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## **The contribution of the procurement process to financial performance: a case study of the sugar-energy sector**

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**Abstract:** The aim of this paper is to identify the key elements of the procurement process that promote financial performance. A systematic literature review (SLR) was conducted to identify the key elements of the procurement process that promote the financial performance. Then an in-depth exploratory case study was conducted on a Brazilian company, the largest sugarcane producer in the world, to examine and identify these key elements on the procurement process. Throughout the case study, it became clear that the alignment between procurement and finance positively influenced organisations' financial results. It also contributes to identifying new key elements and opportunities for improving the procurement processes. This paper helps understand the current relationship between the procurement process and financial performance in the Brazilian sugar-energy industry.

**Keywords:** case study; procurement; performance; key elements; financial; sugar-energy; Brazil.

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## 1 Introduction

One of the processes that comprise supply chain management is procurement, in which strategic plans are developed with suppliers to support the manufacturing flow and development of new products (Lambert and Cooper, 2000). Depending on the industry, procurement is responsible for 50–80% of a company's total costs (Klein et al., 2021; Bode et al., 2022).

Mohd Nawi et al. (2017) state that procurement is responsible for supplier selection, contract management, and order management to meet internal customer demands, coordination, and consolidation of all orders, aiming to obtain economies of scale. Regarding enabling organisational performance and achieving economies of scale, the conclusion drawn by Saranga and Moser (2010) show that the procurement process is efficient in terms of the financial contribution of many organisations. The cost of purchasing items can drastically impact an organisation's bottom line (Ellram and Tate, 2021).

Lysons and Farrington (2020) defined procurement as a strategic corporate activity that is proactive in ensuring a continuous supply of goods and services to enable organisational performance.

During the pandemic, attention was paid to supply chain management and purchasing, which is an opportunity to demonstrate the value of these disciplines (Knight et al., 2022). Procurement has shifted from an administrative (or operational) support role that generates only cost savings to an executive role that drives growth, innovation, and value creation (Bode et al., 2022). To explore this idea, Stek and Schiele (2021) study the procurement of professional knowledge and skills, including financial, cost reduction, analytical, and strategic sourcing.

A few studies, such as Schiele (2019), explore the purchasing year cycle and argue that a company's annual budgeting process, size, and development of purchasing volume play an important role in achieving profit targets, and savings can be calculated based on corporate planning. Another example presents a purchase diagram of the business process with the planning of purchases of goods and company finances as inputs (Khareva et al., 2020). However, a study conducted by Bäckstrand et al. (2019) on purchasing process models shows that most models do not explore or contain corporate planning, budget, or supply planning.

To explore this relationship between procurement process and financial performance, the research question is: How can the procurement process promote financial performance?

The aim of this paper is to identify the key elements of the procurement process that promote financial performance. Therefore, a systematic literature review (SLR) and a single case study has been conducted.

About the choice of the chosen of the case study's company, Brazil currently ranks as the world's largest sugarcane producer and, in 2022, it accounted for about 21% of the world's production of the crop (USDA, 2022). Analysing the export data, in 2022 the sector had US\$12.8 billion in national exports and was the fifth most representative sector in agribusiness (MAPA, 2023). The sugar-energy sector generates approximately 750,000 direct jobs including more than 70,000 independent sugarcane suppliers and 370 million distilleries (CNA, 2020). The main products of this process are sugars, ethanol, and bioenergy.

The focal company in this paper is the leader in sugarcane production in Brazil and has annual revenues of more than R\$ 110 billion, in which it has a shareholding composition of 50% of a Brazilian company and 50% of a global company. The procurement area is structured and includes more than 120 employees, purchasing 140,000 items and with around 4,000 registered suppliers. This area is responsible for material acquisition, services, and equipment in the agricultural and industrial areas (downstream and upstream) as well as the company's corporate purchases, including annual expenditures of approximately R\$4.6 billion/year. It is important to clarify that sugarcane procurement is not the responsibility of the procurement area in this case study, as it is understood that raw materials are very specific and require in-depth technical knowledge. It is worth mentioning that the acquisition value of sugarcane is approximately R\$4 billion/year (lower than the value negotiated by procurement), given that approximately 50% of crushed sugarcane comes from independent producers and the rest from the company's own production.

Finally, the SLR results show 20 procurement key elements that can contribute to a company's bottom line, such as supplier relationship management, cost reduction, innovation, and information technology. In addition, six new key elements were identified throughout the case study: category strategy, compliance, integrated relationship with the business, inventory management, market analysis, and participation in the budget process, contributing to updating the existing literature.

It also contributes in practical terms to the work of practitioners, as five points of improvement were evident regarding a positive impact on financial performance: training and providing the necessary financial skills to procure collaborators, improving planning, drawing procurement and finance areas, encouraging the participation of procurement when preparing the company's budget, and expanding procurement knowledge about the business/company.

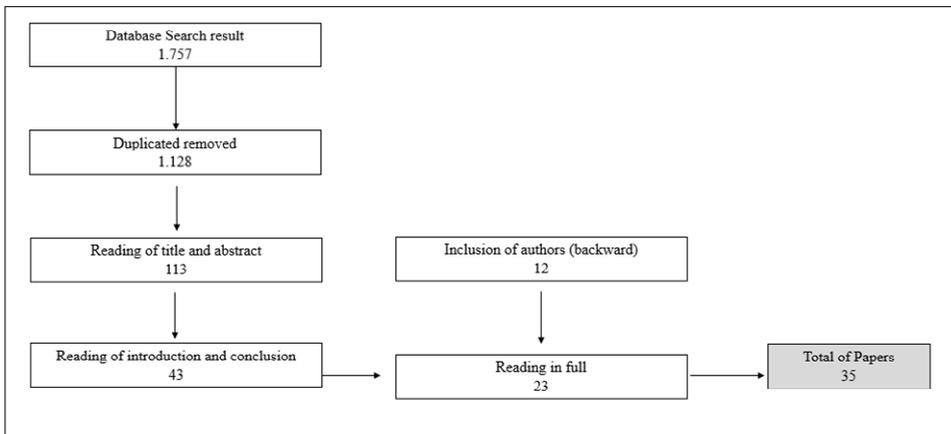
This paper is divided into five sections. Section 2 describes the methodology, and Section 3 presents the case study results. The result of this paper is presented in Section 4, and the final section includes the conclusions, discussion of further research, and limitations of the study.

## 2 Methodologies

### 2.1 Systematic literature review

This section is based on the results of an SLR performed according to the methodology of Tranfield et al. (2003), analysing five databases: Web of Science, Scielo, Scopus, Brazilian Digital Library of Theses and Dissertations (RIDI), and Production Engineering Symposium. The string used were: (procurement OR ‘Supply chain management’ OR ‘purchasing’) AND (index OR performance OR indicator OR ROI OR ‘Cash flow’ OR Ebitda OR EVA OR ROA OR ROE OR ROACE OR warehouse OR ‘working capital’ OR financ\* OR ‘payment term’ OR ROCE OR ‘financial performance’ OR ‘asset management’ OR ‘asset investment’ OR ‘profit margin’ OR ‘asset turnover’ OR ‘cash cycle’ OR stock OR ‘cost reduction’ OR saving), in the ‘title’ field of the databases. The first filters were papers published between January 2008 and December 2022 and available in English or Portuguese.

**Figure 1** SLR steps



*Source:* Authors' own work

After searching each database, duplicate papers were removed from the database and analyses were conducted. Papers that did not add or did not allow identification of the depth, definition, or explanation of the same criteria evaluated when reading the title and abstract were discarded. Following the introduction and conclusion, we read, analysed, and discarded what would not contribute to the theme. A complete reading of the remaining papers was then conducted to identify those that dealt with procurement and financial performance, the relationship between the procurement process and the finance area, studies that explored the procurement process as a contributor to financial performance and studies that correlated some key elements of subject matter. The next, some papers from a ‘backward search’ technique were included to the SLR, this inclusion is essential to compose the review when the keyword search did not identify it, and because it makes the SLR robust and helps researchers to have confidence in finishing the search (Vom Brocke et al., 2015). Ultimately, 35 papers constituted the basis of this research, contributing to the knowledge and creation of a better understanding of how the

procurement process impacts a company's financial performance. Figure 1 illustrates the SLR process.

**Table 1** Procurement process key elements that impact financial performance

<i>Key elements</i>	<i>Authors</i>
Analyse the option to make, lease, outsource or buy	Clayton (2000), Ellram and Liu (2002), Foerstl et al. (2013)
Collaboration	Foerstl et al. (2013), Okongwu et al. (2015)
Contract management	Úbeda et al. (2015)
Cost reduction	Ellram and Liu (2002), Andrade and Marçola (2009), Saranga and Moser (2010), Hahn and Kuhn (2012), Foerstl et al. (2013), Úbeda et al. (2015), Chen and Kitsis (2017), Kähkönen et al. (2018)
Demand management	Andrade and Marçola (2009), Cho et al. (2012), Kumar et al. (2015), Úbeda et al. (2015), Alim and Beullens (2022)
Information technology	Ellram and Liu (2002), Cho et al. (2012), Kim et al. (2015), Úbeda et al. (2015), Kumar et al. (2015), Peng et al. (2016), Marei (2022)
Innovation	Clayton (2000), Foerstl et al. (2013), Okongwu et al. (2015)
Lead time	Clayton (2000), Hahn and Kuhn (2012), Foerstl et al. (2013), Khareva et al. (2020)
Long-term planning	Chen et al. (2004), Kumar et al. (2015)
Order management	Cho et al. (2012)
Risk management	Chen and Kitsis (2017), Kähkönen et al. (2018)
Senior management commitment	Kumar et al. (2015)
Shared information and communication	Chen et al. (2004), Okongwu et al. (2015), Kumar et al. (2015), Chen and Kitsis (2017), Pradabwong et al. (2017)
Strategic sourcing	Kim et al. (2015)
Structure and purchases	Saranga and Moser (2010)
Supplier relationship management	Carr and Pearson (1999, 2002), Clayton (2000), Chen et al. (2004), Ellram and Liu (2002), Terpend et al. (2008), Andrade and Marçola (2009), Ou et al. (2010), Saranga and Moser (2010), Cho et al. (2012), Kumar et al. (2015), Ubeda et al. (2015), Mondini et al. (2015), Lai et al. (2015), Francisco (2017), Schulze-Horn et al. (2018), Van Bergen (2019), Lee (2021), Galankashi and Rafiei (2022)
Sustainable management	Lai et al. (2015), Paulraj et al. (2017)
Talent management	Abreu (2016), Foerstl et al. (2013)
Total cost of ownership (TCO)	Ellram and Liu (2002), Schulze-Horn et al. (2018), Sharma et al. (2019), Schiele (2019)
Trust	Chen and Kitsis (2017)

*Source:* Authors' own work

Throughout the SLR, 20 key elements of the procurement process were identified as contributing to a company's financial performance, as shown in Table 1. Some of these key elements are at the interface with partners and other business areas of the company; some are the responsibility of the procurement process or procurement has greater decision-making power.

In order to better present the SLR results from financial performance, Table 2 presents the 13 financial indicators impacted by the procurement process. They mentioned the impact of the procurement process on a company's financial performance by referring to some of these financial performance indicators.

**Table 2** Financial performance indicators impacted by procurement process

<i>Financial indicator</i>	<i>Authors</i>
Average payment period	Clayton (2000), Ellram and Liu (2002), Andrade and Marçola (2009), Schulze-Horn et al. (2018)
Cash flow	Ellram and Liu (2002), Úbeda et al. (2015), Peng et al. (2016), Francisco (2017)
Company value	Carr and Pearson (1999), Terpend et al. (2008), Mondini et al. (2015)
Earnings Before Interest and Taxes (EBIT)	Chen and Kitsis (2017), Paulraj et al. (2017)
Earnings before Interest, Taxes, Depreciation and Amortisation (EBITDA)	Carr and Pearson (1999, 2002), Chen et al. (2004), Andrade and Marçola (2009), Saranga and Moser (2010), Foerstl et al. (2013)
Economic Value Added (EVA)	Ellram and Liu (2002), Hahn and Kuhn (2012), Galankashi and Rafiei (2022)
Inventory cost	Ellram and Liu (2002), Kumar et al. (2015), Khareva et al. (2020)
Market share	Terpend et al. (2008), Carr and Pearson (2002), Kumar et al. (2015), Lai et al. (2015), Peng et al. (2016)
Profit	Carr and Pearson (1999, 2002), Clayton (2000), Ellram and Liu (2002), Chen et al. (2004), Terpend et al. (2008), Ou et al. (2010), Cao and Zhang (2011), Cho et al. (2012), Caniato et al. (2014), Lai et al. (2015), Mondini et al. (2015), Okongwu et al. (2015), Chen and Kitsis (2017), Paulraj et al. (2017), Francisco (2017), Schulze-Horn et al. (2018), Sharma et al. (2019), Schiele (2019), Van Bergen et al. (2019), Lee (2021), Galankashi and Rafiei (2022), Alim and Beullens (2022), Marei (2022)
Return on Assets (ROA)	Ellram and Liu (2002), Clayton (2000), Terpend et al. (2008), Foerstl et al. (2013), Kim et al. (2015), Chen and Kitsis (2017), Pradabwong et al. (2017), Schiele (2019), Galankashi and Rafiei (2022)
Return on equity (ROE)	Clayton (2000), Foerstl et al. (2013), Ellram and Liu (2002), Carr and Pearson (1999)
Return on Investment (ROI)	Carr and Pearson (1999, 2002), Clayton (2000), Ellram and Liu (2002), Chen et al. (2004), Terpend et al. (2008), Ou et al. (2010), Kim et al. (2015), Kumar et al. (2015), Lai et al. (2015), Mondini et al. (2015), Chen and Kitsis (2017), Pradabwong et al. (2017), Francisco (2017), Lee (2021)
Working capital	Kähkönen et al. (2018)

*Source:* Authors' own work

To diagnose the financial and economic health of a company, financial indices are analysed, making it possible to evaluate its general performance and help decision making regarding the degree of competitiveness, growth in the market, and comparison of its performance with other companies.

In summary some of the findings in the SLR: a study conducted by Kim et al. (2015), it was found that strategic sourcing and e-procurement (information technology tools) have a positive impact on two financial indicators: ROA and ROI. Marei (2022) states that using IT for procurement (e.g., e-procurement) can help companies reduce costs and increase profitability. The average payment term is also important for preserving the company's cash flow and adapting it to the project's expected cash flow, linking payment events negotiated in the sale to customers and cash outflows (Andrade and Marçola, 2009; Clayton, 2000; Ellram and Liu, 2002). Integrating strategic cost management into product design, supply chains, and different processes results in better financial performance, in terms of cost reduction and working capital improvement (Kähkönen et al., 2018).

## 2.2 Case study method

A case study method is used to provide a more in-depth view of the problem. According to Yin (2015), a case study is an empirical investigation that analyses contemporary phenomena in depth.

In a single case study, Yin (2015) highlighted that the researcher had access to a previously inaccessible empirical study and captured the circumstances and conditions related to what was discovered in the theory. In a single case study, several interviews were conducted to allow triangulation of the information, thus protecting the researcher's conclusions (Voss et al., 2015). Therefore, a case study was chosen to understand the relationship between what was found in theory (SLR) and what was practiced in the study company and to find new key elements in practice.

**Table 3** Profile and codes of respondents used in content analysis

<i>Area</i>	<i>Position</i>	<i>Codification</i>	<i>Time in the area (at the time of the interview)</i>	<i>Length of interview (minutes)</i>
Procurement	Supply director	DC1	14 months	55
Procurement	Intelligence and Supply Planning Manager	GC1	15 years	37
Procurement	Supply Chain and Logistics Manager	GC2	14 months	50
Procurement	Industrial supplies manager	GC3	4 years	75
Procurement	Supply coordinator	CC1	7 years	63
Financial	Finance director	DF1	19 years	43
Financial	Investment and M&A Manager	GF1	5 years	47
Financial	Finance coordinator	CF1	10 years	41

*Source:* Authors' own work

To do this, interviews were conducted using a structured questionnaire (Appendix A) with different key informants from procurement and finance areas. Eight interviews were conducted, totalling almost seven hours of recording, which were manually transcribed and analysed by the researchers. In this phase, they also examined the available documents to verify that the information from the interviews was supported and encouraged the interviewees to share other points relevant to the subject if they had not been addressed in the questionnaire. Table 3 presents a summary of the interviewees' profiles and the coding used to guarantee anonymity and facilitate citation of transcribed excerpts throughout the analysis.

### 3 Case study results

In this section, the case study results are presented, including converging interviews with executives, field observations, access to documents, and the knowledge of researchers, to understand the relationship between theory and practice and to find new key elements. First, the key elements of the procurement process in the studied company are presented, followed by a discussion of the financial performance that are affected by the procurement process.

#### 3.1 The procurement process

In this section, some evidence and explanations from the interviewees for each of the key elements identified in the fieldwork are presented, except for four key elements that were not mentioned in the interviews (senior management commitment, shared information and communication, sustainable management, and lead-time). The excerpts selected for this paper were the best lines and examples from interviews.

Starting with *analysing the option to make, lease, outsource or buy*, is an activity that needs to be understood in depth for each category to be negotiated. To make the best option available to the business, the procurement process must reflect on and identify the best option in terms of finances or efficiency.

“[...] But also have quality gains, right? Better things can also be brought from the market with different options for a purchase, which can be a lease or even internalize some operations. (GC2).”

One point presented in the theory that defines *collaboration* is that decisions must be synchronised. At the focal company, this element was highlighted as a point of improvement. Apparently, there is still a lack of synchronisation, which limits or does not enhance the best decision making for the procurement process, as stated in the following excerpt:

“[...] Procurement involves us (finance), with little time for analysis, often what could be done in the space of a month ends up being done in a week because the subject, when it came in, was often already being discussed for some time. Time in procurement... The result is achieved, but not in the best way, in the most structured way possible... (FG1).”

When considering *contract management*, according to the point of view from interviewee CC1, optimising the supply chain, that is, understanding how many contracts are needed in each category and how to divide contracts between suppliers, is:

“We will have situations in which changing suppliers or placing two suppliers for each to perform their specialties. I end one contract and break it into two contracts, placing expertise within each of the suppliers, that way I can optimize the chain ... I think that supplies have the responsibility and primary scope to understand and bring these priorities into the company.” (CC1)

The *cost reduction*, which was the most cited activity in the interviews:

“The first contribution is that the procurement area makes a purchase within the budget; therefore, the business area has a budget to execute and expects that it will be delivered within that budget and eventually under the budget to reduce costs and redirect this cost reduction to another business need.” (GC3)

*Demand management*, together with order management, was the fourth most mentioned activity in the interviews. From the interviewees’ reports, it was observed that it is important to ensure the purchase of all the necessary volumes at the best time in the market, that is, when the prices are low, as shown in the excerpts below.

“[...] Together with industry personnel, we asked for the total volume of our demand for that crop or their expectation of material consumption because we could not miss the best time to buy that the market was offering.” (GC1)

“I saw something going on there recently, which was to have the demand for early off-season items established; then, the buyer was able to pick up idle capacity from suppliers there, in the middle of the harvest, and already negotiated better than in previous years.” (DF1)

In the context of *information technology*, the interviews identified that it helps and speeds up the operational work of the procurement process, as presented in the statements below:

“[...] We provide tools and training on how to use these tools to streamline the procurement operational process.” (CC1)

“[...] You must give them the tools to be quick to look for information, so they do not spend a lot of time on operational things and have more time for critical analysis.” (DC1)

Regarding *innovation*, understanding what the supplier market has to offer, criticising the current contracting model, and understanding the real problems in the operation and process of exploring improvements. The following excerpt leads to this perspective:

“In the sugar warehouse project, in which we managed to change the format, taking off 200 tons using new technology from another supplier that had never worked for us, this took off four million reais, and the delivery was faster. We added the value three months before; it was not in the price of the warehouse; it was also in being able to stock sugar before... and we made more money.” (DC1)

In the *long-term planning* element, the interviewees strongly emphasised that this element is still lacking in the company, but that they understand that if it were present, the procurement process performance would be better than it is now:

“I think that we can still work on things looking at the long term, looking at the chain, at different leverages from the ones we are working on, but today we are not able to do any long-term planning in the company.” (GC2)

In *order management*, respondents addressed both order management to meet the needs of the operation, and urgent and immediate order management.

“Procurement means looking at the level of service, the level of availability of materials and inputs for the business... So, we don’t stop supplying the business because the hole may be much bigger if it impacts my operation.” (CC1)

In the case of procurement process *risk management*, as described in the following excerpts, hedging is used to protect financial operations from price volatility risks, especially in negotiations involving foreign exchanges. This action to protect operations from financial risk is an element of *risk management*.

“There was a time when the guy hedged, so we fixed the price in reais, the supplier hedged, and said, ‘Damn it! I think we can do the hedging, so leave the guy’s price in dollars, and we will hire the hedge because it will be cheaper, so this was also a discussion that came from procurement.” (DF1)

Regarding the last activity, *strategic sourcing*, interviewee DC1 spoke about the depth and breadth of the knowledge generated from this activity. The following excerpt presents his opinion on this issue.

“I really like strategic sourcing, so we can understand exactly what is being asked, right. What it is for, what the objective is, and what the strategy is so that we can then look at the market and understand everything that is different, everything that can be done with technology... not just staying with the same suppliers and identifying new negotiation levers to generate savings (cost savings)?” (DC1)

Regarding the procurement *structure*, one of the interviewees from finance said that a few years ago, the process was more difficult. Currently, the procurement area has an efficient structure with the right number of employees and division of categories according to the company’s operations. This facilitates work and decision-making between the procurement process and finance.

“[...] There was no procurement structure the way it is today, where each coordination takes care of a group of categories that make sense, with industrial procurement management, agricultural procurement management, corporate procurement management, and other support and inventory management. In addition, the team at that time was smaller.” (CF1)

The second most cited activity was *SRM*. Respondents provided examples of various workfronts and supplier relationships, especially in terms of achieving cost savings and improving performance and competitiveness through suppliers.

“Another example I saw in the steel and industrial inputs category was trying to slightly avoid distributors and, sometimes, make direct purchases with factories or producers where the product originally came from, so our negotiating power improved. As we eliminated a link in this supply chain, we negotiated directly with the manufacturer and no longer with the distributor.” (DF1)

Procurement *talent management* entails selecting and preparing employees to engage in a curious profile, which can analyse cost reduction not only in the price discussion but also in the discussions of process improvements and innovation that analyse the market to understand the best negotiation moment, among others. The following transcripts confirm this hypothesis:

“[...] Have you been the right people? People who reflect want to reflect and want to learn... So, you have to bring people who are curious... who want to learn, you have to offer people possibilities to learn, you have to give processes and procedures for them to follow... Having a critical analysis and understanding of the business, I think the sky is limited.” (DC1)

Analysing the *TCO* entails considering all costs over the entire life cycle of a product or service throughout its use and not just the acquisition price:

“The better we can look for alternatives from an investment point of view: working with suppliers, looking at the *TCO*, proposing materials or equipment with lower maintenance costs, achieving gains in negotiation, or suddenly identifying a new supplier. This can make all differences if the project is successful.” (GF1)

“I think that we (procurement) must have choices and projects that leverage negotiation improvements, not only looking at the price, but also looking for *TCO* projects.” (GC2)

As highlighted in the SLR, ensuring that the agreement between SCM members is synonymous with *trust*, and this strengthens the involvement of everyone in SCM.

“For example, we can support a project team and ensure that the project is contracted and carried out within the required time. It is something, together, you can see. This achievement is neither something for supplies, nor for the operation, nor for the project area, nor for the supplier, it belongs to everyone.” (DC1).

During the case study, six new key elements not identified in the SLR were identified: category strategy, compliance, integrated relationship with the business, inventory management, market analysis and participating in the budget process. Table 4 presents these new key elements with examples from the interviews, and a column with research complements.

Additionally, for the interviews, another source of case study evidence was the access to procurement process documents and reports. One of these documents includes information on the area’s performance, presenting the main cost reduction initiatives throughout 2018. Employees mapped the type of cost reduction they could use in their negotiations, such as tax efficiency, development and changing suppliers, changing the scope and specification of the item to be purchased, reviewing demand, payment terms, standardisation, logistics case studies, and material management and innovation.

**Table 4** Key elements identified in interviews

<i>New key elements</i>	<i>Evidence</i>	<i>Complement</i>
Category strategy	Supplies cannot just look at spending, you must look at the complexity of the supplier market as well, the importance of that category in our production process, you have to look at what is happening in the chain as a whole. In this, the PSM [Procurement Strategy Matrix] helps a lot to direct the negotiation levers of each category. (GC2).	Examining all category spending, how the organisation uses the products or services within the category, the market, and individual suppliers to determine and implement sourcing strategies will add significant value to the organisation as part of strategic sourcing and <i>TCO</i> .

Source: Authors’ own work

**Table 4** Key elements identified in interviews (continued)

<i>New key elements</i>	<i>Evidence</i>	<i>Complement</i>
Compliance	<p>Sometimes I wonder a lot about our procurement relationship with suppliers... if there is governance to have a good base, supplier compliance, even due to the maturity of our sector... They are more family-owned companies... A large company values different compliance relationship, right? (GC2).</p> <p>To the extent that I avoid conflicts of interest, that I organise the competition, you know, who are the suppliers that are qualified, approved to provide a certain service... I am ensuring that the company's financial result will be achieved. (GC3).</p>	<p>Ideal compliance with processes and activities during the procurement process should strive to comply fully with procurement rules and regulations to improve the performance levels of their respective procurement departments, resulting in trust.</p> <p>Integrated relationship with the business.</p>
Integrated relationship with the business	<p>The other point of action, which I think is super important, is to understand the business... where the waste is, where money is being lost and we can somehow help to contain it... understand the <i>modus operandi</i> of each place, understand and challenge consumption. (GC2).</p>	<p>Get to know your stakeholders, where they are the problems of the operation, and discuss possible solutions. This brings you closer. This can generate important insights to discuss with your supplier for cost reduction, innovation, or even efficiency improvement.</p>
Inventory management	<p>Now that we are working hard to reduce inventory, for example, there are a series of defensives that we ended up putting in the inventory in a certain situation, which I am now face the challenging of using. (GC2).</p>	<p>Having up-to-date inventory data, checking for stock before purchase, frequently reviewing obsolete items, expiration dates, and inventory turnover should be part of the procurement process to avoid spending money without the necessary important points for demand management.</p>
Market analysis	<p>[...] Steel was contracted... we found a good opportunity to negotiate our steel demand in each month through market analysis such as price history and forecast, analysis of steel supply and demand. (DF1).</p> <p>I think we must monitor the market to provide and even to provoke the business in terms of timing these acquisitions, the strategy, how do I enter the market? (GC3).</p>	<p>The objective is the buyer analyses the supplier market; understands supply, demand, and cost drivers; changes price; and reads news and reports from the category or sector, he/she will be able to identify threats and opportunities in advance, for example, cost reduction.</p>
Participating in the budget process	<p>[...] If finance does not involve the procurement team to do this planning and discuss the best moments and even make some investment choices, we could start a project at the wrong time, direct investment at a time when the market is no longer receptive to that type of contracting or even releasing funds when it's late and I don't have a supplier available to do the service, for example. (GC3)</p>	<p>Together with the internal stakeholders, they participated in the budget cycle and definition from the beginning of the process. Procurement can input information about price, volume, and market forecasts to design a better budget and share resources properly, in alignment with long-term planning.</p>

Source: Authors' own work

### 3.2 Financial indicators

Throughout the interviews, executives evidenced or explained that four of the 13 financial indicators identified in the SLR were affected by the procurement process. The excerpts selected for this paper were the best lines and examples from the interviews, as shown in Table 5.

**Table 5** Financial indicators identified in the interviews

<i>Financial indicator</i>	<i>Evidence</i>
Cash flow	Cash flow, for me, the impact is very high and basically, we can't negotiate without discussing the payment term. (GC3).
Profit	If I have a production process that involves more effective, cheaper purchases, I'll make more profit. (CF1).
EBITDA	In some circumstances, it may be much more interesting for me to lease because it meets my operational needs, it will allow me to deliver the company's operating results, sometimes with some impact on EBITDA, because I start to have a lease that is an expense instead of an investment and there is no depreciation, but I substantially reduce my capital employed. (GC3).
Payment term	Supplies impacts a lot of cash flow through payment terms, obviously, it impacts cash flow as we buy efficiently, buy cheaper and when you buy cheaper, there is more money, right?... (CF1).

*Source:* Authors' own work

## 4 Results

The first aim of this paper (understanding what is in the literature about procurement promote to financial performance) was addressed by SLR, and 20 key elements were identified: analyse the option to make, lease, outsource or buy, collaboration, contract management, cost reduction, demand management, information technology, innovation, lead time, long-term planning, order management, risk management, senior management commitment, shared information and communication, strategic sourcing, structure and purchases, supplier relationship management, sustainable management, talent management, TCO, and trust. This has resulted in a consolidated view of the literature on this subject.

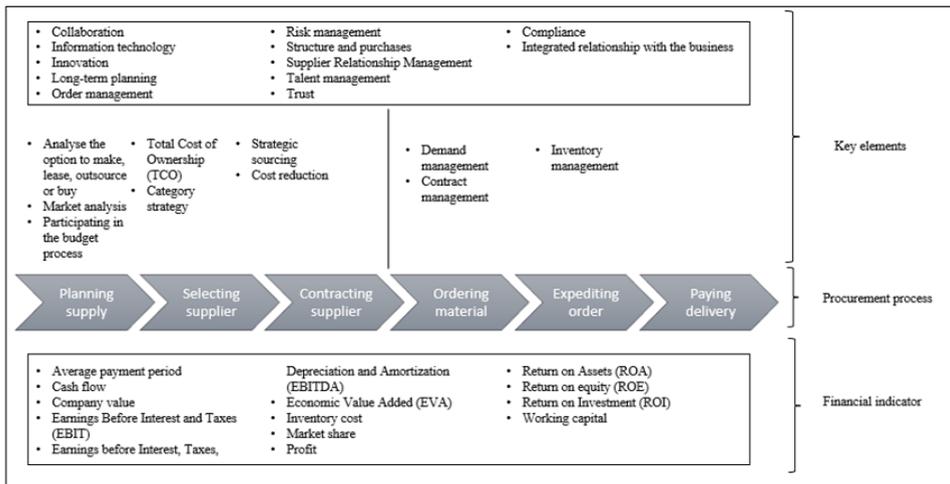
Complementing this, research questions (empirically characterised through the view of procurement and financial executives, whose key elements contribute to the financial success of the company in the sugar-energy sector) were able to validate 16 of the 20 key factors found in the literature. The ones that failed to validate were senior management commitment, shared information and communication, sustainable management, and lead-time. On the other hand, we were able to contribute to updating the literature with six more key elements to the theme identified in the case study: category strategy, compliance, integrated relationship with the business, inventory management, market analysis, and participation in the budget process. For example, in the case of an integrated relationship with a business, the procurement process needs to work very closely with the business to discuss and understand the operation needs, ensuring that the best procurement strategy (scope definition, choice of suppliers, negotiation, payment terms,

and duration of the contract) is carried out, always offering the best solution in the market for the business. Thus, the company generates better financial performance.

Regarding the financial indicators affected by the procurement process, in the case of cash flow, for example, the procurement process directly affects this indicator because the payment term to suppliers is discussed throughout the negotiation, which is the responsibility of the procurement process.

Figure 2 was constructed to consolidate the results obtained, correlating the key elements identified in the SLR and case study with the procurement process and financial performance. To illustrate the procurement process, the model by Schiele (2019) was used as a guide due to the ‘planning supply’ stage because some key elements have a greater impact at the beginning of the process, as an example we can analyse more the option to make, lease, outsource or buy and market analysis in the begging of the procurement process. As like participating in the budget process when procurement can input some information about price, volume, market forecast to design a better budget and share the resources properly, aligned with long-term planning. However, some key elements can be used throughout the process, such as supplier relationships and talent management, which must be frequently managed. Similar to financial indicators, we understand that all of them can be managed and mapped throughout the procurement process.

**Figure 2** Key elements and financial performance indicators on procurement process



Source: Authors’ own work

In addition, considering the fundamentals of the literature and the opinions of its executives, opportunities for improvement of the procurement process were identified through interviews. These five actions have a positive impact on financial performance.

- 1 *Training and providing the necessary finance skills to procurement collaborators*, the most cited action related to talent management. This highlights the importance of having trained staff and a greater knowledge of finance to contribute more to financial performance.

- 2 *Drawing procurement and finance area* closer together, although several interviewees reported a good relationship and integration with the procurement process, this can be improved because the procurement process can provide market or case study data and information for financial planning.
- 3 *Expanding procurement knowledge about the business/company* to better understand how to proactively help them and avoid waiting for demand to reach the procurement area. This may include a better understanding of the production processes, who the stakeholders are, what problems the business has, and how other processes are developed to discuss suggestions for improvement.
- 4 *Improving planning*, which correlates with the long-term planning element, was already mentioned in the results of this study. However, there is still room for improvement at this point for the focal company. This is because better planning contributes to having time to analyse the best strategy and how to negotiate the market; consequently, it will result in better financial results.
- 5 *Encouraging the participation of procurement when preparing the company's budget*, for the same reason as the previous item, the company's budget can be improved by providing market data and information. Currently, the focused company procurement process helps build the budgets of some company businesses, but this contribution could be greater.

Therefore, a company intending to improve its financial performance can collaborate with the procurement process to implement or improve these points. Talking about the last two actions: improving planning and encouraging participation in procurement when preparing the company's budget. As discussed at the beginning of this paper, most parts of the procurement process do not explore corporate, budget, or supply planning (Bäckstrand et al., 2019). To improve this, along with drawing procurement and finance areas closer together, key performance indicators (KPIs) should be built together. The dominant KPI in the procurement and which represents overall performance is 'saving' (Caniato et al., 2014; Brint et al., 2021; Ellram and Tate, 2021), which consequently impacts some financial indicators, since once there is savings in procurement, it results in an improvement in the cash flow, Ebitda and profit.

To obtain savings, some of the key elements discussed in this work contribute positively, such as performing good strategic sourcing, supply relationship management, analysing TCO, using IT to gain agility and reliable information, and talent management. In some ways, all these key elements can be exploited and used to leverage procurement KPIs. Analysing the documents from the business case company, one part of the savings should come from the TCO to force buyers to analyse all costs of acquisition (maintenance, transportation, insurance, total labour, among others), as well as the acquisition price.

According to the first opportunity (training and providing the necessary financial skills to procure collaborators), another KPI should focus on training people; employee skills, employee satisfaction, and percentage of labour cost spent on training are examples from Piotrowicz and Cuthbertson (2015). To find the major skills gap in time and work to be solved using adequate educational methods to increase buyers' performance (Delke et al., 2022), skilled employees can contribute to the growth Supply Chain if there is support and investment in training and development (Patrucco et al., 2021).

Another KPI is the percentage of items under the contract to reduce the operational work of the supply team. A final example is the payment period for suppliers, which directly affects an organisation's cash flow.

Clearly, discussing and finding good KPIs that bring procurement and finance closer together so that procurement keeps bringing positive financial results to the organisation. The cross-KPI between different areas is a good idea for working together to achieve the same objective. In this way and looking for a second action (drawing procurement and finance area), an important factor is the communication between procurement and finance, as they must communicate and use a common language (Abutabenjeh, 2021).

## **5 Final considerations**

This paper makes two unique contributions, theoretical and practical. On a theoretical basis, together with the information gathered in this research and the insights obtained from the empirical research, we collaborate to identify and consolidate opportunities and specific characteristic case studies of the sugar-energy sector that can impact a company's financial performance through the procurement process. This also contributes in practical terms to practitioners by helping them understand the correct efforts and times to best utilise each of the key elements. Another remarkable finding of this paper is the mapping of professional skills.

Two main limitations were identified in this research. First, it was conducted in a single sector, using sugar-energy. Although this sector is important to the GDP of agribusiness in Brazil and the focus company is relevant, the results presented here cannot be generalised. Therefore, it would be interesting for future research to explore this topic in other sugar-energy companies and sectors for comparative purposes.

Second, a limitation occurred with the group of interviewees, procurement executives, and finance executives; therefore, the vision is focused on the processes and challenges of the corporate area and decision makers. Another possibility is to expand the target audience of the interviews for operation executives and specialists, analysts, and interns in the procurement, finance, and operations areas and to expand the perceptions and evidence of the procurement process to achieve the expected results and financial goals.

This paper was restricted to identifying key elements of the procurement process that affect companies' financial performance. Future research could map other subjects, such as KPI, professional skills and training, procurement organisational design, emerging technologies, or ESG practices that contribute to financial performance.

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## Ethical compliance

All procedures performed in this paper involving human participants were in accordance with the ethical standards of the institution.

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## Appendix

Script:

Objective: interview protocol to discuss and obtain the research objectives

Interviewee:

Position:

How many years have you been in procurement or finance?

How long have you worked in the company?

- 1 What are the main contributions of the procurement area, on a day-to-day basis, that impact the company's results and financial performance? Could you give a recent example of this contribution?
- 2 In the sugar-energy sector, do you identify any additional key elements?
- 3 Does the finance team fully understand how procurement can contribute to the company's financial performance?
- 4 In your opinion, do all procurement buyers and analysts fully understand how they can contribute, in their daily lives, to the company's financial results?
- 5 How and how often do you contact the finance or procurement team?
- 6 Does the procurement area or your position have goals and/or challenges shared with the finance area? If yes, what are they?
- 7 Are there any other relevant points on the subject that you would like to share?