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Use of management information systems from the perspective of farmers

Uso de sistemas de información de gestión desde la perspectiva de los productores rurales

Utilização de sistemas de informações gerenciais sob a perspectiva de produtores rurais

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Abstract

Purpose: The purpose is to evaluate the impact of the use of Management Information Systems (MIS) in the management of small companies in the field of rural activity.

Methodology: In this study, questionnaires were applied to rural producers using the conventional accounting system, obtaining 37 responses. In addition, 7 interviews were

conducted with rural producers who started to use MIS to control their activities.

Results: Using the analysis of differences between respondents who use MIS or not, it was possible to identify which points are linked to its implementation, in addition to assessing the benefits obtained from the system used. The results indicate that the use of MIS reflected positively in management, especially with regard to cost and culture control, forecasting needs, increased profit and assistance in decision making.

Contributions of the Study: The findings of the study clarify the practical implications of using MIS in rural properties, such as receptivity to the use of the system and, mainly, which advantages with use are most indicated by respondents from properties that already use it. In this sense, we claim accounting entrepreneurs to instigate the use of management tools by rural producers who do not yet use it, but consider the use of MIS as beneficial.

Keywords: Management accounting. Farmers. Management Information System.

Resumen

Objetivo: Evaluar el impacto del uso de los sistemas de información gerencial (SIG) en la gestión de pequeñas empresas en el campo de la actividad rural.

Metodología: En este estudio, se aplicaron cuestionarios a productores rurales utilizando el sistema de contabilidad convencional, obteniendo 37 respuestas. Además, se realizaron 7 entrevistas con productores rurales que comenzaron a usar SIG para controlar sus actividades.

Resultados: Usando el análisis de diferencias entre los encuestados que usan SIG o no, fue posible identificar qué puntos están vinculados a su implementación, además de evaluar los beneficios obtenidos del sistema utilizado. Los resultados indican que el uso de SIG se reflejó positivamente en la gestión, especialmente con respecto al control de costos y cultura, las necesidades de pronóstico, el aumento de las ganancias y la asistencia en la toma de decisiones.

Contribuciones del Estudio: Los resultados del estudio aclaran las implicaciones prácticas del uso de SIG en propiedades rurales, como la receptividad al uso del sistema y, principalmente, qué ventajas con el uso son más indicadas por los encuestados de las propiedades que ya lo utilizan. En este sentido, se refuerza la necesidad de que los empresarios contables instiguen el uso de herramientas de gestión por parte de los productores rurales que aún no las usan, pero consideran que el uso de SIG es beneficioso.

Palabras clave: Contabilidad de gestión. Productores rurales. Sistema de información gerencial.

Resumo

Objetivo: Avaliar os reflexos da utilização de Sistemas de Informações Gerenciais (SIG) na gestão das pequenas empresas do ramo da atividade rural.

Metodologia: Nesse estudo, aplicou-se questionários para os produtores rurais que utilizam o sistema contábil convencional, obtendo 37 respostas. Adicionalmente, 7 entrevistas foram realizadas com produtores rurais que passaram a utilizar o SIG para controlar suas atividades.

Resultados: Com o uso da análise das diferenças entre os respondentes que usam ou não o SIG, permitiu-se identificar quais pontos estão atrelados à sua implantação, além de avaliar os

benefícios obtidos a partir do sistema utilizado. Os resultados indicam que o uso do SIG refletiu de forma positiva na gestão, sobretudo no que tange ao controle de custos e da cultura, previsões de necessidades, aumento no lucro e auxílio na tomada de decisões.

Contribuições do Estudo: Os achados do estudo esclarecem a implicação prática com o uso do SIG em propriedades rurais, como a receptividade para o uso do sistema e, principalmente, que vantagens com o uso são mais indicadas por respondentes de propriedades que já fazem seu uso. Nesse sentido, reforça-se a necessidade de os empresários contábeis instigarem o uso de ferramentas gerenciais aos produtores rurais que ainda não usam, mas consideram como benéfico o uso dos SIG.

Palavras-chave: Contabilidade Gerencial. Produtores Rurais. Sistema de Informação Gerencial.

1 Introduction

With the increasing competitiveness of companies, the use of Management Accounting becomes increasingly necessary. This is because Management Accounting has a predictive nature, based on tools that are capable of interpreting facts, measuring the performance of companies, and evaluating the financial impacts of their decisions (Machado, Rape, & Souza, 2015).

According to data of SEBRAE (2011), micro and small companies represent 98% of the number of companies in the country. These, in most cases, do not have an effective accounting control, leaving vital information missing for their maintenance, functioning, and operationalization. Such aspects can contribute to a loss of profitability or, more drastically, even lead to market extinction (Sales, Barros & Pereira, 2008).

In accordance with Machado *et al.* (2015), a company that is poorly structured in accounting, facing a competitive market, tends to suffer negative effects on its development and financial growth. One of the reasons for this poor structuring is that many companies see accounting only as a fulfillment of tax obligations (Borilli *et al.*, 2005). Therefore, lacking useful information, they experience difficulties when making decisions and evaluating their performance. Although there are barriers, in the case of small companies, to the understanding of information, evidence indicates that if they had them, there is a receptivity of owners to receive and help with this information (Beuren, Barp & Filipin, 2013).

Based on data of SEBRAE (2011), companies that have good accounting assistance reduce their percentage of bankruptcy from 90% to 20% in five years. Despite this, in the rural area, few companies use accounting assistance to manage their activities (Hofer *et al.*, 2011). On the other hand, Hofer *et al.* (2011) emphasize benefits reported by rural companies that use this type of assistance, which highlight the possibility of greater planning of activities, cost reduction, financial coordination and reports containing accurate information for decision making.

Through these reports, Management Accounting provides the basis for a secure administration. As stated by Padoveze (2010), the use of reports occurs in the company's internal management which, based on analysis, allows for easier decision-making, enabling a more effective management. Also, through these reports, it is possible to assess flaws and areas for improvement in the company's operational and financial process, mitigating errors and proposing future alternatives to be followed (Padoveze, 2010).

Crepaldi (2011) describes Management Accounting as a tool that provides instruments to administrators through a management information system, aimed at the use of economic

resources and assisting in the management functions of companies. These systems provide business support, implementing activities and controlling the flow of data to generate information (Kroenke, 2012).

In situations that require dynamic and effective solutions to solve problems found, this information becomes necessary so that the management process does not become flawed and imprecise (Kruger, Mazzioni, & Boettcher, 2009). In this way, a management information system directly assists in the generation of fast, reliable, and relevant information (Fonseca, & Garcia, 2007).

In the opinion of Canziani (2001), one of the difficulties faced by many rural producers is the lack of this dynamism and efficiency in the management of their projects, causing a deficiency to remain in a competitive situation in the market. The strategic decision in the rural sphere is focused on competitiveness and, for this, it depends on information regarding the market, competitors, consumers, innovations, among others. In this way, this information becomes essential, promoting a balance between the correct decisions and the uncertainties of the globalized world (Oliveira, & Menelau, 2018).

In addition to this information, the results in the rural area depend on the action of producers and their ability to manage the activities they develop (Mazzioni *et al.*, 2011). However, there are several factors that limit the management of these activities, including: i) the difficulty in understanding the rural management process; ii) distrust of the need and effectiveness of using a new management process; iii) high cost of assistance services; iv) high cost of implementing accounting systems; and v) difficulties in generating and interpreting relevant information in rural area (Canziani, 2001).

Other factors that make control difficult in rural areas are due to limitations in data collection, because of the large number of documents and the low level of knowledge, skills, and attitudes of rural employees in relation to management tasks (Canziani, 2001). In that regard, Silva *et al.* (2010) mention that managing an agricultural activity depends on information about the physical volume and financial result.

Thus, in order to evaluate the effects of the use of Management Information Systems (MIS) in the management of small businesses in the field of rural activity, the question to be investigated is the following: **what is the perception of rural producers about the use of MIS?**

This study is justified by the importance of property management, through the use of MIS, for greater control and to contribute to decision making. According to research of Embrapa (2020), about 60% of rural producers have property management as one of their main expectations with the use of technology, which is one of the most prominent elements. Thus, it is hoped that this study will contribute to highlight and discuss the needs of the sector, pointing out the financial advantages brought by proper accounting assistance. With this, it is expected to show the consequences of Management Accounting for the continuity of companies, as well as to encourage rural producers to seek better accounting assistance.

2 Theoretical Framework

2.1 Management Accounting

Management Accounting is an area of general accounting aimed at controlling and managing the resources of an entity. Marion (2009) emphasizes that Management Accounting differs from other area of accounting, as it is not tied to traditional principles accepted by accountants.

More specifically, Iudícibus (2009) defines Management Accounting as the link of several techniques and procedures covered in financial accounting, cost accounting, financial

and statements analysis, detailed in an analytical way, helping managers in the decision-making process.

Additionally, Atkinson *et al.* (2011) describe Management Accounting as a process that produces operational and financial information, driven by the information needs of internal individuals, guiding them to make operational and investment decisions.

In addition, for Crepaldi (2011, p. 2), Management Accounting enables administrators to “evaluate the performance of the company's activities, projects and products, as well as its economic and financial situation through the presentation of clear and objective information according to the needs of each user”.

Finally, Guerreiro, Frezatti and Casado (2006) argue that Management Accounting provides an essential structure for presenting economic events to the organization's members, providing a vigorously structured set of routines: elaboration of budgets, performance monitoring, and the elaboration of routine reports, following the rules and procedures to be applied.

Management Accounting has a strong relationship with the analysis of financial statements, which allows identifying the liquidity, indebtedness, and profitability of companies (Padoveze, 2010). The author also adds that the analysis of these indices is one of the most important instruments in the business management process, resulting in an operational, economic, equity and financial assessment of the company's situation.

However, Padoveze (2010) recognizes that the most important thing is not knowing how to calculate or interpret the indicators but knowing in depth the accounting pieces to be analyzed. Thus, it is possible to observe the importance of collecting safe and reliable information to achieve greater success in managerial practice. The lack of these can compromise the entire operationalization process. In addition, a clear understanding of this information is required to assess management needs.

The quality of this information is a determining characteristic for the success of companies. For this, the reports must be relevant to the users, presenting detailed information and highlighting the most important ones, allowing the identification of possible errors. In addition, they should be directed to those who have the necessary competence and time to understand their meaning and take corrective measures, when necessary (Crepaldi, 2011).

Still according to Crepaldi (2011), this information is internal and fundamental for decision making, because this information provides the issuance of reports aimed at planning, controlling, and organizing the company's financial situation. The Management Accounting process is obtained by collecting data and information stored and processed in the company's information system.

The professional who exercises Management Accounting, when working at the top, is known as a controller (Marion, 2009). For greater ease in exercising its role, it is common the use Management Information Systems (MIS) for decision making.

2.2 Management Information Systems (MIS)

Management Information Systems, also called business management support systems or management systems, are intended to filter business information and group it in the form of reports for the management process (Fonseca, & Garcia, 2007). Oliveira (2008) describes these systems as a resource that transforms data into information, in a practical and dynamic way, which helps in the company's decision-making process.

Additionally, according to Bazzotti and Garcia (2006), by providing secure information in a timely manner, the MIS helps in the planning, control, and organization of a company. Consistent with Stair (1998, p. 278, *apud* Bazzotti, & Garcia, 2006), a MIS has the basic purpose of helping the company to achieve its goals by providing the necessary details for

effective control, organization, and planning.

In accordance with Oliveira (2008), such systems allow obtaining the desired information in a dynamic and practical way, assisting in the decisions to be taken, whether in administrative, strategic, or other areas. According to Bazzotti and Garcia (2006), the reports extracted from the MIS help in improvement plans in the administration and control of company operations, supporting accurate decision-making.

As said by Kroenke (2012), the MIS is an integral part of business strategies. Companies that work with these systems have a great competitive advantage, because the information provided by the system results in correct decision-making. In this way, MIS help companies to monitor and achieve development, their goals, and objectives.

For better quality in the reports offered from the MIS, these systems must be conditioned to some factors: simplicity, flexibility, economy, reliability, acceptability, and productivity. This is justified by the search for better understanding, safety, cost-effectiveness, efficiency, and agility (Oliveira, 2008).

Fonseca and Garcia (2007) state that the financial resources aimed at implementing the MIS should be considered an investment, because the system improves the company's organizational routine, collecting and organizing data in reports that help in the management process. In addition, they ensure that any company willing to improve in managerial terms can succeed in implementing a MIS, as long as there is a commitment to the goals to be set.

2.3 Previous Studies

The importance of management in rural areas is an issue that has already been reviewed in several studies. From the analysis of the results of these studies, it is possible to conclude real benefits from the use of Management Accounting and its controls for productive activities. On the other hand, it is possible to observe the lack of interest of producers in seeking accounting assistance in this area (Table 1).

Table 1

Results of previous studies

Authors	Research purpose	Sample	Results
Borilli <i>et al.</i> (2005)	Verify if Management Accounting can help to improve the management of the activity and the growth of equity.	Interviews and questionnaires applied in 21 accounting offices and 262 rural producers in the municipality of Toledo (PR).	Management Accounting provides subsidies to managers to analyze the profitability and competitiveness of products, assisting in decision making.
Hofer <i>et al.</i> (2011)	Verify the use of controls in the management of productive activities when making investment decisions.	Questionnaire applied to small and medium producers in the western region of the state of Paraná who sought financing for more than one crop for five years.	Resistance of rural producers to the adoption of management accounting tools. Reports of benefits that accounting management brings to the success of companies.
Kruger, <i>et al.</i> (2009)	Demonstrate the need to use accounting and its importance in the management of rural properties as a support tool for decision making.	Questionnaires applied to 289 rural landowners in the municipality of Águas de Chapecó (SC).	Need for greater accounting control, lack of information for decision making and lack of knowledge about the results of activities developed by producers. Improved performance and management of rural properties through the use of accounting tools.

Almeida <i>et al.</i> (2011)	Verify the importance of management control practices as one of the factors for success in managing the enterprise.	Interview with seven milk producers in the municipalities of Pinhalzinho and Saudades (SC).	Improved results and quality of family life through the adoption of management control practices.
Silva <i>et al.</i> (2010)	Investigate the management practices used by small rural producers to manage their properties.	Structured form applied to 76 small rural producers in the municipality of Guaramirim (SC).	Most small rural producers do not use formal management methodologies.
Zanin <i>et al.</i> (2014)	Identify the characteristics of the structure and management of rural properties in the West of Santa Catarina.	Questionnaires applied to 210 landowners in the municipalities of Quilombo, Coronel Freitas and Cordilheira Alta (SC).	Lack of support structure for decision-making and controls for the management process of rural activities.
Mazzioni <i>et al.</i> (2011)	Verify the use of accounting as a management control tool and demonstrate the relevance of its use to the decision-making process.	Questionnaires applied to 100 rural companies belonging to Chapecó (SC).	Lack of knowledge of producers about accounting controls. Accounting as a decisive way for evaluating and interpreting facts, providing subsidies for planning future activities.
Oliveira and Menelau (2018)	Observe how it is structured and what are the effects of the MIS on the performance of the researched production units.	Interview applied to six grape producing companies in the region of Vale do São Francisco (PE).	Managerial information is treated by rural producers with importance, being a resource that positively impacts the results achieved in relation to the dimension of the business, in terms of exports and the volume of grapes traded in the market.

Source: Research data.

As seen in Table 1, according to the view of the producers, there is a lack of knowledge in the area of accounting management. Five of the eight studies cited (62.5%) highlight the non-use of management controls in rural areas. Another aspect frequently observed is the form of control used by most producers, in which it is carried out by the rural producers themselves. As said by Mazzioni *et al.* (2011), the need for the proper use of controls arises from the separation of private expenses with production and property expenses, in addition to the lack of knowledge of the results to be analyzed.

As maintained by Silva *et al.* (2010), the success of agricultural management is based on the control and management of investments applied in the activity and the evaluation of the results achieved. On the other hand, its failure may be one of the factors that contributes to the rural exodus. Zanin *et al.* (2014) also show, as a general result of their study, the fragility of the process of continuity of rural properties due to the need to use greater controls in the sector.

According to Borilli *et al.* (2005), the information generated through management controls make it possible to improve the management of rural activities, optimizing their results and providing better analysis in decision-making. For Oliveira and Menelau (2018), the position of rural producers in treating information as an important input directly impacts the results achieved.

Thus, from the results analyzed, it appears that the adoption of MIS provides improvement in results, aid in decision making, assessment and interpretation of facts. Therefore, the need for MIS for the success of companies is perceived.

3 Methodological Procedures

The present study is characterized as a field research. For Marconi and Lakatos (2003, p. 185), “field research is that used with the objective of obtaining information and/or knowledge about a problem, for which an answer is sought”. Through this field research, a survey was carried out in order to better understand the perception of rural producers regarding the use of MIS.

Furthermore, the research is characterized as qualitative-descriptive, using qualitative resources obtained through data collection on populations in order to outline or analyze facts or phenomena (Marconi, & Lakatos, 2003). In this sense, it is justified that the research is classified as qualitative because it does not use inferential statistical techniques, and as descriptive research because it discusses the perception of a group of rural producers.

The research was conducted through an office that provides accounting assistance in the district of Entre Rios, municipality of Guarapuava, Paraná, Brazil. District whose economic predominance comes from rural production, in addition to being marked by having the largest Brewery Maltaria in Latin America and responsible, together with the municipality, for 40% of the country's malt and barley production (Thomas, 2019). In this way, the researched office, whose corporate name is kept confidential, predominates its assistance aimed at agricultural activity.

The office offers two forms of assistance: through a conventional integrated accounting system and through a Management Information System. The MIS used by the controller of the studied rural producers is a system adapted exclusively for the management of rural production. Its control is subdivided into three parts: i) agriculture; ii) seeds; and iii) specific solutions (Table 2).

Table 2

System subdivision

i) Agriculture	Equity control, production planning, purchasing, financial, inventory management, commercial, machinery, handling, costs, production, accounting, tax, and payroll.
ii) Seeds	Planning, production, batch control, documents, industrial seed treatment, and seed trading.
iii) Specific solutions	Business Intelligence and database integration.

Source: *Research data (2019).*

In its first subdivision, solutions for planning and controlling agricultural management in all operational phases of the company are given. From planting to storage of company's products. The second subdivision presents solutions for managing production and batching. In addition, it exhibits solutions for commercial management. Finally, the last subdivision contains specific solutions developed to help manage properties, agricultural projects, and clients (Table 2).

Therefore, the development of this study consists of two stages. First, a questionnaire was applied to rural producers who use the method of control by a conventional accounting system for decision making. Next, interviews were conducted with producers who use the MIS to control their activities. The questionnaire was built from previous studies, such as from Borilli *et al.* (2005), Hofer *et al.* (2011) and Kruger *et al.* (2009), and adapted for the present research.

Among a universe of 62 rural producers contacted and assisted by the conventional accounting system method offered by the office, 37 were willing to answer the questionnaire, equivalent to 59.7% of the population. The questionnaire applied has 15 closed questions, which are multiple choice, selection of options, and Likert-type scale. The questionnaire is divided

into three parts: i) general information about the profile of producers and properties, ii) methods of controls and difficulties encountered in the area, and iii) specific information on the topic in question, regarding opinions and interests about the MIS.

Marconi and Lakatos (2003) define the questionnaire as a data collection tool answered without the follow-up of the interviewer and which has an ordered series of questions. This questionnaire was sent to rural producers online, through the form offered by Google Docs, which has a platform in which it is possible to create and apply open, closed questions and on Likert-type scales.

In order to deepen, interviews were conducted with 7 rural producers who started to use the MIS to control their activities, from a universe of 9 companies that use this system. Information similar to that collected in the questionnaire was sought, with a structural difference: only ten open questions were applied, in person. In addition, there was a greater focus on the use of MIS and its results.

The interview is a method of obtaining information regarding a specific subject from a face-to-face meeting and a conversation of a professional nature. The interview conducted in this research is characterized as a structured interview, which, through predetermined questions, follows a script applied equally to selected people (Marconi, & Lakatos, 2003).

4 Analysis and Discussion of Results

4.1 Information Collected by Producers Using Conventional Systems

The research has as general objective to identify possible benefits of control in the rural scope from the use of MIS. For this, questionnaires were applied to other producers who do not carry out their controls through MIS. Thus, to collect data on first notions about producers and their properties, the first four questions were applied with a focus on their profiles: education, time of experience in the activity, size of properties, and number of employees working in the area.

It was observed that 59.5% of producers have a higher education degree, while 40.5% have only completed high school. There were no answers for complete primary education or incomplete primary education. Still, it was observed that most respondent producers have been working for more than fifteen years in the sector (45.9%). Further, 29.7% of farmers are starting in the area, working between one and five years, 18.9% of producers operate between five and ten years, and only 5.4% between ten and fifteen years.

Regarding the size of the properties, 56.8% of the producers said they had more than 270 hectares, characterizing themselves as large landowners. Still, 29.7% responded that they have 72 to 269.9 hectares and 13.5% have up to 71.9 hectares, characterizing, respectively, as medium and small properties. Regarding the number of employees, 24.3% have up to one employee, 32.5% have two to four employees, 18.9% five to seven and, 24.3% more than seven employees.

To introduce the questions to the subject of general accounting, producers were asked about controls for differentiating personal expenses in relation to activity expenses. In response, 54.1% of producers said they had this control and 45.9% responded that they do not differentiate their expenses. In this context, it is confirmed what was found by Mazzioni *et al.* (2011), there is a certain lack, on the part of producers, to segregate private expenses from production expenses. From then on, there is a greater need for control.

Moreover, a question was applied to highlight the difficulties found in the research topic. At this stage, three options related to production cost, product price, and financial resources were defined. A selection box was opened so that the respondent could select one or more defined options. In addition, an option was made available so that the producer could point out

another difficulty encountered, which was not established for selection. Among these difficulties, as shown in Table 3, most respondents highlight high production costs as the biggest obstacle in the sector.

Table 3

Difficulties encountered in the sector

Alternatives	Absolute Frequency	Relative Frequency
High production costs	30	55.6%
Low product prices	11	20.4%
Lack of financial resources for investment	10	18.5%
Lack of skilled labor	1	1.8%
Family succession	1	1.8%
Difficulty in trading horticultural	1	1.8%

Source: Research data (2019).

To finalize the questions that show notions of accounting in general, producers were asked about the purpose of accounting, with two options for answers: only for tax purposes and for tax and management purposes. In this context, different from what brings the study of Borilli *et al.* (2005), 97.3% answered that it involves both options and only 2.7% believe that accounting has only tax purposes. This data positively interferes in the corporate accounting structuring, indicating greater receptivity in the possible adoption of a MIS.

Finally, deepening the topic under study, the last eight questions were applied with the focus of observing the view of rural producers on MIS. The introductory question concerns the respondents' knowledge regarding the MIS. Among the results, 56.8% of respondents said they understood what MIS are, 24.3% said they partially understood, and 18.9% of producers revealed lack of knowledge about these systems. Then, only producers who responded that they knew about MIS were asked if they also understood their purposes. Among this group of producers, 75.9% said they know about MIS purposes and 24.1% said they did not know its functions.

To verify some objectives of the MIS, producers were asked the level of importance of preparing a crop diversification plan and the benefits sought by accounting assistance. Soon after, a question was made asking if the producer had the knowledge that MIS facilitate the construction and organization of the referred planning and help in all the advisory criteria listed in the question. Planning is a decisive item regarding reducing production costs, directly interfering in the profitability of the activity (Borilli *et al.*, 2005).

The questions were applied using a Likert scale, conditioning five options to rank the level of importance in the range from 1 to 5, with 1 being the least important and 5 the most important. Regarding the question addressing about planning, the options were related to increasing profitability, preserving the soil, using existing infrastructure, maximizing labor, and obtaining financing lines, as shown in Table 4. As evidenced by Hofer *et al.* (2011) and Borilli *et al.* (2005), aiming for greater profitability is the main objective of this elaboration.

Table 4

Level of importance in developing a plan to diversify cultures

Purpose	1	2	3	4	5
Achieve greater profitability	-	2.7%	16.2%	10.8%	70.2%
Preserve the soil	-	10.8%	18.9%	16.2%	54%
Use existing infrastructure	-	5.4%	13.5%	27%	54%
Maximize the use of labor	-	16.2%	8.1%	24.3%	51.3%
Get more lines of financing	8.1%	13.5%	13.5%	32.4%	32.4%

Source: Research data (2019) and adapted from Borilli *et al.* (2008).

Regarding the question addressing the objective of seeking assistance, which aimed to verify the view of producers about the search for accounting assistance, five criteria were presented. In this regard, it was discussed about control through systems, control and cost reduction, more accurate information and planning based on profitability, as listed in Table 5.

Table 5
Benefits sought by accounting assistance

Purpose	1	2	3	4	5
Control through systems integrated to accounting	5.4%	5.4%	5.4%	18.9%	64.9%
Greater control of production costs	2.7%	5.4%	10.8%	18.9%	62.2%
Accurate information for decision making	2.7%	5.4%	5.4%	18.9%	67.6%
Possibility of cost reduction	5.4%	5.4%	8.1%	16.2%	64.9%
Possibility of planning based on profitability	5.4%	5.4%	5.4%	21.6%	62.2%

Source: Research data (2019) and adapted from Borilli *et al.* (2008).

As for the knowledge of rural producers regarding the ease of preparing the planning (Table 4) and the benefits sought by the accounting assistance (Table 5) through the use of MIS, 86.5% of them said they were aware of these features. On the other hand, 13.5% did not know about these applications. In this sense, the MIS functionalities were demonstrated to the respondents and their opinion on the influence of controlling activities through these systems was then questioned. The question was also applied using a Likert-type scale: also, with an interval from 1 to 5, with 1 for total disagreement and 5 for total agreement. Six alternatives were raised, as shown in Table 6.

Table 6
Influence of controlling activities through a MIS

Purpose	1	2	3	4	5
Increased profitability	5.4%	-	21.6%	27%	45.9%
Cost reduction	-	5.4%	13.5%	37.8%	43.2%
Improved crop control	5.4%	10.8%	18.9%	21.6%	51.3%
Prediction of investment needs	2.7%	5.4%	18.9%	21.6%	51.3%
Prediction of financing needs	2.7%	5.4%	16.2%	21.6%	54%
Greater precision in decision making	-	8.1%	8.1%	16.2%	67.6%

Source: Research data (2019).

It can be seen that, after showing some of the features of MIS, many of the producers agreed about the influence of its use. According to Borilli *et al.* (2005), to increase this rate, it is up to the accountant to guide rural producers on the existence of this planning, control, and management tool.

The following question addressed the comparison of control effectiveness using a MIS against a conventional accounting control system. In this scenario, 89.2% said that controlling their activities through MIS could be more effective, while 10.8% disagreed with this statement. Thus, it seems that there are positive results regarding the opinion of producers on control through MIS.

The last question aimed to identify the interest of producers in the use of MIS. They were asked whether they would pay for a more qualified accounting advisory service that would assist in the management, control, and administration of their properties. It was noticed that there was a predominance of interest in this control, in a sphere in which 78.4% responded that they would pay for this service. Furthermore, 18.9% of producers were satisfied with the current assistance method and only 2.7% said they would not pay for this service. This data is considered a positive factor related to the encouragement of the use of MIS through this research.

4.2 Information Collected by producers who use the MIS

To answer the research's key question, interviews were conducted with producers who control their activities through MIS. The questions were very similar to those presented in the questionnaire, but they were applied in person and focused on the results obtained and observed by the producers from the management assistance.

Common characteristics were observed in relation to this group of interviewees, in which they all have completed a higher education degree and properties larger than 270 hectares. In addition, unlike the responses obtained in the questionnaires, no producer has less than five years of experience: 14.3% work in the area for between five and ten years, 71.4% between ten and fifteen years, and 14.3% have more than fifteen years of experience.

A result directly linked to the control through these systems and with 100% of the positive responses is related to the separation of expenses from the activity with personal expenses. In addition, 100% of the producers responded that they consider the control of activities through MIS more effective in relation to control through conventional accounting systems. Thus, it strengthens the results of the study of Kruger *et al.* (2009), confirming that the performance in the management of rural properties is more beneficial through the use of management tools.

In order to compare the objectives sought from the accounting assistance shown by the other producers, the question applied was modified. Instead of asking them about the reasons that lead them to seek this type of assistance, they were asked what benefits they find from its use (Table 7).

Table 7

Benefits found by accounting assistance

Purpose	1	2	3	4	5
Control through systems integrated to accounting	-	-	-	1	6
Greater control of production costs	-	-	-	-	7
Accurate information for decision making	-	-	-	-	7
Possibility of cost reduction	-	-	1	2	4
Possibility of planning based on profitability	-	-	-	-	7

Source: Research data (2019).

It is observed that there is no disagreement in any of the benefits listed in Table 7. In this sense, Kroenke (2012) states that these systems reduce costs and the probability of errors, resulting in real benefits, as well as competitive advantage. Fonseca and Garcia (2007) reaffirm and suggest that valuing information through a MIS provides, in addition to the competitive differential, greater success in results.

Furthermore, producers were also asked in what managerial control influences. The structure applied in the questionnaires was through a Likert scale, with an interval from 1 to 5, being 1 for total disagreement and 5 for total agreement. The results are shown in Table 8.

Table 8
Influence of controlling activities through a MIS

Purpose	1	2	3	4	5
Increased profitability	-	-	2	2	3
Cost reduction	-	-	1	1	5
Improved crop control	-	-	2	3	2
Prediction of investment needs	-	-	-	3	4
Prediction of financing needs	-	-	2	3	2
Greater precision in decision making	-	-	-	-	7

Source: *Research data (2019).*

From Table 8, it can also be seen that there is no disagreement in any of the suggested alternatives. In this context, what was exposed by Fonseca and Garcia (2007) is confirmed, that control through MIS mainly intervenes in improving decision-making (100%). It was also asked about the main difficulties encountered in the sector. As with questionnaires, high production costs lead as the main obstacle.

The last five questions are directly focused on the view of producers regarding the results obtained after using MIS to control activities. First, the reasons for seeking this type of guidance and its consequent resolutions were questioned. It was also asked in which aspect management assistance best supports them and whether benefits were observed in relation to profitability and increase in equity after using this tool.

There were several different answers about the reasons that led to the search for management assistance. The main cause was due to the search for a better decision-making aid. Furthermore, producers indicated reasons related to risk management, control and cost reduction by culture, expansion of long-term gains, identification and solution of problems that have already occurred and problems that may occur, more detailed analysis of information, and search for financial and tax management. It was later asked whether, after using and controlling it through the MIS offered by the accounting assistance, the producers found benefits associated with the previous answer. In other words, having as problems the reasons mentioned above, to what extent the control by the MIS could solve them.

Regarding the aspects that the control through the MIS best helps, several positive perspectives were presented. Among them, in the view of two of the producers, the assistance extends to all the operations of the activity. Other concepts portrayed were the influence on the choice of variety to be planted, on cost control, on the decision to sell the final product and on the decision on the need to buy or sell machinery, as well as their use. Moreover, answers were obtained about the importance of using the MIS for decision making with greater security.

Another aspect discussed by the producers was related to the speed in the availability of information, confirming that through this tool, information is available when necessary. Thus, the issue of the dynamism of the information advocated by Padoveze (2010) is reinforced, as well as by the results of the studies shown in Table 1, mainly by Oliveira (2008) and Kroenke (2012).

Finally, the last two questions addressed the influence of management through the MIS in relation to the increase in equity and profitability. Regarding both questions, the answers are predominantly positive: 71.4% of respondents observed an influence in relation to the increase in equity and 100% confirmed the benefit related to the increase in profitability from the control of this tool. According to Oliveira and Menelau (2018), the fact that producers treat information as an important input in the management of their activities directly impacts these results.

4.3 Analysis of differences between producers who use or not the MIS

To understand the particularities regarding the views and opinions of the producers, the responses obtained from the questionnaires and interviews were compared. It is noticed that, of the producers who use MIS to control their activities, 100% have completed a higher education degree, more than five years of experience in the area and properties of more than 270 hectares. On the other hand, among the producers that do not adopt the MIS, 59.5% have completed a higher education degree, 29.7% have been operating in the area for less than five years, and 43.2% of the properties are smaller than 270 hectares.

Many of the owners believe that because they own small and medium-sized properties, they do not need such strict control. Thus, while 100% of producers using MIS responded that they control activity expenses separately from personal expenses, only 54.1% of other producers also practice this conduct.

In relation to the difficulties faced in the area, both the answers obtained through the questionnaires and through the interviews, the high production costs stand out. However, in both cases, the other established items were also highlighted. Only producers who do not use MIS commented on other difficulties encountered.

Producers who have management assistance were asked about the benefits of accounting assistance and to the others producers why they were seeking it. The question applied was not the same with the intention of comparing the expected results with the achieved results. It is noticed that among the established alternatives, the producers claim to find benefits, even partially, in all the established items, not disagreeing with any of them. On the other hand, there are producers who do not even seek assistance for these same purposes.

In relation to the topic under study, in the question that addresses the benefits of using MIS, although there is a need for greater depth to investigate the reasons, it was found that in all established alternatives there is some percentage referring to disagreement by producers who do not use this tool. On the other hand, all producers who use the system agree with the established benefits, even if partially.

5 Final Considerations

From the data collected in this research, it was possible to analyze the attitude of producers in relation to the understanding of accounting assistance. The main objective of the study was to evaluate the effects of the implementation of Management Accounting in the management of small businesses in the field of rural activity, in addition to contributing to highlight the needs of the sector and encourage other rural producers to adhere to management assistance.

It is concluded that the search for management assistance takes place through several aspects, many of them related to problems and risks encountered. However, there are those who seek this type of guidance for future gains, ranging from decision-making with greater certainty to control and cost reduction in culture. After comparing the reasons for the search and the current situation of these companies, the producers state that the use of MIS reflected positively on their management.

Nevertheless, it is clear that not all producers have knowledge about MIS and its guidance methods: 43.2% of producers do not know or are not sure about what these systems are. Furthermore, among the 56.8% of producers who responded that they know what this tool is, only 75.9% know its purpose. Thus, some basic aspects corresponding to the use of MIS to complement the research and show this group of producers their functions were presented.

After demonstrating these aspects, all producers were asked their opinion about the benefits related to control through such systems. It is possible to observe different perceptions

by those who use or not this type of control. Benefits were established related to cost and culture control, needs forecasting, increased profit and aid in decision making. Although most respondents agree that the systems offer such advantages, it was observed that many of the producers still do not believe in these benefits.

However, among the producers who disagree, there is none that uses MIS to control their activities. This means a positive reflection in relation to the benefits of the system in the management of companies that use the tool. Still, given the item that deals with greater precision for decision-making, 100% of producers who use the system agree on its influence. In relation to the other questions, everyone agrees, even if partially, that the management assistance method influences the established issues.

Another positive conclusion is the fact that 78.4% of producers who control their activity through the conventional assistance method stated that they would pay for a more qualified and effective accounting service. This service is intended for the control, management, and administration of properties, as demonstrated during the questionnaire, being a characteristic of the adhesion and use of MIS.

Finally, to answer the key research question, several items were observed. Among them, the benefits of the assistance, the influence of the MIS, the aspects in which the tool helps, the effectiveness found in relation to conventional control, and the benefits found in relation to profitability and equity increase. These issues, even if indirectly, are linked to the question of company results.

Thus, it is possible to observe that all producers who use MIS confirm the benefits offered by accounting assistance and the positive influences on the control of activities through this system. In addition, 100% of producers addressed aspects caused by its use that somehow help in the results to be achieved. Furthermore, 100% of the producers verified control benefits in relation to conventional systems.

Regarding the increase in profitability and equity, 100% and 71.4% of producers, respectively, stated that they perceived that the use of MIS had a positive impact. Thus, observing the advantages offered by this method of assistance, it is possible to confirm the research question: from the implementation of Management Accounting and the use of MIS, benefits can be observed in the results of rural companies.

The main limitation of the research refers to the method used, which depends on responses provided by respondents, in which there are no guarantees that the data provided represents reality. Research on the topic is necessary, as accounting in rural areas can help in the performance of properties, given the improvement in crop control, investment analysis, future estimates, and financing needs. Thus, there is a gap for further research on new management methods and techniques sought and used by rural producers. Additionally, future studies may use inferential statistical techniques, with the purpose of verifying the influence of demographic variables on the use of MIS, for example.

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