



**ENTREPRENEURIAL CHARACTERISTICS AND PERFORMANCE OF  
THE VITI-VINICULTURE IN THE CAMPANHA GAÚCHA REGION OF  
BRAZIL**

**CARACTERÍSTICAS EMPREENDEDORAS E DESEMPENHO DA VITIVINICULTURA NA  
REGIÃO DA CAMPANHA GAÚCHA DO BRASIL**

**CARACTERÍSTICAS EMPREENDEDORAS Y DESEMPEÑO DE LA VITIVINICULTURA EN  
LA REGIÓN DE LA CAMPANHA GAÚCHA DE BRASIL**

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Submitted on: 12/09/2019

Approved in: 10/06/2020

Doi: 10.14210/alcance.v28n2(mai/ago).p225-241



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## ABSTRACT

In rural areas, increased competition and the dispute for new markets have demanded certain behavioral characteristics among producers, such as innovating, taking calculated risks and making decisions in the face of uncertainty, i.e., entrepreneurial behavior. This study analyzes the relationship between entrepreneurial characteristics and performance of grape growers in the Campanha Gaúcha region of Brazil. It uses a quantitative approach, with the application of questionnaires to 57 grape growers in the region of Campanha Gaúcha. The resulting data were then analyzed by descriptive statistics, hypothesis testing and multiple linear regression. The results showed a correlation between entrepreneurial characteristics and economic-financial and market performance of grape producers, particularly in relation to the characteristic "Innovation and Planning". This study also provides an overview of the viti-viniculture industry of the region, which has the capacity for innovation and regional development. This contribution of this study is that it links entrepreneurial behavior with agribusiness performance of grape production, and the theoretical model elaborated in the study can also be used in different agricultural contexts.

**Keywords:** Entrepreneurial characteristics; Agribusiness; Rural Entrepreneurship; Performance; Grape growers.

## RESUMO

No meio rural, o aumento da concorrência e a disputa por novos mercados têm demandado dos produtores certas características comportamentais, tais como inovar, assumir riscos calculados e tomar decisões diante de incertezas, isto é, um comportamento empreendedor. Com isso, o estudo buscou analisar a relação de características empreendedoras e o desempenho de vitivinicultores da região da Campanha Gaúcha do Brasil. Com uma abordagem quantitativa, aplicaram-se questionários para 57 produtores de uva da região da Campanha Gaúcha, sendo os dados analisados por estatística descritiva, teste de hipóteses e regressão linear múltipla. Nos resultados, constatou-se relação entre as características empreendedoras e o desempenho econômico-financeiro e mercadológico dos produtores de uva, com destaque à característica "Inovação e Planejamento". Além disso, o estudo traz um panorama da produção vitivinícola da Campanha Gaúcha, a qual possui capacidade para inovação e desenvolvimento regional. O estudo contribui ao relacionar o comportamento empreendedor e o desempenho do agronegócio da produção de uvas, sendo que o modelo teórico elaborado no estudo propicia sua futura utilização em diferentes contextos agropecuários.

**Palavras-chave:** Características Empreendedoras; Agronegócio; Empreendedorismo Rural; Desempenho; Produtores de Uva.

## RESUMEN

En las zonas rurales, el aumento de la competencia y la disputa por nuevos mercados han exigido ciertas características de comportamiento de los productores, como innovar, tomar riesgos calculados y decidir frente a la incertidumbre, esto es, tener un comportamiento emprendedor. Por consiguiente, el estudio buscó analizar la relación entre características emprendedoras y el desempeño de los productores de uva en la región de Campanha Gaúcha de Brasil. Con un enfoque cuantitativo, se aplicaron cuestionarios a 57 productores de uva en la región de Campanha Gaúcha, y los datos se analizaron mediante estadísticas descriptivas, pruebas de hipótesis y regresión lineal múltiple. En los resultados, se verificó relación entre las características emprendedoras y el desempeño económico-financiero y de mercado de los productores, con énfasis en la característica "Innovación y planificación". Además, el estudio proporciona una visión general de la producción de uva de la Campanha Gaúcha, que tiene capacidad de innovación y desarrollo regional. El estudio contribuye relacionando comportamiento emprendedor y rendimiento en el agronegocio de la uva, y el modelo teórico desarrollado proporciona su uso futuro en diferentes contextos agrícolas.

**Palabras clave:** Características Emprendedoras; Agronegocios; Emprendimiento Rural; Desempeño; Productores de Uva.

## 1 INTRODUCTION

Agribusiness is one of the fastest growing areas of business in Brazil and worldwide, with increased competition and disputes over new markets, which are causing significant changes in rural areas. These changes demand certain behavioral characteristics from the producer, such as innovation, risk taking, and decision making in the face of uncertainties. Agribusiness therefore requires entrepreneurial behavior (Bracht & Werlang, 2015; Weber, Morgan & Winck, 2016).

Despite the possible relation between entrepreneurial behavior and agribusiness, studies on entrepreneurship in rural areas are still recent and relatively scarce, making this a relevant topic for further theoretical and empirical development (Wolf, McElwee & Schoorlemmer, 2007; McElwee, 2008; Akgün, Nijkamp, Baycan-Levent & Brons, 2010; Pato & Teixeira, 2014; Smith, 2017; Dias, Rodrigues & Ferreira, 2018; Fitz-Koch, Nordqvist, Carter & Hunter, 2018; Bernardo, Ramos & Vils, 2019; Muñoz & Kimmitt, 2019).

Avramenko and Silver (2009), Akgün, Nijkamp, Baycan-Levent and Brons (2010) and Vik and McElwee (2011) all emphasize, in their studies, the need for empirical research on entrepreneurial behavior focusing on rural areas, as due to its peculiarities, comparisons with studies focusing on urban environments are difficult. Concerning the structuring of research instruments to be applied in rural areas, Akgün, Baycan-Levent, Nijkamp and Poot (2011) and Muñoz and Kimmitt (2019) emphasize the need for a different approach to analyzing entrepreneurship in rural areas, as the approaches presented in the literature so far have used diverse methods, limiting the possibilities of conducting a quantitative comparative research.

Therefore, a way of investigating the role of entrepreneurship in rural areas is by associating entrepreneurial behavior with organizational performance, most commonly seen in studies conducted in urban contexts. Through this association, it is possible to determine which entrepreneurial characteristics are most effective in increasing organizational performance, and to implement more consistent actions in these areas (Schmidt & Bohnenberger, 2009). The investigation of organizational performance, and how it is affected by entrepreneurship, can also be used to implement development policies as well as more selective instruments to encourage entrepreneurship in rural areas (Stathopoulou, Psaltopoulos & Skuras, 2004; Akgün, Nijkamp, Baycan-Levent & Brons, 2010; Muhammad, McElwee & Dana, 2017).

This study addresses entrepreneurship in rural areas, linking entrepreneurial characteristics to the performance of rural properties in a specific activity and region of Brazilian agribusiness: wine growing in the Campanha Gaúcha region, in the state of Rio Grande do Sul, Brazil.

Campanha Gaúcha has gained prominence in the Brazilian wine growing sector since the 2000s. Encouraged by the good prices paid for wine grapes, landowners in the municipalities of Campanha Gaúcha, such as Bagé, Dom Pedrito, Santana do Livramento and Quaraí, set up vineyards to meet the growing demand for fine grapes. Grapes are a commodity that is turned into series of products, especially fine wines, but there is a lack of investments and innovations in this competitive market that would require entrepreneurial behavior from those involved (Silva, Anjos, Andersson & Sperling, 2015; Sarmiento, 2018).

Recognizing the potential of the wine growing industry in the Campanha Gaúcha, it is important to study entrepreneurial behavior in this branch of agribusiness, analyzing the strategies for adding value and competitive advantage. As highlighted by Silva, Anjos, Andersson and Sperling (2015), wine tourism, the search to add value to the "Vinhos da Campanha" (Wines of the Campanha) brand, and competitiveness in the international market stand out as distinguishing features. According to those authors, wine growing is practiced in a region with extensive livestock and cereal production. Therefore it can be assumed that establishing wine growing in a conservative region, consolidated by other agricultural activities, can be considered a form of entrepreneurship for the purposes of this study.

Within this scenario, this study analyzes the relation between entrepreneurial characteristics and the performance of grape growers and winemakers in the Campanha Gaúcha region of Brazil

This is a quantitative research study, in which 57 questionnaires were applied to grape growers and winemakers in the Campanha Gaúcha region. The resulting data were then analyzed through descriptive statistics, hypothesis testing and multiple linear regression. The contribution of this study is that it confirms, through empirical evidence, the relation between entrepreneurial characteristics and wine growers' performance, with emphasis on the characteristics of innovation and planning. The theoretical model developed in this study may also be adapted to different agricultural contexts in the future.

The following chapter presents the theoretical basis of this research, followed by the methodology, results and final considerations.

## 2 ENTREPRENEURIAL CHARACTERISTICS AND PERFORMANCE IN AGRIBUSINESS

Due to the contributions of researchers from diverse fields of knowledge, there are different concepts for the terms “entrepreneur” and “entrepreneurship”, with each researcher using principles from a specific area of interest for its conceptual construction (Shane & Venkataraman, 2000; Kuratko, 2016). However, two theoretical frameworks share common elements: the economists’ framework, conceived by Schumpeter (1961; 1982), which links entrepreneurship with innovation and economic development; and the behavioral framework, led by McClelland (1961; 1987), which highlights the behaviors and attitudes of entrepreneurs, e.g. creativity and achievement orientation.

The literature on the characteristics of entrepreneurial behavior indicates numerous factors that can be adjusted for a smaller set of dimensions of the entrepreneurial profile. Although there is no single, complete list, systematizing entrepreneurial characteristics provides relevant insights into the entrepreneur’s mindset (Kuratko, 2016). The most frequently highlighted characteristics identified in the literature, are: the search for opportunities, innovation, creativity, achievement orientation, determination, internal locus of control, and risk propensity (McClelland, 1961; 1987; Hornaday & Bunker, 1970; Timmons, 1978; Kirkley, 2016; Kuratko, 2016; Moraes, Iizuka & Pedro, 2018). Studies have looked for ways to measure these characteristics, but despite this, there is still no methodological standard for measuring entrepreneurial behavior (Rauch, Wiklund, Lumpkin & Frese, 2009; Schmidt & Bohnenberger, 2009; Muñoz & Kimmitt, 2019).

Various studies, such as those of Kristiansen and Indarti (2004), Schmidt and Bohnenberger (2009) Nascimento, Dantas, Santos, Veras and Costa Júnior (2010) and Soares (2016), have attempted to structure instruments to measure entrepreneurial behavior, profile, intention or potential in different groups of individuals, such as university students, small business managers, rural producers, etc. Although there is no single standard, the variables used are based on similar entrepreneurial characteristics, and the theoretical model of McClelland (1961) is the basis for most of these instruments.

When studying this theme, whether using replicated instruments for measuring entrepreneurial behavior or building new ones, close attention should be given to the context of application. Considering the entrepreneur as a social being and entrepreneurship as a regional phenomenon, different entrepreneurial behaviors are highlighted, depending on the business activity, operational processes, local resources, the individual’s knowledge and the sociocultural environment in which they are located (Rukuižienė, 2010 ; Gaddefors & Anderson, 2018).

In view of the above, entrepreneurial behavior must be analyzed with the specific context of agribusiness in mind, considering its peculiarities and differences in relation to the urban environment (Akgün, Nijkamp, Baycan-Levent & Brons, 2010; Muhammad, McElwee & Dana, 2017). However, since research in the field of rural entrepreneurship is relatively scarce and recent, a deeper analysis of the processes that promote or inhibit such characteristics can fill this void (Aggarwal, 2018; Dias, Rodrigues & Ferreira, 2018). Investigating the execution and effects of entrepreneurship will also help in the implementation of development policies to encourage entrepreneurship in rural areas (Stathopoulou, Psaltopoulos & Skuras, 2004).

In terms of economic activity, the dimensions of the rural producer are varied and cannot be represented as a homogeneous phenomenon. This intrinsic heterogeneity is demonstrated by the different characteristics of rural producers. Adopting this perspective, McElwee (2008) carried out a study seeking to develop a conceptual understanding of the farmer as an entrepreneur.

Among the types of farmers presented in McElwee’s (2008) classification, the “farmer as entrepreneur” has the following characteristics: motivated by factors of attraction, market knowledge, strategy aimed at diversification, networking, and the search for a long-term profit. These characteristics match the entrepreneurial behavior observed in the literature, thus, this type of farmer can be considered a rural entrepreneur.

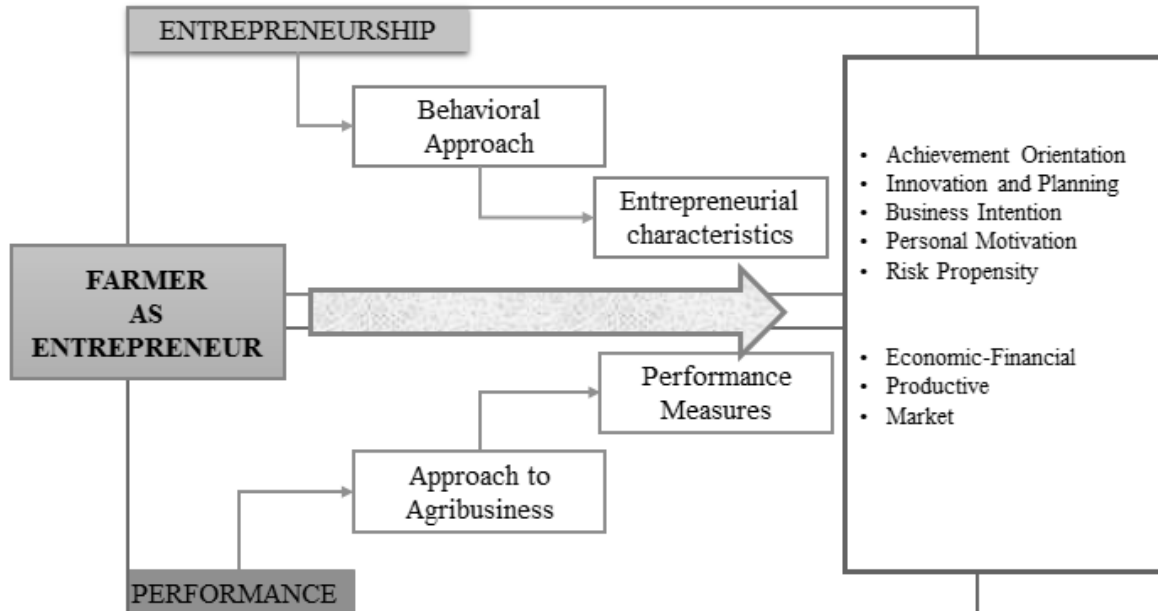
Concerning the structuring of research instruments for use in rural areas, it is emphasized that although interesting results have been obtained in recent decades, the diversity of approaches presented in the literature has been a limiting factor when it comes to performing comparative quantitative research (Akgün, Baycan-Levent, Nijkamp & Poot, 2011).

Among the studies that focus on agribusiness, Soares (2016) propose an instrument that links entrepreneurial profile to the performance of rural producers. The development of variables suitable for use in a rural environment enabled the main groups of characteristics highlighted in the literature on entrepreneurship to be encompassed, e.g. achievement, innovation, planning, personal motivation and risk propensity. As for the performance construct, objective variables were used based on data provided by a regional agro-industrial cooperative. This is considered a positive factor, since there is no standardization in the literature to measure this construct (Lumpkin & Dess, 1996; Hult, Hurley & Knight, 2004; Rauch, Wiklund, Lumpkin & Frese, 2009).

In the academic community, two types of organizational performance measures are adopted: objective and subjective. Objective measures are based on documents and reports, such as income, operating results, financial statements and number of employees. Such data is often difficult to collect, due to the absence of valid and reliable data. Subjective measures, on the other hand, relate to the owners' expectations; an organization can perform well, regularly or poorly, according to the expectations and perceptions of its manager. But the objective truth of this information is impossible to prove (Schmidt & Bohnenberger, 2009, Blackburn, Hart & Wainwright, 2013).

Santos and Carneiro (2013), following a literature review on organizational performance, highlight four types of performance measures: productive, market, financial and innovative. Productive performance relates to process improvement, waste elimination, optimization of production inputs and improved delivery times. Market performance measures include customer satisfaction, total sales and market share, i.e. the organization's ability to position itself prominently in its segment. Financial performance measures include aspects such as return on investments and income, the being the most frequently used category. And lastly, innovative performance relates to patenting new products, processes or technologies.

Based on the classification of the performance variables adopted, specifically the subjective measures, and a literature review on entrepreneurial and rural entrepreneur characteristics, the following theoretical model was structured (Figure 1).



**Figure 1. Theoretical model for empirical application.**

Source: Based on McElwee (2008), Santos and Carneiro (2013), and Soares (2016).

Based on the “Farmer as Entrepreneur” typology (McElwee, 2008), the model to be empirically applied in the case of wine growing in the Campanha Gaúcha was built. The five entrepreneurial characteristics used for this study are those emphasized in the literature (McClelland, 1961; 1987; Hornaday & Bunker, 1970; Timmons, 1978; Kirkley, 2016; Kuratko, 2016; Moraes, Lizuka & Pedro, 2018). The characteristics were measured using the scale proposed by Soares (2016), which is designed specifically for agribusiness. The performance variables are based on a review by Santos and Carneiro (2013), but with an agribusiness-focused approach, seeking to measure economic-financial, productive and market performance.

The conceptual proposal of this study enables different entrepreneurial characteristics to be linked to the performance measures of rural properties, and appropriate adjustments made according to the specificities of each agro-industrial chain. This opens up a field of comparative research among and within agro-industrial sectors, and promotes discussion on their levels of competitiveness in the domestic and international markets.

### 3 METHODOLOGY

This is a descriptive-explanatory study, with a quantitative approach and a survey method. It is descriptive because it describes the entrepreneurial characteristics and the respondents' performance, and explanatory because it seeks to analyze the dependences between different variables, in order to explain the performance of wine growing organizations according to their entrepreneurial characteristics. The choice of the quantitative approach and the survey method was made in consensus with the related literature, especially studies that verify an entrepreneurial intention or attitude.

For the data collection, questionnaires were applied to grape growers and winemakers in the region of Campanha Gaúcha in the state of Rio Grande do Sul, Brazil. Data about the producers were obtained from the Cadastro Vitícola (2015), a database that has been updated regularly since 1990, giving detailed information about wine growing in the state, including area and grape production for growth, broken down by municipality and region.

The Campanha Gaúcha regional boundary was established by researchers according to the classification set by the Regional Development Councils of Rio Grande do Sul (Conselhos Regionais de Desenvolvimento do Rio Grande do Sul – COREDES/RS), which took into account the municipalities belonging to COREDES, Campanha and Fronteira Oeste, totaling twenty municipalities in the state of Rio Grande do Sul (FEE, 2015).

According to the data from Cadastro Vitícola (2015), the municipalities of the Campanha Gaúcha region have a total of 94 registered wine growing properties. Based on this number, the sample calculation for finite population was performed, according to the following equation:

$$n = \frac{Z^2 \cdot \sigma^2 \cdot N}{e^2(N - 1) + Z^2 \cdot \sigma^2}$$

Where:

Z = Confidence level;

$\sigma$  = Standard Deviation (referring to the planted area);

N = Number of properties;

e = sampling error.

Considering a 95% confidence level, the standard deviation for the vineyard area, and a sampling error of approximately 41 hectares, a sample of 56 producers was established. The sample covers 12 municipalities in the *Campanha Gaúcha* region, namely: Santana do Livramento, Rosário do Sul, Santa Margarida do Sul, Bagé, Dom Pedrito, Candiota, Hulha Negra, Lavras do Sul, Quaraí, Uruguai, Itaqui and São Borja. It is worth emphasizing that due to large distances involved to reach the respondents, this research was carried out with a non-probabilistic selection for convenience, applied according to the criteria of the researchers' accessibility.



During the data collection process, the producers were initially contacted via e-mail or phone, in order to explain the research objectives. The producers' email addresses and telephone numbers were obtained from the "Vinhos da Campanha" (Wines of the Campanha) Association and from the region's wineries. The questionnaires were applied between July 17<sup>th</sup> and September 30<sup>th</sup>, 2018, and was done in person through online forms. At the end of the survey, a total of 57 questionnaires were collected, one more than the calculated sample. The total answers represent 60% of the region's producer's population, and despite the non-probabilistic sampling, it allows for a pertinent analysis of the wine growing context in the *Campanha Gaúcha*.

A questionnaire with open and closed questions was used as a tool for the data collection. The questionnaire was divided into two blocks: A) Respondent's profile and the performance of the rural property; and B) Entrepreneurial characteristics. Figure 2 summarizes the structure of the research instrument, with its respective blocks, detailing the variables, format of the questions and the literature used as a source.

Sections		Variables	Format	Source
Block A	Profile	Age; Sex; Level of Education; Source of income; Size of the Property; Hectares dedicated to grape growth; Grape varieties grown	Open-ended questions	Sarmiento (2016).
	Performance	1) Economic-Financial 2) Productive 3) Market	7-point Likert scale	Santos and Carneiro (2013)
Block B	Entrepreneurial characteristics	1) Achievement Orientation; 2) Innovation and Planning; 3) Business intention; 4) Personal Motivation; 5) Risk Propensity	7-point Likert scale	Soares (2016)

**Figure 2. Structure of the questionnaire.**

Source: designed by the authors.

This instrument was constructed based on the literature review. In Block A, the profile questions were based on Sarmiento (2016) and the performance questions were based on Santos and Carneiro (2013), with some adaptations for the wine growing context. Block B, entrepreneurial characteristics, was composed using the scale of Soares (2016). Seven-point Likert scales were used to measure performance and entrepreneurial characteristics. This full research instrument can be seen in the study of Caliari (2018).

Statistical techniques were used for the data analysis. Descriptive statistics were used to characterize the respondents, calculating the mean, median and standard deviation, as well as frequency distribution. To describe the entrepreneurial characteristics, in addition to descriptive statistics, non-parametric hypothesis tests (Kruskal-Wallis and Mann-Whitney) were used. Non-parametric tests were selected because the hypothesis of data normality was rejected by means of the Shapiro-Wilk test.

The Kruskal-Wallis test was used to verify significant differences among the groups of entrepreneurial characteristics in the sample of wine growers, i.e. to verify whether the grape growers and winemakers presented different degrees of entrepreneurship among the factors of Achievement Orientation, Innovation and Planning, Business Intention, Personal Motivation and Risk Propensity, with a 5% significance level.

The Mann-Whitney test was used to compare the levels of entrepreneurial characteristics between the group of producers for whom agricultural activity is their only occupation (those with no source of income other than agriculture, and retirees) and the group of producers who also had another occupations (civil servants, employees of private companies and self-employed). A maximum significance level of 10% was defined.

Finally, multiple regression analysis was used to determine the influence of the entrepreneurial characteristics (independent variables) on performance (dependent variable) of the wine growing properties of Campanha Gaúcha. Three models were estimated, one for each performance category, based on the following equation:

$$Y_i = \alpha + \beta_1 OR + \beta_2 I\&P + \beta_3 IE + \beta_4 MP + \beta_5 PR + \epsilon$$

Where:

$Y_i$  = performance dependent variable;

$\alpha$  = intercept;

$\beta$  = Angular Coefficient;

OR = Achievement Orientation;

I&P = Innovation and Planning;

IE = Business Intention;

MP = Personal Motivation;

PR = Risk Propensity;

$\epsilon$  = residue.

The dependent variables used in the models were: a) economic-financial performance, measured by the average revenue per grape harvest in R\$ variable; b) productive performance, measured by the production volume (in kg) produced on the property variable; and c) market performance, taking the average of the four questions, which were measured on a 7-point Likert scale.

The independent variables were the same for the three models and related to the five entrepreneurial characteristics of Soares (2016), which are highlighted in the theoretical model presented in the theoretical foundation. They are: a) Achievement Orientation; b) Innovation and Planning; c) Business Intention; d) Personal Motivation; and e) Risk Propensity.

For the three regression models, a maximum level of significance of 10% was established. The values for the calculated F, P-value and  $R^2$  were calculated by the SPSS software, while the critical F was determined by the Snedecor F distribution table, considering a significance level of 10%.

We sought to achieve the proposed objectives through these methodological procedures. The results of the research are presented and discussed below.

## 4 RESULTS AND DISCUSSIONS

This chapter is subdivided into three topics: i) Profile of the respondents and the rural properties; ii) Entrepreneurial characteristics of grape growers and winemakers in the Campanha Gaúcha; and iii) Relation between entrepreneurial characteristics and performance of grape growers and winemakers.

### 4.1 PROFILE OF RESPONDENTS AND RURAL PROPERTIES

This research was applied to grape growers and winemakers in the Brazilian Campanha Gaúcha region, i.e. those who have direct contact with production in the countryside. The first produce grapes and make wine, while the latter only produce grapes, selling the production to third parties.

It was found that the sample of producers was mostly male (89.5%), aged 28 to 88. In the category level of education, 61.4% of the respondents had a higher education degree, and 21.05% of those had postgraduate degrees. These data make it clear that most of the surveyed grape growers and wine producers of the Campanha Gaúcha region have a high level of education.

As for the source of income, 36.84% of the producers said their only income derives from agricultural activities, while 63.16% had other sources of income. Regarding the structure of the properties, 27 producers had up to 50 hectares (ha), covering 47% of the sample. As for the "ha" devoted to grape cultivation, the average was 11 ha and the median was 7 ha, with almost 80% of the producers having up to 15 hectares of grape cultivation and the two highest grape growing properties, with 40 and 60 ha dedicated to that crop.



In relation to the production profile, 73.68% of the producers said their production is not restricted to grape cultivation, as they develop other agricultural activities, such as livestock (52.65% of the producers) and cereal production (rice, soy and/or corn), activities carried out by 52.63% and 15.79% of the total producers, respectively.

However, although almost three quarters of the producers carried out other agricultural activities on the property, 70.18% considered fresh grape as their main commercial product, followed by 17.54%, who considered wine production as their main commercial product. The data show that despite having traditional activities in the studied region, such as livestock and soy, most of the producers who own and cultivate grapes treat them as the key crop of their property, regardless of its size.

Regarding the grape varieties, each producer cultivated, on average, four varieties. *Chardonnay* and *Cabernet Sauvignon* were the main ones, cultivated by 75% and 72% of the producers, respectively. For fresh grapes, *Bordeaux* and *Niagara Rosada* varieties (8%) were mentioned, but less frequently.

The producers were asked about the destination of their product, whether they make wine, sell it to wineries, or do something else. 67% of the producers replied that the grapes are sold to wineries; 14% have their own wine-making process and sell the rest to other wineries; 11% make wine from the entire production and 8% send the grapes somewhere else.

Concerning the destination of the grapes, i.e. the city, state and/or country the final product is sold to, the main destinations were Serra Gaúcha (particularly Bento Gonçalves – RS) and Campanha Gaúcha (particularly Santana do Livramento - RS).

Based on these results, it can be said that the viticulture of the Campanha Gaúcha is not configured especially for wine production, but also for the cultivation of the raw material that is mostly sent to large wineries, which give the quality grapes a label and generate income in other regions (mainly Serra Gaúcha). Because grapes are almost exclusively used in wine production, they don't generate local income from fresh fruit or juice. Therefore, in summary, most of the grape growers of Campanha Gaúcha are exclusively suppliers of raw materials.

#### 4.2 ENTREPRENEURIAL CHARACTERISTICS OF GRAPE GROWERS AND WINEMAKERS IN THE CAMPANHA GAÚCHA

This section presents the analysis of the entrepreneurial characteristics of grape growers and winemakers. Table 1 shows the results of the average, standard deviation ( $\sigma$ ) and coefficient of variation (CV) related to the 5 factors and the 15 variables on the entrepreneurial characteristics scale, where 1 indicates "totally disagree" and 7, "totally agree".

**Table 1**  
**Average, Standard Deviation and Coefficient of Variation of the variables and factors of the scale of entrepreneurial characteristics of grape growers and winemakers.**

Factor	Average	$\sigma$	CV (%)	Variables	Average	$\sigma$	CV (%)
Achievement Orientation	6.09	0.67	10.97	I see failure as a source of learning in order not to make the same mistake again.	6.16	1.03	16.75
				I'm able to identify business opportunities and profit from it.	5.74	1.11	19.36
				I try to keep myself informed about my line of business to help make decisions.	6.05	0.99	16.35
				I adopt procedures to ensure that my products meet the required quality standards.	6.42	0.82	12.81
				I calculate the risks before new investments.	6.09	0.93	15.30
				I use personal contacts to achieve my goals.	6.11	1.05	17.15

(Continue)

(Conclusion)

Factor	Average	$\sigma$	CV (%)	Variables	Average	$\sigma$	CV (%)
Innovation and Planning	5.54	0.99	17.80	I create and implement new ideas, changing the way of "running the business" in order to improve the performance of my business.	5.39	1.36	25.24
				I set goals for the future of my business.	5.77	1.25	21.72
				I act (I anticipate myself) before being pressured by new demands and new situations.	5.46	1.04	18.99
Business Intention	6.11	0.97	15.85	I prefer to have my own business than to be an employee in a company/organization.	6.09	1.27	20.89
				I consider myself primarily responsible for the performance of my business.	5.79	1.66	28.59
				I believe that hard work and effort usually lead to success.	6.46	1.23	18.99
Personal Motivation	5.11	1.63	31.99	My personal goals revolve around this business, being one of the most important things in my life.	5.11	1.63	31.99
Risk Propensity	6.05	0.83	13.76	I take risks to expand my business (increase production).	5.82	1.21	20.81
				I'm responsible for completing the work within the stipulated deadlines.	6.28	0.84	13.37

Source: Research data (2019).

In general, the averages of the characteristics evaluated in the 15 statements of the research instrument show values closer to full agreement. It is noted that the entrepreneurial characteristics are present in the sample of producers and, considering the absolute values, the Business Intention presented the highest average among the factors, followed by Achievement Orientation, Risk Propensity, Innovation and Planning and, finally, Personal Motivation. However, it should be verified whether the differences in means are the result of sample variability or actual significant differences. Therefore, we sought to verify whether there are significant differences among the entrepreneurial characteristics using the Kruskal-Wallis non-parametric hypothesis. The results are shown in Table 2.

**Table 2**  
**Results of the Kruskal-Wallis test for differences among the levels of entrepreneurial characteristics of grape growers and winemakers.**

KW Test Statistics	Critical value of the chi-square distribution	df	P-value	Decision
23.37	13.28	4	0.000	Reject null hypothesis

Source: Research data (2019).

The Kruskal-Wallis test proved to be 1% significant ( $P < 0.01$ ), with the KW test statistic (23.37) higher than the critical value of the chi-square distribution (13.28). This result suggests that there is at least one difference among the 5 factors of the entrepreneurial characteristics of the responding producers. To show these differences, Table 3 presents Dunn's *post hoc* results, based on the "adjusted p-value" and its relation to each factor in a matrix.

**Table 3**

**Results of Dunn's post hoc test for multiple comparison of differences among the factors of entrepreneurial characteristics of grape growers and winemakers.**

Characteristics	Median*	Adjusted p-value				
		Business Intention	Achievement Orientation	Risk propensity	Innovation and Planning	Personal Motivation
Business Intention	6.33 <sup>a</sup>	-	1.000	1.000	<b>0.008</b>	<b>0.002</b>
Achievement Orientation	6.17 <sup>ab</sup>		-	1.000	0.084	<b>0.030</b>
Risk Propensity	6.00 <sup>ab</sup>			-	0.068	<b>0.023</b>
Innovation and Planning	5.67 <sup>bc</sup>				-	1.000
Personal Motivation	5.00 <sup>c</sup>					-

\* Different letters indicate different medians among the factors with 5% significance.

Bold indicates P < 0.05.

Source: Research data (2019).

The test demonstrated four differences at a 5% significance level. The characteristics Business Intention, Achievement Orientation and Risk Propensity did not show significant differences among them. However, they showed a significant difference of medians in relation to the characteristics Personal Motivation. The Business Intention characteristic, which presented the highest median in absolute values, also presented a significant difference in relation to the characteristics Innovation and Planning.

Based on the statistical analysis, it seems that the high agreement among the producers in relation to Business Intention relates to a centralizing behavior in decision making; based on the variables for that factor, the producers consider themselves to be largely responsible for their businesses and, therefore, the main decision-makers regarding the rural property. As for the significant difference between Business Intention and the Innovation and factors Planning and Personal Motivation, it is notable that the latter two factors were the ones that presented the highest coefficients of variation (17.80% and 31.99%, respectively), which determines the heterogeneity of producers in terms of these entrepreneurial characteristics.

Analyzing the difference between Business Intention and Innovation and Planning, it is important to highlight the fact that wine growing in the Campanha Gaúcha region is mostly focused on the supply of raw materials for the production of fine wines. As a result, as long as grape growers continue to be the suppliers of raw materials for large wineries, there is practically no need for innovation and product planning, resulting in lower levels of entrepreneurship for this construct.

The results for the factor Personal Motivation, which showed a significant difference in relation to the other three factors, may refer to producers who have other occupations besides agricultural activities, which comprise 52.63% of the sample. Therefore, while one producer considers his farm to be "one of the most important things in life", another may agree less with this statement, if he has another occupation.

This assumption can be verified through the Mann-Whitney test. We compared the levels of entrepreneurial characteristics of the group of producers with agricultural occupation, i.e. those for whom agriculture was the sole occupation (including those with no other source of income and retirees) to those with other, non-agricultural occupations (civil servants, employees of private companies and self-employed). The results are shown in Table 4.

**Table 4**

**Results of the Mann-Whitney test for the average differences of entrepreneurial characteristics among grape growers and winemakers with solely agricultural and non-agricultural occupations.**

Characteristics	Group averages		P-value
	Solely Agricultural Occupation	Non-agricultural Occupation	
Business Intention	6.31	5.93	0.053*
Achievement Orientation	6.30	5.91	0.042**
Risk Propensity	6.35	5.78	0.011**
Innovation and Planning	5.69	5.40	0.192
Personal Motivation	5.74	4.53	0.005***

\* (P<0.10); \*\* (P<0.05); \*\*\* (P<0.01)

Source: Research data (2019).

Four of the five groups of entrepreneurial characteristics showed significant differences between the two sample groups, which means the differences between them go beyond the Innovation and Planning factor. Therefore, based on the groups' averages and the p-value, it can be concluded that the producers for whom agriculture is their sole occupation had higher averages for the entrepreneurial characteristics Business Intention, Achievement Orientation, Risk Propensity and Personal Motivation compared to those with other, non-agricultural occupations.

These results may be because the producer who is dedicated full-time to the farm is more likely to look for new ways to innovate the production process, plan his actions, take calculated risks, and be more motivated to strive for the success of the business.

In summary, the wine growing of Campanha Gaúcha can be considered highly entrepreneurial, as shown by the high levels of entrepreneurial characteristics among the grape growers and winemakers. Producers' entrepreneurial behavior may be a factor that explains the rapid expansion of this activity in the region. Having described the entrepreneurial characteristics of a sample of grape growers and winemakers, it is necessary to analyze how these characteristics relate to the respondents' economic/financial, productive and market performance.

#### 4.3 RELATION BETWEEN ENTREPRENEURIAL CHARACTERISTICS AND PERFORMANCE OF GRAPE GROWERS AND WINEMAKERS

The performance of wine growing properties was measured in three different categories: a) economic/financial - the "average revenue per grape harvest in R\$" variable; b) productive - the "volume of grape (in kg) produced on the property" variable; and c) market - the average of four variables measured on 7-point Likert scales, related to suppliers, buyer markets and competition. The relation between entrepreneurial characteristics and economic/financial, productive and market performance was analyzed using three models of multiple linear regression. Table 5 shows the dependent and independent variables for each of the three models, and the overall significance and explanation of the regressions.

**Table 5**

**Regression Models with general significance and coefficient of determination of the relation between entrepreneurial characteristics and performance of grape growers and winemakers.**

Independent variables	Dependent Variables	Calculated F	Critical F	P-value	R <sup>2</sup>
- Achievement Orientation - Innovation and Planning	Economic/Financial Performance	2.147	1.975	0.075	0.180
- Business Intention - Personal Motivation	Productive Performance	1.082	1.975	0.382	0.098
- Risk Propensity	Market Performance	7.994	1.975	0.000	0.439

Source: Research data (2019).

Considering a maximum 10% level of significance, it can be seen that only the model of productive performance as a dependent variable was not significant. Based on the analysis of the parameters, entrepreneurial characteristics account for 18% of the economic/financial performance, and 43.9% of the market performance of the respondent grape growers, with the other factors remaining constant. Thus, there is an evident relationship between entrepreneurial characteristics and the performance of grape growers in the Campanha Gaúcha region.

Proof that entrepreneurial characteristics and productive performance of the farms are not related may be because the volume of production is fundamentally affected by external factors, such as biological and climatic conditions, that cannot be controlled by the producer. The most he can do is minimize their impact.

But in the long run, entrepreneurial behavior can indirectly influence productive performance. For example, producers may invest in strategies to reduce external environment impacts on grape production, such as the use of fertilizers and new cultivation technologies, increasing the volume of production per harvest.

Table 6 shows the coefficients of the regression models for economic-financial and market performance. It should be noted that economic and financial performance was measured in Brazilian reais (R\$), while market performance and entrepreneurial characteristics were measured on 7-point Likert scales.

**Table 6**  
**Coefficients of the multiple linear regression models and their individual significance in relation to entrepreneurial characteristics and economic-financial and market performance of grape growers and winemakers.**

Dependent Variables	Independent Variables	Coefficient	T-value	P-value
Economic-Financial Performance	(constant)	33688.79	0.093	0.926
	Achievement Orientation	90846.42	1.063	0.293
	Innovation and Planning*	91942.98	1.859	<b>0.069</b>
	Business Intention**	-95913.30	-2.276	<b>0.027</b>
	Personal Motivation	-28628.68	-1.092	0.280
	Risk Propensity	-22186.05	-0.375	0.709
Market Performance	(constant)	-0.4531	-0.343	0.733
	Achievement Orientation*	0.6195	1.818	<b>0.075</b>
	Innovation and Planning**	0.4633	2.339	<b>0.023</b>
	Business Intention	0.0975	0.579	0.566
	Personal Motivation**	0.2172	2.076	<b>0.043</b>
	Risk Propensity**	-0.5318	-2.277	<b>0.027</b>

\* (P<0.10); \*\* (P<0.05)

Source: Research data (2019).

According to the coefficients, the characteristic “Innovation and Planning” is positively correlated with both estimated regression models. Thus, each unit increase in the scale of the “Innovation and Planning” level leads to an increase of R\$ 91,942.98 in the average revenue per grape harvest and 0.4633 in the perceived market performance scale.

Therefore, the characteristics of innovation, highlighted since the beginning of the 20th century by Schumpeter (1961; 1982), and planning, evidenced by McClelland (1961; 1987) in his studies on entrepreneurial behavior, are positively related to the economic-financial performance and the market performance of the sample of grape growers in the region of Campanha Gaúcha. From this perspective, and in view of the significant results of this study, “innovation and planning” should be considered fundamental in subsequent studies on the influence of entrepreneurial behavior on the performance of rural properties.

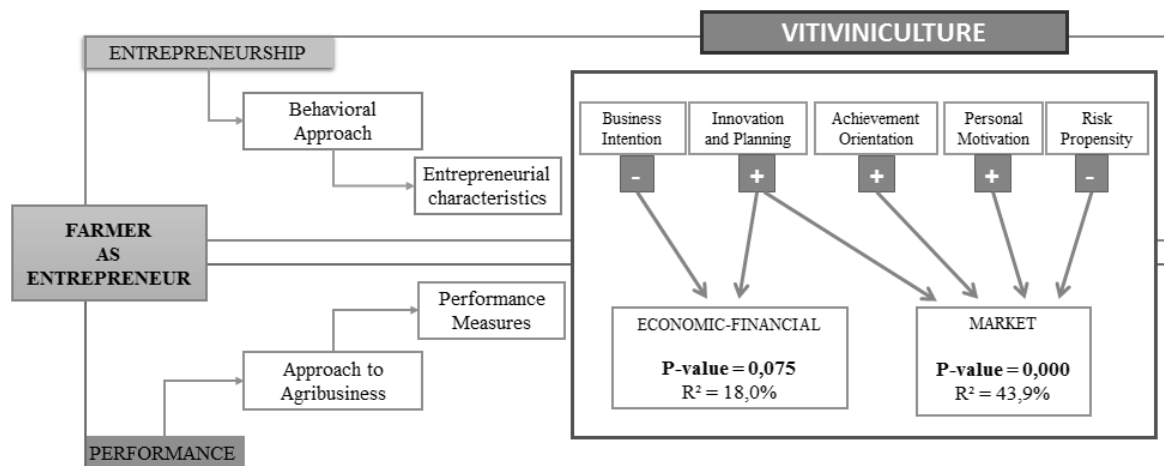
It should be noted, however, that in the economic/financial performance model in particular, the variable “Business Intention” variable presented a negative relation, as with each unit increase in the business intention of producers’ scale, there is a decrease of R\$ 95,913.30 in the average income per grape harvest. All the other factors remained constant.

Interestingly, this factor is associated with a more conservative and individualistic characteristic in which the producer centralizes the decisions concerning his property, as shown by the three variables of the factor, when highlighting situations such as “being the owner of the business”, “I consider myself primarily responsible” and “I believe in hard work and commitment”. Thus, in the sample of grape growers in the Campanha Gaúcha, the characteristic of being the “main person responsible” and of “centralizing decisions” has negatively influenced the economic-financial performance, assuming that collectivity and division of responsibilities tends to generate better performance.

In terms of market performance, in addition to the factor “innovation and planning”, which relates to both models, the factors “achievement orientation” and “personal motivation” also demonstrate a positive relation with market performance. These two factors belong to the theoretical construct “Need for Achievement” (McClelland, 1961). This result demonstrates that taken together, behavioral characteristics (learning from mistakes, being able to identify opportunities, seeking information before making decisions, focusing on quality, calculating risks, having a good network of contacts and personal motivation for rural business) are positively related to market performance, influencing relations between producers and suppliers, between producers and buyers, and even among competitors.

The variable “risk propensity”, on the other hand, presented a negative relation with market performance, showing that wine growing is an agricultural activity in which being prone to risk does not guarantee better market performance. Based on the previously mentioned positive relation with planning characteristics, we see that farmers who are more concerned with risk control and planning have better market performance in relation to those more prone to risk.

Figure 3 demonstrates the association of empirical results of wine growing in the Campanha Gaúcha region with the theoretical basis of this article, going back to the theoretical model presented in the theoretical reference, and inserting the research data in order to synthesize the results.



**Figure 3. Theoretical model and the empirical results of the research.**

Source: Research data (2019).

Figure 3 summarizes the results of the linear regression analysis, indicating the constructs of entrepreneurial characteristics and their respective relations with performance measures. As already pointed out, among the investigated entrepreneurial characteristics, the construct “Innovation and Planning” was prominent among the grape growers and winemakers surveyed, presenting a positive relation with economic-financial performance and market performance of rural properties.

McElwee (2008), proposing the “farmer as entrepreneur” typology, points out that the recognition of business opportunities and the execution of strategic planning are important requirements for farmers to have a profitable businesses. For the author, innovative capacity is an important requirement for taking advantage of business opportunities, and together with planning, is an important factor for the development of the rural property, as shown in the survey responses.

In general, farmers have been encouraged to modernize, take more risks and invest in technologies to make production more sustainable, which requires planning that takes into account external factors (climate and economy) and internal factors (management and processes) that affect agribusiness (Bracht & Werlang, 2015). Weber, Morgan and Winck (2016) emphasize that farmers need to keep constantly up-to-date on the latest management techniques, seeking to development of a more risk-taking profile and making decisions in the face of uncertainties to innovate in agribusiness, in other words, to develop entrepreneurial behavior.

Akgün, Nijkamp, Baycan-Levent and Brons (2010), Vik and McElwee (2011) and Muñoz and Kimmitt (2019) mention the need for empirical research on entrepreneurial behavior focusing on rural areas, since its peculiarities prevent comparisons with studies that focus on urban areas.

In summary, the hypothesis that the economic-financial and market performance of wine growing rural properties in the Campanha Gaúcha region is influenced by the producers’ entrepreneurial characteristics is considered to be valid, although it does not certify a significant result regarding the productive performance. Therefore, it is important to encourage wine growers to act in an entrepreneurial way in regard to their property management innovation and decision planning. This incentive must be directed to established producers, and also to those who are starting out in wine growing business in the region. As grape growers expand their agricultural activity due to better performance, a migration to their own grape vinification becomes possible (either producing the wine themselves or outsourcing), adding value to the business and contributing to the development of the region.

## 5 CONCLUSIONS

Through his attempt to analyze the relations between entrepreneurial characteristics and the performance of grape growers and winemakers in the Campanha Gaúcha region, it was possible to trace a productive and entrepreneurial profile of wine growing in the extreme south of Brazil.



A correlation was found between entrepreneurial characteristics and the economic-financial and market performance of the sampled rural properties, especially in the area of “Innovation and Planning”. This study contributes by emphasizing that for established grape growers and those just starting out, displaying entrepreneurial behavior in the management of their rural businesses can lead to better performance.

The results also indicate that the wine growing sector of the Brazilian *Campanha Gaúcha* has a good potential for growth, especially in wine making, adding value to the grape production. The expansion of wine growing activity can provide additional value, through wine tourism and the consequent diversification of the offered products, enabling farmers to sell fresh grapes, juice and other grape products. Through actions like these, based on productive innovation, planning and risk-taking, farmers can help boost the local economy, contributing to regional development.

One of the limitations of this research is the non-generalization of its results, since the non-probabilistic sample prevented us from extrapolating our results for the entire growing context of Campanha Gaúcha region. Also, grouping innovation and planning variables in a single construct meant that we could not separately analyze the relations of each of these characteristics with performance, and, despite the highlight of this construct in the results, for future research a separation or even a specific investigation of only those characteristics is suggested.

As a recommendation for future studies, the analysis of entrepreneurial characteristics in different agricultural activities is suggested, focusing on their influence on the performance of rural properties (for example, wine growing vs soybean, agriculture vs livestock, commodities vs finished product, south region vs north region etc.) in different regions or branches of agribusiness. These studies will increase knowledge about entrepreneurial behavior in agribusiness, enabling comparison between studies and the formulation of a consistent theoretical body. The use of objective measures of performance is also suggested, to project whether an increase in the level of entrepreneurial characteristics influences the performance of rural properties. This would also enable comparison between perceived performance (a subjective measure) and the performance documented in balance sheets, financial statements and reports (objective measures) for different agricultural activities.

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