PERCEPTION AND TOLERANCE TO THE RISK OF FAMILY AGRICULTURE MANAGERS

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ABSTRACT

Purpose: Analyze the relationships between the constructs of perception and tolerance, perceived by the managers of rural properties.

Method/design/approach: A research survey was carried out with 137 farmers. This is a quantitative study of a described character.

Results and conclusion: In the analysis of the means of the risk behavior factor, the results revealed that risk perception precedes risk tolerance, and the relationship between the constructs is inverse, in which managers perceive more risk in a situation that has the lowest tendency to incur risks. In this context, the greater the perceived risk, the less chance the manager will have of carrying out the business. The findings made it possible to broaden the understanding of the relationships between the risk constructs within the decision-making process. In general, family farming managers show signs of the need to manage finances more efficiently and, in most cases, seek to improve these practices.

Research implications: the implications of this study for the management of family farming show that managers perceive risk situations, and have a low willingness to take this risk (risk tolerance).

Originality/value: expands the understanding of the tolerance to risk linked to the financial of families that live from family farming.


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PERCEPÇÃO E TOLERÂNCIA AO RISCO DOS GESTORES DA AGRICULTURA FAMILIAR

RESUMO

Objetivo: analisar as relações entre os constructos de percepção e tolerância, percebidos pelos gestores de propriedades rurais.

Referencial teórico: se apoia na literatura por meio da agricultura familiar e a tolerância ao risco e incertezas na agricultura.

Método: Realizou-se uma pesquisa survey com 137 agricultores. Trata-se de um estudo quantitativo de carácter descrito. Os dados foram coletados por meio de questionário e revelam que o comportamento dos entrevistados é restrito a ações que não os coloquem em situações de risco financeiro.

Resultados e conclusão: Nas análises das médias do fator comportamento de risco, os resultados revelaram que a percepção ao risco antecede a tolerância ao risco, e a relação entre os constructos é de ordem inversa, em que os gestores percebem mais risco em uma situação que têm a menor tendência a incorrer riscos. Nesse contexto, quanto maior for o risco percebido, menos chances terá o gestor de realizar o negócio. As constatações permitiram ampliar a compreensão sobre as relações entre os constructos de risco dentro do processo decisório. De forma geral, os gestores da agricultura familiar mostram indícios da necessidade de gerir as finanças de forma mais eficiente e na maioria dos casos buscam melhorar essas práticas.

Implicações da pesquisa: as implicações deste estudo para a gestão da agricultura familiar evidenciam que os gestores percebem as situações de risco, e apresentam baixa disposição a correr este risco (tolerância ao risco).

Originalidade/valor: amplia a compreensão sobre a tolerância ao risco vinculado ao financeiro das famílias que vivem da agricultura familiar.


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1 INTRODUCTION

The decision-making process is a preference of the managers, as well as their responsibility, that is, such a preference will give subsidies for the formation of the vision and choices of the managers in the decision-making process, so the choice of the efficient information system is determined by the vision that the managers have in positioning the company in the market and in front of the competitor (Nutt, 1986).

In this context, decisions always involve some kind of risk and are made considering the characteristics and attitudes adopted by decision makers, and the process demands to calibrate rationality or intuition, as it is influenced by the beliefs and values of managers (Lobão, 2012; Tversky & Kahneman, 1974; Vergara, 1991). The decision-making process takes place in all kinds of organizations regardless of the field of activity or size, however, they are influenced by personal values (Macrirmmon & Wehrung, 1990) and are subject to failures (Shore, 2008), because competitiveness seeks quick and satisfactory decisions for the organization (Hough & White, 2003).

In the context of decision-making in the agricultural environment, decisions are also at risk and are often not controllable, such as climatic factors, price variations caused by the market, worker health risks and so on. (Sepulcri, 2006). Agriculture presents very specific characteristics when compared to other sectors of the productive economy, one that stands out.
most is the magnitude and nature of the risks to which it is subject, these risks, which are not often seen in industrial production sectors (Embrapa, 2020).

According to Djanibekon et al. (2018), agricultural risks are sometimes related to variants, such as low production levels, which may arise not only due to poor management practices but also due to production risks, for example due to climatic variability or limited access to some inputs, such as irrigation water. Komareki et al. (2020), further states that without a knowledge base to design possible risk management strategies and policies on multiple variables, farmers become vulnerable. For Salvodi and Cunha (2010), they state that all these risk possibilities impact the financial performance of organizations, so understanding the behavior of the family farmer in relation to risk can contribute to better management in relation to the finances and economic sustainability of his property.

For Morgan et al. (2015), they also point out that such contributions lead the manager to better risk management that may result in reduced revenue variability over time, which will increase the long-term viability of the business, thus avoiding getting involved in risk factors through poorly made decisions. Thus, the present study focused on the influence of behavioral factors of financial risk in the face of perceived risk and risk tolerance of managers in family farming of the RN. Most of the farmers' decisions are linked to the administration of their property, with two simultaneous perspectives, one linked to family support and the other related to the commercialization of surplus production, establishing parameters of action linked to the cultural and symbolic dimension (Baiardi & Alenar, 2014).

However, there is evidence that rural managers would be associated with a more conservative profile, as evidenced by Flores (2012), when they found that they faced financial risks, presenting a low level of indebtedness and conservative behavior. For the purpose of this study, the risk was related to the opportunities and uncertainties of the organization, demonstrating its own characteristics and thus requiring a specific management or analysis (Hopkin, 2010). In this context the question that guides this research is: What is the relationship between risk perception and risk tolerance in family farming of the RN? This research aims to analyze the relationships between the constructs of risk perception and risk tolerance, perceived by the managers of rural properties of family farming of the city of Mossoró/RN. For a more specific analysis, the aspects of financial risk were listed, divided into two factors: perception and risk tolerance. The perception of risk is related to the expectation of negative consequences, since the behavior to risk is associated, there are investments or actions with probability of adverse implications, being influenced by the individual perception in a given context in which the behavior occurs (Blais & Weber, 2006).

The study showed that the perception of risks of that group of small farmers influences their working practices and the way they respond to the risk posed by decision-making and should therefore be analyzed in farmer-related decision-making initiatives and in the scope of risk management initiatives. From a financial planning perspective, risk tolerance plays an important role in guiding individuals to make psychologically satisfactory and comfortable investments (Sivasankaran & Selvakrishnan (2023); Chandu, Reddy, Srilakshmi & Shifaly, 2022).

You (2008) considers that risk tolerance represents the intention of behavior of an individual. Thus, the need for educational action is evident in order to pass on information and clarification to farmers on the risks inherent in agricultural activity (Assunção, Pedrotti, Santos & Brandão, 2019).
2 THEORETICAL FRAME

2.1 Family Farming

According to Savoldi and Cunha (2010), family farming has an influential family behavior in the structure of social reproduction organization, through the elaboration of family and individual strategies that influence the transfer of material and cultural heritage. For the Ministry of Agriculture, Livestock and Supply (2019), family farming is the agricultural and livestock production carried out by small producers, employing in general family-related labor, who have blood or marriage ties. Law 11,326, of July 24, 2006, defines that, in order to be considered family farming must meet the following criteria: the person who practices activities in the rural environment has an area of up to four fiscal modules, workforce of the family itself, family income linked to the establishment itself and management of the establishment or enterprise by the family itself.

It is worth pointing out that in Brazil the National Program for Strengthening Family Agriculture - PRONAF is one of the main sources of financing for this type of activity, and thus, one realizes the importance of family agriculture in the organization and structuring of the agrarian space in Brazil, even if this, admittedly, does not have a valuation in terms of public policies and in the actions of the National State.

The IBGE reveals that in the 21st century family farming still occupies a relevant place in the national agriculture since it represents 4.3 million establishments, occupies 74% of the workforce and is responsible for an important share of food production. However, among the northeastern states, Rio Grande do Norte has the fewest family farmers. Even with low quantitative representativeness, in regional terms family farming is an important sector in its agrarian structure (De Aquino, Freire & De Carvalho, 2017).

In Graph 1 regarding production in family agriculture, we can observe that the data show that chestnuts are the only product with the highest added value that family agriculture has a significant participation, and even that the production of this segment is significant in the production of basic foods (De Aquino et al., 2020).

Graph 1 - share of family and non-family farming in tons (in%) produced by the main crops of Rio Grande do Norte
Source: adapted from De Aquino et al., (2020, p. 122).

In relation to livestock production, family farming in the RN stands out in some aspects, as shown in Chart 2.
The data show good participation of family farming in the goat, sheep, pig, cow and goat sectors. The most relevant performance is with bee honey. De Aquino *et al.* (2020) draws attention to the figures relating to the total value of production and notes that although the share of family farming was significant it generated only 29.7% of the wealth produced by the farming of the RN, and only 12 thousand employers farmers were responsible for 70.3%. These data reveal that there is an inequality in wealth generation capacity that somehow reveals the fragility of family farming, which faces limitations related to scarcity of land, water, technologies, technical assistance, credit, among other assets.

Such a scenario shows that family farming in the RN has an important economic, environmental (as a function of agro-ecology) and social role, however it is necessary to create public policies that minimize its weaknesses and strengthen this segment.

### 2.2 Risk Perception

In the late 1990s, Michell (1999) stated that the concept of risk had reached maturity and established a tradition of research into aspects of consumption. For Bauer (1960), the theory of perceived risk was initially defined under two dimensions: uncertainty and the meaning of consequences (or importance). Serving as an essential input to the development of a person's risk profile, however, these terms are not interchangeable (Grable, 2017). According to Bauer (1960), consumers are faced with a dilemma when trying to make a certain purchase and hesitate to perceive the risk involved in the transaction, which may lead to future losses. In the Johnson, Sivadas and Garbarino findings (2008), the individual's commitment to a given product or brand has an inverse relationship with the perception of risk.

Seeking to develop decision strategies and means to reduce risk, which enable relative confidence and tranquility at times when their information is inadequate and the consequences of their actions are in some sense significantly incalculable (Bauer, 1960). Cox and Rich (1964) explain that, as the consumer does not feel safe in purchasing, he will seek to minimize uncertainties as a risk reduction strategy, avoiding possible unfavorable consequences. The perceived risk has been understood as a multidimensional phenomenon and, for this reason, is subdivided into several categories of risks or losses (Stone & Gronhaug, 1993), a phenomenon that we highlight in the following text.
2.3 Risk Tolerance

Attitude to risk used to be analyzed as the exclusive domain of human rationality, i.e., the question of attitude to risk was seen as a primarily cognitive construct. In the financial field, investors would be led by cognitive risk assessments, considering the trade-off between risk and market reward, before they make their financial decisions.

Therefore, risk tolerance tends to favor the individual's tendency to accept negative changes that are prone to adverse outcomes, i.e. differ from expectations in terms of (Grable & Lytton 1998; Kannadhasan, 2015). Based on the definition of tolerance to financial risk, it can be compared as a psychological component of decision-making under financial uncertainty. In this case, individuals would assess the adequacy of possible outcomes and the likelihood of their occurrence. (Kahneman & Tversky, 1979).

From the point of view of financial planning, risk tolerance plays an important role in guiding individuals to make psychologically satisfactory and comfortable investments. You (2008), considers that risk tolerance represents an individual's intention to behave.

Authors Grable and Lytton (2001), consider that risk tolerance represents an individual's intent to behave. The first way is to view risk tolerance as a single entry in a manager's overall risk profile. The lack of a standard model causes financial professionals to develop and use "self-made" methods usually limited to simple conversations about the level of good in different scenarios.

For Carr (2014), for example, it showed that a customer's risk perception and risk need, in addition to risk tolerance, were the most important characteristics that model an individual's profile. Nobre and Grable (2015), for example, noted that an individual's willingness to take financial risks is influenced by their risk perception, risk need, and risk profile that they defined as being composed of risk capacity, risk preference, and risk composure. When viewed in this way, a manager may be willing to take risks when presented with a financial decision, but not be willing to take risks in another situation (Grable, 2017).

2.4 Risks and Uncertainties in Agriculture

Risks and uncertainties are the basis of any decision-making structure in agriculture. When knowledge is imperfect, you can define risks and know the probabilities of possible outcomes, and when those probabilities are unknown, there is uncertainty. Frey et al. (2017). It is difficult to imagine an environment in which risks and uncertainties are more important than the agricultural sector (Aimin, 2010). In turn, the decision-making process is characterized by its complexity, which eventually inserts uncertainties and risk factors, even if it is complex in nature (Nelson, 1997).

Authors Ondersteijn, Giesen and Huirne (2003) state that farmers who practice strategic management in their businesses are more successful than those who do not, even though the farmer is the manager and at the same time belongs to the labor force. The authors also state that farmers analyze the strengths and weaknesses of their businesses, i.e., assess the risks related to the activity they propose.

Still from this perspective, Nelson (1997) pointed out that uncertainty refers to a situation where the consequences include many possible outcomes, regardless of desirability. Corroborating with the premises presented by Nelson (1997), Aimin (2010) and Rosa et al. (2018) highlight in Table 1 the types of risks linked to agriculture.
Table 1 - terms and definitions of the types of risks in agriculture

<table>
<thead>
<tr>
<th>Terms</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncontrollable Elements</td>
<td>Climate, insect pests and diseases that play a key role in agricultural production.</td>
</tr>
<tr>
<td>Uncertainties and market risks</td>
<td>Decisions about what and how much to produce have to be made well in advance, since the market price for production is normally not known at the time when such decisions occur. Market uncertainty is most relevant because of the inherent volatility of agricultural markets.</td>
</tr>
<tr>
<td>Family risk</td>
<td>Corresponds to loss of work of family members due to illness or accident.</td>
</tr>
<tr>
<td>Political uncertainties and risks</td>
<td>Economic policies have an impact on all sectors through their effects on things, such as taxes, interest rates, exchange rates, regulation, provision of public goods.</td>
</tr>
</tbody>
</table>

Source: adapted from Aimin (2010) and Rosa et al. (2018).

In this way, understanding the origin and specificity of certain types of risks leads to the development of a strategy for its management, in the case of agricultural production, the objective of risk management should be to improve or maintain the yield of agricultural production and its financial and organizational stability within the traditionally distinct stages of identification, evaluation and response to risk.

3 METHODOLOGICAL PROCEDURES

3.1 Research Characterization

This research is characterized as a descriptive and explanatory study, since it seeks to understand the behavior and various factors and elements that influence a given phenomenon. According to Oliveira (2002), research of this nature seeks to encompass the correlation between the variables, giving room for an explanation of the relationship between cause and effect of the phenomena.

A field study was carried out, using a survey, from the questionnaires applied to family farm managers. 137 family farmers from the state of Rio Grande do Norte took part in the research, with over 2 years of activity in the field.

The concept used to characterize farmers was the one proposed by FAO/INCRA (1994, p. 04) as described below:

- The management of the productive unit and the investments made in it are made by individuals who maintain links of blood or marriage;
- Most of the work is also provided by family members;
- The ownership of the means of production (although not always of the land) belongs to the family and it is within them that their transmission takes place in case of death or retirement of those responsible for the productive unit.

The distribution of the sample collected is restricted to family farm managers of the state of Rio Grande do Norte, according to Table 2:
Table 2 - localities and numbers of respondents

<table>
<thead>
<tr>
<th>LOCALIDADES E NÚMEROS DE ENTREVISTADOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municípios pertencentes a região do Apodi</td>
</tr>
<tr>
<td>Apodi</td>
</tr>
<tr>
<td>Sítio Carpina/Apodi</td>
</tr>
<tr>
<td>Baixa Fechada II</td>
</tr>
<tr>
<td>Baixa Fechada I</td>
</tr>
<tr>
<td>Municípios pertencentes a região de Mossoró</td>
</tr>
<tr>
<td>PA Paulo Freire Mossoró</td>
</tr>
<tr>
<td>Assentamento Favela</td>
</tr>
<tr>
<td>Assentamento Jurema</td>
</tr>
<tr>
<td>Casqueira I</td>
</tr>
<tr>
<td>Municípios pertencentes a região de Serra do Mel</td>
</tr>
<tr>
<td>Serra Mossoró</td>
</tr>
<tr>
<td>Vila Ceará</td>
</tr>
<tr>
<td>Sítio Oziel/Meia</td>
</tr>
<tr>
<td>Vila Minas Gerais</td>
</tr>
<tr>
<td>Mulugunzim</td>
</tr>
<tr>
<td>Vila Goiás</td>
</tr>
<tr>
<td>Meia</td>
</tr>
<tr>
<td>Vila Alagoas</td>
</tr>
<tr>
<td>Bom Jesus</td>
</tr>
<tr>
<td>Vila Sergipe/Serra do Mel</td>
</tr>
<tr>
<td>Alagoinha Recanto da Esperança</td>
</tr>
<tr>
<td>Município de Natal</td>
</tr>
<tr>
<td>Município de Açú</td>
</tr>
<tr>
<td>Municípios pertencentes a região de Baraúna</td>
</tr>
<tr>
<td>Municipio de Upanema - 4S São Manoel II</td>
</tr>
<tr>
<td>Riacho Grande</td>
</tr>
<tr>
<td>Municipio de Pedro Avelino</td>
</tr>
<tr>
<td>Santo Antônio</td>
</tr>
<tr>
<td>Municipio de Jandaira</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

Source: management and culture questionnaire (2019)

3.3 Data Collection and Analysis Tool

The research instrument used to analyze the two dimensions of risk was the scale created by Weber, Blais and Betz (2002), adapted and validated in Brazil by Paulino (2009). The original 40-item scale covers five dimensions: financial decisions, health/safety, legal/ethical, social and recreational. However, in this study, the authors used the items referring to financial risk, composed of five questions, used for the dimensions of perception and risk behavior.

The Risk Perception scale is structured on a 5-point Likert scale (1 - No Risk and 10 - Extreme Risk), and the Risk Behavior scale also used a 5-point Likert scale (1 - Very Unlikely and 10 - Very Likely). The scale of risk and intent of risk behavior was organized as follows, as shown in Table 1:

Table 1 - Risk scale and intent of risk behavior

<table>
<thead>
<tr>
<th>VARIÁVEIS COMPORTAMENTAIS</th>
<th>Quanto Risco você percebe?</th>
<th>Qual a Probabilidade de você Realizar?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gostar grande quantidade de dinheiro em loterias</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ser avalista de alguém</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gostar dinheiro impulsivamente, sem pensar nas consequências</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investir em um negócio que possui grandes possibilidades de não dar certo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emprestar para amigo/familiar a maior parte do seu salário ou renda mensal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: management and culture questionnaire (2019)

In the column - How much risk do you perceive? - Indicate how much risk you perceive in the situations mentioned, being 1 for no perceived risk and 10 for extreme perceived risk. In the column - How likely are you to accomplish? - Indicate the probability of you performing the activity or behavior, being 1 for no perceived likely risk and 10 for perceived extreme likely risk.
The data was analyzed statistically through the *IBM SPSS Statistics 24.0* © software, where initially for the treatment and organization of the data, a tabulation was drawn up in electronic spreadsheets. Second, descriptive statistical analyzes of risk perception and tolerance factors were performed in order to identify the means and deviations of patterns respectively. Third, the reliability test, *Cronbach's Alpha*, was used to identify the reliability of the risk perception and risk tolerance scale. This test refers to the internal consistency and reliability of the scale data, where the result may be greater than 0.90 indicating that the data is bias-free. For Hair (2019), this bias occurs when the missing data process causes certain data to be missing from the tab, leading to incorrect results. Hair *et al.* (2019), in exploratory studies, values above 0.60 and up to 0.70 are acceptable.

Fourth and last, *Pearson's Correlation* analysis was performed in order to highlight the existence of correlations and associations (Figueiredo Filho & Silva Júnior; 2009) between the dimensions of risk perception and tolerance, in the face of financial risk behaviors, perceived by property managers.

### 4 ANALYSIS AND DISCUSSION OF RESULTS

#### 4.1 Respondent Profile

Most of the respondents are male, have been on the property for more than ten years, access to land has been through land reform, most of the properties have more than 12 hectares. They produce fruit, vegetables, vegetables and animal husbandry. They participate in the association (62%), but a portion of the respondents does not participate (38%). The decisions about what to produce, what to buy, are made by the owner, even if the position of the rest of the family is different, the owner's premise is the one that prevails.

The gains from production are sufficient for the family to support 53% of the interviewees. They do not assume themselves as entrepreneurs and consider property to be an inheritance for their children. Where the daughters are interested in working on the property (62%), and the study of their sons divides this positioning, since for 53% the formation will allow continuity in rural activities, and for 47% of the interviewees, it must be a possibility for them to leave the countryside. However, for 64% formal education will not help in improving rural property.

The majority of the farmers interviewed do not identify with the work in the field, but they justify that even so, this is their only alternative for survival, and that they do not aspire to any profession other than that of a rural worker. With regard to agribusiness, 59% of the farmers interviewed do not consider themselves part of it. Still, 56% of respondents believe that prices are market-defined, and therefore do not keep up with production costs. The definition of what to produce, divides the positioning of those interviewed on this aspect, where, 53% disagree that the consumer is the one who defines what to produce.

With regard to production, 65% of rural producers explain to their consumers about the benefits of family farming, where most of them (63%) prefer to sell to the final consumer. There is no dependence on the public authorities or cooperatives/associations for the marketing of products.

Still on the production side, 54% is intended primarily for family consumption. However, for 71% of the respondents the priority of the destination of production is commercialization, establishing an inconsistency in the statements. On the other hand, when they say that the main objective of production is profit, we believe that the trend of commercialization prevails, although the theme of environmental preservation prevails as a productive practice.
4.2 Risk Perception and Tolerance

Five items were analyzed referring to the questionnaire drawn up to assess the level of perception and tolerance to risk of the managers of family farming in Rio Grande do Norte. The table below presents the general values related to the descriptive analysis of the variables as to the perception of the interviewees.

Table 2 - descriptive analysis of variables regarding perception and tolerance to risk

<table>
<thead>
<tr>
<th>VARIÁVEIS COMPORTAMENTAIS</th>
<th>PERcepção DE Risco</th>
<th>Tolerância AO Risco</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MÉDIA</td>
<td>DESvio PADRÃO</td>
</tr>
<tr>
<td>Gastar grande quantidade de dinheiro em loterias</td>
<td>8,25</td>
<td>2,86</td>
</tr>
<tr>
<td>Ser Avalista de alguém</td>
<td>8,85</td>
<td>2,49</td>
</tr>
<tr>
<td>Gastar dinheiro impulsivamente, sem pensar nas Consequências</td>
<td>8,89</td>
<td>2,48</td>
</tr>
<tr>
<td>Investir em um negócio que possua grandes de não dar certo</td>
<td>8,39</td>
<td>2,63</td>
</tr>
<tr>
<td>Emprestar para amigo/familiar a maior parte do seu salário ou renda mensal</td>
<td>7,85</td>
<td>2,82</td>
</tr>
<tr>
<td>Fator de Percepção</td>
<td>8,44</td>
<td></td>
</tr>
</tbody>
</table>

Source: management and culture questionnaire (2019)

Taking into consideration that the scale of risk perception varies between 1 and 10 points, on an ascending scale, in which 1 represents no perceived risk and 10 represents extreme risk perceived, it is generally found that the managers of family farming resident in the interior of Rio Grande do Norte, perceive a high risk in the discriminated actions. In this sense, the perception factor for risk with value of (8,44), presents evidence that managers of family agriculture developed a slightly higher risk perception in relation to the variables of financial risk behavior. The results found confirm that there are significant differences where the (sig. 0,000), between the managers' responses and in all the variables investigated, as well as in the risk perception factor point to this interpretation.

However, for some variables the mean values are sufficiently close so that their location on the likert scale does not indicate large differences in perception between participants. For example, the variable "Being someone's guarantor" averages 8.85, although statistical significance indicates that managers on average consider such perception to be too risky. On the other hand, the variable that presented the lowest average was "Lending to a friend/relative the greater part of their monthly salary or income" (with an average of 7.85), which reveals that the interviewees understand that the loan of money to a friend/family member, is a less risky action among the others that were questioned. Thus, according to Halfeld, Alfeld & Torres, (2001), in behavioral finance, man is not fully rational, he is a normal being who often acts irrationally, because he is influenced by emotions and errors that lead him to interpret a given situation differently, according to the context and the way it is analyzed.

With regard to Risk Tolerance, it is noted that managers will hardly develop any of the behaviors such as the variable "Lending to friend/family member the majority of their monthly salary or income" is highlighted by managers (average 4.80), as the alternative most likely to be realized. While the variable "Spend money impulsively, without thinking about the consequences" with (average 1.63), is revealed by managers with the lowest tendency to be developed.

A result similar to that of this study, is evidenced by Grable and Lytton (1998), to whom they also identified the largest portion of responses fixed in the same alternatives, showing that the interviewees are averse to high risks. Ozaki (2007) states that in any sector of economic
activity there are risks that vary to a lesser or greater degree. So in the farming sector, besides the market risk, there are other factors that make the activity risky, one of the main factors is that the farming activity is completely dependent on climatic conditions, and that the farmer has no control over this factor. Such uncertainties may justify the conservative behavior of the farmer in relation to finances, since the difficulties relating to the agrarian environment do not offer him security for spending in uncertain situations and have government support to give him with such unforeseen situations.

In risky situations, risk is (only) a significant aspect of the options available. Furthermore, risk represents an interaction between the alternative and the decision-maker at risk, that is, it is a subjective construct, since loss has different senses for different people, as well as the perception of its probability of occurrence (Yates & Stone, 1992). In order to develop the strategic objectives and suggest measures to guide family farmers in their learning and organizational growth, it was sought to evaluate by means of a questionnaire, seeking through indicators to measure the perception of financial risks and how tolerable they are in view of the dimensions explained, and this is the proposal of the use of the alpha coefficient of Cronbach, expressing, by means of a factor, the degree of reliability of the answers arising from a questionnaire.

Hair Jr. et al. (2019), for a factor to have satisfactory internal consistency, it must have Cronbach’s alpha greater than 0.60, below that value the internal consistency of the scale used is considered low. In contrast, the expected maximum value is 0.90; above this value, one can assume that there is redundancy or duplication, that is, multiple items are measuring exactly the same element of a construct; therefore, redundant items must be eliminated. The estimation of the internal reliability of the construct and its descriptive statistics can be found in Table 3.

Table 3 - Perception and Risk Tolerance construct reliability

<table>
<thead>
<tr>
<th>Source: management and culture questionnaire (2019)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reability Statistics</td>
</tr>
<tr>
<td>Percepção ao Risco</td>
</tr>
<tr>
<td>Cronbach’s Alpha</td>
</tr>
<tr>
<td>Cronbach’s Alpha bases on Standardized Items</td>
</tr>
<tr>
<td>N. of Items</td>
</tr>
</tbody>
</table>

It can be observed, in Table 3, that the reliability of the risk perception scale, obtained Cronbach alpha of 0.8, thus achieving adequate internal consistency, the same did not occur in the risk tolerance where it obtained 0.5 reliability in relation to the scale.

Table 4 shows the behavioral variables and their respective Cronbach alphas. Thus, it was noticed that the item "Lending to a friend/relative part of their monthly salary or income", was with a high degree of variability in relation to the other data. So it was decided to eliminate him.
Table 4 - Constructs reliability for item variance

<table>
<thead>
<tr>
<th>VARIÁVEIS COMPORTAMENTAIS</th>
<th>PERCEPÇÃO AO RISCO</th>
<th>TOLERÂNCIA AO RISCO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cronbach’s Alpha IF item Deleted</td>
<td>Cronbach’s Alpha IF item Deleted</td>
</tr>
<tr>
<td>Gastar grande quantidade de dinheiro em loterias</td>
<td>0.845</td>
<td>0.554</td>
</tr>
<tr>
<td>Ser avalista de alguém</td>
<td>0.826</td>
<td>0.431</td>
</tr>
<tr>
<td>Gastar dinheiro impulsionadamente, sem pensar nas Consequências</td>
<td>0.824</td>
<td>0.556</td>
</tr>
<tr>
<td>Investir em um negócio que possui grandes possibilidades de não dar certo</td>
<td>0.842</td>
<td>0.550</td>
</tr>
<tr>
<td>Emprestar para amigo/familiar a maior parte do seu salário ou renda mensal</td>
<td>0.898</td>
<td></td>
</tr>
</tbody>
</table>

Source: management and culture questionnaire (2019)

Table 5 shows a comparison involving all the items and then the removal of the item "Lend to friend/family member most of your monthly salary or income", highlighting the impact on Cronbach's alpha. The removal of this item shows an improvement of Cronbach's alpha in the remaining items, that is, the consistency and reliability of the construct improves.

Table 5 - increased reliability after withdrawal of tolerance item

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Item Total</th>
<th>Alpha se excuir</th>
<th>Item Total</th>
<th>Alpha it.excluído</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastar grande quantidade de dinheiro em Loterias</td>
<td>0.314</td>
<td>0.511</td>
<td>0.348</td>
<td>0.554</td>
</tr>
<tr>
<td>Ser Avalista de alguém</td>
<td>0.429</td>
<td>0.433</td>
<td>0.494</td>
<td>0.431</td>
</tr>
<tr>
<td>Gastar dinheiro impulsionadamente, sem pensar nas Consequências</td>
<td>0.328</td>
<td>0.513</td>
<td>0.359</td>
<td>0.556</td>
</tr>
<tr>
<td>Investir em um negócio que possui grandes chances de não dar certo</td>
<td>0.403</td>
<td>0.457</td>
<td>0.358</td>
<td>0.55</td>
</tr>
<tr>
<td>Emprestar para amigo/familiar a maior parte do seu salário ou renda mensal</td>
<td>0.208</td>
<td>0.601</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

Source: management and culture questionnaire (2019)

In this work, we also sought to analyze the association between the factors of Perception and Risk Tolerance. Thus, in order to identify the strength and direction of the association between the factors that impact on risk perception and tolerance, the correlation test was calculated using Pearson’s correlation coefficient (Hair Jr. et. al., 2019). Table 06 presents the correlation coefficients for each Risk Perception and Tolerance factor.
Based on the value of *Pearson's* linear correlation found among the constructs of risk perception and tolerance, in the face of financial risk behaviors. It can be concluded that all the variables presented statistically significant coefficients, with weak negative correlation, presented by the modeling of structural equations. With the exception of the item "Investing in a business that has a high chance of not working", which obtained moderate negative correlation, in which the level of significance is less than 0.05, at a correlation of -0.522. According to Sahm (2012) and Grable, Joo and Park (2009), these data indicate the degree to which people feel comfortable about risk/return. They also understand by risk tolerance "the level of volatility that people can tolerate", or even the willingness to take risks (Grable, 2017). The influence of these elements on the decision-making process depends on how managers interpret the environment, i.e. the influence of the external environment depends on how information is collected and processed.

Simon, Houghton and Aquino (2000) found an inverse and significant relationship between risk perception and willingness to invest. As verified by correlation, and presented in Table 06. It has been found that risk perception and tolerance factors are inversely proportional when correlated with each other, i.e. they are negative associations at the level of perception, which confirms a tendency of managers to be risk averse when possibilities present potential loss terms.

**Table 7**: person correlation coefficient

<table>
<thead>
<tr>
<th>VARIÁVEIS COMPORTAMENTAIS</th>
<th>Sig.</th>
<th>N</th>
<th>Percepção ao Risco</th>
<th>Tolerância ao Risco</th>
<th>Resultados</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gostar grande quantidade de dinheiro em loterias</td>
<td>0.024</td>
<td>137</td>
<td>-0.19*</td>
<td>-0.19*</td>
<td>Correlação Negativa Fraca</td>
</tr>
<tr>
<td>Ser avalista de alguém</td>
<td>0.006</td>
<td>137</td>
<td>-0.23**</td>
<td>-0.23**</td>
<td>Correlação Negativa Fraca</td>
</tr>
<tr>
<td>Gostar dinheiro impulsivamente, sem pensar nas consequências</td>
<td>0.002</td>
<td>137</td>
<td>-0.26**</td>
<td>-0.26**</td>
<td>Correlação Negativa Fraca</td>
</tr>
<tr>
<td>Investir em um negócio que possui grandes chances de não dar certo</td>
<td>0</td>
<td>137</td>
<td>-0.52**</td>
<td>-0.52**</td>
<td>Correlação Negativa Moderada</td>
</tr>
<tr>
<td>Emprestar para amigo/familiar a maior parte do seu salário ou renda mensal</td>
<td>0</td>
<td>137</td>
<td>-0.35**</td>
<td>-0.35**</td>
<td>Correlação Negativa Fraca</td>
</tr>
</tbody>
</table>

*significant correlation at 0.05
**significant correlation at 0.01

**Source**: management and culture questionnaire (2019)
In Table 7, the Pearson correlation coefficient between Risk Tolerance and Risk Perception is equal to -0.368, being weak and negative, where it presents as an indirect but significant effect (Sig. 0.000).

Grable and Rabbani (2014), point out that while risk tolerance does not change much in different fields, it is natural that at some point in life people behave differently from their standards and act contrary to risk acceptance. Since this association is inversely proportional (interpreted by the negative sign of the coefficients), managers perceive a lower risk tolerance when they identify risks in their decisions and are therefore effective in the indirect selection of risk tolerance, which is the one with the highest perception. The recognition of risk as an individual activity is influenced by the characteristics of the decision maker (Sjoberg, 2000; Rooij et al., 2011).

The results obtained in this research corroborate the propositions of Nobre and Grable (2015), where such authors observed that an individual's willingness to take financial risks is influenced by his risk perception, risk need and risk profile — which they defined as being composed of risk capacity, risk preference and risk composure. When viewed in this way, a manager may be willing to take risks when presented with a financial decision, but is not willing to take risks in another situation.

5 FINAL CONSIDERATIONS

Risk behavior is of paramount importance to a country's economic development, on the other hand, risk perception retracts attitudes that can be highly observable, and that protect individuals from compromising their financial health. In view of this, the study sought to analyze the relationships between the constructs of risk perception and tolerance to risk, perceived by the managers of rural properties of family farming. To do so, it was based on an investigation with 137 rural producers from the city of Mossoró/RN.

With regard to financial risk behavior, "Spending money impulsively, without thinking about the consequences", with an average of 8.89, was observed by managers as the most risky variable. While "Lending a friend/relative most of the income from their monthly salary or income", averaging 4.80, it was considered the behavior most likely to be carried out by rural managers. The results obtained pointed to a high coefficient of reliability, which indicates that the research instrument is considered reliable, since the internal consistency, obtained by means of the Cronbach alpha, showed a degree of 0.8 with 5 variables for the perception of risk.

In the results of the associations between the factors, it was possible to conclude that, in the light of the Pearson correlations analyzed, the financial behavior of the variable "Investing in a business that has a high chance of not working out", obtained a correlation with statistical significance of moderate negative magnitude, when the level of significance is less than 0.05, at a correlation of -0.522, indicating that rural managers consider as an act that should be well thought out and calculated, to prevent this risk from becoming a failure.

Finally, in the correlation analyzes between risk perception and risk tolerance, they presented weak and negative, but significant (-0.368), correlations coefficients that affirm the predicted relationship between constructs. Thus, when the manager realizes that a decision is riskier he is less likely to take that risk, that is, his tolerance decreases. Shefrin (2002) argues that the perception of agents is highly influenced by the way problems are presented and structured. Corroborating with the data, Grable, Joo and Park (2009) state that when one item is assessed as satisfactory, the other tends to be unsatisfactory.

The implications of this study for the management of family farming show that managers perceive risk situations, and are unwilling to take this risk (risk tolerance). This factor may be indicative of managers' aversion to risk in applying their resources to the family.
business, because as their resources are limited, they seek to invest in what they perceive to be as safe as possible and thereby intuitively decrease the risk of loss.

The study shows indications that the relationship between managers and their families/friends, and the variable referring to lending money, showed a high risk perception, although lower than the other items analyzed, and also a low risk tolerance degree, though higher than the other items. This may indicate that managers observe in family and friends relations a channel of mutual financial help, in view of the fact that community life is above competitive business relations.

The interpretation of rural managers in the face of situations of risk, indicate that other factors, besides those that were mentioned in the survey, can alter the decision for the application of scarce resources in their business. This is linked to the subjectivity of the judgment of the process of choice in risk situations, directly influencing their perception and respectively in how tolerant this behavior (Slovic, 1991).

This research was successful in achieving its proposed goals. For a better understanding of the decision-making process in risk situations, it is suggested for future research to include a qualitative step in order to evaluate the criteria that respondents indicate through decision-making, or even decision contexts related to investments in real assets. Further studies of perceived and risky behavior related to levels of indebtedness in decision-making should also be expected.

It is also suggested that future research be deepened in the existing context of the great trajectory of behavioral finance, especially in its sets of theoreticians, where these are not compatible and do not have sufficient significance to replace the current model of applied finance with forms of popular production and organization, where these demand new models of analysis.

REFERENCES


Carr, N. (2014). Reassessing the assessment: Exploring the factors that contribute to comprehensive financial risk evaluation. (PhD thesis). Kansas State University, Manhattan, Kansas


