The role of algorithmic management as a support for management control systems in the sharing economy: a study about the drivers' perceptions of Brazilian ridesharing companies

O papel da gestão por algoritmos como suporte para os sistemas de controle gerencial na economia compartilhada: um estudo sobre a percepção dos motoristas de empresas do transporte por aplicativo no contexto brasileiro

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Abstract

This paper aims to describe the role of algorithmic management as a support for the management control system (MCS) of 99 Tecnologia Ltda. (99TL) and UBER, considering the models porposed by Malmi and Brown (2008) and Jordão et al. (2013). Based on management and accounting theories, a qualitative, descriptive and documentary study was carried out. We used data from videos posted online of drivers who are digital influencers and public documents of the analyzed companies. The results demonstrate that both companies used the tools of the MCS types described by Malmi and Brown (2008) and Jordão et al. (2013). Moreover, it was possible to verify (i) that the drivers adjusted to the MCS of these companies; (ii) that there was a strong interrelation between the tools of the different control types; and (iii) that the use of algorithms was important for the practical exercise of control in the sharing economy companies studied.

Resumo

O objetivo desta pesquisa foi descrever o papel da gestão por algoritmos como suporte do sistema de controle gerencial (SCG) das empresas 99 Tecnologia Ltda. (99TL) e UBER, considerando os modelos de Malmi e Brown (2008) e Jordão et al. (2013). Procedeu-se a um estudo qualitativo, descritivo e documental. Com base na análise dos dados e informações obtidos a partir de relatos em vídeos de motoristas e documentos públicos das empresas, percebeu-se que que ambas as organizações utilizaram as ferramentas dos tipos de SCG descritos por Jordão et al. (2013) e Malmi e Brown (2008). Ademais, foi possível constatar que: (i) os motoristas se ajustaram ao SCG dessas empresas; (ii) houve uma forte inter-relação entre as ferramentas dos diferentes tipos de controle; e (iii) que o uso de algoritmos foi importante ao exercício prático do controle nas empresas da economia compartilhada estudadas.

Practical implications

The results highlight the strategic role of algorithmic in supporting MCS, helping behaviors and decisions to be coherent with organizational goals and strategies, while also offering an opportunity for competitive benchmarking for professionals, companies and governments that act or will act in sharing economy.

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1 INTRODUCTION

Management control systems (MCS) have been increasingly recognized in the international literature as the main mechanisms for implementing strategies and achieving corporate goals in this new economic and organizational environment (Otley, 2016). Authors as Merchant and Otley (2007) postulate that the MCS should be developed to help organizations adapt to their environment, in order to deliver the results expected by its different stakeholder groups. Malmi and Brown (2008) complement by saying that these systems support the management of activities in order to converge the behavior of workers. They propose a model for their analysis that classifies them into different types of interdependent control.

Jordão et al. (2013) expand this concept, stressing that the MCS needs to integrate the strategy and culture, according to the company's business model, so that it can use its tangible and intangible assets, particularly its knowledge and intellectual capital, to increase their levels of efficiency and effectiveness, generating more value. Rosenblat and Stark (2016) emphasize that this issue is highlighted in new business models developed in the context of the so-called sharing economy. For Sutherland and Jarrahi (2018), this economy is essentially dependent on advances in information and communication technology, and the technological platforms linked to transport by application stand out. In such environment, Leoni and Parker (2019) claim that the way organizations exercise control changes drastically, being quite distinct and innovative, with a digital technology base.

In this context, authors like Cheng and Foley (2019), Hughes et al. (2019) and Basukie et al. (2020) reinforce that algorithmic management has been an essential tool to help control these organizations, due to the scale of the workforce, the intense technology involved and the large amount of data encompassed – that concern their customers and employees, ensuring more efficiency at work. However, despite the relevance of the topic, the role of algorithmic management in supporting the MCS in application transport companies, in the context of the sharing economy, it is an issue that has yet to be investigated in depth (Leoni & Parker, 2019).

Acknowledging and exploiting this research gap, this study sought to understand "what are the characteristics of MCS, supported by algorithmic, of the main transport companies by application in Brazil?". Thus, the research aimed to describe the role of algorithmic management as support for the MCS of UBER and 99 Tecnologia Ltda. (99TL) from the perspective of the models proposed by Malmi and Brown (2008) and Jordão et al. (2013). It focused on the perception of drivers from these companies, as well as the public documents of these organizations, to describe this phenomenon. It should be noted that approaches like this for obtaining information about control systems (supported by algorithmic) of these companies has been used recently in relevant international research on the subject, such as: Rosenblat and Stark (2016), Cheng and Foley (2019) and Galière (2020).

This research is justified by its contributions to a substantial segment of society, as prescribed by Jordão et al. (2014) and Jordão et al. (2019). Thus, it is highlighted: (i) the relevance of the cases (the two most representative in Brazil), (ii) the socioeconomic role of transport companies by application – that influence hundreds of millions of people around the world and in Brazil (Securities and Exchange Commission, 2019; UBER, 2020a; 99TL, 2020a), as well as (iii) the social, economic, legal, political, accounting and managerial impact of the study for organizations and governments that work and/or need to act in this sharing economy environment (Sutherland & Jarrahi, 2018). From a theoretical perspective, in addition to (iv) helping to fill the aforementioned gap, (v) it consolidates the understanding of the theme in an original proposal that mixes the models by Malmi and Brown (2008) and Jordão et al. (2013), and (vi) advances in economics, accounting and management theory, offering several avenues for further investigation.

Finally, we elucidate contributions to managerial practice, including (a) the need to understand the role of algorithmic in supporting the MCS, mentioned by Hughes et al. (2019); and (b) the strategic role of the MCS for the sharing economy organizations, which align the behaviors and decisions of agents with the objectives and strategies adopted by the organizations. In this sense, the research is expected to offer an opportunity for competitive benchmarking for companies, governments and other organizations in similar situations.

2 LITERATURE REVIEW

2.1 Management Control Systems (MCS)

Lowe (1971) defines the MCS as a system for searching and collecting organizational information, accountability and feedback designed to ensure that the organization adapts to changes in its environment and that the behavior of workers is measured against a set of operational goals (in accordance with the general objectives) so that the discrepancy between the two can be reconciled and corrected. Such definition is broader than the

classic presented by Anthony (1965) (closely related to the tactical level of organizations in the post-World War II economy) and meets the need to expand the concept to different levels of contemporary organizations as highlighted by Merchant and Otley (2007) and Otley (2016).

In order to improve discussions about MCS in the literature, Malmi and Brown (2008) proposed a way of analyzing this system in five types of interdependent controls: planning; cyber controls; premium and compensation controls; administrative controls; and cultural control. Planning can be understood as ex-ante control, through which objectives and standards are stipulated, directing efforts and behaviors towards goals and results.

In turn, cyber controls are aimed at measuring phenomena, activities or systems, performance appraisal, feedback process, analysis of variances, and ability to modify behavior or related activities, including budget, financial and non-financial measures. The premium and compensation controls are linked to cybernetics and focus on motivation, performance improvement (by evaluating the direction, duration and intensity of efforts) and congruence of goals.

With regard to administrative controls, these focus on monitoring behavior and its direction, aiming at accountability and greater performance of people and processes, encompassing organizational design and structure, governance, policies and procedures. Finally, cultural control is used to regulate behaviors through values, including mission, vision, beliefs and purposes; symbols to strengthen or develop a particular type of culture; and clans (microcultures of individual groups) by establishing values and beliefs through ceremonies and rituals.

Several studies have been employed over the last few years using this MCS analysis model based on different contexts, such as: Crutzen et al. (2017), Svensson and Funck (2019) and Rikhardsson et al. (2021). According to Lueg and Radlach (2016), the MCS model proposed by Malmi and Brown (2008) addresses not only formal controls, but also informal ones, enabling their application and evaluation at different hierarchical levels. According to Svensson and Funck (2019), this model offers a broader and more holistic view of managerial control in organizations, when addressing interdependent types of control in contrast to individualized systems.

In its turn, Jordão et al. (2013) proposed an analysis model that focuses on the five types of controls for Malmi and Brown (2008) from two different perspectives: strategic control (encompassing planning, cyber controls and premium and compensation); and cultural control (encompassing administrative and cultural controls). The first is guided by business strategy and is aligned with knowledge management, in an attempt to meet market expectations. Thus, intellectual capital would be produced in its three dimensions (human, structural and relational capital), creating sustainable competitive advantages and value for companies.

Cultural control, on the other hand, is based on organizational culture and seeks to include people's expectations in establishing the MCS, helping in the process of converting part of people's tacit knowledge into explicit individual, collective and/or organizational knowledge. This would increase the levels of organizational efficiency and effectiveness, contributing to the generation of more intellectual capital and, consequently, greater value for companies.

The central thesis of the model by Jordão et al. (2013) is that these two elements would be central in the analysis of the MCS in the knowledge economy, including its developments as the sharing economy. It should be noted that, as in the model proposed by Malmi and Brown (2008), this last model presented also considers the importance of the interdependence of controls and its alignment with the organizations' strategy and culture, in order to enable the orientation of operations.

2.2 Algorithmic management and control in the sharing economy

Cheng and Foley (2019) reinforce that advances in the sharing economy, via technology, are closely related to management through algorithmic, allowing greater data processing capacity with fewer resources – which is central for the need for efficiency before the scale of the workforce. According to Rani and Furrer (2021), algorithmic can be used to allocate tasks to workers, monitor the work process and evaluate the results, which have the potential to exert powerful control with little (or no) human intervention.

In this context, Schildt (2017) conceptualizes algorithmic management as the use of technology in order to optimize decisions, by analyzing the performance and directing the efforts of a company's employees or contractors. According to this author, in algorithmic management, power leaves the hierarchy of managers and flows to professionals who dominate the areas of analysis, programming and business. Management would then be no longer a human task, but an intrinsically technological process, being essential for companies like UBER.

Hughes et al. (2019) clarify that, in fact, algorithmic can be used to control employees in two ways: (a) behavior control – directing and monitoring the activities of employees, ensuring that work is in accordance with previously stipulated standards; and (b) results control – measuring employee performance after performing a task.

Controls usually provide the basis for evaluating the performance of workers. Wood et al. (2019) claim that workers with experience and better ratings tend to receive more services, being better ranked by the platform's algorithmic, generating a virtuous cycle for them. This is a very effective form of control, as workers emphasize the importance of maintaining a good average rating on the platforms (Wood et al., 2019). On the other hand, Galière (2020) emphasizes that those who are not considered adequate by algorithmic suffer sanctions, with rumors being found that people are being disabled from the app due to low acceptance rate. In this context, many workers from different sharing economy companies highlight the low wages obtained despite the excess work, in particular, due to the wide supply of labor (Wood et al., 2019; Rani & Furrer, 2021).

These controls, based on algorithmic management, are generally diffuse and are based on information asymmetry between the company responsible for the platform and the workers, as explained by Rosenblat and Stark (2016) and Galière (2020). The latter author emphasizes that workers are now controlled in a kind of Panopticon. In its turn, Veen et al. (2020) emphasize that workers are not passive in the face of the controls imposed by the platforms, carrying out individual or collective actions. Galière (2020) highlights that more experienced workers are able to identify and exploit gaps in the system, thus, it is possible to use strategies to generate greater benefits on the platform and reduce the likelihood of sanctions.

Galière (2020) states that studies that analyze this management from the perspective of workers are relevant. Despite the trend towards algorithmic control by many sharing economy companies, Brougham and Haar (2019) emphasize the growth of psychological problems (such as depression) for workers who are affected by this type of control. Wood et al. (2019), in turn, they claim that algorithmic management can lead to work overload, sleep deprivation and exhaustion.

Usually, the algorithmic controls described by the aforementioned authors are characterized in the literature as MCS tools. In line with the proposed by Malmi and Brown (2008) and Jordão et al. (2013), Chenhall (2003) highlights that the MCS tools cannot be analyzed in isolation. Thus, based on the analyzed literature, the emergence of algorithmic as MCS tools capable of increasing organizational efficiency and effectiveness is emphasized.

The analysis of this phenomenon in this work, as will be described in the next section, was based on the two most prominent companies operating in Brazil in recent years: 99TL and UBER. It should be noted that studies in developing countries such as Brazil are very relevant (Basuki et al., 2020). Specifically, due to the usual low level of security and employment, and these platforms offer opportunities, despite the precariousness of work (Wood et al., 2019; Rani & Furrer, 2021).

3 METHODOLOGY

The selection of cases was due to their idiosyncrasies and expressiveness. Therefore, companies linked to transport by application, 99TL and UBER are technological platforms recognized in the literature (Rosenblat & Stark, 2016; Basukie et al., 2020) as exponents of the sharing economy and who use algorithmic to support the MCS. UBER is a company with worldwide reach, which operates in more than 900 cities spread across 85 countries, with Brazil being the second country with the highest number of cities served (124) (UBER, 2020a). 99TL, on the other hand, is a company founded by Brazilians, whose platform connects 18 million passengers to 600,000 drivers and is present in 1,000 cities (99TL, 2020a).

The database used for the research consisted of secondary data: verbal and visual (Flick, 2004). Visual data were obtained through publicly disclosed 99TL and UBER documents, such as: Securities and Exchange Commission Form S-1, management reports and official websites.

Verbal and visual data available on YouTube from drivers linked to these platforms were also collected. Given the impossibility of obtaining data from all drivers who use the 99TL and UBER platform, those who are digital influencers were selected. We emphasize that sample selection through the media generated by these influencers has been frequently used for research in social sciences in international studies, as it is an important source of evidence (Rosenblat & Stark, 2016; Cheng & Foley, 2019). Influencers were selected based on the YouTube filter "Relevance". To select the sample of drivers, the following keywords were inserted: "UBER", "application driver", "99", "99 Tecnologia Ltda.", and "transport by application". Subsequently, the influencer channels that had the largest number of followers were selected. Information about the channels of selected drivers

are listed in Table 1.

Table 1. Driver channels selected for the study

Code	Subscribers (followers)	Videos	
		Released in 2019	**Related to MCS**
A	Over 100 thousand	136	56
B	Over 100 thousand	268	5
C	Over 100 thousand	212	72
D	Between 50 thousand and 100 thousand	220	28
E	Between 50 thousand and 100 thousand	83	10
F	Between 10 thousand and 50 thousand	547	46
G	Between 10 thousand and 50 thousand	86	8
H	Between 10 thousand and 50 thousand	160	104
I	Between 5 thousand and 10 thousand	62	11

Source: elaborated by the authors.

Selected drivers have tens or hundreds of thousands of followers, which demonstrates the power of reach and the influence they have on the drivers who consume their content. It is noteworthy that the selected drivers act (or have acted during a certain period) as partner drivers of 99TL and/or UBER and know the operational part of the platforms, thus, they present a varied set of criticisms about their MCS.

The data extracted from the influencer channels mentioned in Table 1 refer to the year 2019, and were collected in the first quarter of 2020. We emphasize that all 1,774 videos were watched, with only those related to the MCS tools of the companies studied being encoded and recorded, which totaled 340 videos. Data were treated and analyzed through content analysis, as proposed by Bardin (2016).

We focus, as units of records, on the controls employed by transport companies by application. A thematic analysis of the videos was carried out, focusing on the phrases to which the drivers referred to the controls exercised by the companies from their MCS. As a context unit, we consider the different companies analyzed (UBER and 99TL). As an enumeration rule, we consider the presence (or absence) of different types of control of these systems. Finally, the data obtained were categorized according to the types of control proposed by Malmi and Brown (2008) and the control perspectives by Jordão et al. (2013). Such control groups seem to meet the criteria for choosing "good categories" according to Bardin (2016, p. 149-150): mutual exclusion, homogeneity, pertinence, objectivity and fidelity, and productivity. In addition, the triangulation of different sources of evidence (various official documents and public reports from drivers) was used to ensure the reliability of the data.

We emphasize that a limitation inherent to the technique of qualitative content analysis used refers to the fact that it does not consider the entire exhaustive frequency of a quantitative analysis (Bardin, 2016), enabling researchers' biases. Furthermore, the subjectivity of the drivers' reports can also be understood as an inherent limitation to the strategy adopted to carry out the study. We also emphasize that some drivers are sponsored in certain videos, which can bring a commercial bias to the topics covered. Finally, it is noteworthy that, as all data used in the research were public, some tactical and strategic information inherently internal to the companies and that are part of their MCS were not considered, limiting the inferences made.

4 RESULTS

4.1 99TL's MCS

The 99TL company was founded in 2012 by Brazilians, being acquired by Didi Chuxing ("DiDi") six years later. It should be noted that DiDi aims to be the global leader in the transport and automobile technology revolution (DIDI, 2020). With regard to drivers, the Driver Terms of Use makes it clear that the relationship between 99TL and these is one of race intermediation and payment facilitation, through the use of the software made available by the company, there is no corporate, employment or economic relationship, and the driver is free

to accept or refuse the races from the application:

> *No relationship of a corporate, employment and/or economic nature is established between the partner driver and 99, making sure the partner driver is free to accept or decline races from within the app, as well as to terminate its use at any time, at its free and exclusive discretion. 99 does not have a fleet of vehicles, exclusively providing licensing and intermediation services aimed at facilitating the contracting of a transport service before a partner driver registered in the application (99TL, 2020b).*

In addition, the company disclaims liability in case of damage or loss to passengers (99TL, 2020c). Two types of cyber controls stand out with regard to the 99TL MCS: (i) astar rating (feedback); and (ii) acceptance rates. The rating can range from one (poor rating) to five (great rating) stars. After each trip made, passengers and drivers are invited to evaluate each other. The calculation of the drivers' grades considers the average of the last 100 grades received, recorded chronologically.

Assessments are important for drivers and they understand that grades are of great importance for accessing benefits and ensuring their continuity on the platform. The importance that drivers give to such assessments can be inferred, as they all presented information about them in at least one of their videos posted in 2019. According to the company, drivers can access their ratings and receive tips to improve (99TL, 2020d). In addition, the Channel A driver reported that 99TL implemented the acceptance rate metric in 2019, with the same being presented by the company as a form of control in its Terms of Use (99TL, 2020b).

Furthermore, in its "Privacy Policy", 99TL states that it will use the drivers' data to identify and "personalize their [driver's] experience and use of the 99 Application and Services, including for providing promotions and financial incentives" (99TL, 2018). In accordance with the document, several drivers report that the application of the platform's promotions varies according to the driver's profile (evaluation of passengers, number of runs, etc). Regarding the fare paid by the company for the trips, the Channel I driver made a point of mentioning that they would be low in relation to the expenses required by the activity:

> *we cannot turn a blind eye to the rates that are really low, because of the high maintenance cost: gasoline that does not stop rising, [....] And folks, the appreciation of bus fares too [...] the bus changed to four reais and seventy cents and the passenger paid five bucks [BRL], 6 [...] the tariff [...] Everything normal so far. But it's really a plus, we earning a rate of BRL5 BRL6 is very low. [I-006]*

In addition, the company works with the dynamic fare, when the price of trips are increased to balance supply and demand for cars. However, the Channel C driver points out that it would not always be people actually calling for trips that would inflate demand, but rather people "testing" prices:

> *A lot of people confuse and think that dynamic fare is when there are a lot of passengers asking for a car and it's not. Dynamic rate is the moment where the application understands that there are many people intending to call, many people opened the application and started to simulate. The app starts evaluating: "Well, there are a lot of people calling and there are few cars in the region, I need to attract the cars here". How does it do it? It gradually increases the price as it identifies that there is an imbalance between supply and demand [C-046].*

With regard to administrative controls, 99TL establishes minimum criteria that vehicles must meet to be registered in the system, and the requirements common to all cities are that the vehicle has 4 doors and air conditioning. Also in this type of control, it is important to inform that the company monitors the exchange of messages from drivers in the application in accordance with its privacy policies and that they may influence their stay on the platform (99TL, 2018).

With regard to cultural control, some drivers report the benefits of the 99 Prime club, a club with exclusive advantages. We also highlight the Somos 99 program, mentioned by the driver of Canal G. According to the company, five categories of advantages are offered (Partner, Silver, Gold, Ruby and Diamond), and this program is organized on four fronts: Partnerships, Training, Events and Exclusive Advantages (99TL, 2020e). Figure 1 summarizes the special advantages of each level of the program according to their categories. According to the company, weekly and monthly travel goals are presented so that the driver can reach the different categories, in order to encourage the engagement of drivers (99TL, 2020e).

Benefits	Categories		
	Gold	**Ruby**	**Diamond**
Priority of service at Casa99	No	No	Yes
Free installation of DashCam (restricted to cities that allow use)	No	Yes	Yes
Events (according to registration limit)	No	Yes	Yes
Scoring and trading incentives in the 99 online store	Yes	Yes	Yes
Special incentives	Yes	Yes	Yes

Figure 1. Exclusive advantages of the Somos99 program categories
Source: 99TL (2020e).

4.2 UBER's MCS

UBER's mission, according to the company's president, is to create "opportunities by putting the world in motion" (UBER, 2020b). It is important to highlight that the company president emphasizes the essential role of technology for the company (Securities and Exchange Commission, 2019). The company also highlights the primary role of its algorithmic, based on artificial intelligence, that can run hundreds of models based on their data and provide quality and safe customer service (Securities and Exchange Commission, 2019). Thus, it can be said that the intensive use of algorithmic is a fundamental part of UBER's strategy, being used as part of the MCS for employee control. Despite being cited in essential aspects by UBER (Securities and Exchange Commission, 2019), drivers have already criticized the relationship that the company maintains with them:

> it's a profession that has no future, ok? You will always do the same thing, okay? And it could still be that we will be replaced by autonomous cars. [...] It's just that, I'm going to use a strong term, applications, in general, don't give a damn about the driver, okay? You'll feel like this: the app doesn't care for me. this is highly standard [A-016].

Contrary to what drivers say, UBER highlights the critical role that these agents have in their development, showing their greatest engagement as one of their growth strategies (Securities and Exchange Commission, 2019). However, the distance between the company and the drivers is reinforced in its Terms of Use, which emphasize that there is no labor relationship between the company and the drivers (UBER, 2020c). It should be noted that UBER is keen to emphasize that questioning this non-labor relationship is considered one of the main risks to the company's business model in different parts of the world (Securities and Exchange Commission, 2019).

Several elements of cybernetic control can be discussed with regard to UBER's MCS, however, two stand out: (i) stars evaluation (feedback); and (ii) acceptance and cancellation fees. As in the case of 99TL, the rating varies between one and five stars, however, in the case of UBER, it is considered a weighted average of the last 500 trips. With regard to fees, according to UBER (2019), acceptance refers to the number of trips that the driver accepts in relation to those proposed by the application in the last 30 days. The cancellation fee, on the other hand, refers to the proportion of trips canceled by drivers in relation to those accepted by the same. Although drivers have access to the general result of their assessments, a priori, they have no way of disaggregating it for analysis. Thus, some Brazilian drivers use UBER Fleet (the company's application available abroad), as, from the manipulation of this application, it is possible to obtain the grades of the working weeks and deduct individual grades given by passengers:

> I found a way for you to see the score in the week. [...] And how did I find this out? Through an app called UBER Fleet. [...] But it doesn't exist in Brazil. Why? Because, in Brazil, we don't have the concept of a UBER driver fleet [...] And at the end [of the driver's performance report], the most important information for people who want to know how our evaluation is going this week. It gives you the evaluations in the week. Thus, with this application, UBER Fleet, you can see, in real time, how much your score is, how your evaluation is doing. [C-011].

There are many contextual promotions especially on commemorative dates and periods, such as in the case of 99TL. Another promotion reported by drivers refers to the use of awards on consecutive trips. With regard to the tariff paid by UBER for services rendered, many drivers emphasized that the tariff currently paid by UBER is low and is not readjusted. Finally, all analyzed drivers emphasize the dynamic tariff, used in a similar way to the 99TL case. Some drivers recommend using the REBU app to better take advantage of these increased fares:

> To take advantage of the dynamics, we need to be alerted to the dynamics. And that's where today's super tip from this video comes in: the REBU app [...] For the dynamic work, we need to connect the REBU app to the UBER passenger app. In this connection, the REBU application

> *asks the UBER application for a security key to just access the UBER dynamics map [A-021].*

With regard to cultural control, the company uses automobiles as one of the bases to segregate its drivers according to different levels of category (in general, the higher the level, the higher the fare paid to drivers). Drivers also point out that the registration of UBER drivers is done by region, that is, once registered in one region, the driver could not work in another. Finally, it is very important to note that the company can monitor the exchange of messages from drivers through the application (UBER, 2020d; 2020e).

Still on the cultural control by UBER, it is important to highlight the role of "6 stars Club" and "UBER Pro". According to UBER (2018), the 6 Stars Club was created as a way to value partner drivers who stand out within the platform, being present in some Brazilian cities. Figure 2 shows the benefits of the different levels of the UBER 6 Stars Club. UBER Pro is a more recent program in Brazil and available in some locations. According to UBER (2020f), this program has different categories, which are: Blue, Gold, Platinum and Diamond. The company also emphasizes that the category of each member is given, among other factors, by goals in cyber controls such as acceptance rates and average user rating (minimum of 4.85). In this context, UBER (2020f) demonstrates its control over program conditions:

> *UBER may modify, suspend or interrupt the program or any function at any time, without previous warning. The program and all information accessible through it is provided for informational purposes only "as is" and "subject to availability".*

Benefits of the month	Categories		
	Silver	**Gold**	**Diamond**
Star beside the name	Yes	Yes	Yes
Access to UBER X VIP	Yes	Yes	Yes
Priority support	Yes	Yes	Yes
Unique challenges	No	Yes	Yes

Figure 2. Benefits of the different levels of the UBER 6 Star Club
Source: UBER (2018).

4.3 Results discussion

From the presentation of the results, several similarities can be observed between the MCS employed by both companies covered. Table 2 presents a summary of the findings in each of the systems analyzed in light of the model by Jordan et al. (2013) and considering the different types of control proposed by Malmi and Brown (2008).

Table 2. Characteristics of the MCS employed by the companies studied

	99LT	UBER
Strategic Control	Lack of corporate, employment and economic relationship between drivers and the company. Rating through stars and feedbacks; and acceptance rates. Platform promotions according to the driver's profile: Fixed values to meet goals, distribution of gifts and promotions during festive seasons. Dynamic rate. It is not possible to say that control adheres to the business strategy. Driver information and knowledge management is poorly focused and incipient, not being used to generate value.	Essential role of technology and AI in their business model. No employment relationship between drivers and the company. Rating through stars and feedbacks; and cancellation acceptance fees. Promotions in festive seasons Awards on consecutive trips. Dynamic rate. Control that adheres to the business strategy and tries to align itself with meeting market expectations. However, the management of information and knowledge of drivers is incipient and poorly focused, not being used to generate value.

Table 2. Characteristics of the MCS employed by the companies studied

	99LT	UBER
Cultural Control	Characteristics of accepted cars, as well as different categories. Evaluation of messages exchanged on the Platform. Club 99 Prime and Somos 99. Control centered on structural capital through systems, technologies and processes, including algorithmic management and artificial intelligence, some elements of relational capital being valued, including relationships with stakeholders (in particular, customers). However, there seems to be little focus on the control of human capital related to drivers, with loss of intellectual capital and value as a result.	Characteristics of accepted cars, as well as different categories. Evaluation of messages exchanged on the Platform. 6 Star Club and UBER Pro. Control centered on structural capital through systems, technologies and processes, including management by algorithms and AI, some elements of relational capital being valued, including relationships with stakeholders (in particular, customers). However, there seems to be little focus on the control of human capital related to drivers, with loss of intellectual capital and value as a result.

Source: Elaborated by the authors.

Based on the analysis in Table 2, it is observed that several control tools used by companies can be categorized according to the Jordan models et al. (2013) and Malmi and Brown (2008). It was observed that the results obtained are consistent with the basic conceptual foundations of MCS: the focus on guiding workers to achieve the organization's strategic objectives, serving the interests of various stakeholders, usually consisting of several interdependent tools (Chenhall, 2003; Merchant & Otley, 2007; Jordão et al. 2013).

Furthermore, there are many similarities in relation to the tools used in each type of MCS control to encourage drivers. A tool observed in the empirical study and widely cited in the literature is customer assessment. As noted by Wood et al. (2019), this type of assessment is very important in the case of the 99TL and UBER MCS, both of which encourage their drivers to maintain a high value. There were also similarities in the complaints of drivers in relation to the MCS of both companies, such as the low value of the tariffs. The low remuneration of workers in the sharing economy, especially due to excess labor, has been highlighted in the literature (Rani & Furrer, 2021) and it seems to be the case for both companies analyzed.

It should be noted that this "distance" between the company and the wishes of its drivers reduces the probability of controlling human capital, which is so relevant according to Jordão et al. (2013). In this case, there does not seem to be a clear way to capture a significant part of the explicit knowledge and almost all of the tacit knowledge of drivers through the companies' MCS, and they do not seem to perceive so many incentives for this exchange of knowledge, not even technologies that effectively support this process. In fact, some techniques used by drivers occur outside the companies' platform, indicating that the controls employed do not capture all the nuances of behavior.

Such behavior highlights the fallibility of algorithmic-based MCS used by these companies, as highlighted by Galière (2020) and Veen et al. (2020) which emphasize individual and collective actions in response to the exercised control. Furthermore, despite the relationship between MCS and strategy (Malmi & Brown, 2008; Otley, 2016) and MCS and culture (Jordão et al., 2013; Jordão et al., 2014) are widely supported in the literature, the analysis of the cases revealed that companies still do not seem to use these two aspects effectively enough to realize the potential benefits of this use. More emphatically, it is worth noting that there seems to be little focus on the control of human capital related to drivers, with a loss of intellectual capital and value due to this.

In practice, part of the cultural control defended by Jordão et al. (2013) and Malmi and Brown (2008) is exercised through benefit clubs, but it does not seem to be effectively used to help in knowledge management and its processes of creation, systematization and sharing of information and knowledge. The idea is that this is directly reflected in the organizational and financial performance of companies, in addition to generating increments in terms of competitiveness, sustainability and value creation for such an organization (Jordão et al., 2013).

More specifically related to algorithmic management, it can be seen that its role transcends practically all types of control presented, reinforcing its role in controlling drivers, as emphasized by Cheng and Foley (2019) and Hughes et al. (2019). Furthermore, it is evident that the algorithmic companies use data from cyber controls to enable access to the benefits of the other control packages employed by the companies.

In addition, authors such as Wood et al. (2019) and Rosenblat and Stark (2016) point out that star ratings provide passengers with part of the traditional role of middle management (Schildt, 2017). This tool controls the relational capital of customers, empowering them in relation to the service provided by drivers. These algorithmic

also play a very relevant role in cultural controls. Thus, we verified the simultaneous use of the two forms of control through algorithmic emphasized by Hughes et al. (2019): behavior and performance.

5 FINAL CONSIDERATIONS

The study presented in this article aimed to describe the MCS, supported by algorithmic, from UBER and 99TL from the perspective of the models proposed by Malmi and Brown (2008) and Jordão et al. (2013). We verified that the tools used in management control by both analyzed companies can be classified based on the control components of the models proposed by those authors.

Furthermore, there were several evidences of the central role of algorithmic in supporting the MCS of these companies. The use of these algorithmic seems to cut across practically all the identified control components' tools. The control exercised over drivers, in these cases, is equivalent to both behavioral and performance control. In addition, it is noteworthy that the drivers demonstrate that they understand the incentives of the companies' MCS, reacting to them. In this case, the reference to the REBU application and the UBER Fleet in the case of UBER drivers stands out. There are also questions from drivers about their value to companies and the fees paid. Therefore, companies seem not to pay as much attention, as expected based on Jordão et al. (2013), control of intellectual capital related to drivers, preventing part of their tactical knowledge from being captured by MCS.

Given the above, there are significant contributions, under different aspects, of the research by focusing on managerial control in the sharing economy. The results help to consolidate knowledge about the phenomenon, which influences the lives of millions of people daily, focusing on the gap presented by Leoni and Parker (2019). With regard to theory, the feasibility of using models such as Malmi and Brown (2008) and Jordão et al. (2013) to analyze the phenomenon in the context of the sharing economy, specifically, in per-application transport. Furthermore, the role of technology is highlighted, not only for the emergence of the sharing economy as highlighted by Sutherland and Jarrahi (2018), as well as supporting the control structure of companies, as evidenced by Wood et al. (2019).

It is also important to highlight the contributions of the study to different stakeholders. From the point of view of managers, the important role of algorithmic management as the basis for controlling a great diversity of daily transactions was demonstrated, simultaneously employing a series of interrelated tools. From the perspective of workers, we verify that they are not passive and are able to assimilate such controls and take decisions that benefit them in the interests of the platforms. With regard to governments and regulators, points of friction were identified between those interested in this control, which may be the object of public discussion, to improve the conditions in which the activities are carried out.

However, it is important to highlight an important limitation in the study carried out: the exclusive focus on public data. Thus, tactical and strategic information internal to the companies and that are part of their MCS were not considered to make the inferences. Thus, the reported conclusions must always be analyzed considering such a restricted scope. Future research could: (a) explore the relationship of MCS with drivers of other transport companies by application operating in the country; (b) compare the controls used by UBER on drivers from different countries, since it is a multinational company; (c) collect primary data to better elucidate some unaddressed controls; and (d) analyze other modalities of the sharing economy, such as delivery via apps (UBER Eats, iFood etc.).

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