

Flexible work as a rule in capitalism: conceptualization and theoretical-analytical propositions

GERALDO TESSARINI JUNIOR 12

PATRÍCIA SALTORATO³

KAIO LUCAS DA SILVA ROSA 4

¹ Universidade de São Paulo (USP) / Programa de Pós-Graduação em Administração, São Paulo – SP, Brazil ² Instituto Federal de Educação, Ciência e Tecnologia de São Paulo (IFSP), São Paulo – SP, Brazil ³ Universidade Federal de São Carlos (UFSCar) / Departamento de Engenharia de Produção, Sorocaba – SP, Brazil ⁴Universidade Federal de Minas Gerais (UFMG), Programa de Pós-Graduação em Administração, Belo Horizonte – MG, Brazil

Abstract

This essay aims to explore flexible work in the context of flexible capitalism to propose a theoretical-analytical model of the different classifications of this phenomenon. From a critical literature review, we present fundamental problems – understanding the multiple manifestations of flexibility and how they affect workers and their productive practices. The proposed model comprises three interdependent analytical levels: contractual flexibility, functional flexibility, and workplace flexibility and flexitime. Each level has two subcategories that classify and analyze a work activity in terms of working arrangements, remuneration, tasks, autonomy, where work is accomplished, and work scheduling. Throughout this theoretical essay, we present an alternative definition to the concept of flexible work and argue that flexibilization is a phenomenon incompatible with the enhancement of the labor process in favor of workers and represents another movement of conflict between capital and labor. Therefore, flexibilization is configured in a mechanism of exploitation of workers and expansion of the labor force's productivity in search of greater private accumulation of capital.

Keywords: Flexible work. Flexible capitalism. Exploitation of labor.

A flexibilização do trabalho como regra no capitalismo: conceituação e proposições teórico-analíticas

Resumo

O objetivo deste artigo é explorar a temática da flexibilização do trabalho no contexto do capitalismo flexível, com vistas a propor um modelo teórico-analítico das diferentes classificações desse fenômeno. A partir de uma literatura de cunho crítico, apresentamos como questão fundamental a compreensão sobre quais são as múltiplas manifestações de flexibilidade e como elas afetam os trabalhadores e suas práticas produtivas. Buscando aventar o debate, o modelo proposto compreende 3 níveis analíticos interdependentes: flexibilidade contratual, flexibilidade funcional e flexibilidade espaço temporal. Cada nível apresenta 2 subcategorias que permitem classificar e analisar uma atividade de trabalho quanto a formas de vínculo, remuneração, conteúdo, autonomia, local de execução e duração. Ao longo do ensaio, apresentamos uma definição alternativa ao conceito de flexibilização do trabalho e defendemos que se trata de um fenômeno incompatível com o aprimoramento do processo de trabalho em favor dos trabalhadores, representando mais um movimento de acirramento do conflito capital versus trabalho. Configura-se, portanto, num mecanismo de exploração dos trabalhadores e de ampliação da produtividade da força de trabalho em busca de maior acumulação privada de capital.

Palavras-chave: Flexibilização do trabalho. Capitalismo flexível. Exploração do trabalho.

La flexibilización del trabajo como norma en el capitalismo: conceptualización y propuestas teórico-analíticas

Resumen

El objetivo de este artículo es explorar el tema de la flexibilización del trabajo en el contexto del capitalismo flexible, con miras a proponer un modelo teórico-analítico de las diferentes clasificaciones de este fenómeno. A partir de una literatura de carácter crítico, presentamos como cuestión fundamental la comprensión de cuáles son las múltiples manifestaciones de la flexibilidad y cómo estas afectan a los trabajadores y sus prácticas productivas. Para suscitar el debate, el modelo propuesto comprende tres niveles analíticos interdependientes: flexibilidad contractual, flexibilidad funcional y flexibilidad espacio-temporal. Cada nivel tiene dos subcategorías que permiten clasificar y analizar una actividad laboral en función de la modalidad de trabajo, remuneración, contenido, autonomía, lugar de ejecución y duración. A lo largo del ensayo, presentamos una definición alternativa al concepto de flexibilización del trabajo y argumentamos que se trata de un fenómeno incompatible con la mejora del proceso de trabajo a favor de los trabajadores, y representa otro movimiento para agudizar el conflicto entre el capital y el trabajo. Es, por tanto, un mecanismo de explotación de los trabajadores y de ampliación de la productividad de la fuerza de trabajo en busca de una mayor acumulación privada de capital.

Palabras clave: Trabajo flexible. Capitalismo flexible. Explotación del trabajo.

Article submitted on February 23, 2022 and accepted for publication on May 05, 2022. [Translated version] Note: All quotes in English translated by this article's translator. DOI: http://dx.doi.org/10.1590/1679-395120220049x



INTRODUCTION

The process to expand the productive labor force requires continuous changes in technical and social arrangements (Marx, 2012). Labor organization, management and exploitation modes have got more diverse overtime due to different production patterns (Druck, 2011) and to following structural changes in the capitalist society. The crisis observed in the Taylorist-Fordist accumulation pattern in the mid-1970s has triggered a production restructuring process based on the flexibilization/deregulation association (Alves, 2007; Antunes, 2009). However, the labor world was flooded by innovations as Toyotism emerged, whereas new organization and management forms, mainly guided by flexibility discourses and mechanisms, were established by organizations (Alves, 2007; André, R. O. Silva, & Nascimento, 2019; Antunes, 2018; Campos, 2017; Dal Rosso, 2017; Harvey, 1992).

Although issues associated with flexible work are not a recent topic, they are far from being exhausted, mainly if one takes into consideration all different configurations and perspectives associated with it (Dal Rosso, 2017; Dettmers, Kaiser, & Fietze, 2013). Basically, flexible work can be seen as a fruitful movement in contemporary capitalism, just like other typical expressions, such as globalization, neoliberal policies, service sector growth, company networks, financialization of the economy and technological innovations (Antunes, 2018; Azevedo & Tonelli, 2014; Katz & Krueger, 2019; Spreitzer, Cameron, & Garrett, 2017).

In theoretical terms, this concept presents strong duality, which is expressed, for example, in controversial factors such as *being* flexible or *having* flexibility, flexibility *towards* workers or flexibility *of* workers (Cañibano, 2019; Dettmers et al., 2013; Klindžić & Marić, 2019). On the one hand, there are those who defend and promote the understanding that labor flexibility can supposedly provide mutual benefits to organizations – by enabling workforce adaptation to market and production demands – and to workers – by enabling them to make decisions about their own work, at some level (Cano, Espelt, & Morell, 2021; Dettmers et al., 2013; Hill et al., 2008). On the other hand, the aegis of the capitalist system leads to the degradation of both wages and working conditions, as well as forces workers to take job positions (Vasapollo, 2005) featured by labor intensification, precariousness, and exploitation (Antunes, 2018). Labor standards' replacement by alternative arrangements, such as part-time, temporary, outsourced jobs, among others, is widespread in this system (Abílio, 2020; Antunes, 2011; Spreitzer et al., 2017).

Aligned with a critical theoretical perspective and responding to the call for research in search of solutions to the questions posed by labor relations in the current context of profound changes (Ferraz, 2021), The aim of the current essay is to explore the topic 'flexible work in the flexible capitalism context' to enable proposing a theoretical-analytical model for its different classifications. Flexible work is herein treated as a controversial, complex, polysemic and multidisciplinary phenomenon. The understanding of multiple flexibility manifestations, as well as of the way they affect both workers and their production practices, is herein presented as fundamental matter. Throughout the current study, we focus on understanding the context where flexibilization prevailed in and we advocate that, despite its controversies, this phenomenon is not compatible to the labor improvement process in favor of workers, since it leads to increased exploitation and expansion of labor force productivity in pursuit of higher private capital accumulation.

EMERGENCE OF FLEXIBLE WORK IN THE "NEW" CAPITALISM

The need of the capitalist system for expanding capital accumulation has boosted the Taylorist-Fordist production model, which prevailed throughout most of the 20th century. Based on the Taylorist model, capital's control over activities that depend on human intervention was enabled by the technical and systematic division of tasks, whose consequences for workers were expressed in extreme specialization and 'routinization' of labor activities, as well as in the control and standardization of times and movements. Fordism - inspired in Taylorism - took a further step towards productive restructuring by introducing mobile assembly lines and mass production processes (Campos, 2017; Harvey, 1992).

From the 1970s onwards, after a long period of ascension, the Taylorist-Fordist model experienced a stagnation process and started to show signs of wear and tear triggered by a broad and structural crisis in the capitalist system (Alves, 2007; Antunes, 2009; Harvey, 1992). One can mention reduced profit rates due to increased labor force price; the exhaustion of

"scientific organization of labor" to promote productivity gains, which came up against labor intensification and human capacity limitations; the welfare state crisis (or social welfare state); and retracted consumption due to high unemployment rates as striking expressions of this context (Antunes, 2009; Campos, 2017).

Based on this scenario, capitalism was forced to reinvent itself based on the redefinition of its ideological and political domination system, in order to maintain its hegemony and accumulation system (Antunes, 2009). This process gave rise to the flexible accumulation regime (Harvey, 1992), also called flexible capitalism (Sennett, 2016), which is a new capital accumulation model that subordinates the production sphere to the financial one - a process that contaminates all production and labor management practices (Druck, 2011; Gaulejac, 2007; Vasapollo, 2005). This regime is based on a neoliberal political and economic project, whose main foundations comprise economy and production 'financialization', intensification of both production and labor restructuring processes, technological advances, globalization, capital globalization and managerial ideology (Antunes, 2018; Azevedo & Tonelli, 2014; Katz & Krueger, 2019; Spreitzer et al., 2017).

Flexible capitalism aims at fulfilling a political, economic, and social function by producing substantial outcomes; its own reproduction is its most significant outcome (Gaulejac, 2007). Accordingly, several changes are applied to labor, based on the logic of, and discourse about, flexibility; it is done to enable companies to effectively meet market demands, to maximize their gains and to define management strategies essentially (or exclusively?) oriented by financial operations and interests (Sennett, 2016). Labor is "a secondary variable that must be made flexible" (Gaulejac, 2007, p. 47). The "labor force is left completely uncovered, either in their current jobs, for which they have no guarantee, or in their future labor condition, since no one guarantees their income at unemployment times" (Vasapollo, 2005, p. 10).

Thus, new labor organization models have emerged; among them, one finds Toyotism (Antunes, 2011; T. Wood, 1992), which is "just another compositional element of the long capitalist production rationalization and living labor manipulation process resulting from the Fordism-Taylorism regime" (Alves, 2007, p. 156). The lean production model featured by low inventory levels (the least necessary); varied, diversified and on-demand production; reengineering; just-in-time procedures; lean manufacturing; production flexibility; total quality; as well as by workers with greater autonomy to contribute to labor rationalization and to exercise quality control, was introduced (Antunes, 2011; T. Wood, 1992). New – and theoretically more flexible and participatory - people management techniques were also developed, with emphasis on the so-called production cells, work teams, quality control circles (QCC) and semi-autonomous groups. According to Antunes (2009), these techniques are nothing more than a manipulative labor organization process that preserves workers' alienation and whose real purpose is to intensify their exploitation condition.

However, flexible capitalism (the new one) goes far beyond what can be associated with Toyotism, because "more than a variation of an old topic", it attacks bureaucratic capitalism's (the old one) rigidity and turns flexibilization into a hegemonic ideology (Sennett, 2016, p. 9). Thus, flexible capitalism is seen as the future, whereas the rigid one is seen as the past (Dal Rosso, 2017); this factor requires everyone – namely: organizations, management, labor and, finally, workers - to become flexible (Harvey, 1992). Consequently, flexibilization becomes the rule, rather than the exception. The relationship between individuals and society is seen through an instrumental, utilitarian, and accounting logic, based on which, workers are relegated to the status of mere company resources; therefore, they are manageable (Gaulejac, 2007). Based on reification, workers are reduced to the most miserable commodity (Marx, 2013) and "become a capital that should be made productive" (Gaulejac, 2007, p. 28).

This phenomenon leads to a relentless process of co-opting and subsuming individuals to the flexible capitalism logic: "workers are required to think on behalf of capital" (Previtali & Fagiani, 2014, p. 761). Thus, typical Fordist workers undergo a "despecialization" process and get replaced by flexible, multifunctional, temporary, outsourced, and subcontracted workers. Workers are increasingly involved in the manipulative logic of new capitalism, whose discourse spreads the idea of greater participation and autonomy in production processes (Antunes, 2018; Sennett, 2016). However, it is a fallacious discourse, since "the effective design of products - i.e., the decision about what and how to produce - is not up to workers. The result of the work process [...] remains external and alien to producers" (Antunes, 2011, p. 40). Briefly, a liberation ideology based on participation – i.e., the fallacious idea of "participatory management" - is adopted in a system where the assumed autonomy and flexibility effectively mean increased involvement and work (Gaulejac, 2007).

Based on the flexible capitalism, "workers are asked to be agile, open to short-term changes, to continuously take risks, and to depend less and less on laws and formal procedures" (Sennett, 2016, p. 9). However, being fast is not enough; it is necessary being the fastest and the most efficient one. There is talk of employability, creativity, and adaptability, since the labor market gets leaner and leaner, and only leaves vacancies for those who are committed to organizational interests and to become true slaves in pursuit of high performance (Nascimento, Damasceno, & Neves, 2016). It is possible saying that "the value of each individual is measured based on financial criteria. The unproductive ones are rejected because they become useless in the world" (Gaulejac, 2007, p. 77). Thus, increased unemployment, precariousness, informality, and underemployment rates are another aggravating factor of the new capitalism (Alves, 2007; Antunes, 2018).

Perhaps the best example of it is what society has seen at late 20th century and early 21st century, namely: significant reduction in the industrial working class, which was followed by significant growth of the service sector (Antunes, 2011; Harvey, 1992). This growth is only possible because capital, under the false modern and positive narrative that flexibilization is – per se – beneficial to workers (Dal Rosso, 2017), starts demanding that labor must be as flexible as possible, mainly in the service sector. Workers have alternative contracts (whenever there are contracts) and fewer labor rights; they become temporary, outsourced, intermittent workers, with flexible working hours and remuneration, and they even lack a predetermined workplace (Antunes, 2018). This new society is forced to endure a high-performance culture (profitability, productivity, and efficiency) that puts the world, labor and workers under pressure, and that triggers the most diverse and dangerous pathologies, such as physical and mental exhaustion, stress, suffering and depression (Gaulejac, 2007).

The 2017 Brazilian labor reform, enacted through Law n. 13,467, from July 13th, 2017, (Lei nº 13.467, de 13 de julho de 2017) is an emblematic example of this new context. The aforementioned reform, which was based on neoliberal ideas, has expanded the flexibilization and precariousness of labor rights based on several "novelties", such as intermittent labor, layoffs based on "common agreement" and the prevalence of "agreements" over legislation (Guimarães & E. B. Silva, 2020). Workers were cornered by a manipulative and perverse discourse, namely: either you have rights or jobs.

What is in place is the ruse of flexibility (Dal Rosso, 2017); it is the time of the "new (un)employed, of short-term employable workers, due to the (new) and precarious contract forms" (Druck, 2011, p. 43). The contemporaneity of flexible capitalism gives rise to a structural labor precariousness process that has unemployment and informality as its most striking manifestations. Thus, precarious employment based on different supposedly-flexible models, or on intensified and exploited labor, appears to represent a paradoxical privilege granted by capital, according to which, only the most competent (or lucky) workers are worthy; in other words: the privilege of servitude (Antunes, 2018).

FLEXIBLE WORK AS RESEARCH OBJECT

It is possible finding two main strands on this topic in the national and international literature. The first one – in pleasant terms – is more optimistic and understands flexibility as benefit to workers and as modern management practice (Atkinson, 1984; Cañibano, 2019; Hill et al., 2008). The second one is more critical - although under different ontological and epistemic orientations - and highlights the potential precariousness, weakening and corrosion faced by both labor and workers, due to flexibilization (Antunes, 2011, 2018; Dal Rosso, 2017; Druck, 2011; Gaulejac, 2007; Sennett, 2016).

These two perspectives clash against each other because the meaning attributed to flexibilization by organizations/ companies is not necessarily the same meaning attributed by workers (Cano et al., 2021; Chung & Tijdens, 2013; Dettmers et al., 2013; Hill et al., 2008). It is worth emphasizing that the terms *flexible*, *flexibility* and *flexibilization* are not neutral, since they are associated with positivity – if the opposite of flexible is rigidity, it is natural that one prefers the former meaning (Jonsson, 2007).

In analytical terms, the literature often opposes traditional (or standard) to flexible labor (Azevedo & Tonelli, 2014), a fact that significantly limits these concepts (Cappelli & Keller, 2013). From this perspective, the first group comprises formal, full-time, legally supported jobs, with guaranteed labor and social security rights and prospect of stability. In the Brazilian case, this group comprises workers ruled by the Consolidation of Labor Laws (CLT - Consolidação das Leis do Trabalho), as well as public servants linked to specific regimes (Azevedo & Tonelli, 2014). On the other hand, the second group often comprises all other labor relationship forms, which are overall called "alternative arrangements". The limitation mentioned by

Cappelli and Keller (2013) stems from the fact that this classification type is restricted to the contractual and legal dimension, which is often used to differentiate a good job (first group) from a bad one (second group); however, it is not enough to explain the multiple labor configurations that can be seen as flexible.

Atkinson (1984), who was one of the pioneers on this topic, identified the three main labor flexibility dimensions, namely: functional, numerical, and financial. The first dimension refers to the need of having workers capable of performing different functions and tasks, as products and production methods change in the short- and medium-terms. The second dimension concerns the extent to which a given company finds it easy to increase or decrease its number of employees, based on its needs. In order to do so, flexible contracts, based on which employees can be easily hired and dismissed, should be adopted. The third dimension refers to the remuneration structure, which replaces wage rigidity by alternatives such as varying remuneration based on productivity and bonuses.

The classification introduced by Smith (1997) only comprises the functional and numerical flexibilities, although their interpretation is slightly different from the one presented by Atkinson (1984). According to Smith (1997), functional flexibility involves a set of mechanisms and innovations – such as new technologies, labor expansion and self-managed teams – used to boost workers' commitment, to train them, as well as to explore their knowledge and skills. Numerical flexibility, in its turn, comprises the rise of alternative labor arrangements, such as temporary jobs, in opposition to the decline of traditional contracts.

Piccinini, S. R. Oliveira, and Rübenich (2005) have investigated flexible work types found in Brazilian organizations and highlighted 5 flexibilization analysis categories, namely: 1) external quantitative flexibilization - models displacing means-or-end activities to other organizations, such as outsourcing, cooperatives and home work -; 2) internal quantitative flexibilization - based on atypical employments, such as temporary contracts, part-time jobs and internships -; 3) external flexibilization of labor forms – flexibilization (outside the company) of the work schedules and places where it will be carried out, such as remote work -; 4) internal flexibilization of labor forms – flexibility (within the company) of work schedules and places where it will be carried out, such as the adoption of bank of hours –; and 5) functional flexibilization.

Against the grain of previous classifications, Cappelli and Keller (2013) have introduced an alternative model, which is based on the idea of control over the work process and capable of regulating the employee-employer relationship. The aforementioned authors presented two concepts, namely: labor arrangements, which are substantiated by labor law and involve direct relationship, or a relationship (based on hiring third parties) between employees and the employer, who has control over what and how its employees work; and contractual arrangements, which are ruled by contractual law and involve a relationship, based on which, workers provide a given service to their clients, be them a company or a person, for a pre-determined period-of-time, or not. In this case, the contracting part does not have direct control over the workers' activity.

Although Spreitzer et al. (2017) acknowledged both the validity and the relevance of the classification presented by Cappelli and Keller (2013), they pointed out that it neglects other important dimensions associated with new labor arrangements, such as flexible working hours and places. According to them, a third dimension must be added to the first two, namely: flexibility in work relationships, which is similar to other classifications associated with contract types.

Finally, Cañibano (2019) presented a more diverse classification. According to her, flexibility at work goes beyond people management or contractual model policies and practices since they mainly emerge and establish themselves through employees' experiences at work. Flexibility is presented as a duality: it is a contribution to, or a factor necessary for, the proper functioning of companies – which, for example, require employees to have time available or to travel for business purposes. It is an incentive granted by companies, which authorizes workers to make work-related decisions, such as choosing their working schedule and place, among others.

PROPOSITION OF A THEORETICAL-ANALYTICAL MODEL

The analysis of the aforementioned models has shown their amplitude and the consequent difficulty in conceptualizing and classifying labor flexibility in a unison manner. This concept is herein understood in a broader fashion that goes far beyond contractual models (Cappelli & Keller, 2013) or aspects and decisions regarding how, where, when and for how long the work is carried out (Z. E. Bayazit & M. Bayazit, 2019; Hill et al., 2008). Thus, in order to provide an alternative definition in compliance with a critical perspective, we herein understand that flexible work can be seen as a disruptive organizational movement that

grew in the socio-historical process of capitalist development and that is driven by structural metamorphoses taking place in production patterns and accumulation instruments. It is about introducing alternative elements, either permanently or temporarily, in work relationships, conditions, content and organization ways, by adjusting it (work) to capital holders' interests and private accumulation demands.

Based on this understanding, and aiming at compiling, classifying, conceptualizing, and updating different ideas about this topic, Box 1 presents the proposition of a theoretical-analytical model comprising several flexible labor arrangements and possibilities, by taking into consideration the Brazilian reality. This model comprises three interdependent analytical flexibility levels, namely: contractual, functional and spatial-temporal. Each level has two subcategories that enable classifying and analyzing a given job based on its employment, remuneration, content, and autonomy forms, as well as on its place of execution and duration.

Box 1
Theoretical-analytical model proposed in the current study

| | | Based on bond type | Based on remuneration structure |
|----------------------|------------------|---------------------------|---------------------------------|
| | Contractual | Outsourcing | Varying remuneration |
| | | Quarteirização | Skill-based pay |
| | | Pejotização | • Bonus |
| | | Cooperatives | Profit sharing |
| | | Determined time | |
| | | Part-time | |
| | | Intermittent work | |
| L C | | Internship | |
| Analytical dimension | | Uberization | |
| | -unctional | Based on content | Based on autonomy |
| | | Multipurpose | Semi-autonomous groups |
| | | Rotation of job positions | Empowerment |
| | | Work expansion | Multi-skills/competences |
| | Fur | Job enrichment | Management/Leadership |
| | | Work digitization | |
| | | Automation of labor | |
| | Spatial-temporal | Based on workplace | Based on working time |
| | | Remote work/teleworking | Bank of hours |
| | | Home office | Schedules/shifts |
| | | Coworking | Overtime |
| | Sp | | Reduced working hours |

Source: Elaborated by the authors.

This classification system is schematic and serves theoretical-analytical purposes; thus, it cannot be seen as a rigid and standardized model. It happens because, in practice, different flexibility types can be mistaken for each other, overlapped or even unrelated. It is perfectly likely, for example, for workers hired under a standard employment model – full-time, guaranteed labor and social security rights, stability – to perform their tasks remotely or to receive productivity bonuses. The following topics address, in detail, each of the flexibilization forms presented in the herein proposed model.

CONTRACTUAL FLEXIBILITY

Contractual flexibility is the type most directly observed in the literature; it comprises workers' contracting and remuneration forms, be them informal and/or precarious. Therefore, it configures a working relationship between two agents, namely: the service taker/employer and the service provider/employee. Box 2 describes the main alternative contracting arrangement modalities observed in the literature, mainly in Brazil. It is worth emphasizing that it is not the aim of the current study to present all the existing possibilities, mainly because contracting forms often change from country to country and because they are significantly influenced by the current legislation.

Box 2
Alternative contracting arrangements

| Arrangement | Feature |
|----------------------------------|--|
| Outsourcing | The person is employed by one company, but his/her work is performed in another company he/she is not connected with. |
| Quarteirização | Also known as "outsourcing the outsourcing"; it happens when the outsourced company hires another company to perform the service. |
| Pejotização | The worker constitutes an individual company (legal entity) and sets a service provision contract between his/her company and another one. It is often used to mask labor relationships in place, wherein the person becomes a self-employed worker for legal purposes, oftentimes due to contracting party's imposition, in order to circumvent labor rights. |
| Cooperativism | It is an autonomous association of individuals who voluntarily get together to explore a certain economic, social and cultural activity, through a collectively-owned and democratically-managed company. Despite cooperatives' social nature, false cooperatives have been increasingly established in the country, with the only purpose to exploit workers and to avoid paying labor rights; thus, these cooperatives are featured by lack of self-management practices and by permanence of the employer-worker relationship. |
| Determined time or temporary job | Workers are hired only for a certain period-of-time, with fixed start and end dates. This arrangement type can comprise employees directly or indirectly hired by companies (outsourcing or <i>quarteirização</i>). It is often adopted in times of seasonal demand. |
| Part-time | The employee is hired to work for a reduced number of hours, with proportional remuneration and benefits. After the labor reform implemented in Brazil, in 2017, the current maximum limit for part-time employment is 30 hours a week. It can also be classified as a form of flexible working hours. |
| Intermittent work | Contractual modality based on which the person is at the employer's disposal, awaiting a call to work. He/she only gets paid for the effectively worked time, in addition to not being owed anything associated with his-her inactive time. |
| Internship | Activity performed by students in order to get prepared for productive work and for the practical application of knowledge acquired in the classroom. It assumes an educational and supervised act that does not generate employment relationship between students and the contracting company. However, since the internship bond is not ruled by the Consolidation of Labor Laws (CLT- Consolidação das leis do trabalho) and since interns do not have the same rights as other workers, companies often hire interns in order to reduce their costs and to get inexpensive labor force. |
| Uberization | Name given to an emerging labor model based on the supposed idea of sharing economy, on gig economy and on the expansion of services provided through apps and virtual platforms. It is a labor organization, management and exploitation model that does not acknowledge employment relationship and, consequently, it does not give any right or guarantee to workers. The neologism "uberization" derives from the name of the company accounting for providing urban transport services - Uber Technologies Inc, which is emblematic in exploring the work of drivers, based on this conformation. |

Source: Elaborated by the authors.

Alternative contracting arrangements appear to have stopped being the exception and to become the rule in contemporary capitalist society – the number of outsourced, *quarteirizados*, and temporary and intermittent workers on the world stage is rapidly increasing (Antunes, 2018). Additional remarks about labor uberization should be made. This modality creates intermittent job markets, where buyers/contractors and sellers/workers connect to each other through companies' virtual platforms in order to perform specific tasks (Davis & Sinha, 2021; Moraes, M. A. G. Oliveira, & Accorsi, 2019); these platforms enable setting recruitment, control and remuneration precedents through algorithmic management (Amorim & Moda, 2020; Duggan, Sherman, Carbery, & McDonnell, 2020; A. J. Wood, Graham, Lehdonvirta, & Hjorth, 2019).

The uberized labor arrangement sets a new capitalist accumulation mode (Franco & Ferraz, 2019). The subordination relationship and the wage bond between capital and labor are covered up by the daring action of promoting a more flexible and autonomous labor system (Abílio, 2020). Workers' description as entrepreneurs is associated with the process aimed at demobilizing class struggles. Workers believe to be bourgeois as they are demoted to proletarians (Antunes, 2018). Workers' exploitation and the appropriation of surplus value generated by their service have significantly increased. Nowadays, workers take the risks and costs to perform their work in a context of absolute precariousness, insecurity, uncertainty, competition, and sequestration of both their time and subjectivity (Abílio, 2020; André et al., 2019).

Remuneration flexibilization - which is another component belonging to the contractual dimension - comprises the introduction of less rigid mechanisms to make workers' remuneration susceptible to performance and productivity indicators. The main examples of it lie on varying remuneration, sales commissions – mainly in the retail sector –, profit sharing, performance bonuses and skill-based pay. According to Antunes (2018), the aim of this process is to introduce flexible wages consistent with a goal-based management system that, obviously, is also flexible – tomorrow's goals will always be higher than today's ones.

FUNCTIONAL FLEXIBILITY

Functional flexibility refers to the relationship established between workers and their task. On the one hand, it covers the content of work, and the likely performance of different tasks, in different job positions, either inside or outside the company. On the other hand, it refers to the level of workers' autonomy and control over their own work, to the development of multiple competencies and skills, as well as to their ability to make decisions and to exercise leadership.

Functional flexibility is one of the key elements in discussions about labor flexibility, since it aims at changing individuals into multi-skilled and versatile workers (Antunes, 2011). The best examples of it comprise the rotation of job positions among people involved in different tasks; the expansion of a given position in its horizontal (attributing tasks of the same nature and complexity to workers) and vertical (attributing tasks of higher nature and complexity to workers) modalities; job enrichment (simultaneous application of horizontal and vertical expansion); semi-autonomous groups (self-managed teams and QCC); empowerment (decentralization of accountability and decision-making power); and training to work in management and leadership positions.

Despite the relevant role played by functional flexibility in changes observed in labor organization processes, there are controversies about its impacts on work (Azevedo & Tonelli, 2014). Some perspectives consider it beneficial because it encourages stronger workers' involvement and participation in multiple functions, as well as the continuous development of new skills in order to prevent the alienation of routinized work (Atkinson, 1984; Smith, 1997). From another perspective, criticisms emphasize intensified work (Nascimento et al., 2016; Salerno, 2004); diffusion of less explicit control mechanisms – disguised under the participation/involvement rhetoric - such as QCCs, which are exercised by co-workers themselves; and the pursuit of reducing production and capital circulation time to increase workers' exploitation (Antunes, 2018).

Functional flexibility also comprises current changes in labor organization, which result from a supposed fourth industrial revolution emerging within the scope of the so-called Economy 4.0 and, most specifically, within the scope of Industry 4.0, which is featured by a series of technological advancements and has production and labor flexibility as one of its fundamental pillars (Paula & Paes, 2021). There is talk of increased work digitization, workforce automation and need of developing a

series of functional, behavioral and social skills to enable workers to adapt to this new context (Tessarini & Saltorato, 2018). However, according to critical authors, these factors are euphemisms used to minimize the real workers' subsumption to capital (Antunes, 2018), as well as to intensify production restructuring processes and their most significant effects, namely: reduced workforce and workers' rights and guarantees, as well as increased capital concentration and monopoly of production forces (Caruso, 2017).

SPATIAL-TEMPORAL FLEXIBILITY

Carrying out work outside organizations' facilities defines what is conventionally called workplace flexibility (Hill et al., 2008; Piccinini et al., 2005). This alternative is supported by the massive use of information and communication technologies, which enabled both the emergence and growth of remote work/teleworking and home office regimes (Antunes, 2018; Rocha & Amador, 2018). Workplace flexibilization has also been enhanced in recent years through the adoption of home office due to the social distancing/isolation context in place to help stopping COVID-19 outspread (Araújo & Lua, 2021; Carli, 2020).

Although teleworking and home office were often treated as synonyms, there are conceptual differences between them (Rocha & Amador, 2018). The first one refers to using technology to perform activities from workers' homes or from different locations, such as cafeterias, shopping malls or shared spaces – i.e., the so-called coworkings (Spreitzer et al., 2017). Teleworking, in Brazil, was regulated by the 2017 labor reform. Home office is a specific teleworking category that enables workers to work directly from their own homes; however, this category does not yet have its own regulation (Rocha & Amador, 2018). It belongs to the universe of online work experiments that have been implemented and that tend to be adopted in different sectors to enable their vertiginous growth (Antunes, 2020).

Several positive and negative aspects are associated with teleworking, in its different configurations. Among the benefits, one finds reduced commuting from home to work and vice versa (Antunes, 2018; Rocha & Amador, 2018); improved balance among labor, social and family demands (Z. E. Bayazit & M. Bayazit, 2019); workers' greater autonomy to make decisions about their own work (Cañibano, 2019); as well as increased productivity (Bloom, Liang, Roberts, & Ying, 2015) and job satisfaction (Virick, N. Silva, & Arrington, 2010). The main disadvantages of teleworking pointed out in the literature comprise the risk of having labor and social security rights extinct (Antunes, 2018); fewer opportunities for professional advancement (Rocha & Amador, 2018); organizations' fear of losing control over workers, which may lead to the establishment of new control mechanisms (Rocha & Amador, 2018; Sennett, 2016); conflicts and difficulty in separating work from family, which is an aspect that mainly affects women and opposes the assumingly improved balance between professional and personal life (I. L. Aderaldo, & Lima, 2017; Carli, 2020); isolation and loss of sociability and collective conviviality (Antunes, 2018); less company-worker integration (Rocha & Amador, 2018); and work overload (I. L. Aderaldo et al., 2017).

According to Sennett (2016, p. 66), "working from home is the ultimate island of the new regime". Although teleworking is naturally influenced by personal, family, organizational and social issues, it raises an ambiguous debate about work-related and personal life demands: is it a source of balance or conflict?

The remote work-control issue deserves to be better observed. Given the fear that workers can abuse both the flexibility and the supposed freedom granted to them, and become unproductive, companies create a series of control mechanisms to regulate the work process, such as monitoring based on results and goals, as well as supervision through intranets, e-mails, and mobile devices. Workers exchange "one form of submission to power (face-to-face) for another (electronic) form of it" (Sennett, 2016, p. 66). More than that, they are compelled to self-discipline and self-control in order to meet the demands imposed by the company/market, or even by themselves, in the case of self-employed workers (Gaulejac, 2007). This process creates a false autonomy that is never fully achieved – workers may even control their workplace, but they do not acquire higher control over work itself (Rocha & Amador, 2018; Sennett, 2016).

Working time flexibility is another component of the spatial-temporal dimension; it comprises different mechanisms to enable adjusting worked hours to production demands (Jonsson, 2007). The most common mechanisms lie on overtime, bank of hours, shift-based contracts, and different ways of reducing working hours (Chung & Tijdens, 2013). In summary, time flexibility serves a triple purpose, namely: transforming the non-working time into working time, maximizing workers' productivity; expanding the working time management freedom by allowing adjustments to be made overtime, based on production demands that mainly happen due to changes in labor legislation; and promoting stronger workers-company bond, even outside office hours (Krein, 2007).

The working time issue gains relevance, even in terms of academic research, due to its strong social component, since it affects individuals' quality of life and their likelihood of enjoying more free time, or not. In addition, it defines the amount of time individuals dedicate to economic activities and it sets direct association between workers' health condition and performed work type and time (Dal Rosso, 2017).

FINAL CONSIDERATIONS

It is necessary adopting different classifications and approaches to better understand a complex, multidisciplinary and dynamic topic such as labor flexibility. The organizational metamorphoses of flexible work suggest that some of the previously described models have limited application, since they emphasize issues associated with alternative hiring arrangements and leave other possibilities, such as the emergence of spatial-temporal flexibility and the new technological dynamics observed in functional flexibility, aside.

The current article presented a broader and essentially critical definition of work flexibility, to help filling these gaps, by emphasizing how different manifestations of this concept aim at meeting the interests of capital. By taking this definition into consideration, it is possible observing a theoretical-analytical work flexibility model based on the alignment, synthesis and updating of different approaches identified in the national and international literature. It was done to help broadening the discussion about this topic, by taking into consideration multiple flexible work possibilities, as well as its causes and consequences. It brought this discussion closer to the current organizational reality of labor, mainly in the advent and hegemony of flexible capitalism, which demands vigilance and purposeful counter-movements. However, it is worth emphasizing that, given the capitalist system's complexity and unequivocal ability to reinvent itself, the flexibility concept assumes different meanings and arrangements in the labor world. Therefore, the herein proposed model does not intend to exhaust the topic or to represent all possibilities inserted in different capitalist economies and in all social relations of production.

Despite its limitations, we believe that the herein proposed model can contribute to future research, since it can help better understanding different labor flexibility forms; ranking studies in the literature, based on their contribution to, and investigation focus on, the identification of other variables that were not herein included; and carrying out case studies, from a comparative perspective, to enable analyzing the similarities, differences and impacts of flexibility on each organization, be it public or private.

This article is also expected to contribute to reflections and issues inherent to labor, by substantiating discussions, movements and struggles aimed at reorganizing individuals' working life and at re-signifying the meaning of labor. Finally, we call on those who acknowledge the need of promoting a critical thinking in managerial sciences, that is capable of opposing the managerial mainstream and whose acquired knowledge is mostly committed to the organizational hegemonism associated with the act of disciplining workers and improving production patterns in order to maximize the exploitation of the labor force commodity.

The labor flexibility process itself is subject to a vast framework of organizational theories that have guided the most perverse experiments, either in the contractual, functional, or spatial-temporal dimension. How long will management keep on contributing to legitimize and naturalize these processes? It is necessary having a contraposition capable of indicating the incompatibility of truly structuring, free, autonomous, and emancipatory work within an increasingly flexible, neoliberal and globalized capitalism at the service of capital accumulation by few based on the exploitation of many.

REFERENCES

Abílio, L. C. (2020). Uberização: a era do trabalhador *just-in-time? Estudos Avançados*, *34*(98), 111-126. Retrieved from https://doi. org/10.1590/s0103-4014.2020.3498.008

Aderaldo, I. L., Aderaldo, C. V. L., & Lima, A. C. (2017). Aspectos críticos do teletrabalho em uma companhia multinacional. *Cadernos EBAPE.BR*, *15* (Special), 511-533. Retrieved from https://doi.org/10.1590/1679-395160287

Alves, G. (2007). *Dimensões da reestruturação produtiva: ensaios de sociologia do trabalho*. Porto Alegre, RS: Práxis.

Amorim, H., & Moda, F. B. (2020). Trabalho por aplicativo: gerenciamento algorítmico e condições de trabalho dos motoristas da Uber. *Fronteiras – Estudos Midiáticos*, *22*(1), 59-71. Retrieved from https://doi.org/10.4013/fem.2020.221.06

André, R. G., Silva, R. O., & Nascimento, R. P. (2019). "Precário não é, mas eu acho que é escravo": análise do trabalho dos motoristas da Uber sob o enfoque da precarização. *Revista Eletrônica de Ciência Administrativa*, 18(1), 7-34. Retrieved from https://doi.org/10.21529/RECADM.2019001

Antunes, R. (2009). Os sentidos do trabalho: ensaio sobre a afirmação e a negação do trabalho (2a ed.). São Paulo, SP: Boitempo.

Antunes, R. (2011). Adeus ao Trabalho? Ensaio sobre as metamorfoses e a centralidade no mundo do trabalho (15a ed.). São Paulo, SP: Cortez.

Antunes, R. (2018). O privilégio da servidão: o novo proletariado de serviços na era digital. São Paulo, SP: Boitempo.

Antunes, R. (2020). *Coronavírus: o trabalho sob fogo cruzado*. São Paulo, SP: Boitempo.

Araújo, T. M. D., & Lua, I. (2021). O trabalho mudou-se para casa: trabalho remoto no contexto da pandemia de covid-19. *Revista Brasileira de Saúde Ocupacional, 46,* e27. Retrieved from https://doi.org/10.1590/2317-6369000030720

Atkinson, J. (1984). Manpower strategies for flexible organisations. *Personnel Management*, *16*, 28-31.

Azevedo, M. C., & Tonelli, M. J. (2014). Os diferentes vínculos de trabalho entre trabalhadores qualificados brasileiros. *RAM – Revista de Administração Mackenzie*, *15*(3), 191-220. Retrieved from https://doi.org/10.1590/1678-69712014/administracao.v15n3p191-220

Bayazit, Z. E., & Bayazit, M. (2019). How do flexible work arrangements alleviate work-family-conflict? The roles of flexibility i-deals and family-supportive cultures. *The International Journal of Human Resource Management*, *30*(3), 405-435. Retrieved from https://doi.org/10.1080/09585192.2017.1278615

Bloom, N., Liang, J., Roberts, J., & Ying, Z. J. (2015). Does working from home work? Evidence from a Chinese experiment. *The Quarterly Journal of Economics*, *130*(1), 165-218. Retrieved from https://doi.org/10.1093/qje/qju032

Campos, M. R. (2017). Trabalho, alienação e adoecimento mental: as metamorfoses no mundo do trabalho e seus reflexos na saúde mental dos trabalhadores. *Revista de Políticas Públicas*, 21(2), 797-812. Retrieved from https://doi.org/10.18764/2178-2865.v21n2p797-812

Cañibano, A. (2019). Workplace flexibility as a paradoxical phenomenon: exploring employee experiences. *Human Relations*, *72*(2), 444-470. Retrieved from https://doi.org/10.1177/0018726718769716

Cano, M. R., Espelt, R., & Morell, M. F. (2021). Flexibility and freedom for whom? Precarity, freedom and flexibility in on-demand food delivery. *Work Organisation, Labour & Globalisation, 15*(1), 46-68. Retrieved from https://doi.org/10.13169/workorgalaboglob.15.1.0046

Cappelli, P., & Keller, J. R. (2013). Classifying work in the new economy. *Academy of Management Review*, *38*(4), 575-596. Retrieved from https://doi.org/10.5465/amr.2011.0302

Carli, L. L. (2020). Women, gender equality and covid-19. *Gender in Management*, 35(7/8), 647-655. Retrieved from https://doi.org/10.1108/GM-07-2020-0236

Caruso, L. (2018). Digital innovation and the fourth industrial revolution: epochal social changes? *AI & Society, 33*(3), 379-392. Retrieved from https://doi.org/10.1007/s00146-017-0736-1

Chung, H., & Tijdens, K. (2013). Working time flexibility components and working time regimes in Europe: using company-level data across 21 countries. *International Journal of Human Resource Management*, 24(7), 1418-1434. Retrieved from https://doi.org/10.1080/09585192.2012.712544

Dal Rosso, S. (2017). O ardil da flexibilidade: os trabalhadores e a teoria do valor. São Paulo, SP: Boitempo.

Davis, G. F., & Sinha, A. (2021, January). Varieties of uberization: how technology and institutions change the organization(s) of late capitalism. *Organization Theory*. Retrieved from https://doi.org/10.1177/2631787721995198

Dettmers, J., Kaiser, S., & Fietze, S. (2013). Theory and practice of flexible work: organizational and individual perspectives. Introduction to the special issue. *Management Revue*, *24*(3), 155-161.Retrieved from https://doi.org/10.5771/0935-9915-2013-3-155

Druck, G. (2011). Trabalho, precarização e resistências: novos e velhos desafios? *Caderno CRH*, *24*(1), 37-57. Retrieved from https://doi.org/10.1590/S0103-49792011000400004

Duggan, J., Sherman, U., Carbery, R., & McDonnell, A. (2020). Algorithmic management and app-work in the gig economy: a research agenda for employment relations and HRM. *Human Resource Management Journal*, *30*(1), 114-132. Retrieved from https://doi.org/10.1111/1748-8583.12258

Ferraz, D. L. S. (2021). Todos queremos de fato saber? A necessidade de uma ciência radical. In *Anais do 41º Encontro da Associação Nacional de Pós-Graduação e Pesquisa em Administração*, Maringá, PR.

Franco, D. S., & Ferraz, D. L. S. (2019). Uberização do trabalho e acumulação capitalista. *Cadernos EBAPE.BR*, 17(Special), 844-856. Retrieved from https://doi.org/10.1590/1679-395176936

Gaulejac, V. (2007). Gestão como doença social: ideologia, poder gerencialista e fragmentação social. São Paulo, SP: Ideias e Letras.

Guimarães, S. D., Jr., & Silva, E. B. (2020). A "reforma" trabalhista brasileira em questão: reflexões contemporâneas em contexto de precarização social do trabalho. *Farol – Revista de Estudos*

Organizacionais e Sociedade, 7(18), 117-163. Retrieved from https://doi.org/10.25113/farol.v7i18.5503

Harvey, D. (1992). Condição pós-moderna. São Paulo, SP: Edições Loyola.

Hill, E. J., Grzywacz, J. G., Allen, S., Blanchard, V. L., Matz-Costa, C., Shulkin, S., ... Pitt-Catsouphes, M. (2008). Defining and conceptualizing workplace flexibility. *Community, Work and Family*, *11*(2), 149-163. Retrieved from https://doi.org/10.1080/13668800802024678

Jonsson, D. (2007). Flexibility and stability in working life. London, UK: Palgrave Macmillan.

Katz, L. F., & Krueger, A. B. (2019). The rise and nature of alternative work arrangements in the United States, 1995-2015. *Industrial and Labor Relations*, 72(2), 382-416. Retrieved from https://doi.org/10.1177/0019793918820008

Klindžić, M., & Marić, M. (2019). Flexible work arrangements and organizational performance: the difference between employee and employer-driven practices. *Drustvena Istrazivanja*, *28*(1), 89-108. Retrieved from https://doi.org/10.5559/di.28.1.05

Krein, J. D. (2007). A tendência de flexibilização do tempo de trabalho. *Revista Abet*, *6*(2), 47-72.

Lei n^{ϱ} 13.467, de 13 de julho de 2017. (2017). Altera a Consolidação das Leis do Trabalho (CLT), aprovada pelo Decreto-Lei n^{ϱ} 5.452, de 1^{ϱ} de maio de 1943, e as Leis n^{ϱ} 6.019, de 3 de janeiro de 1974, 8.036, de 11 de maio de 1990, e 8.212, de 24 de julho de 1991, a fim de adequar a legislação às novas relações de trabalho. Brasília, DF. Retrieved from http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/lei/l13467.htm

Marx, K. (2012). *O capital: crítica da economia política* (Livro I: O processo de produção do capital). Rio de Janeiro, RJ: Civilização Brasileira.

Marx, K. (2013). *Manuscritos econômico-filosóficos*. Porto Alegre, RS: Martin Claret.

Moraes, R. B. S, Oliveira, M. A. G., & Accorsi, A. (2019). Uberização do trabalho: a percepção dos motoristas de transporte particular por aplicativo. *Revista Brasileira de Estudos Organizacionais*, *6*(3), 647-681.

Nascimento, R. P., Damasceno, L. C. M., & Neves, D. R. (2016). Between reward and suffering: the bank workers' view of the flexibility discourse. *RAM – Revista de Administração Mackenzie*, *17*(4), 15-38. Retrieved from https://doi.org/10.1590/1678-69712016/administracao.v17n4p13-37

Paula, A. P. P., & Paes, K. D. (2021). Fordismo, pós-fordismo e ciberfordismo: os (des)caminhos da Indústria 4.0. *Cadernos EBAPE.BR*, 19(4), 1047-1058. Retrieved from https://doi.org/10.1590/1679-395120210011

Piccinini, V. C., Oliveira, S. R., & Rübenich, N. V. (2005). Formal, flexível ou informal? Reflexões sobre o trabalho no Brasil. In *Anais do 29º Encontro Nacional da Associação Nacional de Pós-Graduação e Pesquisa em Administração*, Brasília, DF.

Previtali, F. S., & Fagiani, C. C. (2014). Organização e controle do trabalho no capitalismo contemporâneo: a relevância de Braverman. *Cadernos EBAPE.BR*, *12*(4), 756-769. Retrieved from https://doi.org/10.1590/1679-395115088

Rocha, C. T. M., & Amador, F. S. (2018). O teletrabalho: conceituação e questões para análise. *Cadernos EBAPE.BR*, *16*(1), 152-162. Retrieved from https://doi.org/10.1590/1679-395154516

Salerno, M. S. (2004). Da rotinização à flexibilização: ensaio sobre o pensamento crítico brasileiro de organização do trabalho. *Gestão & Produção*, 11(1), 21-32. Retrieved from https://doi.org/10.1590/S0104-530X2004000100003

Sennett, R. (2016). A corrosão do caráter: as consequências pessoais do trabalho no novo capitalismo (2a ed.). Rio de Janeiro, RJ: BestBolso.

Smith, V. (1997). New forms of work organization. *Annual Review of Sociology*, *23*(1), 315-339. Retrieved from https://doi.org/10.1146/annurev.soc.23.1.315

Spreitzer, G., Cameron, L., & Garrett, L. (2017). Alternative work arrangements: two images of the new world of work. *Annual Review of Organizational Psychology and Organizational Behavior*, 4, 473-499. Retrieved from https://doi.org/10.1146/annurev-orgpsych-032516-113332

Tessarini, G., & Saltorato, P. (2018). Impactos da Indústria 4.0 na organização do trabalho: uma revisão sistemática da literatura. *Revista Produção Online, 18*(2), 743-769. Retrieved from https://doi.org/10.14488/1676-1901.v18i2.2967

Vasapollo, L. (2005). *O trabalho atípico e a precariedade*. São Paulo, SP: Expressão Popular.

Virick, M., Silva, N., & Arrington, K. (2010). Moderators of the curvilinear relation between extent of telecommuting and job and life satisfaction: the role of performance outcome orientation and worker type. *Human Relations*, *63*(1), 137-154. Retrieved from https://doi.org/10.1177/0018726709349198

Wood, A. J., Graham, M., Lehdonvirta, V., & Hjorth, I. (2019). Good gig, bad gig: autonomy and algorithmic control in the global gig economy. *Work, Employment and Society*, *33*(1), 56-75. Retrieved from https://doi.org/10.1177/0950017018785616

Wood, T., Jr. (1992). Fordismo, toyotismo e volvismo: os caminhos da indústria em busca do tempo perdido. *Revista de Administração de Empresas*, *32*(4), 6-18. Retrieved from https://doi.org/10.1590/S0034-75901992000400002

12-13

Geraldo Tessarini Junior

ORCID: https://orcid.org/0000-0002-4376-4487

Ph.D. student in Business at University of São Paulo (USP); Manager at Federal of Education, Science and Technology Institute of São Paulo (IFSP). E-mail: geraldo.tessarini@usp.br

Patrícia Saltorato

ORCID: https://orcid.org/0000-0002-4089-2547

Ph.D. in Production Engineering at Federal University of São Carlos (UFSCar); Associate Professor at Federal University of São Carlos – Sorocaba Campus (UFSCar). E-mail: saltorato@ufscar.br

Kaio Lucas da Silva Rosa

ORCID: https://orcid.org/0000-0001-7865-6585

Master's Degree Student in Business at Federal University of Minas Gerais (UFMG). E-mail: kaiorosa98@gmail.com

AUTHOR'S CONTRIBUTION

Geraldo Tessarini Junior: Conceptualization (Equal); Project administration (Lead); Validation (Equal); Visualization (Equal); Writing - original draft (Equal); Writing - review & editing (Equal).

Patrícia Saltorato: Conceptualization (Equal); Project administration (Supporting); Supervision (Lead); Validation (Equal); Visualization (Equal); Writing - original draft (Equal); Writing - review & editing (Equal).

Kaio Lucas da Silva Rosa: Conceptualization (Equal); Project administration (Supporting); Validation (Equal); Visualization (Equal); Writing - original draft (Equal); Writing - review & editing (Equal).