. Dissertação (Mestrado em Serviço Social) – Universidad Nacional de la Plata, Buenos Aires, 2020.

SINGER, Paul. *Introdução à Economia Solidária*. 1. ed. São Paulo: Fundação Perseu Abramo, 2002.

SOUZA, Lucas Henrique; LUZIO-DOS-SANTOS, Luís Miguel. Economia solidária no Brasil: comparativo dos mapeamentos de 2007 e 2014. *Organizações e Sustentabilidade*, Londrina, v. 7, n. 1, p. 119–32, 2019.

TEODÓSIO, Armindo dos Santos de Sousa; GONÇALVES-DIAS, Sylmara Lopes Francelino; SANTOS, Maria Cecília. Procrastinação da Política Nacional de Resíduos Sólidos: catadores, governos e empresas na governança urbana. *Ciência e Cultura*, São Paulo, v. 68, n. 4, p. 30–3, 2016.

Author Contributions

Benilson Borinelli: Conceptualization; formal analysis; research; project administration; supervision; visualization; writing – original draft preparation; writing – review & editing.

Lilian Aligleri: Conceptualization; formal analysis; methodology; research; project administration; writing – original draft preparation.

Luís Miguel Luzio dos Santos: Conceptualization; research; formal analysis; writing – original draft preparation.

Reginaldo Fidelis: Formal analysis; methodology; resources; visualization; writing – original draft preparation.

About the authors:

Benilson Borinelli: Postdoctoral researcher in Geography at the University of São Paulo (USP). PhD in Social Sciences from the State University of Campinas (UNICAMP). Master's degree in Administration from the Federal University of Santa Catarina (UFSC). Bachelor's degree in Administration from UFSC. Associate Professor at the State University of Londrina (UEL). **E-mail:** benilson@uel.br, **Orcid:** <https://orcid.org/0000-0002-7256-7618>

Lilian Aligleri: PhD in Administration from the University of São Paulo (USP). Master's degree in Business Management and Bachelor's degree in Administration from the State University of Londrina (UEL). Associate Professor in the Department of Administration and coordinator of the Interdisciplinary Waste Research Center (NINTER) at UEL. **E-mail:** lilian.aligleri@uel.br, **Orcid:** <https://orcid.org/0000-0002-3039-2645>

Luís Miguel Luzio dos Santos: Postdoctoral research in Philosophy and Social Sciences and PhD in Social Sciences from the Pontifical Catholic University of São Paulo (PUC-SP). Master's degree in Administration and Bachelor's degrees in Economics and Administration from the State University of Londrina (UEL). Associate Professor in the Department of Administration and the Graduate Program in Administration at UEL. **E-mail:** lmig@uol.com.br, **Orcid:**

<https://orcid.org/0000-0001-9369-0298>

Reginaldo Fidelis: PhD in Production Engineering from the Federal University of Technology – Paraná (UTF-PR). Master’s degree in Science Teaching and Mathematics Education from the State University of Londrina (UEL). Bachelor’s degree in Mathematics from UEL. Full Professor in the Department of Mathematics at UTF-PR and faculty member in the Graduate Program in Administration at UEL. **E-mail:** reginaldof@utfpr.edu.br, **Orcid:** <https://orcid.org/0000-0003-0702-6353>

Data Availability

The entire dataset supporting the results of this study is published in the article.

Editor-in-Chief Responsible for the Article: Arlinda Cantero Dorsa.
