



Article

An Analysis of the Use of Accounting Information by Portuguese SMEs

Ana Catarina Santos ¹, Rui Pires ² and Maria-Ceu Alves ^{3,*}

¹ Department of Management and Economics, University of Beira Interior, 6201-001 Covilhã, Portugal; catarina_santos91@hotmail.com

² Instituto Politécnico de Bragança, 5300-253 Bragança, Portugal; rucapires@ipb.pt

³ NECE-UBI Research Unit in Business Sciences, University of Beira Interior, 6201-001 Covilhã, Portugal

* Correspondence: mceu@ubi.pt

Abstract: Despite the significant economic contribution of small and medium-sized enterprises (SMEs), little is known about the extent to which they make use of accounting information (AI). Although AI is considered one of the main sources of information for SMEs, many continue to ignore its potential, considering that this information is only intended to meet tax obligations. The literature stresses the influence of several factors on AI usage. However, the conclusions of the studies are fragmented, contradictory, and not very enlightening. Following these studies, the purpose of this paper is to explore which characteristics of decision makers, companies, and accounting services influence the importance and use of AI in SMEs. Data were collected through an online questionnaire survey applied to Portuguese SMEs. The findings show that the decision makers' level of education, as well as their educational background, influence the importance they attribute to AI. It has also been found that smaller companies and SMEs that use outsourced accounting services make the least use of AI. Therefore, in addition to providing empirical evidence on the importance and use of AI, a debate that has been mainly theoretical, and on the importance of SMEs in any economy, this paper aims to raise awareness of the need to further study the decision-making process in such firms.

Keywords: accounting information; accounting information system; decision-making; small and medium-sized enterprises (SMEs); online questionnaire survey; Portugal



Citation: Santos, Ana Catarina, Rui Pires, and Maria-Ceu Alves. 2023. An Analysis of the Use of Accounting Information by Portuguese SMEs.

Journal of Risk and Financial Management 16: 225. <https://doi.org/10.3390/jrfm16040225>

Academic Editor: Thanasis Stengos

Received: 28 February 2023

Revised: 20 March 2023

Accepted: 26 March 2023

Published: 4 April 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

It is widely recognized that companies operate in increasingly unstable environments (Prohorovs 2022). Technological evolution and the greater dissemination of information have made customers increasingly demanding. Business globalization forces companies to adapt to different contexts and small businesses, in particular, can become quite vulnerable to these changes (Aragón-Sánchez and Sánchez-Marín 2005; Pedroso and Gomes 2020). Their survival may depend on the creation of a competitive advantage (Husin and Ibrahim 2014; Marriott and Marriott 2000; Salles 2006).

One of the key resources for creating this competitive advantage is the proper use of the available sources of information (Albaum 1964; Lybaert 1998a, 1998b). Accounting information (hereafter AI) has proved to be one of the most important sources of information to support managers (Ball and Brown 1968; Dyt and Halabi 2007; Hall 2010; Libby 1975; Mckinnon and Bruns 1992; Pedroso and Gomes 2020). AI is essential to managers effectively and efficiently managing the organizations' strategies and operations, as well as maintaining greater internal control (Thuan et al. 2022). Moreover, if of high quality, AI is not only important to decision-making but also determines its success (i.e., decision-making success) which, in turn, is critical for business success (Monteiro et al. 2022). Despite the significant economic contribution of small and medium-sized enterprises (SMEs) (e.g., Huerta et al. 2017; Pedroso and Gomes 2020; Shields and Shelleman 2016; Zor et al. 2019), little is known about the extent to which they make use of AI (Armitage et al. 2016).

Many organizations, especially SMEs, still do not make good use of AI in the organization's management (Jawabreh et al. 2012), considering that accounting only aims to comply with legal and tax obligations (Dyt and Halabi 2007; Holmes and Des 1988). Thus, one of the biggest shortcomings of small businesses is that they generate little AI to help them make informed and timely decisions (López and Hiebl 2015; Senftlechner and Hiebl 2015). AI, especially timely information, supports managers' work and allows for faster action in unstable and uncertainty contexts, contributing to combating potential threats and taking advantage of opportunities (Pires and Alves 2022; Pires et al. 2023).

In this context, it is relevant to understand what leads managers to exclude this critical source of information, particularly in small businesses where resources are generally limited. Previous studies have examined the influence of managers' characteristics such as age and education (e.g., Lybaert 1998b; Pavlatos and Kostakis 2018; Zor et al. 2019), companies' features (e.g., Armitage et al. 2016; Gouveia et al. 2015; Ruiz and Collazzo 2021), and accounting services' attributes (e.g., Blackburn et al. 2018; Carey and Tanewski 2016; Huerta et al. 2017) on AI importance and use. To the best of our knowledge, no previous study simultaneously investigated the influence of managers', companies, and accounting services' characteristics on AI. Therefore, this study intends to fill this gap and answer the following research question:

Research question. *Which factors (decision-makers', companies', and accounting services' characteristics) influence the importance attributed to the accounting information by decision-makers and determine its use in Portuguese SMEs?*

In order to answer this research question, an empirical study was developed in Portuguese SMEs. SMEs were chosen for their importance in the development of modern economies around the world (Ayyagari et al. 2007; La Porta et al. 1999; Zor et al. 2019) and, in particular, because of their importance in Europe, including Portugal, where they represent 95% of the totality of companies (Pedroso and Gomes 2020). SMEs have been widely recognized as critical sources of employment and income (Shields and Shelleman 2016; Zor et al. 2019), as they typically account for a large share of the economic units in any given economy (Berrone et al. 2014). Data were collected through an online questionnaire survey applied to Portuguese SMEs managers. Sixty decision-makers answered this survey.

This study is relevant because AI has become increasingly important in supporting business management, in particular, SME management. In fact, previous literature has highlighted the importance of AI and its use for several purposes, such as to support decision-making, to allocate resources, and to evaluate performance (e.g., Monteiro et al. 2022; Pires and Alves 2022; Pires et al. 2023; Shields and Shelleman 2016). However, most studies have investigated the importance and use of AI only in manufacturing or/and large companies (e.g., Alves 2008; Cheffi and Beldi 2012; Pires and Alves 2022; Pires et al. 2023; Zor et al. 2019). Research studying AI's importance and use in SMEs is still scarce (e.g., López and Hiebl 2015; Ruiz and Collazzo 2021; Zor et al. 2019). Therefore, this study provides additional knowledge about the influence of decision-makers', companies', and accounting services' characteristics on AI's importance and use in SMEs. To the best of our knowledge, it is the first study to examine, simultaneously, the influence of all these characteristics on AI in SMEs. Moreover, this study contributes also to practice, as it shows, for instance, that managers' education level and educational background influence the importance attributed to AI and its use. Managers with lower levels of education and/or without an educational background in management or related areas attribute less importance to AI. Accounting professionals should make AI simpler to understand, namely for these managers. Managers without an educational background in management or related areas should also receive additional training in management to perceive the relevance of AI and use it properly in decision-making process. Finally, the importance of SMEs in the Portuguese economy also justifies the interest in this subject.

The remainder of this paper is organized as follows. Section 2 presents the literature review and develops our research hypotheses. Section 3 summarizes the methodology

used. Section 4 presents and discusses the results. Finally, Section 5 provides the main conclusions and limitations of the study and some future research clues.

2. Literature Review

This section comprises four parts. First, the literature regarding the importance and use of AI in SMEs management is reviewed. Second, the literature that relates managers'/owners' characteristics and AI is described. Third, a brief review of the literature concerning the relationship between companies' characteristics and AI is summarized. Fourth, the literature that relates accounting services' characteristics and AI is presented.

2.1. Accounting Information in SMEs Management

It is now widely recognized that companies operate in increasingly unstable and uncertain environments (Pires and Alves 2022; Pires et al. 2023; Prohorovs 2022). Technological evolution and greater information dissemination have made customers increasingly demanding. Business globalization forces companies to adapt to different realities, countries, and cultures. The economic crisis that is felt also poses a huge challenge to companies (Prohorovs 2022).

Small businesses, specifically, can become quite vulnerable to such changes. Although these companies are considered to have some advantages over larger companies due to their capacity for rapid growth and great flexibility, the fact is that many SMEs have limited access to resources and they have less capacity for competition (Aragón-Sánchez and Sánchez-Marín 2005). For these companies to ensure their survival, it is critical to create a competitive advantage in the face of competition (Husin and Ibrahim 2014; Marriott and Marriott 2000; Salles 2006).

Literature has long referred to information sources as an indispensable resource for organizations' competitiveness (Albaum 1964; Lybaert 1998b). Accounting, in particular, has been evolving as an information source, becoming increasingly efficient in supporting managers (Pedroso and Gomes 2020), and is considered by many authors as one of the most relevant information sources (Ball and Brown 1968; Dyt and Halabi 2007; Hall 2010; Libby 1975; Mckinnon and Bruns 1992). Many companies use accounting to support management (Alves 2008; Boyd and Cox 2002; Gouveia et al. 2015; İbicioğlu et al. 2010). However, it also appears that many organizations, especially SMEs, do not make adequate use of this source of information for management purposes (Jawabreh et al. 2012).

Recent literature has also highlighted the importance of non-financial information (e.g., Bertolotti et al. 2019; Monteiro et al. 2022; Pires and Alves 2022). This information complements financial information (Pires and Alves 2022) once it is not enough for decision-making purposes (Monteiro et al. 2021). In addition, non-financial information has a positive influence on organizations' success, given that it contributes, among others, to attain inter-functional integration (Bertolotti et al. 2019; Monteiro et al. 2022). Moreover, non-financial reporting, as is the case with sustainability reporting, has also attracted the attention of researchers and practitioners given its relevance for organizations' legitimacy and reputation (Rodríguez-Gutiérrez et al. 2021). However, the application and research of non-financial reporting in SMEs is still limited (Dinh et al. 2023; Krawczyk 2021), which can result from the fact that non-financial reporting is not mandatory for most of these enterprises (Krawczyk 2021; Ortiz-Martínez and Marín-Hernández 2022).

Due to the obligation of having organized accounting, every Portuguese company produces AI, mainly financial information. However, Portuguese SMEs managers do not seem to take advantage of accounting data, as they consider that it is only intended to comply with legal and tax obligations and that the state is the main interested party in the AI produced (Dyt and Halabi 2007; Holmes and Des 1988). Thus, although the literature points to AI as key to the success of organizations its potential is often underused by managers (Jawabreh et al. 2012), mainly in SMEs. The reasons why SMEs continue to ignore AI potential is still an open question and it is, therefore, relevant to study this matter.

The literature points out some factors that condition AI's importance and use. Some of these factors are directly related to the managers' /owners' characteristics, such as their level of education and their experience (e.g., Gouveia et al. 2015; Holmes and Des 1988; Lybaert 1998b; Nunes and Serrasqueiro 2004; Pavlatos and Kostakis 2018; Zor et al. 2019). Other factors are related to the companies' characteristics, such as their size, seniority, and industry (e.g., Armitage et al. 2016; Gouveia et al. 2015; Holmes and Des 1988; Lybaert 1998b; Ruiz and Collazzo 2021). In addition, some authors argue that the type of accounting services chosen by companies may also condition AI importance and use (e.g., Blackburn et al. 2018; Dyt and Halabi 2007; Gouveia et al. 2015; Holmes and Des 1988; Nunes and Serrasqueiro 2004).

2.2. Decision-Maker Characteristics and Accounting Information

There are diverse manager socio-demographic characteristics that can influence the degree of importance they attribute to AI. One of the factors most mentioned in the literature is the managers' level of education as well as their business-oriented knowledge. The higher the decision-maker's level of education, the greater the importance attributed to AI, and it may be even greater if they have an educational background in management and related areas (Cassar and Holmes 2003; Gouveia et al. 2015; López and Hiebl 2015; Lybaert 1998a, 1998b; McMahan and Holmes 1991; Pavlatos and Kostakis 2018; Thomas and Evanson 1987; Zor et al. 2019). Managers with higher levels of education are more likely to have the capabilities to understand and process AI (e.g., Zor et al. 2019). Similarly, managers with an educational background in management and related areas have a better understanding of the importance and usefulness of AI, as opposed to managers without an educational background in management and related areas (e.g., Cheffi and Beldi 2012; Gouveia et al. 2015; Pavlatos and Kostakis 2018).

A recent study carried out in Portugal revealed that the main reason given by managers for not using AI is their limited knowledge of accounting, finance, and management (Gouveia et al. 2015). The respondents also admitted that, with simpler language and presentation, they would use AI more often. In interviews conducted by Marriott and Marriott (2000), owners from some SMEs also have admitted that they do not understand the information provided by accounting, namely information contained in income statements, balance sheets, or information related to ratios. However, this problem does not affect only small businesses. In a French study, it was found that large company managers with no educational background in accounting admitted to using little or even excluding AI from their decision-making process because they considered themselves unable to understand and interpret it (Cheffi and Beldi 2012). Therefore, the problem will not be in the information produced, but in the ability of the decision-maker to perceive this information. Furthermore, the accountants' age and experience can also influence their participation in the companies' decisions (Tout et al. 2014) and, thus, provide support for decision-makers to understand AI.

Hence, it is essential to examine the influence of the decision-maker's education level and educational background on the importance attributed to AI. Based on the literature reviewed, the following research hypotheses are proposed:

Hypothesis 1a. *Decision-makers with a higher level of education attribute more importance to AI.*

Hypothesis 1b. *Decision-makers with an educational background in management, or related areas, attribute more importance to AI.*

Previous studies also indicate other decision-maker characteristics with the potential to influence AI importance and use, as is the case of tenure and personality traits (e.g., Lybaert 1998b; Pavlatos and Kostakis 2018; Zor et al. 2019). For instance, Lybaert (1998b) points out other factors that influence AI use by managers, such as the desire to make the company evolve and grow, or experience and familiarity with the industry in which they

operate. More inexperienced and pessimistic managers tend to seek help from outside consultants to obtain the data they need (Lybaert 1998a, 1998b). In turn, Gouveia et al. (2015) state that stronger and more experienced managers value AI more, making greater demands on accountants to obtain the information they need. This apparent contradiction in the studies' conclusions reinforces the idea that further studies on these issues are needed. In this study, it is assumed that more experienced managers attach greater importance to AI because they better understand the potential of AI to support their work. Therefore, the following research hypotheses are formulated:

Hypothesis 2a. *More experienced decision-makers attribute greater importance to AI.*

Hypothesis 2b. *More experienced decision-makers resort less to external consultants.*

2.3. Companies' Characteristics and Accounting Information

In addition to the decision-makers' characteristics, the organization itself may have particularities that condition AI use. The literature often emphasizes the companies' size as a conditioning factor in AI use. The larger the company, the greater the use of this source of information (Benjaoran 2009; Cassia et al. 2005; Davila 2005; Elhamma 2012; Gouveia et al. 2015; Holmes and Des 1988; López and Hiebl 2015; Lybaert 1998b). Typically, the increase in the organization's size provides a greater number of variables to manage and control, making decision-making more complex. Thus, managers tend to look for more and better sources of information to support them in the decision-making processes.

Companies' seniority may also influence AI use (e.g., Armitage et al. 2016; Davila 2005; Gouveia et al. 2015; López and Hiebl 2015). It seems that more-established companies make greater use of AI than younger companies. As companies mature and grow, they have more resources and their information needs to coordinate activities and communicate across the organization increase (Armitage et al. 2016). According to Gouveia et al. (2015), companies with more than five years of activity attribute more importance to AI than younger companies. This factor may be directly related to the managers' characteristics, since the same authors state that more inexperienced managers undervalue AI.

Hence, taking into account the seniority's influence and the companies' size in AI use, the following research hypotheses are proposed:

Hypothesis 3a. *Larger-sized SMEs use more AI.*

Hypothesis 3b. *SMEs with more years of activity use more AI.*

Another important factor is associated with the companies' financial condition. Lybaert (1998a) concluded that most SMEs do not possess the needed resources, such as knowledge, money, and time, to make adequate use of the information they have. SMEs face a greater shortage of resources, and this may be one reason for the non-use of AI (Benjaoran 2009). Companies with greater financial availability are more likely to obtain the needed information (Lybaert 1998b). Some managers even acknowledge that they avoid asking the accountant for additional information for fear of the associated costs (Marriott and Marriott 2000).

In addition, many SMEs are family businesses where the managers are usually the founders and owners and, not infrequently, their employees are members of the same family, establishing family businesses. In these companies, financial information is often undervalued, and the decisions made are based on emotions to the detriment of economic arguments (Hiebl 2012; López and Hiebl 2015; Lutz and Schraml 2010, 2012). The introduction of accounting practices and AI use in family businesses depends on the owners and the owners' perceived competence of those that propose such accounting practices (Huerta et al. 2017).

Literature suggests several criteria to define a family business and there is no consensus among authors (Poutziouris et al. 2006; Songini et al. 2013). Handler (1989) even states that

“defining the family firm is the first and most obvious challenge facing family business researchers” (p. 258). According to the Portuguese Family Business Association (PFBA), family businesses are those in which the family has control in terms of the management bodies’ appointment and some of its members participate and work in the company. This will be the definition adopted in this study.

In this context, the following research hypothesis is formulated:

Hypothesis 4. *Family SMEs use AI less than non-family firms.*

The companies’ activity sector also influences the use of AI. AI is used more frequently in the secondary sector, with some companies in the industrial sector using information generated not only by financial accounting but also by cost accounting and the latter being mainly produced internally (Gouveia et al. 2015; Holmes and Des 1988; Marriott and Marriott 2000). Accordingly, the following research hypothesis is proposed:

Hypothesis 5. *Industrial SMEs use AI more than other activity sectors’ SMEs.*

2.4. Accounting Services’ Characteristics and Accounting Information

In addition to decision-makers’ and companies’ characteristics, there are other factors that condition AI use. The literature often highlights the way information is disclosed and the type of accounting service that companies have as important variables to explain this issue. In fact, the way AI is communicated to managers can condition its use. Thus, to understand the AI importance for management, it is necessary to understand which methods of communication are used by managers (Hall 2010). The literature reports that managers have a strong preference for verbal communication, prioritizing contact with people in informal meetings and discussions (Alves 2004; Hales 1986; Hall 2010; Mckinnon and Bruns 1992). However, despite the importance of verbal communication, much of the AI is transmitted to the managers in a traditional way, that is, through written documents and reports.

Many SMEs use outsourced accounting services (e.g., Blackburn et al. 2018; Gouveia et al. 2015; Husin and Ibrahim 2014). The literature has revealed that there is a significant difference in AI use when it is produced internally rather than externally through the outsourcing of accounting services. Companies that produce accounting internally tend to use more AI (Holmes and Des 1988). According to Nunes and Serrasqueiro (2004), companies that resort more to AI have an accounting service within the company. Likewise, companies that make less use of it outsource external accounting services. The literature also reports that when company accounting is outsourced, the average level of academic education of the manager is lower and the manager will have greater difficulties in analyzing and interpreting the various financial statements and accounting reports.

There are companies that resort to outsourcing and use financial information to support management. However, in most of these cases, AI is not solicited from the accountant and is produced internally (Gouveia et al. 2015; Holmes and Des 1988). According to Blackburn et al. (2018) and Holmes and Des (1988), most of the information requested by SMEs managers is intended to fulfil legal and tax obligations. This reveals a lack of knowledge about the true importance of the information that accounting can provide managers. Marriott and Marriott (2000) concluded that although many managers did not understand the information in the financial statements, they never met with the accountant to analyze annual accounts. Despite SMEs owners and managers using some external advisors and resorting to accountants for compliance services, most do not use these advisors additionally as a source of business advice (Blackburn et al. 2018). In some cases, this can result from the lower perceived competence of the external accountant (Carey and Tanewski 2016).

The issue of how often information is available can also be raised. AI use is greater in companies with higher tax requirements (monthly accountability) (Nunes and Serrasqueiro

2004). This may be due to the companies' size, as mentioned above, but also due to the need for more frequent data processing and disclosure. On the other hand, as suggested by Jawabreh et al. (2012), sometimes managers show uncertainty about the reliability of the information provided by accounting services, and instead prefer to develop their own sources of information and produce their own information. Based on the discussion above, the following research hypothesis is proposed:

Hypothesis 6. *SMEs that resort to outsourced accounting services use less AI.*

3. Methodology

A quantitative approach was used to achieve the research purposes (e.g., Cooper and Schindler 2014; Smith 2003), and a questionnaire survey was employed to collect data, as this instrument allows for reaching many respondents (Smith 2003; Stockemer 2019). The questionnaire survey was developed through a web-based platform (Google Forms) and was sent to companies by e-mail through a link placed in the collaboration request.

The questionnaire survey was structured into three distinct parts to collect information on (i) companies' characteristics, (ii) managers' and employees' characteristics, and (iii) the use of information sources and the decision-making process. To reach this goal, the questionnaire included a total of 32 questions. Regarding the use of information sources, mostly AI, managers/entrepreneurs were asked to indicate the degree of importance they attribute to AI for different purposes and the frequency of use of AI considering progressive scales of five levels, as described in the next section.

The companies surveyed were selected using a database provided by Informa D&B, which belongs to the Dun and Bradstreet Worldwide Network, containing data from 1000 Portuguese SMEs from all over the country. All activity sectors were considered, with the exception of accounting, auditing and tax consulting firms, as "their own opinion" could influence the results (Gouveia et al. 2015).

The questionnaires were addressed to managers and owners and 60 valid answers were obtained, corresponding to a 6.00% response rate. This rate, when compared with the responses rates obtained by other authors, can be considered low (Boyd and Cox 2002; Dyt and Halabi 2007; Holmes and Des 1988; İbicioğlu et al. 2010; Jawabreh et al. 2012; Lybaert 1998a, 1998b; Tout et al. 2014). Nevertheless, the number of observations lies within the normal parameters of this type of study (López and Hiebl 2015; Shields and Shelleman 2016). Low response rates are one of the disadvantages of obtaining data through a questionnaire survey, namely when the target population consists of SMEs. However, despite all of the associated difficulties, this continues to be a widely used methodology (Newby et al. 2003).

Data processing was performed using IBM SPSS Statistics 27. To evaluate the scales' internal consistency, Cronbach's alpha test was applied (Pestana and Gageiro 2014), hence, we verified a good internal consistency (Cooper and Schindler 2014; Smith 2003). The Kolmogorov-Smirnov test ($n > 50$) was also applied to ascertain the sample's normality, concluding that it does not follow a normal distribution. Consequently, for hypothesis testing, we resorted to descriptive statistics and non-parametric statistical tests, namely the Mann-Whitney U test in the case of two independent samples, and the Kruskal-Wallis test in the case of three or more independent samples (Pestana and Gageiro 2014; Stockemer 2019). A significance level of 0.05 (p -value < 0.05) was considered, that is, a confidence level of 95.00%.

4. Results and Discussion

This section comprises two main parts. First, the sample characterization is presented. Second, the constraints on AI use are examined and the hypotheses developed in Section 2 are tested.

4.1. Sample Characterisation

The data for this study are the result of empirical research on a sample of Portuguese SMEs. We use survey data to test our hypotheses. The questionnaire survey employed contained several questions that aimed to characterize the sample of companies surveyed. Table 1 summarizes the information collected.

Table 1. Sample characteristics.

Description	Frequency (%)
Geographical localization (district):	
Oporto	12 (21.00)
Lisbon	10 (16.67)
Aveiro	6 (10.00)
Other	32 (53.33)
Legal form:	
Limited liability company	32 (53.33)
Corporations	25 (41.67)
Others	3 (5.00)
Company age (years since founding):	
Up to 25 years	23 (38.33)
More than 25 years	27 (45.00)
No response	10 (16.67)
Industry sector:	
Industrial	19 (31.67)
Non-industrial	35 (58.33)
No response	6 (10.00)
Size:	
Microenterprise	23 (38.33)
Small enterprise	20 (33.33)
Medium-sized enterprise	14 (23.33)
No response	3 (5.00)
Size (number of employees):	
1–9	11 (18.33)
10–49	34 (56.67)
50–249	15 (25.00)
Family and non-family business:	
Family company	31 (51.67)
Non-family company	29 (48.33)

As shown, concerning geographical localization, most of the companies are located in Oporto (20.00%), Lisbon (16.67%), and Aveiro (10.00%) districts. As for the legal form, there is a predominance of limited liability companies (53.33%) and corporations (41.67%). The remaining 5.00% corresponds to other legal forms.

The companies surveyed are, on average, 31 years old, with the most recent company having five years of activity and the oldest 88. Based on the information provided (Table 1), we infer that 38.33% of the companies have up to 25 years of activity and 45.00% have over 25 years.

Regarding the companies' activities included in the sample, there is an enormous dispersion of SMEs per different activity sectors. The following may be highlighted as more representative: (i) wholesale trade (including agents) other than motor vehicles and motorcycles (25.00%); (ii) retail trade, except motor vehicles and motorcycles (10.00%); (iii) food industries (8.30%); (iv) specialized construction activities (5.00%). Based on the Portuguese Classification of Economic Activities and previous studies (e.g., [Gouveia et al. 2015](#); [Holmes and Des 1988](#); [Marriott and Marriott 2000](#)), the companies were classified as industrial and non-industrial. As can be seen in Table 1, although a significant portion is industrial companies (31.67%), most of the companies surveyed are non-industrial (58.33%).

Regarding SMEs’ size, companies are divided into three categories: 38.33% are micro-enterprises, 33.33% are small enterprises, and 23.33% are medium-sized enterprises (Table 1). The companies surveyed have, on average, 53 employees, with a minimum number of 3 and a maximum number of 249 employees. Table 1 shows that most companies (56.67%) have between 10 and 49 employees.

As far as the companies’ classification as family or non-family businesses is concerned, using the PFBA’s definition, the majority (51.67%) of the companies surveyed is familial (Table 1). Regarding the positions occupied by family members, although they vary greatly, the positions of advisory management, financial management, and commercial management are the most frequent.

As far as capital ownership is concerned, and based on the analysis performed, data show that there is a single owner in 25.00% of the surveyed companies, two owners in 35.00% of the companies, and only 20.00% of the companies claim to have four or more owners. Regarding the existence of hired managers, 18.33% of the companies admit that they have none, 26.67% have only one, and 15% of the companies have four or more contracted managers. Finally, 16.66% of the companies admit other situations, such as shareholding management companies, lawyers, and shopkeepers.

Regarding the respondents’ characteristics, the results indicate that of the total of 60 respondents, 53.33% are contracted managers and 38.33% are owners. The remaining 8.34% correspond to other employees, such as administrative workers and operational workers, among others. Most respondents have an educational background in management and related areas (71.67%). As for academic education, 45.00% have a degree, and 25.00% have a post-graduation, master, and/or doctoral degree. One of the respondents admits that his/her initial education (degree) is in an area other than accounting and related, though he/she has subsequent education (postgraduate, master, and doctoral degrees) in the financial area. The respondents have an average of 16 years (15.52%) of experience in management positions; the least experienced interviewee has been in management positions for only one year and the most experienced for forty years.

4.2. Constraints on Accounting Information Use

This subsection contains four parts. First, the importance attributed to AI and its use is analyzed. Then, the influence of decision-makers’, companies’, and accounting services’ characteristics on AI use is presented and discussed.

4.2.1. Importance Attributed to AI and Its Use

As mentioned previously, this study aimed to identify which factors influence the importance attributed to AI and that condition its use by SMEs managers. For this, six hypotheses were formulated. To test these hypotheses, it was investigated the influence of decision-makers’ (education, experience), companies’ (size, industry), and accounting services’ (type of service) characteristics on the importance and use of AI by SMEs.

Managers were asked to indicate the degree of importance they attribute to AI. Specifically, they were asked to evaluate the degree of importance attributed to AI for different purposes using a progressive scale of five levels, with 1 being “not important at all” and 5 “very important”. Table 2 synthesizes the information collected.

Table 2. AI importance by purpose.

Purpose	n	Mean	Standard Deviation
Performance evaluation	58	4.55	0.862
Compliance with tax obligations	58	4.52	0.883
Support decision-making	58	4.34	1.069
To banking entities	58	4.03	1.008
To other stakeholders (e.g., employees, customers, suppliers, and investors)	57	3.54	1.135

The results show that managers attribute great importance to AI for all purposes presented. Nevertheless, AI is considered more important when it is intended for performance evaluations. In turn, AI is considered less important when it is intended for other stakeholders, such as employees, customers, suppliers, and investors, among others.

We also analyzed the importance attributed to AI to make different types of decisions. To accomplish this goal, four types of decisions were used (Mintzberg et al. 1976; Naranjo-Gil and Hartmann 2006). Managers were asked to evaluate the importance attributed to AI for each type of decision using a progressive scale of five levels, with 1 being “not important at all” and 5 “very important”. Table 3 summarizes the information gathered.

Table 3. AI importance by type of decision.

Type of Decision	n	Mean	Standard Deviation
Strategic decisions	56	4.20	0.980
Decisions regarding resource allocation	56	3.98	0.981
Decisions related to the control of goals achievement and performance evaluation	56	3.96	0.990
Operational decisions made daily	56	3.32	1.237

It appears that AI is seen to be important for all types of decisions presented but is more important for strategic decisions. AI is the basis for supporting managers in making appropriate decisions, defining strategic goals, allocating resources, orienting operations on a regular basis, and monitoring goals achievement (Thuan et al. 2022).

As for the frequency of AI use, several accounting documents were indicated. The respondents were asked to indicate their frequency of use based on a progressive scale of five levels, where 1 corresponds to “never” and 5 to “monthly”. Table 4 summarizes the information collected.

Table 4. Frequency of use of accounting documents.

Accounting Document	n	Mean	Standard Deviation
Account statements	56	4.61	0.802
Trial balance	56	4.54	0.709
Profit and loss account	56	4.27	0.646
Other documents	56	4.07	1.412
Balance sheet	56	3.95	0.789

The results show that all accounting documents are used with some frequency. All documents submitted have averages above 2.50, which means that most companies use these documents more than once a year. Among the most frequently used documents, the account statements (4.61) and the trial balance (4.54) are highlighted.

4.2.2. Decision-Makers’ Characteristics and Accounting Information

Through Hypotheses 1a and 1b, we intended to analyze the influence of the level and type of decision-maker education on the importance attributed to AI. First, two distinct levels of “basic and secondary education” and “higher education” were considered and, to test hypothesis 1a, the Mann-Whitney’s U-test was performed. The results show that the importance attributed to AI for all the purposes considered (Table 2) does not vary significantly with the education level of the decision-maker. However, statistically, significant differences were found when the decision-maker’s level of education was related to the importance attributed to AI in each of the different types of decisions (Table 3). Thus, there were statistically significant differences in the AI use in strategic decisions (Mann-Whitney Value = 194.00; *p*-value = 0.024). That is, decision-makers with higher education levels attribute more importance to AI for strategic decision-making than those with lower levels of education. These results suggest that decision-makers with a higher level of education

assign greater importance to AI, partially supporting Hypothesis 1a. They have the needed capabilities to understand this information (Zor et al. 2019) and recognize that AI is useful for decision-making purposes (Pires et al. 2023). Therefore, the results obtained are consistent with previous literature (e.g., Cassar and Holmes 2003; Gouveia et al. 2015; Holmes and Des 1988; López and Hiebl 2015; Lybaert 1998a, 1998b; Nunes and Serrasqueiro 2004; Thomas and Evanson 1987; Zor et al. 2019).

Second, with Hypothesis 1b, we sought to determine whether decision-makers with an educational background in management and related areas attribute more importance to AI than decision-makers without an educational background in management. Therefore, two groups were created: “decision-makers with an educational background in management” and “decision-makers without an educational background in management”. Regarding the different purposes analyzed (Table 2), the results show that “decision-makers with an educational background in management” assign more importance to AI when it is intended for other interested parties, such as customers, suppliers, and investors (Mann-Whitney Value = 2130.50; p -value = 0.022). Mann-Whitney’s U-test was also applied to verify the existence of significant differences concerning the importance assigned to AI for different types of decisions (Table 3) between managers with and without an educational background in management. No statistically significant results were found. Therefore, our results suggest that there is some evidence indicating that decision-makers with an educational background in management attribute greater importance to AI and, thus, Hypothesis 1b is partially supported. These results are consistent with the literature (e.g., Cassar and Holmes 2003; Gouveia et al. 2015; Holmes and Des 1988; López and Hiebl 2015; Lybaert 1998a, 1998b; McMahon and Holmes 1991; Nunes and Serrasqueiro 2004; Thomas and Evanson 1987).

In addition, we aimed to examine the influence of the decision-makers’ experience on the importance attributed to AI and on subcontracting, or not, external consultants (Hypotheses 2a and 2b). To measure managers’ experience, we create a new variable with three levels based on the respondents’ years of experience: 1 = up to 10 years of experience, 2 = from 11 to 20 years of experience, and 3 = 21 or more years of experience. The results show significant differences in the importance attributed to AI for banking entities, and managers with 11 to 20 years of experience (intermediate level) are those who attribute more importance to AI for this purpose ($X^2 = 7.096$; p -value = 0.029).

Regarding the importance attributed to AI for different types of decisions, no statistically significant differences were found. In this sense, although there are some statistically significant differences, more experienced decision-makers are not those who attribute more importance to AI. Decision-makers with an intermediate level of experience are those who attribute more importance to AI, therefore, Hypothesis 2a is not supported by the results of this study. This is a divergence point from the literature, and some of the researchers who have studied the influence of managers’ experience on AI have also come to different conclusions. For instance, Lybaert (1998a, 1998b) concluded that the most inexperienced managers tend to seek more support in AI, contrary to Gouveia et al. (2015) who state that the most experienced managers are those who value AI the most.

We also sought to verify whether decision-makers’ experience influences subcontracting external consultants as posited in Hypothesis 2b. The results show no statistically significant differences between subcontracting external consultants and the decision-makers’ experience. Therefore, Hypothesis 2b was not supported.

4.2.3. SMEs’ Characteristics and Accounting Information

In addition to decision-makers’ characteristics, we intended to investigate the potential influence of SMEs’ characteristics on AI use. The first factors examined were the companies’ size and age (Hypotheses 3a and 3b). To test the respective hypotheses, the variable “frequency of use/analysis” was created by adding the averages of use/analysis of the documents presented above (see Table 4). Additionally, the documents’ use was also analyzed individually. The results show statistically significant differences in AI use

between SMEs of different sizes ($X^2 = 12.530$; p -value = 0.02). Medium-sized enterprises use AI more than small and microenterprises. Based on these findings, it was possible to validate Hypothesis 3a: Larger SMEs make greater use of AI. These results are consistent with previous literature (e.g., [Benjaoran 2009](#); [Cassia et al. 2005](#); [Holmes and Des 1988](#); [López and Hiebl 2015](#); [Lutz and Schraml 2010, 2012](#); [Lybaert 1998a, 1998b](#)). Analyzing individually each document presented in Table 4, it can be observed that the documents where there is a difference in use, according to the size of the companies, are the profit and loss account ($X^2 = 14.095$; p -value = 0.001) and the balance sheet ($X^2 = 11.074$; p -value = 0.004), with the medium-sized companies using them more.

Another factor that was analyzed was SMEs' number of years since founding. In order to test this variable's influence on AI use, the variable "frequency of use/analysis" was used again. The data show that there are no statistical differences. Although some authors have shown that companies with more years of activity tend to make greater use of AI ([Davila 2005](#); [Gouveia et al. 2015](#); [López and Hiebl 2015](#)), our results do not allow us to confirm Hypothesis 3b. Similarly, recently [Ruiz and Collazzo \(2021\)](#) have not found any significant relationship between the use of AI and the age of the companies.

This study also sought to explore potential differences in AI use between family SMEs and non-family SMEs (Hypothesis 4). Likewise, we intended to analyze differences between industrial and non-industrial SMEs about their AI use (Hypothesis 5). The Mann-Whitney's U-test was carried out using the variable "frequency of use/analysis" created previously. Both the tests performed for Hypotheses 4 and 5 did not produce results that allow us to state that there are statistically significant differences in the use of AI. Therefore, both Hypotheses 4 and 5 were rejected.

Although some authors have reached different conclusions, the literature suggests that family SMEs tend to use AI less than non-family SMEs ([Hiebl 2012](#); [López and Hiebl 2015](#); [Lutz and Schraml 2010, 2012](#); [Lybaert 1998b](#); [Tout et al. 2014](#)). Concerning the activity sector, our results suggest that industrial SMEs tend to use more AI than companies in other activity sectors ([Gouveia et al. 2015](#); [Holmes and Des 1988](#); [Marriott and Marriott 2000](#)). It should be noted, however, that the concept of a family business is complex, and, in this study, only the number of employees with a kinship degree to the manager was considered as the criterion for the definition of a family business, which may bias the results.

4.2.4. Accounting Services' Characteristics and Accounting Information

Finally, we intended to examine the potential influence of outsourcing accounting services on AI use (Hypothesis 6). For this purpose, the variable "frequency of use/analysis" was used once more. The results show that there are statistically significant differences between companies with in-house accounting and companies with outsourced accounting services concerning AI use (Mann-Whitney Value = 126.00; p -value = 0.000). Therefore, we conclude that companies with in-house accounting use AI more frequently. These results allow us to confirm Hypothesis 6 and are consistent with previous literature ([Gouveia et al. 2015](#); [Holmes and Des 1988](#); [Nunes and Serrasqueiro 2004](#)).

5. Conclusions

This study sought to determine whether the characteristics of decision-makers, companies, and accounting services influence the importance attributed to AI by managers and condition its use in Portuguese SMEs. From the literature review, six hypotheses were developed. Survey data to test the hypotheses were obtained using an online questionnaire survey from 60 SMEs.

Regarding the decision-makers' characteristics, it was found that decision-makers with higher education levels assign more importance to AI than those with lower education levels, mostly at the level of strategic decision-making. We also found that decision-makers with an educational background in management and related areas attribute greater importance to AI. Moreover, decision-makers' experience seems to influence the importance attributed to financial information. The results show that decision-makers with an inter-

mediate level of experience (between 11 and 20 years) assign more importance to AI than others. Hence, we conclude that some experience is needed to value and understand AI. We also noted that all accounting documents presented to the respondents (Table 4) are used with some frequency.

These results show that Portuguese SMEs' decision-makers assign great importance to using AI it for management purposes, although much of the empirical evidence in the literature indicates otherwise. Nevertheless, we still find that some factors condition the use of AI in Portuguese SMEs, such as firm size and the type of accounting service they have (in-house or outsourced). Concerning companies' size, larger SMEs make greater use of AI. With regard to the accounting services, we found that companies with in-house accounting services use AI more frequently.

In short, we conclude that decision-makers' education level, as well as their educational background, influence the importance that managers attribute to AI both in decision-making and for other purposes, such as performance evaluation and compliance with tax obligations, among others. Managers' experience also influences these parameters. Furthermore, we also concluded that smaller SMEs, as well as SMEs that use outsourced accounting services, are those that make less use of AI. Additionally, based on the results achieved, we also conclude that, contrary to previous studies, the companies' size, seniority, and activity, and the type of business (i.e., family and non-family business) do not influence the importance and use of AI. The low response rate and the enormous dispersion of SMEs per different activity sectors may be contributing factors to these results.

The findings of this paper have relevant theoretical and practical implications. That is, they are significant both to scholars and practitioners (e.g., managers and accounting professionals). From the theoretical point of view, this study contributes to the literature concerning the importance and use of AI, specifically in SMEs. On the one hand, this study validates the findings of previous studies about the influence of managers' education level and educational background on the importance they attribute to AI, as well as the influence of companies' size and accounting services on AI. On the other hand, this study challenges the findings of previous studies regarding the influence of managers' experience, companies' industry, and family and non-family companies on the importance and use of AI. Accordingly, further research is needed to investigate these relationships, taking into account also additional factors which can affect them and justify the results achieved.

From the practical point of view, the results of this study reveal that companies need to implement accounting systems that provide accurate and useful information for different purposes. This information should be provided not only in a formal way, mainly for managers with higher levels of education and/or educational background in management and related areas, but also in an informal way for managers with lower levels of education and/or without educational background in management. AI provided in an informal way can be seen as easier to understand and use by managers with lower levels of education and/or without educational background in management and related areas. Moreover, the findings of this study are also relevant for education institutions, in particular, higher education institutions. They represent an opportunity for these institutions which can organize training courses focused on accounting and management issues for managers without educational background in management and related areas.

Inevitably, this study has some limitations that must be considered when interpreting the results obtained. First, a low response rate (6%), although the number of observations (60) is higher than that obtained in most of the micro-enterprises-related studies (López and Hiebl 2015), limits the generalization of the results. Second, the inclusion of SMEs of all dimensions and all activity sectors may have contributed to the failure to achieve some of the expected results. Finally, the use of the questionnaire survey does not allow for asking additional questions to clarify detected situations.

Despite the limitations presented, this study answers many of the questions that have been raised. However, the importance of AI for management support in SMEs and the decisive effect it can have on these companies' survival makes further development of this

subject necessary. Previous literature indicates that AI is often transmitted to managers in a formal way, through financial statements and written reports. This fact may help to explain some of the results obtained in this study, since only managers with higher education levels and management or related educational background will be able to understand and use such information. Inappropriate disclosure, coupled with a lack of understanding, can lead to AI being excluded as a source of information for decision-making purposes. Therefore, we consider it relevant to evaluate the impact of the way AI is transmitted to managers. Similarly, since we verified that there is less use of AI by companies using outsourced accounting services, we consider it useful to assess the quality of the services provided by these companies, not only in terms of compliance with tax obligations but also in terms of the support provided. In addition, we suggest the development of a more in-depth study on AI use in family SMEs and the implementation of similar studies using larger samples. Future research should also investigate how personality traits and competencies as well as accountants influence the importance and use of AI (Kroon and Alves 2023; Kroon et al. 2021; Zor et al. 2019). Finally, future research should explore how SMEs report and use non-financial information, given its usefulness to complement financial information in decision-making (Pires and Alves 2022) and positive influence on organizations' success (Monteiro et al. 2022). Future research should also explore non-financial reporting features in SMEs, as is the case of sustainability reporting, considering its relevance for the legitimacy and reputation of the organizations (Rodríguez-Gutiérrez et al. 2021). Research on these issues in SMEs is still very scarce (Dinh et al. 2023).

Author Contributions: Conceptualization, A.C.S., R.P. and M.-C.A.; methodology, A.C.S., R.P. and M.-C.A.; software, A.C.S.; validation, A.C.S., R.P. and M.-C.A.; formal analysis, A.C.S.; investigation, A.C.S.; resources, A.C.S., R.P. and M.-C.A.; data curation, A.C.S., R.P. and M.-C.A.; writing—original draft preparation, A.C.S.; writing—review and editing, A.C.S., R.P. and M.-C.A.; visualization, A.C.S.; supervision, M.-C.A.; project administration, A.C.S., R.P. and M.-C.A.; funding acquisition, M.-C.A. All authors have read and agreed to the published version of the manuscript.

Funding: This research was supported by National Funds through the FCT (Portuguese Foundation for Science and Technology), I.P., within the scope of the project Ref. UIDB/04630/2020.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Albaum, Gerald. 1964. Horizontal information flow: An exploratory study. *Academy of Management* 7: 21–33. [CrossRef]
- Alves, Maria do Céu. 2004. Escolha da informação no sistema de contabilidade de gestão: Estudo nas empresas industriais portuguesas. *Portuguese Journal of Management Studies* 9: 127–48.
- Alves, Maria do Céu. 2008. A contabilidade nas decisões de gestão dos dirigentes portugueses. *Revista Universo Contábil* 4: 124–37. [CrossRef]
- Aragón-Sánchez, Antonio, and Gregorio Sánchez-Marín. 2005. Strategic orientation, management characteristics, and performance: A study of Spanish SMEs. *Journal of Small Business Management* 43: 287–308. [CrossRef]
- Armitage, Howard M., Alan Webb, and John Glynn. 2016. The use of management accounting techniques by small and medium-sized enterprises: A field study of Canadian and Australian practice. *Accounting Perspectives* 15: 31–69. [CrossRef]
- Ayyagari, Meghana, Thorsten Beck, and Asli Demircug-Kunt. 2007. Small and medium enterprises across the globe. *Small Business Economics* 29: 415–34. [CrossRef]
- Ball, Ray, and Philip Brown. 1968. An empirical evaluation of accounting income numbers. *Journal of Accounting Research* 6: 159–79. [CrossRef]
- Benjaoran, Vacharapoom. 2009. A cost control system development: A collaborative approach for small and medium-sized contractors. *International Journal of Project Management* 27: 270–77. [CrossRef]
- Berrone, Pascual, Hector Gertel, Roberto Giuliadori, Leandra Bernard, and Eugenia Meiners. 2014. Determinants of performance in microenterprises: Preliminary evidence from Argentina. *Journal of Small Business Management* 52: 477–500. [CrossRef]
- Bertolotti, Fabiola, Diego Maria Macri, and Matteo Vignoli. 2019. Strategic alignment matrix: Supporting management coordination in complex organizations. *Journal of Accounting & Organizational Change* 15: 557–79. [CrossRef]

- Blackburn, Robert, Peter Carey, and George Tanewski. 2018. Business advice by accountants to SMEs: Relationships and trust. *Qualitative Research in Accounting & Management* 15: 358–84. [\[CrossRef\]](#)
- Boyd, Lynn H., and James F. Cox. 2002. Optimal decision making using cost accounting information. *International Journal of Production Research* 40: 1879–98. [\[CrossRef\]](#)
- Carey, Peter, and George Tanewski. 2016. The provision of business advice to SMEs by external accountants. *Managerial Auditing Journal* 31: 290–313. [\[CrossRef\]](#)
- Cassar, Gavin, and Scott Holmes. 2003. Capital structure and financing of SMEs: Australian evidence. *Accounting and Finance* 43: 123–47. [\[CrossRef\]](#)
- Cassia, Lucio, Stefano Paleari, and Renato Redondi. 2005. Management accounting systems and organisational structure. *Small Business Economics* 25: 373–91. [\[CrossRef\]](#)
- Cheffi, Walid, and Adel Beldi. 2012. An analysis of managers' use of management accounting. *International Journal of Business* 17: 113–25.
- Cooper, Donald R., and Pamela S. Schindler. 2014. *Business Research Methods*, 12th ed. New York: McGraw-Hill.
- Davila, Tony. 2005. An exploratory study on the emergence of management control systems: Formalizing human resources in small growing firms. *Accounting, Organizations and Society* 30: 223–48. [\[CrossRef\]](#)
- Dinh, Tami, Anna Husmann, and Gaia Melloni. 2023. Corporate sustainability reporting in Europe. A scoping review. *Accounting in Europe* 20: 91–119. [\[CrossRef\]](#)
- Dyt, Robyn, and Abdel K. Halabi. 2007. Empirical evidence examining the accounting information systems and accounting reports of small and micro business in Australia. *Small Enterprise Research* 15: 1–10. [\[CrossRef\]](#)
- Elhamma, Azzouz. 2012. The relationship between firm size, activity based costing and performance: An application on Moroccan enterprises. *Journal of Accounting, Business & Management* 19: 90–102.
- Gouveia, Henrique, Joaquim Fernandes, and Cristina Gonçalves. 2015. A utilidade da contabilidade para os gestores das Microempresas. *Portuguese Journal of Accounting and Management* 16: 77–105.
- Hales, Colin P. 1986. What do managers do? A critical review of the evidence. *Journal of Management Studies* 23: 88–115. [\[CrossRef\]](#)
- Hall, Matthew. 2010. Accounting information and managerial work. *Accounting, Organizations and Society* 35: 301–15. [\[CrossRef\]](#)
- Handler, Wendy C. 1989. Methodological issues and considerations in studying family businesses. *Family Business Review* 2: 257–76. [\[CrossRef\]](#)
- Hiebl, Martin R. W. 2012. Peculiarities of financial management in family firms. *International Business & Economics Research Journal* 11: 315–23. [\[CrossRef\]](#)
- Holmes, Scott, and Nicholls Des. 1988. An analysis of the use of accounting information by Australian small business. *Journal of Small Business Management* 26: 57–68.
- Huerta, Esperanza, Yanira Petrides, and Denise O'Shaughnessy. 2017. Introduction of accounting practices in small family businesses. *Qualitative Research in Accounting & Management* 14: 111–36. [\[CrossRef\]](#)
- Husin, Mohd Azian, and Mohamed Dahlan Ibrahim. 2014. The role of accounting services and impact on small medium enterprises (SMEs) performance in manufacturing sector from east coast region of Malaysia: A conceptual paper. *Procedia—Social and Behavioral Sciences* 115: 54–67. [\[CrossRef\]](#)
- İbicioğlu, Hasan, Turan Kocabiyik, and Hüseyin Dalğar. 2010. Financial statement utilization during decision making process in SMEs: A comparative study on European and Turkish managers. *Marmara Üniversitesi İktisadi ve İdari Bilimler Dergisi* 28: 209–26.
- Jawabreh, Omar A. A., Ali Mahmoud, and Abdallah Alrabei. 2012. The impact of accounting information system in planning, controlling and decision-making processes in Jodhpur hotels. *Asian Journal of Finance & Accounting* 4: 173–88. [\[CrossRef\]](#)
- Krawczyk, Patrycja. 2021. Non-financial reporting—Standardization options for SME sector. *Journal of Risk and Financial Management* 14: 417. [\[CrossRef\]](#)
- Kroon, Nanja, and Maria do Ceu Alves. 2023. Fifteen years of accounting professional's competencies supply and demand: Evidencing actors, competency assessment strategies, and 'top three' competencies. *Administrative Sciences* 13: 70. [\[CrossRef\]](#)
- Kroon, Nanja, Maria do Ceu Alves, and Isabel Martins. 2021. The impacts of emerging technologies on accountants' role and skills: Connecting to open innovation—A systematic literature review. *Journal of Open Innovation: Technology, Market and Complexity* 7: 103. [\[CrossRef\]](#)
- La Porta, Rafael, Florencio Lopez-De-Silanes, and Andrei Shleifer. 1999. Corporate ownership around the world. *The Journal of Finance* 54: 471–517. [\[CrossRef\]](#)
- Libby, Robert. 1975. Accounting ratios and the prediction of failure: Some behavioral evidence. *Journal of Accounting Research* 13: 150–61. [\[CrossRef\]](#)
- López, Oro Lavia, and Martin R. W. Hiebl. 2015. Management accounting in small and medium-sized enterprises: Current knowledge and avenues for further research. *Journal of Management Accounting Research* 27: 81–119. [\[CrossRef\]](#)
- Lutz, Eva, and Stephanie Schraml. 2010. Loss of control vs risk reduction—Decision factors for hiring non-family CFOs in family firms. *Center for Entrepreneurial and Financial Studies* 4: 1–22. [\[CrossRef\]](#)
- Lutz, Eva, and Stephanie Schraml. 2012. Family firms: Should they hire an outside CFO? *Journal of Business Strategy* 33: 39–44. [\[CrossRef\]](#)
- Lybaert, Nadine. 1998a. The association between information gathering and success in industrial SMEs: The case of Belgium. *Entrepreneurship & Regional Development: An International Journal* 10: 335–51. [\[CrossRef\]](#)

- Lybaert, Nadine. 1998b. The information use in a SME: Its importance and some elements of influence. *Small Business Economics* 10: 171–91. [\[CrossRef\]](#)
- Marriott, Neil, and Pru Marriott. 2000. Professional accountants and the development of a management accounting service for the small firm: Barriers and possibilities. *Management Accounting Research* 11: 475–92. [\[CrossRef\]](#)
- Mckinnon, Sharon M., and William J. Bruns. 1992. *How Managers Get the Information They Really Need: The Information Mosaic*. Harvard: Harvard Business School Press.
- McMahon, Richard G. P., and Scott Holmes. 1991. Small business financial practices in North America: A literature review. *Journal of Small Business Management* 29: 19–29.
- Mintzberg, Henry, Duru Raisinghani, and André Theoret. 1976. The structure of “unstructured” decision processes. *Administrative Science Quarterly* 21: 246–75. [\[CrossRef\]](#)
- Monteiro, Albertina Paula, Catarina Cepêda, Amélia Silva, Eduardo Leite, and Élvio Camanho. 2021. The role of accounting information in decision-making and economic performance: The Portuguese accountants’ perspective. *Entrepreneurship and Sustainability Issues* 9: 30. [\[CrossRef\]](#)
- Monteiro, Albertina Paula, Joana Vale, Eduardo Leite, Marcin Lis, and Joanna Kurowska-Pysz. 2022. The impact of information systems and non-financial information on company success. *International Journal of Accounting Information Systems* 45: 100557. [\[CrossRef\]](#)
- Naranjo-Gil, David, and Frank Hartmann. 2006. How top management teams use management accounting systems to implement strategy. *Journal of Management Accounting Research* 18: 21–53. [\[CrossRef\]](#)
- Newby, Rick, John Watson, and David Woodliff. 2003. SME survey methodology: Response rates, data quality, and cost effectiveness. *Entrepreneurship: Theory and Practice* 28: 163–72. [\[CrossRef\]](#)
- Nunes, Leonor, and Zélia Serrasqueiro. 2004. A informação contabilística nas decisões financeiras das pequenas empresas. *Revista Contabilidade & Finanças* 15: 87–96. [\[CrossRef\]](#)
- Ortiz-Martínez, Esther, and Salvador Marín-Hernández. 2022. European SMEs and non-financial information on sustainability. *International Journal of Sustainable Development & World Ecology* 29: 112–24. [\[CrossRef\]](#)
- Pavlatos, Odysseas, and Xara Kostakis. 2018. The impact of top management team characteristics and historical performance on strategic management accounting. *Journal of Accounting & Organizational Change* 14: 455–72. [\[CrossRef\]](#)
- Pedroso, Elsa, and Carlos F. Gomes. 2020. The effectiveness of management accounting systems in SMEs: A multidimensional measurement approach. *Journal of Applied Accounting Research* 21: 497–515. [\[CrossRef\]](#)
- Pestana, Maria Helena, and João Nunes Gageiro. 2014. *Análise de Dados para Ciências Sociais: A Complementaridade do SPSS*, 6th ed. Lisboa: Edições Sílabo.
- Pires, Rui, and Maria-Ceu G. Alves. 2022. The impact of environmental uncertainty on accounting information relevance and performance: A contingency approach. *Economies* 10: 211. [\[CrossRef\]](#)
- Pires, Rui, Maria-Ceu Gaspar Alves, and Catarina Fernandes. 2023. The usefulness of accounting information and management accounting practices under environmental uncertainty. *Journal of Risk and Financial Management* 26: 102. [\[CrossRef\]](#)
- Poutziouris, Panikkos Zata, Kosmas X. Smyrniotis, and Sabine B. Klein. 2006. *Handbook of Research on Family Business*. Cheltenham: Edward Elgar Publishing Limited.
- Prohorovs, Anatolijs. 2022. Russia’s war in Ukraine: Consequences for European countries’ businesses and economies. *Journal of Risk and Financial Management* 15: 295. [\[CrossRef\]](#)
- Rodríguez-Gutiérrez, Pablo, M. Dolores Guerrero-Baena, Mercedes Luque-Vílchez, and Francisca Castilla-Polo. 2021. An approach to using the best-worst method for supporting sustainability reporting decision-making in SMEs. *Journal of Environmental Planning and Management* 64: 2618–40. [\[CrossRef\]](#)
- Ruiz, Tonatiuh Najera, and Pablo Collazzo. 2021. Management accounting use in micro and small enterprises. *Qualitative Research in Accounting & Management* 18: 84–101. [\[CrossRef\]](#)
- Salles, Maryse. 2006. Decision making in SMEs and information requirements for competitive intelligence. *Production Planning & Control* 17: 229–37. [\[CrossRef\]](#)
- Senftlechner, Daniel, and Martin R. W. Hiebl. 2015. Management accounting and management control in family businesses: Past accomplishments and future opportunities. *Journal of Accounting & Organizational Change* 11: 573–606. [\[CrossRef\]](#)
- Shields, Jeff, and Joyce M. Shelleman. 2016. Management accounting systems in micro-SMEs. *The Journal of Applied Management and Entrepreneurship* 21: 19–31. [\[CrossRef\]](#)
- Smith, Malcolm. 2003. *Research Methods in Accounting*. London: Sage Publications.
- Songini, Lucrezia, Luca Gnan, and Teemu Malmi. 2013. The role and impact of accounting in family business. *Journal of Family Business Strategy* 4: 71–83. [\[CrossRef\]](#)
- Stockemer, Daniel. 2019. *Quantitative Methods for the Social Sciences: A Practical Introduction with Examples in SPSS and Stata*. Cham: Springer.
- Thomas, Joseph, and Robert V. Evanson. 1987. An empirical investigation of association between financial ratio use and small business success. *Journal of Business Finance & Accounting* 14: 555–72. [\[CrossRef\]](#)
- Thuan, Phan Quoc, Nguyen Vinh Khuong, Nguyen Duong Cam Anh, Nguyen Thi Xuan Hanh, Vo Huynh Anh Thi, Tieu Ngoc Bao Tram, and Chu Gia Han. 2022. The determinants of the usage of accounting information systems toward operational efficiency in industrial revolution 4.0: Evidence from an emerging economy. *Economies* 10: 83. [\[CrossRef\]](#)

Tout, Samer, Khalil Ghazzawi, Sam El Nesar, and Radwan Choughari. 2014. The major role accountants play in the decision making process. *International Journal of Finance and Accounting* 3: 310–15. [[CrossRef](#)]

Zor, Ummugulsum, Stefan Linder, and Cristoph Endenich. 2019. CEO characteristics and budgeting practices in emerging market SMEs. *Journal of Small Business Management* 57: 658–78. [[CrossRef](#)]

Disclaimer/Publisher’s Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.