

ASPECTOS COMPORTAMENTAIS NA COMERCIALIZAÇÃO DE SOJA PELOS PRODUTORES DO RIO GRANDE DO SUL

BEHAVIORAL ASPECTS IN SOYBEAN MARKETING BY PRODUCERS IN RIO GRANDE DO SUL

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Resumo

Este trabalho teve como objetivo identificar os aspectos comportamentais que atuam no momento da tomada de decisão para comercialização de soja em produtores do Rio Grande do Sul. A pesquisa se constitui como um estudo exploratório, com abordagem quantitativa, com dados coletados através da aplicação de questionário estruturado como instrumento de coleta de dados, aplicado entre os meses de julho e novembro de 2023. Como resultado, foi observada a manifestação de sete dos oito aspectos comportamentais estudados, sendo que para os comportamentos de otimismo, confiança, aversão a perdas e manutenção do status quo, os respondentes apresentaram respostas condicionadas a forma da transação, se se dará com volume de grãos físico ou dinheiro. Com relação às heurísticas da disponibilidade e efeito *priming*, o resultado evidenciou a importância do histórico de desempenho nas comercializações, mas também o impacto do resultado da última negociação para definição da próxima estratégia. No comportamento de conformidade social, foi observada a influência do contexto em que o tomador de decisão está inserido, condicionando seu comportamento.

Palavras-chave: Finanças comportamentais; comercialização agrícola; produtores de soja.

Abstract

This study aimed to identify the behavioral aspects that influence decision-making when marketing soybeans among producers in Rio Grande do Sul. The research is characterized as an exploratory study with a quantitative approach, with data collected through a structured questionnaire used as a data collection instrument, applied between July and November 2023. As a result, the manifestation of seven out of the eight behavioral aspects studied was observed. For the behaviors of optimism, trust, loss aversion, and status quo maintenance, the respondents' answers were influenced by the relationship with the volume of physical grains or money. Regarding the heuristics of availability and priming effect, the results highlighted the importance of performance history in marketing, as well as the impact of the outcome of the last negotiation on defining the next strategy. In the behavior of social conformity, the influence of the decision-maker's context was observed, conditioning their behavior.

Keywords: Behavioral finance; agricultural marketing; soybean producers.

1. Introduction

The soybean stands out as one of the main pillars of the Brazilian and Gaúcho economy, evidencing the importance of agriculture for both scenarios. The Brazilian production corresponds to 50% of the world total, with more than 54% of the grain volume exported (GABBI et al., 2022). In turn, Rio Grande do Sul contributes significantly to this production, having reached 13 million tons in the 22/23 harvest, a little more than 9.5% of the total, even impacted by drought, and with perspective to reach 21 million tons in the 23/24 harvest, which represents approximately 14% of the national total (CONAB, 2024). This relevance is translated in several aspects, such as income generation and positive trade balance, in addition to stimulating the development of several segments of the production chain, from the supply of inputs to agroindustry and transport (COSTA et al., 2020). The soybean drives job creation, tax generation and the development of technological innovation. In Rio Grande do Sul, soybean is the main product exported by the agribusiness, answering for approximately 47% of the sector's exports (COSTA et al., 2020).

The key role of exports in the Brazilian soybean revenue evidences a great challenge for the grain producers at a national and regional level. As a product dependent on global supply and demand conditions, soybean producers end up taking on the role of price takers in the international market, which oscillate with the fluctuations in its quotations on the benchmark exchange in Chicago, the exchange rate between the Real and the Dollar, coin in which the exports are negotiated, and also the export premium, which reflects the local demand situation. These fluctuations have an important meaning, as, at the time of commercialization, much of the harvest's success is defined, so hasty decisions can cause a reduction in the profit margin of the activity, even if the production was satisfactory. This means that, regardless of the success in the handling and production process at the harvest level, the commercialization still represents a sensitive moment in the soybean business cycle for the producer.

In addition to the evident role of market fluctuations in determining the price at which their soybean crop will be traded, the producer also faces the characteristic oscillations of agricultural activities, such as the price of inputs and, increasingly larger in recent years, the climatic fluctuations. These variables directly impact the routine of soybean producers, aggravating the environment of uncertainty in the decision-making process for commercialization. But decisions on commercialization are not defined by climatic data and market information alone. How the decision-making is impacted by behavioral factors is also an important component of this process, where the experience and characteristics of each individual, and the context in which they are inserted, have the potential to promote distortions in the judgment of the possible alternatives.

In this sense, to understand how the behavioral aspects influence the decision-making at the time of commercialization of soybean by rural producers from Rio Grande do Sul, the specific objectives of the present study are to identify the behavioral aspects that most impact decision-making in marketing, according to the socioeconomic profile of the survey respondents, using data collected through a structured questionnaire.

2. Theoretical framework

In order to understand the behavioral factors that act at the decision-making time, it is important to highlight the relevance that traditional decision-making analysis theories had for the beginning of the debate, arriving at the construction of what is currently known as the behavioral finance theory. The environment of decision-making involving financial issues is characterized for being a complex space, full of uncertainties. When dealing with financial decisions in the context of agribusiness, the complexity and uncertainties are further amplified,

as the main activities in the agricultural chains involve not only market uncertainties, but also the intrinsic uncertainties of the production process, such as climatic variations.

The rational approach to decision-making began to be discussed regarding its limitations in the 1950s. Hebert Simon (1955) reflected on this from the starting point that the traditional theories constructed a model of the “economic man” that, dealing with economy, would naturally be rational, having dominion over the aspects of his environment and having abilities that allowed him to make the best possible decisions using all the available information. In the definition of the persona that materializes the concepts of the traditional decision-making theories, Simon also constructs the idea of gaps observed by him, the nonexistence of a complete dominion over the environment and the limitation of the individual’s abilities. During this discussion process regarding the limits of the traditional theory, Simon (1957) emphasizes a behavior that evidences this limitation, the notion of satisficing, a term coined by the author, which translates the phenomenon of an individual being satisfied with an option even if it is not the best possible option, that is, the individual is satisfied with a sufficient option according to their context. In this sense, Simon (1959) builds the need for the development of a theory of human behavior in decision-making, suggesting the use of tools from areas such as psychology and sociology.

From the works of Simon (1955; 1959), the discussions around behavioral theories began to gain traction. Both Tversky and Daniel Kahneman began a series of studies where they discussed biases produced by behavior associated with the law of small numbers (TVERSKY and KAHNEMAN, 1971), heuristic of availability (TVERSKY and KAHNEMAN, 1973) and anchoring effect (TVERSKY and KAHNEMAN, 1974). After these advances in the discussion, Tversky and Kahneman (1979), in the article *Prospect Theory: An Analysis of Decision Under Risk* build their criticism of the expected utility theory, based in experiments where the individuals’ answers were different from the expected when the decision-making is observed from the point of view of the expected utility theory. To explain this behavior, the authors proposed the idea of a function of value, which determines how people attribute value to the potential results. The function presents a different behavior for losses and gains, with losses presenting a concave pattern and, for gains, a convex pattern. This means that people feel the losses with more intensity than the gains with equivalent value, denominating this behavior as “risk aversion”. Bringing together the discoveries of the previous decades, Kahneman (2011) proposed the two-system model that guide the individuals thinking, system 1, fast, automatic and emotional, and system 2, slow, deliberate and logical. In this study, the authors also introduce the idea of the fourfold pattern, which links the elements of risk aversion, the curvature of the value function, temporal perspective and the reference point.

The discussions around the behavioral dimension in the decision-making process has advanced largely due to studies conducted concerning finances and the financial market, creating the concept by Behavioral Finance (TOMER, 2007; SHEFRIN, 2009). In this sense, studies were conducted relating human behavior with demand, consumption and price (HURSH, 1984; HURSH and SILBERBERG, 2008); risks in investments (KUMAR and GOYAL, 2015); market efficiency (FAMA, 1998; SHILLER, 2003), retirement planning (THALER and SHEFRIN, 1981; BERTNAZI and THALER, 2002; GARCIA, 2006), and with managerial decision-making processes (KOELLINGER, SCHADE and MINNITI, 2007), while seeking to find, in psychology, the concepts known as heuristics and cognitive biases to classify judgment errors in decision-making (TVERSKY and KAHNEMANN, 1974).

Other studies were conducted identifying different behavioral factors involved in the decision-making process, providing a theoretical structure that aims to explain the economic behavior, while admitting the limitation of individuals’ rationality (SIMON, 1955; KAHNEMAN E TVERSKY, 1979; CAMERER and LOEWENSTEIN, 2004). Among the

main factors discussed to address the effect of behavior in decision-making are loss aversion, status quo maintenance, procrastination, trust, optimism, social conformity, availability and priming effect, as shown in Table 1.

Table 1. Evaluated behavioral aspects

Behavioral Factor	Definition	References
Loss Aversion	Tendency to be more sensitive to loss than gains, the psychological pain associated with loss is generally greater than the pleasure associated with an equivalent gain.	Tversky and Kahneman (1979), Thaler (1981), Baker and Nofsinger (2002), Tversky and Kahneman (1974), Kahneman (2011)
Status quo Maintenance	Tendency to maintain or prefer the current situation, even when there are incentives to change. People tend to resist changes to the current state and prefer stability.	Gal (2006), Pitz and Reinhold (1968), Samuelson and Zeckhauser (1988), Tversky and Kahneman (1991), Thaler (1981)
Procrastination	Postponing tasks or decisions, often times due to seeking immediate gratification or the discomfort associated with the task. Procrastination can result in delays and performance issues.	Shefrin and Thaler (1988), Tversky and Shafir (1992), Thaler and Benartzi (2004)
Trust	The belief in the veracity, integrity and ability of a person, process, system or entity. Trust can influence decisions and behaviors, often times being based on previous experiences.	Tversky and Kahneman (1974), Odean (1998), Kahneman et al. (2011), Shefrin and Statman (2000)
Optimism	Tendency to expect positive results in the future, even when faced with evidence to the contrary. Optimistic people can underestimate risks and overestimate the probability of positive events.	Zhao (2015) and Weinstein (1980)
Social Conformity	Behavior of following the crowd without a critical analysis, often times leading to unreflective collective decisions. Also referred to as herd mentality, it can be observed in investment situations, consumption and opinions.	Devenow and Welch (1996)
Availability	Tendency to place more weight on information that is more easily available in memory. Recent or easily recalled events can influence decision-making more than more relevant information.	Tversky e Kahneman (1974), Tonetto et al., (2006), Plous (1993 e 1989)
Priming Effect	A stimulus influences the response to a subsequent stimulus (selling and seeing the price rise can lead to seeking to sell better to compensate for the “loss”), even if they are not directly linked. It can unconsciously mold decisions.	Kahneman (1974)

Source: Elaborated by the author.

Although popular in the analysis of decision-making processes in finance and financial market, behavioral theory has been sparsely applied to the analysis of decisions in another important global market, agricultural commodities. Specially in Brazil, where soybean cultivation makes up an important fraction of the commercial balance, the discussions around decision-making for grain commercialization has been based on the theoretical foundation of expected utility theory.

3. Method

The research can be classified as quantitative, where there is data collection and analysis, integration of the findings, and the extraction of inferences, with the use of qualitative approaches and methods in the same research (TASHAKKORI and CRESWELL, 2007).

The data collection instrument was a structured questionnaire, containing 37 questions, in accordance with “appendix E”, related to the theoretical constructs of the study. For its elaboration, other published instruments were consulted (KAHNEMAN and TVERSKY, 1984; DE ARAÚJO and SILVA, 2007; MELO, 2009; SAMUELSON and ZECKAUSER, 1988; SAURIN et al., 2011; THALER e SUSTEIN, 2009; ALVARADO MORALES et al., 2022) and based on them, the questions were adapted to the reality in which this research would be applied. Most of the accessed instruments presented language and construction directed to the urban public, dealing with financial and economic questions. Thus, the language and situations proposed in the questions were adapted to the agricultural reality. According to Gil (2010), this instrument offers a variety of alternatives to the participants, allowing them to select the option that aligns itself the most with their individual circumstances or points of view. This focus allows the researcher to gain valuable insights on the opinions, beliefs, interests and experiences of the individuals involved in the study.

The questionnaire was applied between the months of July and November of 2023, obtaining answers from producers from nine cities in the state of Rio Grande do Sul: Palmeira das Missões, Boa Vista das Missões, Liberato Salzano, Seberi, Jaboticaba, Lajeado do Bugre, Sagrada Família São Luiz Gonzaga, São Sepé and Vila Nova do Sul. The data collection occurred in person, with the aid field technicians, as well as online, through informational groups of cooperatives and grain traders.

The first block is composed of 16 questions (01 to 16), with the objective of describing the social-economic profile of the participants, indicating variables such as: sex, age, marital status, education, relation to the propriety, experience time in the propriety activities, decision power in the propriety activities, soybean participation in the profit, total propriety area, presence of a grain storage system, volume of the system if present, and frequency of participation in production and handling, rural management and commercialization. The other blocks contain different questions seeking to represent the associated behavioral factors (Table 2), completing a total of 57 questions.

Table 2. Description of questions present in the questionnaire, by number and behavioral factor
(continues)

Factor	Number	Description
Loss aversion	17	While deciding when to sell my soybean harvest, I usually avoid making risky decisions in order to avoid possible financial loss, even if that means losing opportunities for bigger gains.
	18	You intend to commercialize a volume of soybean in the next months. Observe the following three situations (a, b and c), and mark your agreement with each one, considering a scenario where to quotation/bag is R\$ 130.50.
	18a	Selling the next month, with 10% chance to receive R\$ 160.00/bag
	18b	Selling the next week, with 50% chance to receive R\$ 144.00/bag
	18c	Selling tomorrow, with 90% chance to receive R\$ 132.00/bag
	19	You realize you have 100 bags of soybean you did not count on, deposited in your name in a cooperative. Observe the following three situations (a, b and c), and mark your agreement with each one.
	19a	Selling and gambling the value with 16.66% chance of gaining eight times the gambled value.
	19b	Selling and gambling the value with 50% chance of gaining four times the gambled value.
	19c	Not gambling and keeping the 100 bags of soybean.
Status quo maintenance	20	If someone pressures me to chance something in my commercialization method, I tend to resist, even if the change can benefit me.
	21	I am not interested in performing activities that will result in changes on the way I commercialize soybean.
	22	You invested R\$ 80,000.00 and had a return of R\$ 20,000.00. Some time after, due to fluctuations in the market, you lost R\$ 10,000.00. Your final capital is R\$ 90,000.00. Observe the following three situations (a, b and c) and mark your agreement with each one.
	22a	I would withdraw all the money.
	22b	I would reinvest.
	22c	I would transfer the money to a lower risk investment.
Procrastination	23	Even after making a decision, I take time to put it in practice.
	24	When I have to perform a complex and important task, I tend to prioritize it and do it as soon as possible.
	25	When I have to perform a complex and important task, I do other activities and, then, dedicate myself to it.
	26	When I have to perform a complex and important task, I wait until the last moment to do it.
Trust	27	You received a prize of R\$ 10,000.00, in which of the following situations would you used it? Observe the following three situations (a, b and c) and mark your agreement with each one.
	27a	I invest in variable income.
	27b	I save it in my bank account.
	27c	I buy something I want, if there is any left, I decide where to invest or save it.
	28	I feel safe in trusting the information and analysis that I perform myself to make decisions about soybean commercialization.
	29	I trust the information provided by specialists or financial consultants to make decisions about soybean commercialization.
Optimism	30	Do you consider your professional profile adequate to make key decisions about soybean commercialization? Observe the following three situations (a, b and c) and mark your agreement with each one.
	30a	I do not consider myself to have the adequate professional profile.
	30b	It is uncertain and, until we have more information, we should not take any measures

Factor	Number	Description
	30c	It seems dangerous, but it could pay off to take risks.
	31	I am optimist in relation to market opportunities for soybean in the future.
	32	If specialists in the grain market announce the possibility of higher risk for soybean commercialization, with which of the following sentences do you identify? Observe the following three situations (a, b and c) and mark your agreement with each one.
	32a	The chance of loss is certain.
	32b	It is uncertain and, until we have more information, we should not take any measures
	32c	It seems dangerous, but it could pay off to take risks.
Social conformity	33	I have made decisions about commercialization after observing that a great number of producers were making the same decision.
	34	Having the external information that a certain company is offering good conditions for soybean commercialization, observe the following three situations (a, b and c) and mark your agreement with each one.
	34a	I would not make the same deal.
	34b	I would seek more information about the opportunity.
	34c	I would make the same deal.
	35	Imagine you are part of a group with 3 partners. The majority decided to commercialize part of the soybean production immediately due to an increase in prices. In this situation, what would you do? Observe the following three situations (a, b and c) and mark your agreement with each one.
	35a	Propose that the group wait a few more weeks to evaluate the market tendency before making a decision.
	35b	Propose that the group consults an agricultural commercialization specialist to obtain additional opinions.
	35c	Vote for the same decision as the majority of partners.
Heuristic of availability	36	You need to sell a volume of soybean in a determined time of year. You remember that in previous years, there was a significant increase in soybean prices during the same period. In this situation, what would you do? Observe the following three situations (a, b and c) and mark your agreement with each one.
	36a	Decide to wait a little more to sell the soybean, trusting the positive tendency from previous years.
	36b	Perform a more detailed analysis of the current market situation before making any decision.
	36c	Ignore the tendencies from previous years and base your decision exclusively in current market information and analysis.
Priming effect	37	You sold a certain volume of soybean and, in the following days, the quotation improved. In this situation, thinking about your next sale, what would you do? Observe the following three situations (a, b and c) and mark your agreement with each one.
	37a	Try to recover the value you did not gain for having sold earlier for a lower value.
	37b	Maintain the same decision strategy.
	37c	Analyze the available options without considering the precious decision.

Source: Elaborated by the author.

It was opted to present the answers to the questions regarding behavioral factors in a Likert scale, with levels from one to seven, varying from “Completely disagree” (1) to “Completely agree” (7), aiming to capture the intensity of the response. After completed, the questionnaire was subjected to a test, having been applied in person to five participants. After the test, some small adjustments were made, in terms of the writing of the questions and the structure of the questionnaire blocks. The data analysis was conducted using descriptive statistics, including means and frequencies, provided by the SPSS 25 software. A multivariate

analysis was also carried out based on the data obtained from the survey, which will be presented in a later paper.

4. Results

In order to meet the objectives of this study, the participants' profile is initially presented. The questionnaire obtained a total of 87 answers, in 37 questions, divided in eight different blocks.

Table 3. Characterization of the participants

Variables	Alternatives	Frequency	Percentage (%)
1. Sex	Female	16	18,39
	Male	71	81,61
2. Age	18 to 29 years old	11	12,64
	30 to 45 years old	40	45,98
	45 to 60 years old	34	39,08
	Over 33 years old	2	2,30
3. Marital status	Married	47	54,02
	Single	35	40,23
	Separated	4	4,60
	Widow(er)	1	1,15
4. Education degree	Elementary Education	13	14,94
	High School Education	35	40,23
	Higher Education	23	26,44
	Post-Graduate Education	16	18,39
5. What is your relation to the property?	Owner/Partner	53	60,92
	Family	34	39,08
	Collaborator	0	-
6. How long have you worked in the property?	Up to 10 years	20	22,99
	More than 10 years	67	77,01
7. Who is responsible for the commercialization negotiations in the property?	Me	57	65,52
	Other owner, partner or family	30	34,48
	Collaborator	0	-

Source: Research data.

It is observed that the majority of participants is male (81.61%), over 33 years old (80.46%), married (54.02%), do not have higher education (55.17%), is partner or owner of the property where they produce (60.92%), has more than 10 years' experience in soybean production (77.01%), and is responsible for the soybean commercialization in the property (65.52%).

Table 4. Characterization of the property and commercialization

Variable	Alternatives	Frequency	Percentage (%)
9. What is the total area (ha) of the property?	Small	56	64,37
	Medium	24	27,59
	Large	7	8,05
10. Does the property have a storage system (silo, warehouse)?	Yes	8	9,20
	No	79	90,80
11. If the answer was "yes" in the previous question, what is the capacity? (If the answer was no, type 0)	.	.	-
12. Commercialization with inter-mediation? (Brokerage)	Yes	20	22,99
	No	67	77,01

Source: Research data.

In question number eight, about the importance of the soybean profit for the property, the majority indicated that the activity is responsible for more than 50% of the annual profits, with 67 participants, reaching 79.3% of the total. Regarding the total area of the properties, 91.95% of properties are medium or small, that is, according to the average of fiscal modules in Rio Grande do Sul, they have up to 270 hectares. Still, the majority does not have a grain storage system (90.80%), and does not commercialize using inter-mediation services (77.01%).

Table 5. Relation to complementary education in topics related to soybean production

Variables	Average	Percentage (%)						
		1	2	3	4	5	6	7
13.	5,5402	4,6	3,45	2,3	13,79	17,4	16,09	42,53
14.	4,908	10,34	8,05	4,6	10,34	21,84	13,79	31,03
16.	4,1034	18,39	2,30	12,64	16,09	31,03	6,90	12,64
15.	3,3563	26,44	13,79	12,64	13,79	17,24	10,34	5,75

Source: Research data.

Table 5 seeks to understand the participants relation to the commercialization and complementary education in activities related to the production and management of their property.

Questions 13 to 15 try to evaluate specifically complementary education such as courses and lectures. Question 13 presented the statement “I take courses related to crop production and handling”, question 14 “I take courses related to rural property management”, question 15 “I take courses related to commercialization”. In this set of questions, the average of responses on the scale were distributed in a way that highlights a hierarchy of importance for the respondents, placing courses on handling in first place, management in second, and ones related to commercialization in third.

Question 16 proposed the following statement “The main reason for my decision in soybean commercialization is the payment of agricultural expenses”, with aim to evaluate the relevance of the payment of expenses in the decision to commercialize. This statement obtained an average of 4.1034 in the Likert scale, adding 50.57% of participants who marked options between 5 and 7, which show a higher level of agreement. This indicates that the payment of expenses contracts with financial agents is a highly relevant component for decision-making. Other studies already evidenced this behavior, such as Barbosa *et. Al* (2022), where the authors identified the higher concentration of soybean profits in the period from March to May, in the evaluated cooperatives.

Below, the results of the questions directly related to the eight behavioral aspects studied in the study are presented and discussed.

4.1. Loss aversion

Table 6 presents the participants loss aversion factor. Seven questions were elaborated, where question 17 sought to measure the effect of loss aversion more directly, and with questions 18 and 19 presenting situations where the participant should mark the level of agreement with the three possible answers.

Table 6. Variables related to the Loss Aversion factor

Variables	Average	Percentage (%)						
		1	2	3	4	5	6	7
19c.	5,69	6,90	1,15	8,05	6,90	4,60	21,84	50,57
17	5,15	6,90	2,30	4,60	16,09	18,39	28,74	22,99
18c.	4,08	22,99	10,34	6,90	13,79	8,05	17,24	20,69
18b.	4,01	18,39	2,30	10,34	24,14	26,44	10,34	8,05
18a.	3,44	24,14	12,64	12,64	21,84	12,64	6,90	9,20
19b.	3,33	25,29	5,75	17,24	21,84	25,29	1,15	3,45
19a.	2,70	35,63	14,94	14,94	20,69	8,05	3,45	2,30

Source: Research data.

These data illustrate that the responding producers presented a degree of loss aversion regarding soybean transactions. We observe that in the two fictitious situations proposed in question 18 and 19, the alternatives that varied in risk and return level obtained answers that were distributed in higher proportion to those that represented a lower risk possibility (alternative c), followed by the answers that represented “moderate” risk (alternative b), and with the lowest averages, the alternative that represented the highest risk (alternative a). These data translate the loss aversion behavior in the participants’ routine, where the weight of losses ends up being higher than the potential gains. When observing the routine and how these producers relate with commercialization, this behavior ends up justifying, for example, the conservative relationship between producers and existing new commercialization tools.

The difference in answers, when dealing with the soybean volume in grains and the value attributed to this soybean volume corroborates the observation made by Novemsky and Kahneman (2005), where the authors state that loss aversion is observed in regards to money, however, it acts with different intensity for other types of goods. In the question block, the participants’ aversion is higher when the decision that has to be made is related to soybean volume (100 bags in the question) than when dealing with values in reais. Relating the results obtained in this section of the questionnaire with the data from the section that describes the socioeconomic profile of the participants, it is possible to observe that the results are in accordance with Gachter, Johnson and Herrmann (2022), who indicate that the loss aversion is negatively related to education, as can be observed in questions 13 to 15, where the participants declare lower participation in courses and events related to commercialization than those related to other property activities.

4.2. Status quo

Table 7 presents the results related to questions that seek to evaluate the status quo maintenance factor. Three questions were presented, with different situations, question 22 presented three possible answers to the presented scenario, where the participants should indicate their level of agreement.

Table 7. Variables related to the status quo maintenance factor

Variables	Average	Percentages (%)						
		1	2	3	4	5	6	7
20	4,08	10,34	12,64	12,64	19,54	20,69	16,09	8,05
21	3,05	32,18	11,49	14,94	18,39	12,64	4,60	5,75
22c.	4,99	6,90	6,90	4,60	21,84	10,34	20,69	28,74
22b.	3,90	16,09	11,49	6,90	27,59	17,24	11,49	9,20
22a.	3,54	19,54	18,39	10,34	16,09	19,54	8,05	8,05

Source: Research data.

Two issues can cause this prevalence of preferring to maintain the status quo. The first is related to the variety of possible choices, causing a “choice dilemma”, with many available possibilities in terms of commercialization, and little knowledge about details of these possibilities, considering different buyers, different contract types and different payment conditions. The results showed that producers tend to maintain the status quo, as observed by Samuelson and Zeckhauser (1988). Another possible trigger is the relation with the loss aversion factor. As observed in the previous section, the sample presents an important level of loss aversion. Saurin *et al.* (2011) observed that the tendency to maintain the status quo is observed mainly in individuals that are more averse to loss. Samuelson and Zeckhauser (1988) also make an observation in this sense, including that, besides the relation with loss aversion, status quo maintenance also responds to cognitive cost, rationalization and fear.

4.3. Procrastination

Table 8 presents data related to questions that sought to evaluate the influence of the procrastination factor in the participants’ decision-making. Four statements were presented, where the participants had to indicate their level of agreement with each one.

Table 8. Variables related to the Procrastination factor

Variables	Average	Percentages (%)						
		1	2	3	4	5	6	7
24	5,62	3,45	1,15	6,90	11,49	16,09	17,24	43,68
23	3,44	20,69	13,79	13,79	24,14	13,79	8,05	5,75
25	3,25	32,18	12,64	10,34	14,94	9,20	13,79	6,90
26	3,10	33,33	13,79	11,49	14,94	9,20	11,49	5,75

Source: Research data.

In this block, it is possible to observe that the participants reject the idea that they procrastinate. Thaler and Benartzi (2004) comment that the procrastinating behavior occurs in individuals that judge the tasks they must do as little important, in relation to those they are performing at present. Tversky and Shafir (1992) observe that the temporal perspective is important when analyzing the procrastinating behavior, as the more time one has to perform a task, the larger the probability that this task will not be done. On the other hand, Pereira and Ramos (2021) state that, despite there not being a specific group that is more responsive to procrastination, it is possible to indicate that procrastinating behavior is more common in younger individuals. Based on the data exposed in the study, it is possible to establish a relation between the fact that the sample is characterized by older individuals and the observation made by Pereira and Ramos (2021). It is also possible to indicate that variables such as the need to quickly define commercialization, observed in the results by the relevance of the answers that indicate that the payment of agricultural expenses, and the absence of a storage system in 90.80% of properties, are important factors to define commercialization, excluding the main component of the procrastinating behavior, which is valuing the future reward.

4.4. Trust

In Table 9, the results of the answers to the question block related to the trust factor are presented. Three questions were presented, question 27 presenting a scenario with three options where the participants had done indicate their level of agreement with each one.

Table 9. Variables related to the Trust factor

Variables	Average	Percentage(%)						
		1	2	3	4	5	6	7
28	4,44	2,30	5,75	18,39	28,74	19,54	14,94	10,34
29	4,32	3,45	5,75	12,64	31,03	29,89	14,94	2,30
27b.	3,97	14,94	13,79	12,64	24,14	5,75	10,34	18,39
27a.	3,48	25,29	11,49	11,49	16,09	19,54	9,20	6,90
27c.	2,95	34,48	19,54	6,90	17,24	5,75	9,20	6,90

Source: Research data.

The questions presented different scenarios in term of how the value on which the producer should base their decision was presented. Question 27 deals with values, while questions 28 and 29 brought the figure of soybean commercialization. As already observed, people tend to express different behaviors when talking about money or other goods. In the question involving values, it was possible to observe that the participants tend to choose the safest option, evidencing that, in the context of a purely financial decision, such as analyzing where to allocate money in a financial product, they tend to be less confident, possibly due to thinking they do not have the needed knowledge. On the other hand, when the decision involves soybean commercialization, the results express a tendency to trust their own abilities and also analysis and observations by specialist. Tversky and Kahneman (1974) comment that trust can be developed through some heuristics, such as anchoring, availability and representation. Odean (1998) classified the bias resulting from the behavior of trust in three ways: overlap, over-precision and overestimation, leading individuals to underestimate risks and ignore contradictory evidence. It is possible to establish, for example, that in a negotiation of trading soybean for inputs, the producer's behavior is different than the behavior when settling a volume of grain for money. When dealing with the exchange of inputs for a volume of soybean, the producer tends to be more confident, while when dealing with pricing their volume of soybean, they may be more insecure.

4.5. Optimism

In Table 10, the results from the question block related to the optimism factor are presented. Three questions were presented, questions 30 and 32 presented different scenarios and three options where the participants had to indicate their level of agreement with each one.

Table 10. Variables related to the Optimism factor

Variables	Average	Percentage (%)						
		1	2	3	4	5	6	7
32b.	4,9885	2,30	2,30	11,49	20,69	24,14	19,54	19,54
30b.	4,977	3,45	3,45	6,90	17,24	28,74	27,59	12,64
31	4,7471	5,75	-	16,09	18,39	27,59	16,09	16,09
32c.	3,977	5,75	11,49	16,09	35,63	17,24	4,60	9,20
30c.	3,7931	5,75	16,09	24,14	24,14	11,49	13,79	4,60
30a.	3,7471	19,54	6,90	14,94	22,99	17,24	10,34	8,05
32a.	3,5517	16,09	13,79	17,24	22,99	17,24	6,90	5,75

Source: Research data.

The results evidence that the participants tend to have a optimistic view regarding the soybean market, seen as, when confronted with three possible answers to the opinion of specialists about a negative tendency, they indicated to agree with the more optimistic alternative. Sharot (2011) comments that optimism is maintained by a selective mechanism of updating beliefs, making it so that people tend to incorporate positive information more easily than negative information about the future. In this sense, it is important to highlight the context

in which this research was conducted. When experiencing two years of harvests impacted by the drought, the 23/24 harvest, which began during the research period, was seen as an opportunity for better productivity, due to the end of the drought period. Bracha and Brown (2012) point out that optimism is the result of a relationship between emotional and rational processes, thus, the emotional state of the participants is also determinant for an optimistic view or not of the soybean market, which reinforces the relevance of studying the behavior in decision-making. Furthermore, Sharot (2011) also states that underestimating uncertainty due to an optimistic view can reduce preventative behaviors and contribute to the creation of economic bubbles, through the accumulation of optimistic expectations by the individuals.

4.6. Social conformity

Table 11 gathers the results of questions related to the effect of social conformity. This block was composed of three questions, two (34 and 35) presenting different scenarios with three alternatives each, where the participants had to indicate their level of agreement according to the scale.

Table 11. Variables related to the Social Conformity factor

Variables	Average	Percentage (%)						
		1	2	3	4	5	6	7
34b	5,7356	1,15	0,00	4,60	16,09	16,09	20,69	41,38
35b	5,2069	2,30	3,45	8,05	20,69	17,24	19,54	28,74
33	4,7586	4,60	6,90	12,64	20,69	12,64	24,14	18,39
35a	4,2989	6,90	14,94	12,64	20,69	12,64	16,09	16,09
35c	3,9540	20,69	5,75	6,90	24,14	19,54	12,64	10,34
34a	3,4943	18,39	11,49	17,24	25,29	17,24	3,45	6,90
34c	3,4828	20,69	11,49	9,20	31,03	16,09	8,05	3,45

Source: Research data.

These data demonstrate that, when the decision depends exclusively on the participant, there is a tendency to accompany a unanimous movement taken by other peers, however, when they have to make a decision with a group, they avoid endorsing the majority decision, preferring to better discuss the possible alternatives. This behavior was also observed by Spyrou (2013), who verified that institutional investors were less affected by the social conformity behavior, while individual investors are more affected by this behavior. The author establishes a relation between the effect of social conformity and the trust factor, stating that social conformity acts as an answer to the bias of excess trust in information present in the environment. Qasim *et al.* (2019) also observed results establishing a relation between trust and social conformity, where the bias of excess trust generates a tendency for social conformity. Still, in line with what is discussed in the section about the heuristic of availability, Merli and Roger (2013) comment that the low performance in negotiations during a period influences individual to be more likely to follow the effect of social conformity, and that this effect can persist for some time.

4.7. Heuristic of availability

Table 12 presents the results related to the question that sought to evaluate the presence of the “Availability” factor in the participants’ routine. This block contains only one question, presenting a scenario and three alternatives, making the participants indicate their level of agreement with each one.

Table 12. Variables related to the Availability factor

Variables	Average	Percentage (%)						
		1	2	3	4	5	6	7
36b.	5,1839	4,60	2,30	2,30	22,99	21,84	20,69	25,29
36a.	4,1954	11,49	9,20	10,34	24,14	13,79	24,14	6,90
36c	4,046	17,24	6,90	13,79	21,84	10,34	16,09	13,79

Source: Research data.

These data demonstrate that the participants are influenced by the availability of memories about the last commercialization decisions, however, there is a type of “hierarchy” in this preference. In the case of alternative “b”, the participants inform that they try to make a more detailed analysis of the market’s current situation before making a new decision, indicating that the performance in previous decisions makes them try to improve the performance by seeking new information. Alternative “a” also had a tendency to agree, although at a lesser degree than alternative “b”, indicating that the availability of information from previous harvests also has a significant impact in decision-making, however, less than the performance in recent negotiations. Tversky and Kahneman (1974) discussed that the heuristic of availability is an adaptive mechanism, that can lead one to underestimate or overestimate risks. Pachur *et al.* (2012) observed that people tend to be more affected by the availability of a personal recollection than events not experienced entirely, such as those seen in media. This indicates that the adaptability of the heuristic of availability can be due to the distance between the individual and the recalled event. If the recalled event is one in which the individual did not actively participate, it tends not to trigger a decision built upon the process of the availability heuristic. Another important question is about the individual’s mood. MacLeod and Campbell (1992) observed that the recovery time for pleasant memories is shorter in people who are happy, while people who are sad tend to more easily recall negative events.

4.8. Heuristic of priming effect

Table 13 presents the data from the answers to the question that tried to evaluate the action of the priming effect in the participants’ decisions. A situation was presented, with three alternatives, where the participants had to indicate their level of agreement with each one.

Table 13. Variables related to the Priming Effect factor

Variables	Average	Percentage (%)						
		1	2	3	4	5	6	7
37c.	4,7586	3,45	9,20	11,49	18,39	19,54	17,24	20,69
37a.	4,4368	8,05	6,90	12,64	19,54	20,69	22,99	9,20
37b.	4,1034	9,20	11,49	11,49	28,74	16,09	12,64	10,34

Source: Research data.

Despite the option with the highest averages being the option in which the participants indicate not considering previous performance, the average of the option that indicates a change in posture because of the last performance was also high. These answers may be influenced by the confidence in their own marketing performance, which explains the high rate of answers indicating no change in the decision-making process. Similarly, the importance of repaying production credit and the limited availability of storage infrastructure suggest less flexibility in considering marketing strategies, also contributing to this more conservative behavior regarding commercialization.

5. Conclusion

From the obtained results, it is possible to observe that the behavioral questions are important components that influence the decision-making of the surveyed farmers. Among the eight behavioral aspects considered in the research, the data demonstrate that seven of them effectively act in the decision-making of the participants, procrastination being the only behavior that was not highlighted in this context.

Through all the data presented, it is possible to highlight that some contexts tend to change the farmers' behavior regarding the decision-making in soybean commercialization. This is the case with the relationship between individuals and money and the physical volume of grains, as observed in the responses reflecting loss aversion, status quo maintenance, and trust behaviors, where the level of manifestation of these behaviors varied depending on the type of transaction. In the same sense, the individuals' behavior regarding social conformity is an important result, seen as it indicates that individual decision-making is impacted by the social context, while the participant tends to not follow a behavior of conformity when deciding in smaller groups. It is also worth highlighting, regarding heuristics of availability and priming effect, that the participants seek security in previous memories from their decisions, but condition their future decisions on the recent performance of those past decisions. Still, it was observed that the farmers demonstrate trust in future opportunities, even in an adverse context as the one where the research was conducted, in which the recent retrospect of the harvests was impacted by droughts period.

Introducing a behavioral approach into the analysis of decision-making in the context of agribusiness, especially regarding commercialization and activities that seem to be more uncomfortable in the producers' routine may be an efficient way to more precisely diagnose the performance of the properties and also propose solutions that dialogue with what in fact matters to aid in individuals' decision-making. The popularization of management and commercialization tools, as well as training in these areas, may improve the competitiveness of small and medium-sized properties. This takes into account the fact that individual behavior varies within their socioeconomic strata and between these strata.

Based on this study, research can be proposed to address the identification of behavioral aspects in different production chains, beyond the soybean chain, in different sectors of rural properties, and in different relationships between rural properties and their producers, with cooperatives, technical assistance, financial system and others. Additionally, it suggests the discussion of management methods that consider the variable of individual behavior.

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