BARTER AS A WAY TO ACHIEVE A SUSTAINABILITY STRATEGY IN THE PHARMACEUTICAL INDUSTRY

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ABSTRACT

The aim of this study was to investigate how a multilateral barter system can contribute to the pharmaceutical industry's sustainable development strategy. The methodological approach was qualitative based on semi structured interviews. It took place on a pharmaceutical industry context of barter projects which replaced the incineration of unexpired medications with their donation to needy people and in exchange received media for future advertising campaigns. The study identified socioenvironmental motivation as a driving factor behind the decision to implement barter projects, in addition to identifying new barriers such as organizational culture and bureaucracy.

Keywords: Multilateral barter. Pharmaceutical sector sustainability. Triple bottom line.

PERMUTA ORGANIZACIONAL COMO UMA FORMA DE ATINGIR UMA ESTRATÉGIA SUSTENTÁVEL NA INDÚSTRIA FARMACÊUTICA

RESUMO

O objetivo deste estudo foi investigar como um sistema de permuta multilateral pode contribuir para uma estratégia de gestão sustentável na indústria farmacêutica. A abordagem metodológica utilizada foi a qualitativa, com uso de entrevistas semiestruturadas com representantes de três projetos de permuta envolvendo laboratórios farmacêuticos que substituíram a incineração de medicamentos válidos por doação para a população carente e, como contrapartida, receberam mídia para futuras campanhas publicitárias. Os resultados apresentaram evidências que a motivação socioambiental foi um fator impulsionador para a decisão de realizar projetos em permuta, além de identificar novas barreiras, tais como cultura organizacional e burocracia.

Palavras-chave: Permuta multilateral. Setor farmacêutico. Sustentabilidade. *Triple bottom line*.

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1 INTRODUCTION

The increase in socioenvironmental problems due to greater environmental degradation, critical social challenges and the overuse of natural resources without respecting the planet's limits, has placed the issue of sustainability at the center of the business agenda. Indeed, the 2020 World Economic Forum presented its Annual Risk Report with the climate crisis, for the first time in history, occupying the first five places of world preoccupations (WEF, 2020). This encourages organizations to seek alternatives for a better use of resources by developing new products, processes and practices (Figuera et al., 2018), thus helping companies enhance their corporate social responsibility.

The simultaneous emphasis on economic, social and environmental aspects are the pillars that support the concept of sustainability, with Elkington (1997) terming them the Triple Bottom Line. Adopting this approach companies broaden their perspective regarding the various interested parties, or stakeholders (customers, community, partners, amongst others), with value creation transcending shareholder returns to also include social and environmental value (Freeman, 1984; Dyllick & Rost, 2017). In other words, organizations are not only concerned with profits and financial results, but also with their impact on the environment and society at large.

In addition, against a backdrop of adverse economic conditions and scarce financial resources, companies need to reinvent themselves and exploit any and every resource available without losing the focus on socioenvironmental needs. Companies must therefore seek other ways of doing business, not merely those involving monetized transactions. A lack of funds, mainly for marketing actions, and excess inventory are part of the reality of many firms, and pharmaceutical sector companies are no exception. In the Brazilian market this sector's revenues totaled R\$62.4 billion in 2018, registering a nominal growth of 9.76% in comparison with the same period of the previous year. Brazil accounted for 2% of the sector's total world sales and, in revenue terms, the domestic sector ranks 7th in the classification of the 20 main economies (Sindusfarma, 2019).

Medications with an expiration date of less than 12 months are not easily absorbed by conventional distribution channels. This generates a problem for the laboratories that need a place for storage and disposal, as established by Collegiate Board Resolution No. 306 of the Brazilian Sanitary Surveillance Agency (Anvisa, 2004) and Brazilian National Environment Council Resolution No. 358 (Conama, 2005).

On the one hand there is an inventory of useful medications that will not be used, and, on the other, a needy population, with little access to healthcare and which needs these medications that will end up being incinerated (thus impacting the environment). The way to confront this problem is through a network of stakeholders, where partner firms exchange products and services using a multilateral barter system, i.e. between all the companies in the network simultaneously.

Business-to-business (B2B) barter enables firms to use their inventory or idle capacity in exchange for projects that benefit them in some way. According to this logic nonproductive inventory that is about to expire or discontinued, can be an important currency of exchange (Birch & Liesch, 1998; Kaikati & Kaikati, 2013). This alternative contributes to these pharmaceutical laboratories' sustainable management, in Triple Bottom Line terms, as it disposes of excess inventory as a currency of exchange for the advertising of new products, benefits those in need and avoids the disposal of medications. Besides, barter can also be strategic to face economic or environmental crisis (Bebbington, 2010; Finau & Scobie, 2021)

The aim of this research was to investigate how a multilateral barter system can contribute to the pharmaceutical industry's sustainable development and enhance its corporate social responsibility. The study describes how the multilateral barter system works, identifying the motivations for its adoption and the barriers it encounters, in addition to analyzing its impact on this industry's sustainable management and including the viewpoint of the stakeholders who are the beneficiaries of this action.

As O’Riordan and Fairbrass (2014, p. 122) analyzed, there is a lack of studies of corporate social responsibility approaches to the management of stakeholders in the pharmaceutical industry, which is a “sensitive” segment regarding social, ethical and environmental issues. Thus, this study intends to meet the Academy of Management Journal’s clamor for studies that contribute to the “Grand Challenges” and transform research into practical solutions that enable the global community to face the challenge of achieving the UN’s Sustainable Development Goals (George, Howard-Grenville, Joshi & Tihanyi, 2016).

2 THEORETICAL REVIEW

This study used the Triple Bottom Line (Elkington, 1997) approach and the barter framework proposed by KaiKati and Kaikati (2013) to investigate Corporate Social Responsibility and sustainability in the pharmaceutical sector.

2.1 Sustainable development and the triple bottom line

The excessive concentration of wealth, growing inequality and poverty, ecological negligence, the loss of ecosystem resilience and the increase in environmental risks and unpredictability are some of the effects that clamor for the re(construction) of new styles of development (Reus & Andion, 2018). The concept of sustainable development is based on a process in which the exploitation of resources, the guiding criteria for investments and technological development need to be in sync with institutional change - thus strengthening current and future potentialities - in order to satisfy human ambitions and needs According to the World Commission on the Environment and Development (Wced,1987), the definition of sustainable development “is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

Currently, Corporate Social Responsibility – after decades during which the concept has evolved from its beginnings as corporate philanthropy – should be seen as a way of achieving sustainability (Barbieri & Cajazeiras, 2017) as defined in ISO 26000 – the ISO of Social Responsibility, which “provides guidelines on principles to integrate social responsibility in terms of strategy, system and processes” (Fuzy, Habidin, Hibadullah & Ong, 2017).

The simultaneous union of economic, social and environmental aspects are the pillars that support the concept of sustainability, and which Elkington (1997) termed the Triple Bottom Line (TBL). By concentrating on the broader results of investment, i.e., regarding performance in the inter-related dimensions of profits, people and the planet, the TBL has become an important tool and guide for supporting sustainability targets and meeting the needs of diverse stakeholders (Slaper & Hall; 2011).

Studies in the CSR and corporate sustainability areas in the pharmaceutical industry have focused on various aspects, such as: the relation between engagement in CSR activities and positive financial results (Min, Desmoulins_Lebeaut & Esposito, 2017); challenges of reverse logistics management in the pharmaceutical industry (Luna & Vianna, 2019; Naryana & Elias, 2014); the management of the complex stakeholder network (O’Riordan & Fairbrass, 2008; O’Riordan & Fairbrass, 2014) as well as the issue of the industry’s reputation (Fischer, 2009).

Moreover, Singleton, Nissen, Barter and McIntosh (2014) in their literature review cited the three main sources of the pharmaceutical huge negative impact in the environment: the carbon footprint of manufacturing and distribution chain; the incineration of unwanted pharmaceuticals, and the direct chemical effects of the pharmaceutical in nature (Kummerer, 2010), and suggested that pharmaceuticals should have an action to reduce such impacts. However, no study was found in the literature which investigated barter in the pharmaceutical industry’s sustainability.

2.2 Barter

Although money plays a fundamental role in the modern economy and its use has numerous advantages, a growing amount of business is being conducted without using money, or in some cases balancing its use with the exchange of goods or services (Kaikati & Kaikati, 2013). Barter is the oldest existing form of commerce (Nassimbeni & Sartor, 2009) and became an important tool in the development of nations. It provided a solution for problems such as balance of trade difficulties, scarce foreign currency, finding markets for surplus goods and guaranteeing a reliable source of raw materials.

Barter, which can be defined as a moneyless exchange or trade transaction as undertaken in local communities, is fulfilled with the simultaneous transfer of the goods and services agreed as being of equal value and concluded under a single contract (Birch & Liesch, 1998). It is also based upon personal ties of mutual trust, benefit and balance (Al Suwaidi, 1993).

The International Reciprocal Trade Association (Irta, 2018) extended the concept of barter to the organizational sphere, considering this form of commerce as a financial and marketing tool that companies use to move their excess inventory and exploit a factory's underutilized capacity to fund the cost of production. So, Business-to-Business (B2B) barter has become institutionalized as an alternative system of marketing exchange, and is a widely used type of exchange that complements the conventional regime based on a monetized market (Birch & Liesch, 1998).

As the classic barter system proved to be a limited model due to time, need and value asymmetries between buyers and sellers, it evolved towards a multilateral business barter system based on the convenience provided by informatized commercial exchanges (Birch & Liesch, 1998). According to Cresti (2005), this sector is formed by multilateral exchange networks of barter clubs, that coordinate the exchange commerce between their members using a mutual credit system, i.e. goods and services are exchanged using credits instead of the official currencies of the country in which the network is located (Birch & Liesch, 1998).

Due to the use of a unit of account called "commercial credit" to register the value of transactions, barter does not need to be a directly synchronized bilateral transaction. Thus, in contrast to simple bilateral barter, the members are not tied to a direct exchange, but can acquire goods and services from a pool of associates and the credits can be retrieved from the system at a future date. It should also be highlighted that in barter networks the prices should be the same as those used in monetized systems (Cresti, 2005).

A different system of barter not based on money is brought by the experience in the Fiji Islands with new ways to an old adopted system informed by Indigenous values and practices of trade and exchange. Covid-19 economic crisis has forced Fijians to abandon systems embedded in ideologies of free-market capitalism and to adopt an alternative form of accounting. The experience suggests new emerging barter practices to support economic crisis (Finau & Scobie, 2021).

These authors shed light on two different views of barter: economists generally define barter as a commodity exchange between different parties; whereas anthropologists have distinguished between commodity exchange and barter, the distinction being that a commodity exchange is purely a commercial transaction while barter is embedded in social relations. The idea of barter as a primitive practice and as a precursor to money is being questioned and analyzed from another perspective to understand the way accounts were used in rejecting a proposed barter.

Finau & Scobie (2021) follow the approach by Bebbington (2010) where the use of accounts is not related to structured systems of bookkeeping but broader and alternative notions of value. They explore specific practices of barter that determine values, but within a wider accountability system based on kinship and reciprocity. The article highlights the complexities of accounting for exchanges with cultures whose notions of exchange differ from capitalist notions of exchange where commodities are alienable (Finau & Scobie, 2021).

2.2.1 Motivations for Multilateral Barter

A firm's decision to negotiate moneyless agreements can be influenced by various factors. Kaikati and Kaikati (2013) developed a conceptual framework to distinguish between the main factors that have led to the prevalence of moneyless transactions in today's market. According to these authors the factors can be classified as contingent or structural, with the contingent factors divided between those oriented towards survival or oriented towards growth.

According to Kaikati and Kaikati's (2013) framework, contingent deals are generated by external pressures, including adverse economic conditions, such as the financial crisis and tighter credit, in addition to legal regulations imposed by government bodies. Contingent deals oriented towards survival involve mainly a company that achieves its financial and legal objectives in the short term. These agreements are initiated as a response or adaptation by the firm to changes imposed by the market, such as economic crises, legal regulations and customers' financial difficulties. This type of agreement is often anticyclical, i.e., when economic conditions improve these deals cease to exist (Kaikati & Kaikati, 2013).

Corroborating the above, Birch and Liesch (1998) affirm that barter institutionalizes itself as companies seek to capture the advantages of these modalities of alternative exchange when the orthodox system is a limiting factor. Thus, in principle, barter would be more attractive during economic recessions when financial resources are scarcer. During sluggish macroeconomic and recessionary periods, the orthodox market-based monetized system is challenged and barter appears as an alternative complementary model.

On the other hand, Kaikati and Kaikati (2013) define contingent barter transactions oriented towards growth as those actions that are initially undertaken as a reaction to market conditions, but instead of being reactive are generally proactive. Thus, barter is seen by organizations as a means of growth and promotion. As these promotional expenditures are recurrent, the contingent growth-oriented factor has a greater probability of persisting in the medium and long term. This is due to the fact that executives willfully and proactively seek various ways of implementing cost-cutting initiatives to achieve corporate efficiency goals.

Thus, although contingent growth-oriented deals, similarly to survival-oriented ones, tend to be initiated during difficult economic times, they can persist beyond the cost-cutting need phase to provide continuous financial and marketing benefits oriented towards future consistent growth, independently of the broader economic situation. Faced with smaller marketing/promotional budgets, executives explore the feasibility of: exchanging obsolete inventory for publicity; negotiating non-monetary product placement deals; taking part in cross-promotion campaigns; and launching promotional campaigns without money (Kaikati & Kaikati, 2013).

Cresti (2005) defends the idea that the economic environment plays an important role in determining the type of barter that can be developed and the way the business model can respond to the economic situation. He concludes that, considering the positive relation between barter and the service sector's gross domestic product (GDP), it would not be correct to link the barter activity exclusively to crisis situations. Thus, it cannot be seen solely as an anticyclical phenomenon.

Kaikati and Kaikat (2013), classify structural factors as those that involve the development of new business models, independently of whether economic conditions are more likely to be permanent and enduring. The structural factors concentrate on long-term prospects for consistent growth and overcoming the competition. These transformational business models are driven largely by new technological advances and present opportunities to structure substantially new business models.

Beyond the economical view only, Bebbington (2010) proposed that Lets (Local exchange trading systems), defined as an extended/multilateral barter system, could also address social and environmental aspects, therefore offering support to the Triple Bottom Line.

2.2.2 Challenges and barriers facing barter

Although the use of moneyless transactions is positive for companies, the literature presents various challenges inherent to businesses based on barter, such as those involving financial, non-financial (e.g., coincidence of interests between the parties) and legal factors (Birch & Liesch, 1998; Kaikati & Kaikati, 2013). Birch and Liesch (1998) also include the coincidence of wants, need, values and time as challenges to the effective implementation of bilateral barter.

As an example of a financial challenge, Kaikati and Kaikati (2013) cite the latent cost of moneyless transactions, tax implications, reports and the difficulties involved in forecasting the financial result of barter transactions. Indeed, accountability systems are not prepared for barter operations and need to be changed (Bebbington, 2010; Finau & Scobie, 2021).

Futhermore, there are price and cost issues. According to Yakovlev (2000, pag.284), “the barter prices are higher... It can be 2.0–2.5 times as much as the ‘live money’ price”. Besides the commissions and fees can produce an unexpected cost increase due to some companies that can not use the system efficiently (Uyan, 2017)

As regards legal issues, emphasis was placed on the importance of observing protocols, similarly to transactions involving money: B2B barter transactions are treated like money transactions for tax purposes and the Internal Revenue treats barter revenue as the equivalent of monetary revenue (Birch & Liesch, 1998; Kaikati & Kaikati, 2013). Aggarwal (1989) affirms, that products acquired by barter might be difficult to value for customs and tax purposes. In addition, McVey (1981, pag.212) posits that a barter transaction “includes a number of potentially difficult areas which must be taken into consideration in order to be assured of a safe and orderly transaction” such as contracts and guarantee of payment.

The non-financial challenges mentioned were the lengthy negotiations and the concern with the disposal of the products negotiated (Kaikati & Kaikati, 2013). Table 1 summarizes the challenges and barriers facing barter.

Table 1: Barter challenges and barriers

Barter Challenges/ Barriers	Author
Coincidence of interest between parties	Birch; Liesch, 1998; Kaikati; Kaikati, 2013
Coincidence of wants, need, value and time	Birch; Liesch, 1998 ;
Tax issues such as: difficulties of forecasting financial results in barter transactions and tax reports in barter transactions; accounting systems	Kaikati; Kaikati, 2013; Bebbington, 2010; Finau & Scobie, 2021
Lengthy negotiations	Kaikati; Kaikati, 2013
Concerns regarding the disposal of traded products	Kaikati; Kaikati, 2013
Legal issues (importance of observing protocols like transactions involving money) ; contracts	Birch; Liesch, 1998 ; Mcvey, 1981
Tax issues: barter transactions should be treated like transactions involving money for tax purposes	Birch; Liesch, 1998; Kaikati; Kaikati, 2013
Extras costs like Commission and logistic	Uyan, 2017;
Higher prices	Yakovlev, 2000

Source: The authors

3 METHOD

This study analyzed barter, as a new way to deal with trade. Implementation demands a change in the traditional organizational culture with new values and changing habits that it brings. According to Rosentiel (2004), social sciences started with the complexity of the object of their investigation, the human beings in a complex they have themselves created. In Rosentiel's (2004,p.136) words: Organizations are systems created by people which gain significance for their

members by virtue of their perception and interpretation. If one desires to comprehend this scientifically, qualitative procedures are particularly well suited to the task.

Because of the possibility of enquiring openly about situational meanings or motives for barter, and self-interpretations in a differentiated and open way, and also because of the possibility of discursive understanding through interpretations, semi-standardized interviews provide important opportunities for an empirical application of new theories and ideas.

As this study embraces studies of corporate social responsibility, marketing, and organizational politics, it requires a broader view which can be best given by a qualitative approach. The object of analysis comprised three socioenvironmental projects involving pharmaceutical laboratories (one multinational and two medium-sized Brazilian ones), that donated their excess inventories in exchange for media using the Prorede Barter System (Prorede, 2019). These projects were chosen due to convenience of access to these laboratories' managers and directors.

Table 2 presents a summary description of each of the actors of this study (note that the number after the acronym refers to the project). Thus, Project 1 included laboratory LAB1, Sponsor PAT1 and Donation Recipient REC1). It should be highlighted that the option of participating in the barter project means donating the medications (that would be incinerated otherwise) to some recipient institution, represented here by REC1, REC2 and REC3, and in return receive media for products to be launched by the laboratories and/or their staple products.

Table 2: Summary description of the actors involved in the study

LAB 1	Brazilian company founded in 1985 and a leader in phytomedicine in the country. It provided products worth R\$5 million for social actions.
LAB 2	Subsidiary of a leading African brand and one of the world's twenty biggest companies in the generic medication segment. The group entered the Brazilian market officially in 2009 when it acquired 100% of the subsidiary. It provided products worth around R\$3 million for social actions.
LAB 3	Brazilian company founded in 1982 that produces and sells medications, functional food and cosmetics through two divisions: medical and dental divisions.
*	Media group that has been in the Brazilian market for 39 years. It provided advertising panels for social projects in the country's main airports.
PAT 2	Movie theater group in the city of Rio de Janeiro. Provided media on movie screens for social projects.
PAT 3	Outdoor advertising panel market leader in the state of Rio de Janeiro. Provided idle outdoor panels for social projects.
REC 1	Regional unit of the Red Cross – the world's main humanitarian aid group – responsible for the operation in the state of Paraná.
REC 2	Regional unit of the Red Cross – the world's main humanitarian aid group – responsible for the operation in the state of Amazonas
REC 3	Institute in the city of Rio de Janeiro that studies and analyzes the health sector in order to propose feasible and innovative solutions, that benefit the city's needy communities.
PROREDE	Multilateral barter system responsible for project intermediation.

Source: The authors

Ten people with decision-making power in the three projects were selected to take part in semi-structured *in situ* interviews with one of the authors. They consisted of three representatives of the pharmaceutical laboratories (LABn), three sponsors of the barter action (PATn), three representatives of philanthropic entities that received the donated medicine (RECn) and a representative of Prorede. Given that the aim of this study was to describe how a multilateral barter system can help the pharmaceutical industry remove excess inventory, contributing to sustainable management using the Triple Bottom Line model, the interviews were conducted to discover whether the three sustainability pillars (environmental, social and financial) were considered in the decision to implement the project. Table 3 presents the interviewees' profiles.

Table 3: Interviewee profiles

Interviewee	City/Location	Position
LAB1	Curitiba	Marketing Manager
LAB 2	Rio de Janeiro	Marketing Manager
LAB3	Rio de Janeiro	Product Manager
PAT1	São Paulo	CEO
PAT2	Rio de Janeiro	Project Coordinator
PAT3	Rio de Janeiro	CEO
REC1	Curitiba	Administrative Director
REC2	Manaus	Divisional Head
REC3	Rio de Janeiro	Administrative Director
PROREDE	Rio de Janeiro	Executive Director

Source: The authors

3.1 Prorede

Prorede (2019) is a consulting firm that was founded in 2004 and specializes in intermediating barter of non-productive inventory and idle capacity, proposing bilateral and multilateral barter options for all network partners. Prorede's social arm began to take shape when a pharmaceutical laboratory executive reported that pharmaceutical laboratories often incinerated unexpired medications, given that distribution channels do not absorb medications with an expiration date of less than 12 months.

As a product with considerable legal restrictions, it was initially difficult to organize a barter project involving medications. However, in January 2011 the mountain region of the Rio de Janeiro State was hit by severe flooding, causing 918 deaths and making more than 30 thousand people homeless. It was at this time that the Prorede team had the idea of proposing a project in which a laboratory would provide medications for donation to the victims of the floods in exchange for media to promote its new products.

The pilot project implemented to cater to the victims of the floods in Rio de Janeiro's mountain region involved the donation of medications worth 50.000 US dollars. As the business model had demonstrated its feasibility, Prorede took commercial steps to expand its reach. It established partnerships with other pharmaceutical laboratories, signed agreements with charities and sensitized more sponsors. As a result, by mid-2019 Prorede had already managed to build several associations of the three parties necessary, involving more than 5 million US dollars worth of medications.

The flow of a barter project involving social actions are the following: 1) the laboratory draws up an inventory of medications whose expiration dates are close to 12 months and informs Prorede; 2) Prorede looks for philanthropic and humanitarian aid institutions that are interested in the inventory and are able to distribute the medications to the population in need. It is important that the institution assume responsibility for the donation from its storage to the complete distribution of the medications; 3) having drawn up an inventory of medications and found an institution that is willing to receive and assume responsibility for the donation, Prorede activates its partner network to find sponsors for the action; 4) the sponsor (usually a media vehicle) allows its idle space to be used by the pharmaceutical laboratories in exchange for their donations. Thus the system manages to transform the medications donated by the laboratories to the philanthropic institution into an equivalent amount of media.

4 ANALYSIS OF RESULTS

This section is organized as follows: firstly a description is given of the pharmaceutical industry's current disposal process from the company perspective. This is followed by the presentation of the results related to stakeholders' motivations and the barriers they encounter in the

barter process. Finally, data is provided regarding the socio-environmental aspects of the action and pharmaceutical companies' perception of barter as a tool for fostering sustainability in their industry.

4.1 The Pharmaceutical Industry's Disposal Process

In general, and as the present study confirms, inventory management is a critical point in the pharmaceutical industry. The three companies interviewed affirmed that, for commercial reasons, medications with less than 12-month expiration dates are not sold through the conventional distribution channels and the industry needs to decide what to do with these products. The pharmaceutical companies affirm that:

The product has a two-year expiration date. When it has 365 days to expire, one year from its expiration date, it is blocked in the industry's inventory. (LAB1)

With 14, 13 months to go, the company performs commercial actions to totally resolve the inventory (LAB2)

We have a monthly meeting to check inventory, samples, original product. In the case of medications with large amounts close to expiration, we undertake a specific action in the field, or with doctors, we always do what we can to try to reduce this type of excess inventory, ok? (LAB3)

After exhausting commercial attempts to run down inventory that has expired, it is sent to incineration, thus complying with the prevailing legislation.

The pharmaceutical industry's usual practice is incineration (LAB1)

It is what we have to do according to sanitary legislation (LAB2)

4.2 Motivations for Barter

It was clear that the managers of the three pharma companies interviewed were uncomfortable about incinerating medications that could still be used. According to LAB1, although the sale of a product with an expiration date of less than 12 months is blocked, they think that "the product is fine, in an excellent state and condition" and that it could be bought, albeit not complying with market policy. LAB2 similarly showed its concern with incineration:

You cannot sell medications with an expiration date of less than 12 months, but you still have a year of medication ahead of you. We think the medication cannot simply be incinerated (LAB2).

As regards the economic pillar of sustainability, the companies think that the media obtained in return is advantageous and that this pillar is interspersed with the social responsibility and environmental dimensions. Barter was thus considered to be a feasible solution:

In addition to generating waste, it is expensive (incinerating medications that are unexpired and in perfect condition) (LAB1)

Put the products to better use (...) avoid expelling smoke into the environment (LAB2).

We think that barter is one of the best solutions for dealing with products with a less than 12-month expiration date (LAB2).

The pharma companies are transforming unwanted inventory into advertising and this advertising will usually generate revenues, will generate new sales and profits. So there is an economic component of sustainability (Prorede).

The cost of barter is X plus 10%, so it's worth it, because in addition to not throwing the products away, we are doing good for society...As we perform an evaluation matrix, it's hard for it not to be a good option (LAB1).

As regards the decision chain, although the three projects studied began in the marketing department, the go-ahead came from the respective pharma company CEOs. According to LAB2,

The media obtained in return directly influenced the decision to engage in the barter projects. According to the pharma company manager “we didn’t know any other company that did this and as there was a commercial return it was easier to justify it, to put before the company board” (LAB2)

Thus, the pharma companies interviewed were asked to list the main motivations for participating in a barter project in order of importance. As summarized in Table 4, the media obtained in return (financial pillar) was the least important motivation for LAB1 and LAB2, with only LAB3 identifying it as the main motivation. However, it is important to emphasize that these projects occurred at a time of consternation at the social situation of those who had lost their homes due to the floods.

Table 4: Pharmaceutical companies’ motivations for engaging in barter projects

	Motivational Reason		
	Social	Enviromental	Economical
LAB1	2	1	3
LAB2	2	1	3
LAB3	2	3	1

Source: The authors

To understand the project as a whole it was also necessary to identify the motivations of barter project sponsors. The interviews revealed that that although the sponsors were satisfied with the project and with the return it could bring to society, only PAT1 elevated the action to the level of organizational values (and a degree of strategic connection). Both PAT2 and PAT3 said that the motivation for undertaking the project was linked to personal satisfaction and philanthropy.

We had some barter contracts with the Prorede, not social, but actual business ones. So when this social barter possibility appeared, we found it very interesting to use our idle space to do things that are important for society (...) I bought into the idea immediately and when it reached the group’s decision-making spheres it was very well received (PAT2).

We talked, the Prorede presented the project and we liked it very much and we offered the idle spaces in our outdoor panels. This was a very positive thing, wasn’t it? Not just for the company but for also for me, personally speaking, being able to help society, right? (PAT3).

We had been doing some barter transactions (...). Then the proposal was made to use these credits to sponsor the medication donation action, to support a cause, a partnership with the Red Cross, etc... At this exact time we were redefining our values, objectives, and we ended up seeing that we not just doing something positive, but that it was also an obligation of the group to use some of our assets to contribute to something bigger, right... (PAT1).

4.3 Barriers to barter

Some difficulties were identified from the laboratory perspective that compromise the project’s feasibility, with compliance being one of the most cited. The term compliance suggests a set of actions, processes and procedures sponsored by the organization’s top management to ensure that all norms (internal and external) established for the business can be fulfilled (Coimbra; Mazi, 2010) in addition to avoiding, detecting and dealing with any deviation or non-conformity that may occur (Terra; Bianchi, 2018).

Our global compliance is very strong, so obviously it is a barrier and we had to show that the project was really serious, that the people that were engaged in it were honest and that the barter would bring real social value. (LAB2)

The concern expressed by LAB2 is in line with Prorede's opinion, with the latter also viewing compliance and the preoccupation with the disposal of the products negotiated as obstacles to the implementation of the barter project.

Our view is that compliance instruments hamper or make it extremely difficult to dispose of this inventory in this way. So this makes the operation much more complex. For example, much closer monitoring of the arrival of the medications at the final beneficiary, all the stages. This is a problem, especially for multinational laboratories. (...). So, our proposal has to include this type of monitoring. Establishing a partnership with a distributor who has an unblemished reputation. That is why we only deal with recognized bodies (Prorede)

Another difficulty mentioned by LAB 1 was the tax and accounting issue, thus corroborating previous studies that state that one of the challenges of barter transactions is the difficulty of forecasting the financial results of transactions, in addition to making tax reports (Kaikati; Kaikati, 2013). However, LAB2 identified ethical/legal rather than commercial aspects as being the most difficult ones.

It was not very clear to us how it would work, as it is not something we usually do. Our accounting system is not prepared for barter, it is prepared for sales. So I think the main barrier is related to this. Not least because we don't write off inventory, it's as if the marketing department had bought the products to perform an action. Trying to understand how we did this so that it would be clear enough for the accounting department to be able to explain it all at the end of the year, that was a problem (LAB 1).

The responsibility, whether you are selling or donating medications, is always industry's. So we had to be sure that the medications that reached their intended destination were used correctly (LAB2)

We needed to guarantee that hospital XYZ that had been indicated to receive our donation, had in fact received it, and if so had followed the correct procedures. Because if not the company would also be liable. So I think that this was the main point we had to overcome. Not commercial aspects but ethical/legal ones. (LAB2)

Although LAB1 and LAB2 presented obstacles that hampered the implementation of the barter project, LAB3 affirmed that it had not faced any difficulties. According to this account it was possible to perceive how organizational culture can facilitate or hinder the decision to take part in specific projects.

The laboratory is very open when it comes to undertaking any type of differentiated action. We have the departments, the departments talk to each other, so the initiative was very well received by all. Barter is not simple, as we all have to change our daily routines, right? It's the logistics, the marketing, the regulatory issues. But we go ahead anyway. We talk and manage to get this type of action implemented easily (LAB3).

According to recipient REC3, as there was a big volume of donations they felt the need to share the products received with another institution. However, there were bureaucratic and legal impediments. This issue can be identified as one of the barriers mentioned by Birch and Liesch (1998) who included legal issues as a challenge in transactions involving barter. The concern to use the whole donation received was also a point mentioned by the other recipients:

We can't help them, because their social services are also free of charge and we thought of giving them a part, passing on these donations so that they could distribute them in the communities they serve. However, there was a bureaucratic impediment – they cannot receive donations... The legislation could be more flexible to allow a greater exchange (of products) and make it easier for institutions to share and thus for the medications to reach the needy population.... (REC2).

Prerede tells us the origin of the medication, so we assess whether we can use it in the hospital. Will I be able to use such an amount before the expiration date? This is the biggest problem. We once refused to accept some medications because there was too much and we wouldn't be able to distribute them in time (REC1).

As mentioned by the laboratories there is a great concern with the medication after it leaves the industry and the national regulator exercises a very strict supervision. Therefore, the donation process must be very rigorous and often bureaucratic.

There is too much bureaucracy, we fulfill all the requirements. It was not easy, there were many stages. An institution that doesn't have our capacity would perhaps not be able to receive the donations because it will not be able to prove some things legally, which might be facilitated by Anvisa, by the authorities, right? So as to avoid this absurd situation of incinerating instead of distributing the medications to the needy populations (REC3).

I think the main barrier is the supervisory institution itself, isn't it? They have some requirements for receiving the goods, having a specific location, registers, certificates... (REC2).

From the sponsors perspective the only one that identified any barrier was PAT2, mentioning its own team as one of the elements that hampered the process. According to the representative interviewed, the internal team checked the availability and delivery of the media, without receiving a commission, as it was a barter transaction with a social return.

Some people understood the process, its purpose...Others didn't. My feeling is that that some people wouldn't do it just for the social return. So we had to convince people that this was the right approach (PAT2).

In Prerede's opinion one of the difficulties found was to "count on the good will of the media vehicles to sponsor the project" given that the sponsors' only return is a social one and the satisfaction of being able to help society, as shown in the item that refers to motivation. Table 5 summarizes and exemplifies the barriers found in the interviews.

One always has to appeal to the feeling of altruism, of wanting to do it, even when space is available. So we have tried to say: "look, this space is available, you're going to lose..... Don't you prefer to use this to donate medications to people who need them? (Prerede).

Table 5: Barriers found in the interviews.

BARTER CHALLENGES AND BARRIERS	
COMPLIANCE	"Our global compliance is very strong, so it is obviously a barrier." (LAB2)
	"Our perception is that compliance instruments hamper, or make it extremely difficult to use inventory for this purpose." (REC3)
LEGAL	"The legislation could be more flexible to allow more barter and make it easier for institutions to share and thus for the medications to reach needy populations" (REC3)
	"The responsibility, whether you are selling or donating, is always the industry's. So we had to be sure that the medication that reached its intended destination was used correctly" (LAB2)
FISCAL and TAX	"Our accounting system is not prepared for barter..." (LAB1)
BUREAUCRACY	"There is too much bureaucracy, we have to fulfill all the requirements. It was not easy, there were many stages." (REC3)

	I think the main barrier is the supervisory institution itself, isn't it? They have some requirements for receiving the goods, for having a specific location, registers, certificate, a company registration number ... (REC2)
ORGANIZATIONAL CULTURE	"Some people understood the process, its purpose...Others didn't. I have the feeling that some people wouldn't do it just for the social return. So we had to convince people that this was the right approach (PAT2).

Source: The authors

4.4 Socioenvironmental impacts of the projects

Part of the study was devoted to understanding how the products are distributed and their impact on the recipient community and the environment. As it was impossible to perform interviews directly with the needy populations that received the medications donated, the study contemplated the recipients of the donations, i.e., the charities that are responsible for receiving and distributing the medications to the population.

The distribution was performed according to the profile of the medications and the demand from recipient institutions. According to the recipient units the medications donated reached around 9.500 people spread out all over the states of Amazonas, Paraná and Rio de Janeiro. As regards the social impact of the donation of medications to the needy populations, it could be perceived that the actions influenced people's self-esteem.

We managed to take a quality product to people who would normally not have access to this type of medication, to this type of material, right! So, receiving a product that is on the drugstore shelf, an expensive drugstore, an expensive product, the people feel important... This donation initiative was very important because they were quality products, a considerable amount, that enabled us to organize this project, working alongside the doctors and psychologists (REC3)

Imagine that you are fat, poor, there is already prejudice involved, you receive a product that will help your wellbeing? It's a great joy for this part of the population (REC2)

Considering the impact on the environment stakeholder, it is difficult to measure the real gain. However, documental study data showed that 60 thousand medications were not incinerated and were donated to the needy populations. When one considers that many of these medications came in packets containing 30 tablets, the environmental impact was even greater.

4.5 Barter and sustainability

The study went to great lengths to discover how the interviewees understood sustainability and whether companies had a policy towards sustainability/social balance sheet. During the collection of secondary data it was found that the laboratories involved had sustainable rules regarding pharmaceutical sector best practices and sanitary legislation, but no established and formalized sustainability policy. Although the three laboratories interviewed had affirmed that they did not have a formalized sustainability policy, the interviews showed that they did indeed undertake socioenvironmental actions.

LAB1 is the closest to having formatted a sustainability policy and includes sustainability clauses in its bylaws. LAB2 does not have an established sustainability policy but seems to want to develop a socioenvironmental awareness, given that it encourages its employees to become involved in community projects. LAB3 does not mention any action or concern with sustainability on its website.

When asked directly about their understanding of the concept of sustainability, the laboratories affirmed that they were aligned with the Triple Bottom Line model, i.e. recognize the

social, environmental and economic pillars, as shown by the position upheld by LAB2, which was emphatic in demonstrating the need to achieve the economic pillar in a socially responsible fashion:

Our company is not an NGO, it is a corporation. It is listed on the Johannesburg stock exchange, so we really need to make a profit, but not at any price. We believe that we can be profitable but can also be socially responsible in performing our tasks (LAB2)

5 DISCUSSION AND FINAL CONCLUSIONS

The main objective of the present study was to investigate how a multilateral barter system can contribute to sustainability in the pharmaceutical industry, identifying motivations and the barriers facing the implementation of this innovation. Considering the Triple Bottom Line concept it was possible to identify that a barter project simultaneously complies with the requirements of the environmental, social and economic pillars: the fact of not incinerating unexpired medications contributes to the environmental pillar, while distributing these medications to the population that needs them has a positive impact on society. The financial return is achieved because the laboratory exchanges products that would be disposed of for marketing campaigns, thus encouraging the sale of new products and contributing to the laboratory's financial result.

Establishing a parallel with the conceptual structure developed by Kaikati and Kaikati (2013), it was found that the motivation for barter can initially be characterized as a contingent growth-oriented factor, i.e., barter is seen by organizations as a path to growth and promotion, providing continuous marketing (and thus financial) benefits, while also exploiting the reduction of obsolete inventory.

However, the study identified a socioenvironmental motivation (especially in the case of LAB1 and LAB2, but also shared by various actors of the barter network) despite the fact that laboratories lacked an explicit sustainability strategy. This motivation may be in line with Cresti (2005) who alleges that the motivation does not necessarily need to originate in an economic crisis and Bebbington (2010) who suggested that multilateral barter can be an approach to address social environmental issues. Besides, Finau and Scobie (2021) suggested that barter could be influenced by the need to build a sense of community and reciprocity.

The environmental pillar was mentioned more often in the interviews (specifically by two or three laboratories), reinforcing the idea that sustainability in the pharmaceutical industry may focus more on environmental problems – pollution, waste generation and natural resources, a situation perhaps exacerbated by the fact that they are regulated directly by Brazilian National Solid Waste Policy (Pnrs, 2010) legislation.

Some barriers identified in the interviews with project stakeholders - such as compliance, legal and fiscal/tax barriers in multilateral barter – had previously been reported in the barter literature (Birch & Liesch, 1998; Kaikati and Kaikati McVey, 1981). However, other barriers appeared during the course of this study. Firstly, organizational culture was reported in one of the interviews as an important barrier and may indeed become an impediment in companies that have a greater resistance to process and practice innovation. Another barrier cited emphatically by various interviewees was bureaucracy – a chronic problem that has a great impact on the Brazilian economy (Cirani, Koni, Santos & Cassia, 2016).

Curiously, organizational culture was considered a facilitating factor by some actors, while for others it was clearly a barrier as previous mentioned. For example, when asked about the barriers to project implementation, LAB3 affirmed that it had faced no obstacles, stressing that the laboratory is very flexible regarding new projects and that internal departments interact. On the other hand PAT2 affirmed that the main barrier to project implementation was precisely the employees. This case showed the importance of the organization's structure and culture regarding innovation and new processes.

It should be highlighted that the barter projects analyzed in this study were exceptional cases and that the incineration of unexpired medications that could still serve a useful social purpose unfortunately remains the norm. If the barter alternative were to be adopted as a standard procedure by laboratories, and this new process established as a sustainability policy in companies, raising it to a strategic level, it would be possible to classify it, according to Kaikati & Kaikati (2013), as a structural factor to be applied in the long term: an innovative business process, implementing collaborative models between various stakeholders, aiming especially at sustainability.

5.1 Theoretical contribution

This study made important contributions to the areas of Barter and Sustainability research areas. The first was to contribute to the corroboration of barter concepts, as regards motivations and barriers, that had already been identified in the international literature and could also be found in Brazil in an important sector like the pharmaceutical industry.

The second most important contribution was to reveal the socioenvironmental motivation as an important factor in the decision to undertake a barter project which can be key in supporting strategies to address economic and social environmental world crisis, in line to the claims of previous researchers (Bebbington, 2010; Finau and Scobie, 2021). This result complements the conceptual model proposed by Kaikati and Kaikati (2013) and contributes to the advancement of knowledge about the multilateral barter system as a sustainability strategy, in addition to identifying new barriers such as organizational culture and bureaucracy.

5.2 Practical contribution

The study can contribute to the development of public policies that encourage actions with a social impact, as in the case of the examples cited in the study, so that the barter alternative may be seen as an incentive and not as a bureaucratic obstacle in projects. In light of the challenges to the implementation of an innovative process posed by compliance, it is imperative that companies analyze the need to implement governance systems oriented towards sustainability.

To conclude, despite its small-scale relative to the size of the pharmaceutical market, the Prorede multilateral barter system constitutes an important tool for enabling laboratories to achieve sustainable development and, in addition, contribute to the UN's 2030 Agenda for Sustainable Development Goals (SDG), especially SDG 3 (ensure healthy lives and promote well-being for all at all ages) and SDG 11 (make cities and human settlements inclusive, safe, resilient and sustainable) (ONU, 2019)

5.3 Limitations and suggestions for future research

Similarly to all studies, the present one also has some limitations. Firstly, one should be cautious in interpreting the evidence for social motivation in this study, as it may have been influenced by the social consternation prevailing at the time of the project, given the thousands of people who had lost their homes due to the floods. However, this business model was also used by other laboratories. Thus, the authors recommend that future research include other laboratories in order to enrich the study and bring new perspectives to the theme.

Another limitation of this study was the fact that the interviews with the society stakeholder were performed with the charities responsible for the reception and distribution of the medications. Future studies could benefit from an additional investigation of the benefited population, thus providing greater detail of the social impact, and subsequent monitoring to analyze whether the medications were totally consumed in order to gauge the environmental impact with greater precision.

Given that compliance emerged as a complex barrier to overcome, futures studies of barter could benefit by focusing on the governance required for this business model. Indeed, there is a clamor for more research into new forms of governance oriented towards current needs for sustainability (Tihany, Graffin & George, 2014). Some researchers also claimed for more studies focused on barter accounting to support world economic crisis and sustainable development agenda (Bebbington, 2010; Uyan, 2017), including a “re-orientation of accounting for barter research that incorporate the disciplines of economic and anthropology” (Finau & Scobie, 2021, p 1.).

Future research could also investigate how the issue of organizational culture can influence barter actions (type of innovation) aligned with CSR and sustainability, as Romano, Teixeira e Alves (2014) who identified organization cultural factors which fosters social responsibility actions in the cosmetic Brazilian industry. Therefore, evaluating how employees’ individual attitude/behavior towards actions that are more ethical and committed to society can affect strategic sustainability decisions (and implementations) through barter, could also enrich research in the area.

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