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ARTICLE

How do Sanctions and Communication Affect Cooperative Behaviors in Non-monetary Platforms of Collaborative Consumption? An Experimental Study

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ABSTRACT

Governance is an essential feature of collaborative platforms, as it refers to the rules adopted to stimulate users towards cooperative behaviors. However, little is known about governance on non-monetary platforms, in which sharing is free. Based on the theory of social dilemmas, we analyze the effects of sanctions and communication mechanisms on cooperation, and the moderating effect of disposition to trust. We conducted an experimental study exposing one group to a scenario subject to social and monetary punishment, and another group to a scenario with greater information transparency between users. The results show that sanctions and communication increased cooperation similarly and that their effect was more significant among people with a low disposition to trust. This means that more transparency of information can be a mechanism that leverages cooperation without the need for external controls or incentives. Our study offers theoretical contributions to the field of collaborative platforms and also managerial implications for practitioners involved in the governance of platforms.

KEYWORDS

Governance, Collaborative Consumption, Non-monetary Platforms, Sanctions, Communication, Trust

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Como sanções e comunicação afetam comportamentos cooperativos em plataformas não monetárias de consumo colaborativo? Um estudo experimental

RESUMO

A governança é uma característica essencial das plataformas colaborativas, pois se refere às regras adotadas para estimular os usuários a adotarem comportamentos cooperativos. No entanto, pouco se sabe sobre a governança em plataformas não monetárias, nas quais o compartilhamento é gratuito. Com base na teoria dos dilemas sociais, analisamos os efeitos das sanções e dos mecanismos de comunicação sobre a cooperação e o efeito moderador da disposição a confiar. Realizamos um estudo experimental expondo um grupo a um cenário sujeito a punição social e monetária, e outro grupo a um cenário com maior transparência de informações entre os usuários. Os resultados mostram que as sanções e a comunicação aumentaram a cooperação de forma semelhante e que seu efeito foi mais significativo entre as pessoas com baixa disposição para confiar. Isso significa que mais transparência nas informações pode ser um mecanismo que potencializa a cooperação sem a necessidade de controles ou incentivos externos. Nosso estudo oferece contribuições teóricas para o campo de plataformas colaborativas e também implicações gerenciais para profissionais envolvidos na governança de plataformas.

PALAVRAS-CHAVE

Governança, Consume colaborativo, Plataformas não monetárias, Sanções, Comunicação, Confiança

1. INTRODUCTION

Collaborative consumption and the sharing economy represent a new consumption paradigm in which people share idle assets for money, or for free, with the help of the internet, resulting in a new business model and a new area of research (Acquier et al., 2019; Netter et al., 2019; Parente et al., 2018). This behavior brings environmental benefits by increasing resource use efficiency, reducing waste, and absorbing the surplus created by excess production and consumption (Hamari et al., 2015). A multitude of platforms promotes sharing. Some are monetary, intending to generate profit through the maximization of assets (Schor, 2014). Others do not seek revenue maximization; their goal is to serve the community's needs, promoting sharing for free (Botsman & Rogers, 2010). These platforms are non-monetary and are the great pioneers of collaborative consumption (Henten & Windekilde, 2016).

Trust represents an essential element to stimulate people that do not know each other to collaborate through platforms (Ter Huurne et al., 2017). Although trust may emerge naturally, platforms can also deploy governance mechanisms to promote it (Alstyne et al., 2016; Bardhi & Eckhardt, 2012; Hamari et al., 2015; Schreieck et al., 2018). Previous studies recognize the relevance of governance mechanisms (Hamari et al., 2015; Martin et al., 2017), but they do not present how different mechanisms promote trust and affect the cooperation in the sharing economy. To avoid possible negative consequences, it is necessary to know consumer attitudes towards rules and controls in collaborative consumption (Hartl et al., 2016). Furthermore, it is necessary to understand the conditions under which platforms can stimulate cooperation when sharing is free (Cook & State, 2017).

Therefore, the purpose of this study is to analyze the moderating effects of disposition to trust in the relationship between sanctions/communication and cooperation in the context of non-monetary platforms of collaborative consumption. To this end, we use the theory of social dilemmas to understand the effect of communication on cooperation (Balliet, 2010; Bottom et al., 2002; Kollock, 1998; Messick & Brewer, 2005; Pillutla & Murnighan, 1995; Sally, 1995).

It is known that sanctions increase cooperation in collaborative consumption since people tend to distrust unknown people (Hartl et al., 2016). However, this mechanism does not open space for spontaneous cooperation, as it focuses on the dynamics of incentive and ignores the possibility of genuine cooperation between individuals (Mulder et al., 2006). On the other hand, motivational mechanisms such as communication can leverage cooperative behavior among those who "escape" the need for incentives (Balliet, 2010). Communication diminishes the need to use sanctions to ensure cooperation among group members (Iwai & Azevedo, 2016) and it can be more effective than economic incentives (Agarwal et al., 2010).

This study contributes to the discussion initiated by Hartl et al. (2016) and tests different governance mechanisms to increase cooperation through motivational solutions. Our results reveal that (i) structural mechanisms (sanctions) and motivational mechanisms (communication) can increase cooperation from the perspective of those who provide the resources to the community; (ii) the disposition to trust negatively moderates the relationship between sanctions and cooperation; and (iii) the introduction of communication is positively related to cooperation. This can be particularly relevant for governance of non-monetary platforms, in which survival can be challenging. Adequate governance can increase cooperation and the platforms' capability to survive, contributing to the strengthening of the sharing economy and sustainability.

2. THEORETICAL BACKGROUND

2.1. Essential principles of collaborative consumption platforms

Despite the variety of business models in collaborative consumption that differ in scale, maturity, and purpose, they all present essential aspects for operation (Botsman & Rogers, 2010). One principle is creating critical mass, which refers to a minimum number of people, products, or options in a community to enable sharing among people. If there are not enough options to satisfy the customer, consumers will probably opt for regular consumption. Moreover, the more people use a collaborative consumption platform, the more they influence others to use it (Botsman & Rogers, 2010; Schor, 2016).

A second aspect refers to idle capacity. Several resources can be shared, rented, sold, donated, or borrowed. A vacant car seat can be a ride for someone, a backyard with room can create a community garden, a guest room can host someone, or even time and knowledge can be offered as a course (Shirky, 2009). As long as two or more people have some spare capacity, there is the possibility to invest in collaborative actions (Botsman & Rogers, 2010; Shirky, 2009).

Although critical mass and idle capacity are necessary conditions for collaborative consumption platforms, they are not sufficient to guarantee their operation and motivate people to donate their free time to help others or make their idle resources available. The common good belief is another fundamental aspect of collaborative consumption, highlighting the benefits shared collectively in a community (Botsman & Rogers, 2010). Digital media resigned that belief by reinforcing community values and connecting people with common interests (Hamari et al., 2015).

While belief in the common good is relevant to business functioning in the sharing economy, a considerable amount of trust among people is necessary to foster collaborative consumption (Ter Huurne et al., 2017). Trust is an attitude in the face of uncertainty, complexity, inability to predict the future, and it can also be an expectation of fulfilling promises (Hagen & Choe, 1998; Luhmann, 1979). "Sharing is trust" (Botsman & Rogers, 2010; Bardhi & Eckhardt, 2012), and trust is considered an invisible currency in the sharing economy, where participants have to trust strangers to share goods or property (Belk, 2014). It is a critical ingredient in facilitating human interaction and cooperation and plays an essential role in resource sharing (Bardhi & Eckhardt, 2012).

In the first interactions of sharing, trust consists in the disposition to trust, i.e., the tendency to believe in other individuals' kindness based on a lifelong socialization process (Gefen, 2000; Kim et al., 2008; McKnight & Chervany, 2001). Literature shows that the disposition to trust is a personality trait with two components: "trusting posture" and "faith in humanity" (Kim et al., 2008; McKnight & Chervany, 2001). Trusting posture assesses trust by engaging in interactions with other individuals, while faith in humanity assesses that other individuals are typically reliable and well-intentioned (Mcknight et al., 1998). In general, a disposition to trust represents an individual's tendency to trust others, serving as a plausible background of trust (Gefen, 2000). Propensity to trust results from lifelong personal development, education, and cultural consistency (Kim et al., 2008; McKnight & Chervany, 2001).

Hence, the disposition to trust is highly effective in the initiation phase of interactions (Gefen, 2000), common in various configurations of collaborative consumption (Mittendorf, 2018; Ter Huurne et al., 2017). For this reason, we propose the following hypothesis:

- **H1:** Individuals with a high disposition to trust cooperate more than individuals with a low disposition to trust.

2.2. Sanctions in collaborative consumption platforms

As platforms operate as intermediaries in collaborative consumption, different mechanisms that provide more security to the user and decrease the perception of fraud and opportunistic behavior can mitigate the low disposition to trust (Hartl et al., 2016). One mechanism is external control, which refers to establishing an authority to regulate the group. People give up some part of their freedom to a leader in exchange for social measures (Hardin, 1968). In collaborative consumption, mechanisms represent external, such as accreditation, insurance policies, and conflict mediation. Airbnb, for example, offers property damage protection of up to $1 million for its hosts.

Conflict mediation is how the platform manages problems with users (Schreieck et al., 2018). Even if the group is aware and unanimous about its collective interests, cooperation cannot be taken for granted (Olson, 1965). Unless there is an external incentive, there will be no cooperation to achieve the collective goals (Balliet et al., 2011; Van Dijk et al., 2015). These incentives are called sanctions, represented by punishments or rewards (Kollock, 1998). Sanctions can increase cooperation by decreasing the attractiveness of opportunism since agents caught in non-cooperative behavior will be penalized (Dawes, 1980; Tenbrunsel & Messick, 1999).

Once the platforms have control over users' interactions, they can use punishments, such as excluding community members who break the rules or even demand the payment of fines in case of lousy care of the shared item. In previous studies, sanctions have positively affected

cooperation in collaborative consumption (Hartl et al., 2016; Sabitzer et al., 2018). Based on these findings, we propose that:

- **H2:** The introduction of sanctions increases cooperation in collaborative consumption platforms.

The relationships between individuals in collaborative consumption can be facilitated (or hindered) by the presence of trust (Lamberton & Rose, 2012). In social dilemmas, trust shapes the expectations of individuals about the behavior of other participants in the dilemma (Cook & State, 2017). Consequently, the degree of trust can moderate the relationship between sanctions and cooperation (Balboni et al., 2018; Yamagishi, 1992, 1988, 1986). In the context of inter-organizational alliances, trust has negatively moderated the effect of formal control over cooperation, reducing its relevance (Balboni et al., 2018). Yamagishi studies (1992, 1988, 1986) found that individuals with low levels of trust exhibited low cooperation levels but were willing to cooperate when being subject to a sanctioning system. On the other hand, when trust in other individuals is high, sanctions can undermine cooperation because the use of control and punishment strengthens the assumption that others act in their best interests, undermining trust in others (Mulder et al., 2006).

In collaborative consumption platforms, the influence of sanctions on cooperation was also more significant in individuals with less disposition to trust (Hartl et al., 2016) because low levels of trust increase the perception of risk (Kim et al., 2008; Pavlou & Gefen, 2004) and negatively affect the likelihood of sharing (Lamberton & Rose, 2012; Rindfleisch & Crockett, 1999). In Airbnb, for example, the risk perceived by the hosts negatively influences the intention to offer accommodation to the platform's customers (Mittendorf, 2018). We summarize these arguments in the following hypothesis:

- **H3:** Disposition to trust negatively moderates the relationship between sanctions and cooperation.

2.3. Communication in collaborative consumption platforms

Although sanctions are generally effective, they do not open space for spontaneous and altruistic cooperation because they focus on incentives (Balliet et al., 2011). Sanctions can diminish human beings' intrinsic motivation to cooperate and reduce trust in others (Van Dijk et al., 2014). Hartl et al. (2016) found that those who did not support the introduction of sanctions in collaborative consumption platforms expressed concerns about the loss of self-determination, a breakdown in the relationship with community members, and stressed the need for alternative mechanisms.

Reputation systems are the most common mechanism for community self-regulation in collaborative consumption platforms. A reputation system allows users to read comments on transactions performed and access the ranking of successful transactions. Such systems are adequate mechanisms for reducing information asymmetry and increasing consumer trust (Sundararajan, 2016). Reputation development contributes to status generation, another mechanism based on the dynamics of incentives to generate cooperation (Willer, 2009). The creation of social or symbolic rewards, and punishments, also function as sanctioning mechanisms to regulate social action (Granovetter, 1985; Olson, 1965).

One of the most robust findings of the literature in social dilemmas is the positive effects of communication on cooperation (Balliet, 2010; Bottom et al., 2002; Kollock, 1998; Messick & Brewer, 2005; Pillutla & Murnighan, 1995; Sally, 1995). When individuals can communicate, cooperation increases significantly (Balliet, 2010; Sally, 1995). Communication allows group members to gather information about the choices others tend to make, introducing group norms and conformity pressures in favor of cooperative choices, increasing their sense of identity (Messick & Brewer, 2005; Kollock, 1998). Unlike sanctions, communication opens space for spontaneous cooperation, acting as a motivation for social participation (Dawes, 1980). Mechanisms such as chats for exchanging messages, profiles with personal information, photos, and friends in common, and spaces for commenting about the transactions encourage community self-regulation through greater information transparency. They allow people to communicate directly before engaging in a transaction (Balliet, 2010; Sally, 1995).

Also, information shared by the platform that reinforces the purpose of the community can help leverage cooperation. The sense of community makes the psychological distance between the individual and collective interest narrow, contributing to an increasing perception of trust (Messick & Brewer, 2005; Van Lange et al., 2013). Therefore, we propose that:

- **H4:** The introduction of communication mechanisms increases cooperation in collaborative consumption platforms.

Just as trust can moderate the effect of sanctions on cooperation, it can also influence the effectiveness of communication mechanisms (Parks et al., 1996). Some authors argue that neither party benefits by communicating their true intentions to a counterpart and acting reliably, since the parties' opportunistic potential cannot be verified ex-ante (Malhorta & Murnighan, 2002; Pillutla & Murnighan, 1995). For people with a greater perception of risk to opportunism, "talk is cheap" (Malhorta & Murnighan, 2002).

Parks et al. (1996) explored the moderating relationship of trust between communication and cooperation, studying how individuals with low and high trust react to receiving messages about each other's behavior in a social dilemma. In this study, participants received a message stating whether the opponent planned to be cooperative or competitive. They found that individuals with low trust reacted to the competitive message by decreasing cooperation but were not affected by the cooperative message. Those with high trust responded to the cooperative message by increasing cooperation, but were not affected by the competitive message. This result means that people with a higher disposition to trust are more influenced to cooperate, given the possibility of communication, than people with a low disposition to trust (Parks et al., 1996).

Therefore, the effect of communication on cooperation can be greater among people with a high disposition to trust. Communication is an effective mechanism to leverage cooperative behavior among those who "escape" the need for incentives (Balliet, 2010) and have a greater disposition to share resources with strangers (Cook & State, 2017). Thus, we propose the following hypothesis:

- **H5:** Disposition to trust positively moderates the relationship between communication and cooperation.

Figure 1 illustrates the conceptual model and hypotheses proposed in this research.

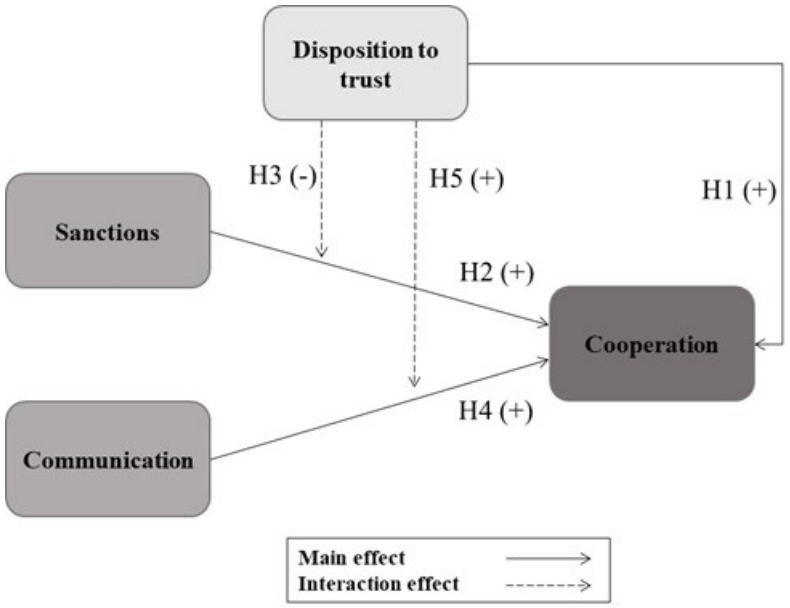

Figure 1. Conceptual model and research hypothesis
Source: elaborated by the authors (2022)

The next section presents the methodological procedures used in this research.

3. MATERIAL AND METHODS

Since this study aims to analyze the influence of sanctions and communication on cooperation, and the moderating effect of the disposition to trust on non-monetary platforms of collaborative consumption, we chose the experiment as a research method for its ability to explain causal relationships involving a phenomenon (Jackson & Cox, 2013).

3.1. Participants

The sample was composed of students from Brazilian universities, setting up a non-probabilistic and for convenience sample. Brazil is Latin America's leader in shared economy initiatives (IDB, 2016), and collaborative consumption is already a reality for over 70% of the Brazilian population (CNDL, 2019). Through an online questionnaire created in Qualtrics software, the researchers sent the survey link to a group of university students, totaling 369 respondents.

We reduced the sample after the analysis of questionnaires with missing values and outliers. The missing data should not exceed 10% of the answers of a variable (Kline, 1998), excluding 35% of the questionnaires, totaling a sample of 239 respondents. We identified the multivariate outliers based on the Mahalanobis calculation, reducing the final sample to 223 respondents.

In experimental research, it is suggested that researchers use at least 30 cases in each experimental condition (Hernandez et al., 2014). We made sure that the sample was significant enough to expose the participants to three possible conditions: neutral, sanctions and communication. Therefore, the sample for this experimental design should be at least 90 participants.

3.2. Materials and procedures

When an experiment has more than one treatment, the researcher can opt for three types of design: (1) Between Subjects, (2) Within Subjects or (3) Mixed. In between-subjects, the sample is exposed to only one treatment and measures are subsequently compared between subjects. In within subjects, the sample is exposed to all treatments, comparing measures among subjects. In the mixed type, both options can be combined, exposing subjects to different treatments of one or more factors. In this study, a mixed experimental design was chosen, in which subjects were exposed to two of three possible treatments (neutral + sanctions vs. neutral + communication).

The questionnaire started with a description of a scenario that led the respondent to a situation of collaborative consumption, in which he/she had to decide if he/she would lend one of his/her belongings to an unknown person for free in the absence of controls by the platform (neutral scenario). The description of the scenario was as follows: *"Imagine that you decided to be part of a community of users of a platform that facilitates the connection between people to SHARE THINGS (such as a drill, tent, or ladder), to save money, be sustainable and meet new people. For this purpose, the platform enables people to LEND and BORROW things for personal use for FREE. The platform guides that it must be returned to its owner in the same conditions as it was delivered after using the object. The interactions between users and the equipment's use are not subject to ANY CONTROL by the platform. Now, imagine that you have received a notification from the platform that someone wants to install a cabinet and needs to borrow a DRILL. You DO NOT KNOW this person personally, but you know that he/she lives near you".*

We measured cooperation by inserting the following questions after the scenario: *"Knowing that you have a drill available at home, what is the probability that you would lend it to this person?"* being 1 equivalent to "I would not lend it at all" and 7 "I would certainly lend it." We chose a "drill" because it is one of the most used examples to explain collaborative consumption by Botsman and Rogers (2010).

The respondents were then randomly directed to a new scenario, introducing sanctions or communication mechanisms. We directed 115 out of 223 participants to the sanctions scenario and 108 to the communication scenario. The scenarios covered elements that emerged in the theoretical framework as necessary in characterizing sanctions and communication. In the sanctions scenario, we informed participants that: *"After a reassessment of the platform's functioning, the managers decided to insert a new functionality TO CONTROL the interactions between users and the use of the equipment. Now, the PLATFORM MONITORS the collection, return, and use of the shared item, GUARANTEEING that it is returned in the same conditions as it was delivered. Otherwise, the platform will PUNISH the member through community EXCLUSION and payment of a FINE in the amount corresponding to the damage done to the shared item".*

In the communication scenario, the increased transparency of information and the monitoring of the platform by users' comments on the transactions replaced control: *"Now, USERS COMMENT on how the collection, return, and time of use of the shared item was, INFORMING whether it was returned in the same conditions as delivered."* Creating the user's profile with personal information (such as profile photo, full name, email, profession, workplace, hobbies, interests) and a chat to facilitate communication when combining the conditions for sharing the item replaced the punishment. Besides, informing that the community consists of more than 170 thousand people who have already saved almost 1.5 million USD by avoiding unnecessary purchases reinforced the sense of community.

Then, we performed a manipulation check to assess whether the respondents understood the introduction of governance mechanisms. In the "sanctions" group, it was asked, *"Did you notice the introduction of control and punishment by the platform?"* and in the "communication" group, *"Did you notice the introduction of tools for communication by the platform?"*. The respondents answered "yes" or "no," and 100% of the sample said they perceived the mechanisms' introduction.

Respondents then responded about the likelihood of cooperating: *"Based on this new situation, and knowing that a person still needs a drill, what is the probability of you lending it?"* with 1 being "I wouldn't lend anything" and 7 "I would certainly lend."

After this step, we measured the disposition to trust through a 7-point Likert-type scale based on Gefen (2000), with 1 being equivalent to "I totally disagree" and 7 "I totally agree." The Cronbach's alpha for this scale was 0.878. In the sequence, participants answered questions about gender, age, and income as control variables. At the end of the questionnaire, a debriefing asked participants about their perception of the research objective. This step is necessary for experiments because respondents cannot be aware of the research objective (Jackson & Cox, 2013). Figure 2 (Appendix A), illustrates the steps followed in the research.

To support data analysis, we used SPSS 22 software and Social Science Statistics, a web site that offers free resources for researchers working with statistics in the social sciences.

4. RESULTS

Regarding the asymmetry and kurtosis of the variables, data showed normality with asymmetry less than |3| and kurtosis less than |10| (Kline, 1998), enabling the use of parametric tests such as T test and ANOVA.

Our sample was composed mainly of women (63%), predominant in the age group from 20 to 39 years old (62%). We analyzed the possible influences of socio-demographic variables as variables external to the experiment. Using ANOVA, the results show that there were no significant differences in the means of cooperation in the variable gender ($F=0.40$, $p=0.52$), age ($F=3.85$, $p=0.51$), and income ($F=0.08$, $p=0.76$). This result means that the socio-demographic variables do not explain the cooperation variations.

The first hypothesis tested refers to the relationship between the disposition to trust and cooperation in the absence of governance mechanisms. The hypothesis assumes that individuals with a high disposition to trust cooperate more than individuals with a low disposition to trust. To this end, we performed an ANOVA for independent samples to compare the averages of cooperation between individuals with a low and high disposition to trust. This division was made based on the mean of this variable ($M=4.87$, $SD=1.19$, $N=223$) in the two groups (sanctions and communication), as both received the same neutral scenario.

As suggested in H1, the mean of cooperation in the group with a low disposition to trust ($M=3.98$, $SD=1.16$, $N=92$) was significantly lower than the mean of cooperation in the group with a high disposition to trust ($M=5.25$, $SD=1.14$, $N=131$), $F(1.221) = 68.05$, $p<0.01$, supporting H1.

Considering the effect size of $f2 = 68.05$ and assuming a significance level of 0.05 and statistical power of 0.8, consensus in social applied science, the actual power of the effect was 0.8205937 and the minimum sample per group would be 20 respondents (values calculated on G*Power). Thus, as the sample size of the group with the fewest observations in this study is 92, the adequacy of the sample size for the internal validity of the results is verified.

The second hypothesis proposed that introducing sanctions would increase cooperation. We compared the means of cooperation before and after introducing sanctions by employing an ANOVA for paired samples. The results indicated that cooperation after the introduction of sanctions (M = 5.71, SD = 1.07) was significantly higher than in the neutral scenario (M = 4.90, SD = 1.21, F (1.113) = 29.56, p < .00001), supporting H2. In other words, sanctions increased cooperation in 16.7% (the mean increased from 4.90 to 5.71). Comparing to Hartl et al. (2016), who also investigated the effect of introducing sanctions in a collaborative community, their results revealed a significant main effect of sanctions on cooperation, F(1.351) = 137.75 p < .001.

Considering the effect size of η2 = 29.56 and assuming a significance level of 0.05 and statistical power of 0.8, the actual power of the effect was 0.8243437 and the minimum sample per group would be 26 respondents. Thus, as the sample size of the group with the fewest observations in this study is 115, the adequacy of the sample size for the internal validity of the results is verified.

H3 proposed that the introduction of sanctions would greatly influence individuals less willing to trust. To test this hypothesis, we first divided the sample from the sanctions group according to the mean for the disposition to trust (M = 4.95, SD = 1.25, N = 115), classifying individuals as "low trust" (less than 4.95) and "high trust" (greater than 4.95). Then we analyzed how much cooperation increased in each of these groups after the introduction of sanctions. An ANOVA for paired samples analyzed whether the increased cooperation intensity was significant between the two groups. This difference was significant and confirmed that the introduction of sanctions had more influence on individuals with a low disposition to trust (M=1.09, SD=0.90) than on individuals with a high disposition to trust (M=0.64, SD=0.82, F (1.113) = 7.54, p=0.01), supporting H3.

Considering the effect size of η2 = 7.54 and assuming a significance level of 0.05 and statistical power of 0.8, the actual power of the effect was 0,801717 and the minimum sample per group would be 242 respondents. Thus, as the sample size of the group with the fewest observations in this study is 42, the results do not guarantee internal validity adequacy.

As an alternative mechanism to the use of sanctions, H4 proposed that the introduction of communication would increase cooperation. Therefore, we performed an ANOVA for paired samples to compare cooperation before and after introducing communication. The results showed that cooperation increased significantly after the introduction of communication (M neutral = 4.54, SD neutral = 1.40; M with = 5.31, SD with = 1.07, F (1.106) = 20.57, p <.01), supporting H4. This result means that communication increased cooperation in 16.96% (the mean increased from 4.54 to 5.31).

Considering the effect size of f2 = 20.57 and assuming a significance level of 0.05 and statistical power of 0.8, the actual power of the effect was 0.8133799 and the minimum sample per group would be 50 respondents. Thus, as the sample size of the group with the fewest observations in this study is 108, the adequacy of the sample size for the internal validity of the results is verified.

As a further analysis, we compared the effect of sanctions and communication on cooperation. An ANOVA for independent samples compared cooperation differences before and after introducing sanctions and before and after introducing communication. This difference was not significant, F (1.221) = 0.15, p=0.7020, indicating that the effects of sanctions and communication on cooperation were not significantly different.

Finally, the fifth and last hypothesis suggested that introducing communication greatly influences individuals with a greater disposition to trust. Again, the sample of the communication group was divided according to the average disposition to trust (M=4.79, SD=1.13, N=108), classifying individuals with a disposition to trust less than 4.79 as "low trust" and more than 4.79 as "high trust."

We then analyzed how much cooperation increased in each of these groups after introducing communication. An ANOVA for paired samples analyzed whether the difference in the increased cooperation was significant between the groups. This difference was significant and showed that the introduction of communication had a more significant influence on individuals with less disposition to trust (M=1.06, SD=1.00) than on individuals with more disposition to trust, M=0.54, SD=0.99, F (1.106) = 7.26, p=0.0082. These results allow us to reject H5.

Table 1 summarizes the results of the hypothesis tests.

Table 1
Hypothesis test

Research hypothesis	ANOVA	Results
H1: Individuals with a high disposition to trust cooperate more than individuals with a low disposition to trust	F (1.221) = 68.05, p<.01	Supported
H2: The introduction of sanctions increases cooperation in collaborative consumption platforms.	F (1.113) = 29.56, p<.00001	Supported
H3: Disposition to trust negatively moderates the relationship between sanctions and cooperation.	F (1.113) = 7.54, p=0.01	Supported
H4: The introduction of communication mechanisms increases cooperation in collaborative consumption platforms.	F (1.106) = 20.57, p<.01	Supported
H5: Disposition to trust positively moderates the relationship between communication and cooperation.	F (1.106) = 7.26, p=0.0082	Not supported

Source: elaborated by the authors (2022)

5. DISCUSSION

This paper aimed to understand the effects of different governance mechanisms on cooperation and the moderating effects of trust in non-monetary collaborative consumption platforms. Previous studies on governance in collaborative consumption platforms analyzed the effect of sanctions in cooperation (Hartl et al., 2016). Still, the impact of motivational mechanisms, such as communication and information transparency, remains unclear. Thus, our study offers three contributions to this field of study by showing that: (i) structural mechanisms (sanctions) and motivational mechanisms (communication) can increase cooperation from the perspective of those who provide the resources to the community; (ii) the disposition to trust moderates negatively the relationship between sanctions and cooperation; and (iii) the results showed that the introduction of communication is positively related to cooperation.

Our first contribution to the field of collaborative consumption platforms highlights that governance mechanisms can leverage cooperation in the absence of trust. The introduction of sanctions, represented by the platform's greater control over interactions between users and punishments for non-cooperative behavior (exclusion from the community and payment of

fines), generated an increase of 16.7% in cooperation. This result reinforces the effectiveness of sanctions in social dilemmas (Olson, 1965; Tenbrunsel & Messick, 1999; Balliet et al., 2011) since it decreases the attractiveness of opportunistic behavior (Tenbrunsel & Messick, 1999). Punishments are more effective when the group composition is unstable (Choi & Ahn, 2013), which is the case of collaborative consumption communities. However, punishments can strengthen the assumption that there will be no cooperation unless there is an external incentive (Olson, 1965).

As a second contribution, our results show that the disposition to trust negatively moderates the relationship between sanctions and cooperation, namely, the less the disposition to trust, the greater the effect of sanctions on the decision to share. This result confirms Yamagishi's (1992, 1988, 1986) findings on the relationship between trust and sanctions in social dilemmas. It also reinforces the trust dimension in the platform governance model which Schreieck et al. (2018) proposed. The presence of sanctions can be the necessary incentive to engage individuals interested in the idea of collaborative consumption but fear others' opportunistic behavior. However, an aspect that seems critical to avoiding the adverse effects of sanctions on collaborative consumption is its severity. Regulatory systems are perceived as essential to prevent other members' exploitation in a collaborative consumption community, but rigorous controls and punishments (Ostrom, 2000; Sabitzer et al., 2018) may cause adverse effects on those members that already trust others.

We also analyzed the effect of communication as a governance mechanism, represented by greater transparency of information and the possibility of direct communication between users, since principles such as transparency, authenticity, and humanity guide strategic decisions in collaborative consumption (Botsman & Rogers, 2010). As a third theoretical contribution, the results showed that the introduction of communication was positively related to cooperation, promoting an increase of 16.96%. This result showed that communication leverages cooperation in an intensity similar to sanctions. By allowing group members to gather information about others tend to make, a sense of trust is created between the parties, diminishing the perceived risk of taking the cooperative decision alone and being explored (Messick & Brewer, 2005).

Knowing that communication has leveraged cooperation at a similar intensity to sanctions also contributes to understanding the conditions to resolve social dilemmas in non-monetary collaborative consumption platforms (Cook & State, 2017). The transaction costs inherent to using sanctions can be a challenge, implying a greater centralization of control and conflict resolution by the platform, giving up the service's gratuity to offer this type of support to users. Hence, the use of mechanisms such as a reputation system, greater disclosure of users' personal information, and the possibility of direct communication makes it possible to reduce information asymmetry and give greater autonomy to community members, representing a less costly process for the platform.

The strong presence of elements that precede collaborative consumption (such as socio-environmental awareness and belief in the common good) and the expectation of reciprocity contribute to understanding cooperative behavior in non-monetary collaborative consumption platforms. The sense of belonging to a group increases the factors related to the individual's predisposition to cooperate (Messick & Brewer, 2005; Van Lange et al., 2013). This sense of belonging does not mean that platforms should abandon the use of sanctions. This mechanism is efficient in meeting users' diversity to generate trust in the platform. However, it is communication that allows the development of trust between people (Gulati, 1999).

Previous studies also suggested that communication would be less effective among individuals with a low disposition to trust (Malhorta & Murnighan, 2002). Unless formal rules stipulate penalties for non-cooperative behavior, these individuals will not cooperate (Pillutla & Murnighan, 1995). In collaborative consumption, it means that even if a user had access to comments, personal information, and could communicate directly with other members, this would not be enough to make him/her prone to participating in sharing communities. The results indicated that communication further increased cooperation among individuals with a low disposition to trust, as well as sanctions. This means that, faced with the scenario of sanctions and communication exposed to the respondents of this survey, the moderating effects of the disposition to trust behaved similarly in the relationship between governance mechanisms and cooperation. While sanctions help leverage cooperation in the short term in very heterogeneous groups, communication can generate long-term social transformation (Kollock, 1998). However, communication needs a great deal of encouragement to generate convincing and stimulate continuity of cooperation (Balliet, 2010).

BlablaCar[1], for example, shares with its members the results achieved by the community in reducing CO2 emissions through numerous shared rides. The platform seeks to stimulate the cooperation of members through communications that reinforce the power of collectivity. In 2018, the BlablaCar community helped reduce 1.6 million tons of CO2, reinforcing that the community generates a collective benefit with global impact beyond the individual benefit of saving travel expenses. This type of communication strategy can increase the sense of self-efficacy, a vital aspect for solving dilemmas, and allow individuals to access the larger impact of their contribution (Van Lange et al., 2017).

6. CONCLUSION

This study contributes to the literature on governance in collaborative consumption since conceptual models are still under development (Martin et al., 2017). A better comprehension of the effect of different governance mechanisms on cooperation may be relevant to the construction of these models. This study also contributes to understanding the effect of motivational mechanisms (communication) on cooperation in collaborative consumption communities, complementing the study by Hartl et al. (2016).

By proposing an experiment of collaborative consumption similar to non-monetary platforms' reality, this study also helps understand the conditions under which cooperation can be stimulated without financial incentives (Cook & State, 2017). Besides, this research expands knowledge about consumer attitudes towards governance in sharing lower monetary value objects. This study contributes to the literature on social dilemmas by shedding light on the moderating effect of trust in motivational solutions, such as communication.

From a managerial perspective, we contribute to understanding consumers' attitudes towards governance in collaborative consumption, helping platforms to promote better regulation of their user community. Based on this research, collaborative consumption platforms form a heterogeneous community of users in terms of trusting strangers, despite having a common goal (saving money, contributing to the environment, or meeting new people).

[1] *BlaBlaCar* is a ridesharing platform. It has more than 60 million members and is present in 22 countries. Source: https://www.blablacar.com.br

The same community may include cooperative users willing to share their resources and users who may only enjoy the benefits of other people's sharing (known as free-riders). This situation can affect the sustainability of collaborative consumption platforms, and therefore understanding the effects of different governance mechanisms can ease these problems. The challenge of these platforms is to create conditions for the community to grow and obtain enough critical mass to create the best combinations between supply and demand, which is the value proposition of these platforms.

In order to meet the diversity of users, platforms need to start with efficient external control and sanction mechanisms to generate trust, which helps in acquiring members and gaining critical mass. As more people adopt cooperative behaviors and feel comfortable with the existing support structure, communication mechanisms can help leverage trust among members. If these mechanisms work and generate positive results, people will be more likely to take care of the continuous improvement of this community and find motivation for self-regulation. The principles of collaborative consumption, such as trust in strangers, collaboration, reciprocity, belief in the common good, socio-environmental awareness, and others, can also be present in the governance of these platforms.

While this study offers new insights, it also has limitations. The cooperation decision was based exclusively on the collaborative consumption scenario for sharing a drill from the supplier's perspective, the individual that provides the common good to the community. Therefore, it cannot be generalized to other situations. Future research may use new scenarios and samples with different characteristics to ratify the results found in this research. Considering the theory of social dilemmas and the provision of common goods, we suggest deepening the role of effectiveness in collaborative consumption. One of the main reasons people do not cooperate in common good provision dilemmas is that a single person's actions may not have a noticeable effect on the situation (Kollock, 1998). This argument is in line with the study by Van Lange et al. (2017), where effectiveness is crucial, especially in situations in which critical mass can provide the common good and individuals can access their impact contribution on the whole. Communication can be an essential mechanism for creating self-efficacy in collaborative consumption.

Regarding the governance models in collaborative consumption, there is also a need for more research that maps the new forms of governance emerging and analyzes how they can provide social, environmental, and economic benefits. Future research can also investigate alternative forms of governance to ensure continued engagement of its members, as governance allows the evolution of members' roles over time, affecting their legitimacy and identity.

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AUTHOR'S CONTRIBUTION

JS: Definition of the research design, conceptual model, elaboration of the literature review, data collection, and conducting the analysis of the results and conclusions; IG: Advising and review of the research, validation of the conceptual model. General review of the article; WL: Advising of the experimental study. Data analysis and results interpretation. General review of the article; DW: Review of the introduction and literature review. Discussion of results and theoretical implications.

CONFLICTS OF INTEREST

The authors have no affiliations with or involvement in any organization or entity with any financial interest, or non-financial interest in the subject matter or materials discussed in this manuscript.

APPENDIX A

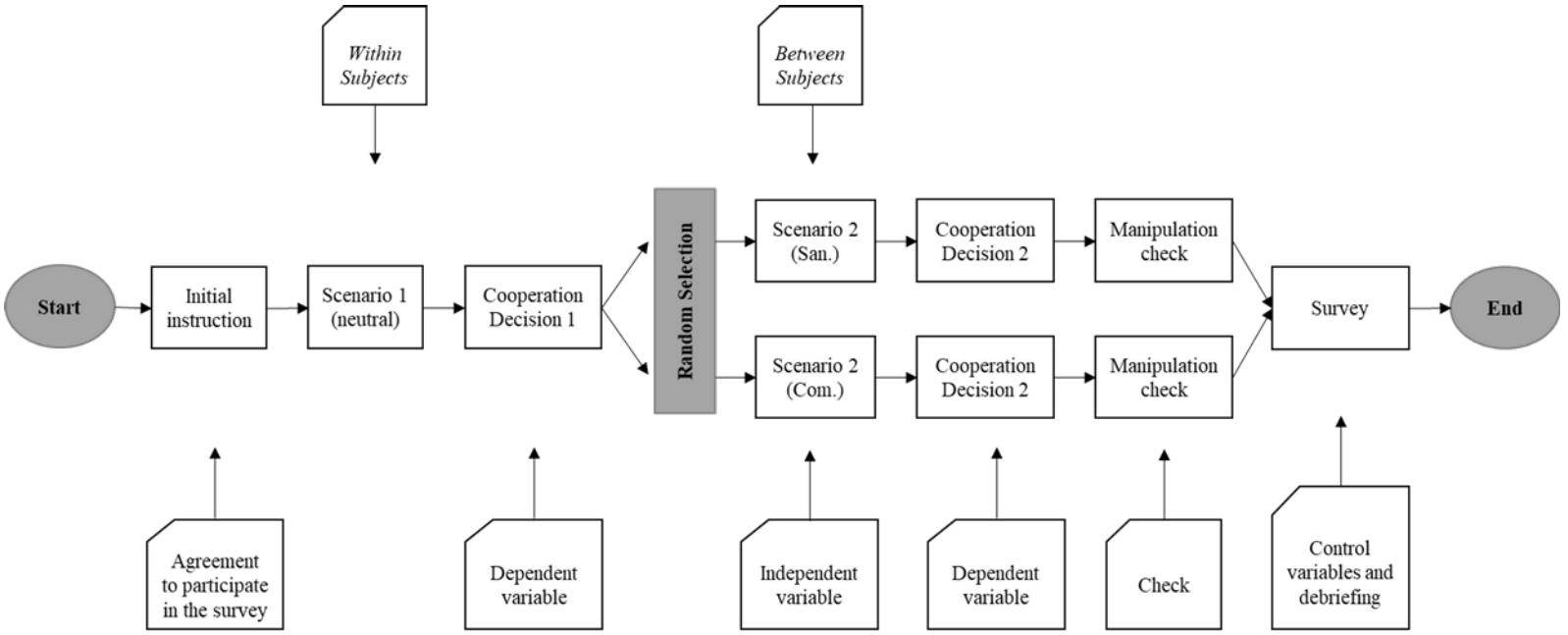

Figure A1. Execution protocol of the experiment
Source: Elaborated by the authors (2022)