

Recent Developments and Trends in Accounting Information Systems

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Abstract

This study examines the relationship between management accounting and integrated information systems by investigating the existing literature on the subject. The current research has been uncovered, classified and interpreted in order to provide an understandable illustration of the findings of previous studies and to show in what aspects more research is required. This paper also provides a new theoretical framework which enables a structured classification of the reviewed literature.

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1. Introduction

Management accounting is thoroughly supported by information systems, which are computer systems used for collecting, storing and processing accounting data (Belfo & Trigo, 2013). However, information systems were initially used in financial accounting, in tasks such as automating journal entries and filling out the general ledger (Brady, Monk, & Wagner, 2001). It was the corporations' need for further using management accounting in 1990's that led to further research in the field of enterprise resource planning (ERP) systems (Nicolaou, 2008). Before that, ERP systems and integrated information systems (IIS) in general were incapable of using information from all the corporations' departments and each department used its own information system (Rom & Rohde, 2006). Various studies on the relationship of management accounting and IIS are concentrated on either Management Accounting or IIS, depending on the point of view of the researchers. However, both research streams have offered a wide body of knowledge that keeps growing. The first step for further research is to comprehend in depth the existing research findings and fully examine the research opportunities of the field (Rom & Rohde, 2006). The aim of our research is to disclose and explain the extant research findings concerning management accounting and IIS and furthermore to locate the inadequate research in specific aspects of the subject and propose new guidelines for further research.

2. Theoretical Framework

The theoretical framework's objective is to track all extant and future research concerning the relationship between management accounting and IIS and present the variables that affect this relationship. It is important to note that the theoretical framework is independent of the paradigm that will be used in the study. Our goal is to trace and discuss theories regarding integrated information systems and management accounting. The literature review contacted based on academic databases, review of accounting and financial journals and conferences. However, some publications did not add new theories, thus they were not included in

this study. Various methods for finding the appropriate literature were used. One of them is the method of triangulation, which seemed to be very useful as it helped to find new relevant publications. Moreover, the literature review was conducted on a concept-centric basis and not an author-centric one. The theoretical framework that follows is based on the concepts mentioned in the literature review. Even though most frameworks do not focus on the interaction of management accounting and IIS but concentrate on each component separately, there are three frameworks that incorporate both components. The first framework is introduced by [Mauldin and Ruchala \(1999\)](#) according to whom an accounting information system (AIS) should be task focused. Furthermore, this framework is centered on four organizational principles, the task – focus, the planning procedure, the contingency planning and the task accomplishment. The second framework was presented by [Dehning and Richardson \(2002\)](#) and it supports that task accomplishment is influenced by the task features. [Hartmann and Vaassen \(2003\)](#) developed the third framework, which consists of different domains. AIS influence in an indirect way the communication domain, which in turn influences the business domain, while in the meantime all the above have an impact on the organizational performance. Therefore, the role of the framework is to offer a “map” of the current studies, so as the research gaps are easily tracked. Hence, a framework is considered successful when it contains all the existing research ([Rom & Rohde, 2006](#)).

3. Literature Review Findings

3.1. Traditional Accounting Information Systems (AIS)

All Accounting Information Systems (AIS) was created to assemble and report crucial financial and non-financial data of the firm with only limitation the lack of further information considering traditional accounting. The next limitation is about the ability of Business Process Management Suite (BPMS) concerning financial and non-financial data that is been collected by the company. BPMS is a suite that executes some kind of checking between the processes in order to gather data for sharing with the only propose to provide help to decision-making units of the firm from one side to the other via alerts and messages ([Trigo, Belfo, & Estébanez, 2016](#)).

A classic AIS system consists of the production cycle which is the actions that happen to convert raw materials and the applied labor to finished goods. All these exchange movements that take place in the production cycle are saved in the internal storage of the AIS. An accounting information system is a program that runs on a computer and identifies the accounting activity via information technology resources ([Fontinelle, 2013](#)). AIS is in charge of the storage and the handling of financial and accounting information that management uses for decision-making. The basic structure of the AIS is composed of three subsystems; 1. Transaction Processing System that is backing operations that happen every day, 2. General Ledger System which is a financial reporting system, and 3. Management Reporting System ([Hall, 2013](#)). The concept of an Information System that serves accounts is commonly part of an ERP system. Compared to that, small and medium companies are of a different approach because they use software for accounting functions that does not provide a complete view of the company. The synthesis of an ERP consists of various modules that assemble information from several transactions that occur all over the company and save them in a centralized database. It is mentioned that some accounting systems are trying to find a way to represent the products revenues and costs, but the reality is that they target more on the reporting aspect. To identify the cost of a product in a specific time of the production there are a set of costs that must be estimated related to the manufacturing process. A specific technique that looks like BPM is ABC costing, but as said by the authors it should be more process-oriented. It is generally accepted that the most important thing those informatics offered, is the lining up of Business and IT which is one the biggest concerns of businesses and technical managers, generally speaking, IT has made it easy for companies and also it helped to enhance their performance and productivity ([Trigo et al., 2016](#)).

3.2. IIS and Management Accounting Tasks

[Rom and Rohde \(2006\)](#) also examined the current research regarding management accounting and IIS and make further research proposals. They followed the extant researches and they created a more understandable theoretical framework. Based on this framework, they classified and presented the reviewed literature in a structured way. According to [Booth, Matolcsy, and Wieder \(2000\)](#) management accounting tasks are divided into three categories: transaction related tasks, reporting tasks, and decision-supportive tasks. Their survey showed that ERP systems are effective when used for transaction tasks, but are not that efficient when used for reporting and decision support tasks. [Fahy and Lynch \(1999\)](#) showed similar findings, indicating that ERP systems help to improve the use of transaction information for strategic management accounting purposes, whereas they cause trouble in decision-supportive tasks. This is not a surprise because enterprises tend to concentrate more on the transaction tasks of management accounting (that ERP systems support more easily) and less on the strategy tasks related to decisions of management accounting. Moreover, ERP systems have not improved the quality of reports, regardless their processing power of huge amounts of data. In conclusion, what matters most because of its challenging aspect is accounting activities. An AIS to function properly has to rely on technical aspects, but also, on the other side other issues should be taken under consideration, this would be the people and other organizational matters ([Belfoo, 2012](#)).

3.3. IIS and Management Accounting Techniques

Furthermore, Rom and Rohde (2006) investigated the relationship between management accounting techniques and IIS; They highlight that Johnson and Kaplan (1987) survey revealed that the business community back then needed new management accounting techniques. As a result, some innovative techniques emerged, such as the balanced scorecard and the activity-based costing. Another management accounting technique is known as open-book accounting. This technique forces the companies to reconfigure the philosophy of their accounting information systems so that they can distribute accounting information with other related companies. The most common way that information systems can process or distribute information is usually via data processing software such as Microsoft Excel. Also, the distribution of accounting information between companies is additionally achieved with the use of integrated information systems (IIS), one of which is ERP (D'Atri, Ferrara, George, & Spagnoletti, 2011).

However, not all techniques were adopted by the companies, mostly due to the difficulty in applying IIS (Chenhall & Langfield-Smith, 1998). However, the IIS provoke changes in management accounting techniques, because IIS' main component, the ERP system, is difficult to change (Davenport, 1998). Companies must be very careful when deciding which IIS they will choose, as they should consider two things: 1) what IIS do their competitors use and 2) the configuration of an IIS can't be altered (Dechow & Mouritsen, 2005). Nevertheless, there are some researchers who support that the IIS can be changed by the management accounting techniques, as the components of IIS are an outcome of those techniques and when the users are familiarized with them they are able to change them (Luft & Shields, 2003). To conclude with, management accounting techniques are not likely to change due to the use of ERP systems but they do change due to the use of other IIS' components.

3.4. IIS and the Role of Accountant

The Management Accountant in a company plays a strategic role which benefits the company in reaching long-term goals by applying management and operational control (Brands & Holtzblatt, 2015). Nielsen (2015) highlights that it is a management accountants' responsibility to promote the company's competitive advantage against other companies, through his capabilities. Today's accountant helps management by estimating the company's performance with the use of internal data and by supplying descriptive reports to answer questions (Nielsen (2015).

Rom and Rohde (2006) conducted a survey in order to examine the relationship between the management accountants and the IIS. What they found out is that in the older days, management accounting was strictly conducted by management accountants but during the recent years, management accounting can be also performed by general managers. On the other hand, management accountants are not only occupied with management accounting, but with general management as well. All of the above are changes that came up as a result of the IIS' use. Management accountants are expected to have a multidisciplinary knowledge and act also as business consultants (Lodh & Gaffikin, 2003). This change was not only noticed because of the ERP implementation, but also due to other components of IIS. The accountants will have to decide whether they want to use the IIS or let the IS professionals take charge of them, having in mind that the IIS' user possess great power but are also obliged to work under great pressure (Markus & Pfeffer, 1983). Consequently, the wide adoption of ERP systems has led to new, hybrid jobs (Caglio, 2003).

3.5. ERP Systems

ERP systems are information systems that are used for the coordination of every resource a company has into custody, from information to functions (Kallunki, Laitinen, & Silvola, 2011). Another capability that an ERP system has, is to integrate transactions of an enterprise into one centralized database storage so that all other peripheral units can fetch the stored data to exploit them (Dechow & Mouritsen, 2005). Earlier studies especially that of Granlund and Malmi (2002) have shown that ERP because of his focus in improving the financial reporting process and not trying to change the physical process has made less impact in management accounting. In order to have an effective and functional ERP system some changes in management accounting must take effect, for instance, the role of management accountant could be also to act as a business consultant who takes charge in order to assist executives and those who have to take decisions (Grabski, Leech, & Sangster, 2009). Moreover, another point of view proposes that management accountants so far with the use of ERP and more computerized information that have in their disposal have the power to act more actively and support the company with a more forward-looking philosophy (Appelbaum, Kogan, Vasarhelyi, & Yan, 2017).

3.5.1. ERP Systems and Management Accounting Techniques

The relation between ERP and management accounting techniques is a topic that has been investigated a lot by researchers. The vast majority of those who investigated this relation conclude that there are no significant changes in management accounting techniques (Scapens & Jazayeri, 2003). Although there were no changes in management accounting techniques all the existing principles were moved to the ERP. Firms that run an ERP system witness no change in their management accounting techniques, also it is said that a company that runs an ERP system is not applied new managerial accounting techniques (Granlund & Malmi,

2002; Scapens & Jazayeri, 2003). The research showed by far that there is no effect on ERP and management accounting systems until (Spathis & Constantinides, 2004) found out there is. What they did is they depended in the positive feedback responses they had in their survey that signified that all the firms that responded in their survey had maximized their non-financial performance measures and revenue analysis at the time when the ERP was functioning. They claimed that their findings were not so important, something that indicates that no changes happened.

3.5.2. ERP Systems and Strategic Control

Most of ERP systems have totally changed the method that data are collected, stored and distributed within a corporation. When an ERP system operates then a lot of issues and challenges arise for the management. The findings of Teittinen, Pellinen, and Järvenpää (2013) amplify these issues and under what circumstances these issues exist. A new strategic control was what the top management hoped for but instead of that, it resulted only in financial accounting based control. The top management saw ERP with enthusiasm characterizing it as a fantastic management tool because it added transparency to the company by adding an easy control to all the firm's units and processes.

More results on ERP systems have seen the light considering their conjunction with management control as firms implement ERP systems. Thereinafter, what is generally accepted is that ERP systems have changed the procedure of data collection and storage of data in firms. The top managers of the firm looked forward to a system that would help the strategic control of the firm, but unfortunately, the challenging environment didn't help so what actually they end up was a system that served only the financial accounting aspects. The middle managers and the people that work in office positions saw the beneficial view of ERP in everyday usage especially data collecting from all the firm's units was an easy and quick task, from an accountant's perspective this system is excellent but all of its excellence relies on its usage (Teittinen et al., 2013).

3.5.3. ERP Systems Contribution

Top managers sought the penetration of ERP positively because finally, they could use it to enhance the strategic control of the company. The research of Teittinen et al. (2013) showed that one of the main advantages of ERP was its transparency, it made the firms' operation transparent. In a study that was conducted by Dechow and Mouritsen (2005) it was clearly mentioned that ERP carried out impossible functions such as collecting financial accounting data from all existing units to provide useful information to the management for proper decision making and issuance of reports that can be comparable. Another advantage mentioned was the execution of the strategic vision by ERP. Reports at that stage can help the strategic control aspect of the management to have a clear view of all functions that happen in the company so they can positively contribute to the company.

One of the biggest objectives that an ERP operator must do when operating an ERP system is to enter correctly the data he has available and of course to proceed with other functions of the ERP it is mandatory to save and backup. If during the phase of data entry mistakes or errors occur when the problem will hit the production. Most of the problems occurred had to be fixed because the system will end up less functional, some functions that need to be fixed are the data entry process and other various ones (Teittinen et al., 2013).

The data entries several times took place days after the manufacturing date causing serious problems because of the mistakes and the wrong entries. The solution to this was that all entries should be done at the same time during the production activities. The ERP system once installed and configured it was very difficult to change or reconfigure, this was basically because the ERP's system depends on hash calculations and plans which when changed ERP can't cope anymore. Practical, most mistakes and errors that the system showed up had to be eradicated, this requires the presence of a single person with the desired knowledge on the system to provide fixes in a daily basis (Teittinen et al., 2013).

3.6. Enterprise Architecture and Enterprise Application Integration

One of ERP's basic functions is the online real-time transaction processing which can transport present-day but also bygone statistics about the company's productivity. Even if ERP systems function best in a real-time mode the problem lies in reporting. A research about ERP systems carried out by project managers of 20 Canadian firms uncovered that only 25% believed that ERP lacks reporting abilities resulting from the incompatibility with the firm's standard way of function. Based on the recommendation of one of the managers that took part in the research, the problem at first is mainly the size of the ERP system and secondly the lack of technical support to fix dysfunctions of the system (Kumar, Maheshwari, & Kumar, 2003).

3.6.1. The Impact of Enterprise Systems on Management Accounting

Vakalofotis, Ballantine, and Wall (2011) published a paper concerning the impact of enterprise systems, such as ERP or business intelligence (BI) on management accounting. They found out that researchers are divided into three categories: a positivist approach, an interpretivist approach and a combination of both. Their conclusions regarding the positivist approach are the following: First, changes related to transactions in management accounting have taken place since the implementation of ERP systems. With ERP, accounting

information is more understandable and accurate and reaches managers more easily. Consequently, management accountants are freed from tasks of minor importance such as collecting information and making provisions and are now capable of concentrating on important tasks concerning decision-making. Second, ERP systems are not efficient enough in making changes in management accounting strategies. In fact, they tend to support more the use of more traditional management accounting techniques (e.g. breakeven point, standard/marginal costing, variance analysis, etc.) than the sophisticated ones (e.g. activity-based costing, benchmarking, balanced-scorecard, etc.). Nevertheless, more research is needed to discover which independent variables influence ERP's impact on management accounting. Vakafiotis et al. imply that two possible variables are the use of a business intelligence system as an ERP superstructure and the degree of managers' sophistication.

The interpretivist approach, just like the positivist approach, shows that ERP systems provoke changes concerning transactions in management accounting, e.g. automating information processes. Because of that, management accountants might lose some control of their usual tasks. Moreover, the interpretivist approach agrees with the positivist one regarding the inability of ERP systems to contribute to strategy changes in management accounting. In fact, ERP systems encourage more the implementation of traditional accounting techniques than the sophisticated ones. In addition, ERP systems are inadequate in improving reporting so, as a result, reporting is carried out with spreadsheets instead. Some independent variables that this approach uses are the management accountants' contribution in ERP implementation (Grabski et al., 2009) and the CFO's importance in ERP implementation (Caglio, 2003). Those independent variables influence the degree of change in management accounting (El Sayed, 2006). Another independent variable that might affect management accounting changes due to ERP use is the extent of management accountants' computer literacy. According to Caglio (2003), management accountants are obliged not only to analyze the information derived from the ERP but also to maintain and develop them. El Sayed (2006) also pointed out the importance of acquiring IT skills for management accountants, as by doing so they are able to promote themselves as experts in implementing ERP systems. Lastly, the degree of sophistication of ERP systems is another independent variable according to the interpretivist researchers. Granlunds (2007) suggested that when management accountants consider ERP too sophisticated, the benefits of management accounting concerning transactions were little. Even though efforts were made to use complex accounting techniques, ERP systems were not able to support those techniques in an effective way due to the sophistication of their architecture.

The combining approach of positivism and interpretivism is introduced by Newman and Westrup (2005) who found that management accountants consider positive the change that ERP implementation causes. Moreover, the advent of ERP systems has made management accountants concentrate more on the information analysis in order to use it for making decisions (Jean-Baptiste, 2009). That is the key factor that converts management accountants into business advisors. Moreover, Newman and Westrup (2005) discovered that due to ERP management accountants lose some control of their usual tasks, but at the same time, they gain total control of the ERP systems.

From another point of view, the findings that saw the light by Gullkvist (2013) have contributed positively to management accounting in a way that helped the development of this accounting sector. The researcher examined some changes that occurred in data quality, information quality and the overall effectiveness and how efficient an accountant can be when ERP systems are implemented. The outcome of testing showed that firms that run ERP systems changed the way their management accounting tasks are applied. A functional ERP system that works successfully has a statistically positive effect according to the changes in management accounting usage. A new set of findings are recognized by Sangster, Leech, and Grabski (2009) these are present when an ERP system is implemented, these enhancements are added data quality, advanced decision-making, and different accountant obligations. Granlund and Malmi (2002) stated that the outcome of their research pointed that one of the most important reason that management accounting techniques change is the time that an ERP is adopted. Despite that point of view, most of the changes happen in an 8-year horizon right after the implementation of the ERP system. Those that fall behind in time considering ERP implementation witness much bigger changes in management accounting techniques than those that implemented ERP more recently. Wieder, Ossimitz, and Chamoni (2012) found that a relationship between BI tool and data quality exists highlighting that the use of BI tools can pose direct or indirect influence on the practices of management accounting. This means that BI tools could result in specific issues with no logical solution. Nevertheless, a possible solution could be the diversity on the level of integration among BI tools and ERP systems.

3.7. Management Accounting Changes under the Influence of SAP

Malinić and Todorović (2012) made a study on the ERP and more specifically the SAP (one of the best and most well-known ERP systems) impact on management accounting. They came to conclusions concerning the time that a management accountant consumes for traditional activities, for analyzing data, for measuring the performance and for reporting. Moreover, they drew conclusions about the changes in the profession of management accountants. Some of the variables they used in their model are Target Costing, ABC, Non-financial key performance indicators, BSC, and others. They examined the impact of SAP in particular because

it is a widely used software and specifically in Serbia (the country where they conducted the survey) 1/3 of the GDP derives from the users of SAP. Malinić and Todorović (2012) found out that SAP influences management accounting, but this influence is smaller than one would expect. Moreover, they came to the conclusion that implementing SAP does not cause important changes in management accounting techniques. Their findings are summarized below: Implementing SAP is sophisticated, especially in the beginning phase, when the configuration of the basic modules is structured. Only developed accounting can overcome the problems that sophistication provokes. The time needed to fully implement SAP is significantly long (in some cases more than 18 months) and this causes problems. For example, until full implementation is completed, the old software and the SAP are both used, complicating the tasks of management accountants. After the implementation, it takes an important period of time before the first positive outcomes. This means that the total benefit of SAP implementation will come in later phases of using it.

Replacing the old software can lead in various problems, e.g. moving information from the old system to the new for integration purposes, technical complexities, organizational resistance to change etc. In addition, the fact that SAP is oriented towards the whole business and not towards separated tasks, can also cause lack of flexibility. SAP's limited influence should be investigated in the area of problems on the implementation. Some of those problems are the re-engineering of business processes, wrong implementing strategy, wrong ERP choice, bad consulting, etc. The SAP is the reason why time needed for traditional tasks is reduced, while time needed for data analysis and measuring performance increases. The required time for more detailed management reporting is significantly increased, as large amounts of information are obtained by Excel, BI, and other software. Management accountants' ability to use these software increases their importance in the company.

To conclude, Malinić and Todorović (2012) showed that IIS can cause changes in management accounting. In the years to follow, ERP systems will determine the future of management accounting because they contribute to the flexibility of the information and to time and money saving.

3.8. Traditions and Future Directions in Accounting Information Systems

Belfo and Trigo (2013) published a paper on the tradition and future of AIS. They analyzed the accountants' responsibilities that are supported by traditional information systems and other responsibilities that are not yet supported by them and must be the center of future research. They made provisions of future technological changes in accounting that include cloud computing, enterprise application integration, web services, environmental scanning, business process management, mobile devices, business intelligence etc. Belfo and Trigo (2013) discovered that in the recent years, the accountants' responsibilities that were considered traditional accounting tasks have been replaced by strategic management consulting. This shift, that is a result of the 2008 financial crisis, reflects the added value of the accounting profession.

One of the accountants' major tasks is reporting. They need to be able to conduct reports in real time and to be able to choose what they wish to put in the reports, without the help of the IT department. Real-time reporting is a technique that provides many advantages in comparison to conventional periodic reporting. Between enterprises, the bar is set high considering the competition and the demands that for more updated info that enables fast adaptation of the management (Trigo et al., 2016). Accounting reports included various prospects such as management accounting (forecasting, budgeting, costing and reporting on variances like cost control or detailed reports about performance against budget, as well as cash flow management). The most often applied function that is used by accountants and probably the most important functions of an accounting information system are reporting (Trigo et al., 2016).

The need for real-time accounting is mandatory in a company and of great importance because a system that hands updated information provides better management services, especially in circumstances when answers are needed to address problems. Hall mentions in 2010 that the activity which is used very often by accountants is reporting, reporting is basically the most crucial activity of an accounting information system. Real-time reporting when functioning must act intelligently in a way that through metrics it can choose the most preferred option.

Thus, reporting and all the accountants' responsibilities, especially the new responsibility of management support, need the proper technological tools. Nevertheless, the traditional accounting responsibilities should also be supported by technology. Most of the accounting responsibilities, traditional or not, are supported by ERP systems (Belfo & Trigo, 2013).

Belfo and Trigo (2013) grouped the IT responses to each of the accounting needs: Internet services enable enterprise application integration (EAI) between various systems such as AIS, web applications and others. The mobile revolution has made mobile devices a significant tool used in businesses, thus it is really important that those devices are integrated with AIS. Accounting intelligence, a new type of business intelligence, is a set of technological tools used for extraction, analyzing and presenting information derived from ERP applications. Enterprise Application Integration (EAI), which supports the integration framework of an enterprise, helps with the accounting challenges such as forecasting, real-time reporting, benchmarking, etc. As far as management accounting is concerned, strategic enterprise management (SEM) systems are more effective, thus SEM systems are used supplementary with ERP systems. Business Process Management (BPM), an

important thematic initiative, enables the analytic accounting and real-time reporting because it provides an elaborate process analysis which helps to allocate costs and revenues in the appropriate cost or revenue centers. Finally, large companies produce huge amounts of data so developers are now challenged to create technological tools that can process big data, usually with the use of many machines that work simultaneously for storing and analyzing data.

To summarize, [Belfo and Trigo \(2013\)](#) identified the accounting challenges and noticed that in 2013, the current technology was still inadequate to cope with these challenges. In addition, even though ERP systems are the most common AIS, they introduced new AIS such as (SEM), (BPM) and big data analysis systems. They support that current AIS research has focused mainly on ERP systems, so they support that more research is needed to be done on those new systems in order to find out the benefits they can bring to accounting.

4. Concluding Remarks

This study conducts a review of the literature on AIS and Management Accounting. The importance of AIS in corporate development and management control has been highlighted in many ways in the international literature. Accounting Information Systems created to assemble and report crucial financial and non – financial data of the firm. Management accounting tasks that are full field are divided into three categories: transaction related tasks, reporting tasks, and decision-supportive tasks. The techniques used in order to cover these three tasks and their implementation mostly depend on the accountant's skills. Most of the management accounting techniques include the use of advanced ERP systems which are based on the individual's corporate needs. Most of ERP systems have totally changed the method that data are collected, stored and distributed within a corporation. ERP systems changed the way their management accounting tasks are applied. A functional ERP system that works successfully has a statistically positive effect according to the changes in management accounting usage. ERPs and more specifically the SAP has a great impact on management accounting information collection and distribution. The time that management accountant consumes for traditional activities, for analyzing data, for measuring the performance and for reporting has been improved. It must be knotted that the time needed to fully implement SAP is significantly long and this causes problems.

There is no previous research that studies the relationship between management accounting, IIS, and company performance. The questions to be answered are: Does the improvement in management accounting cause better performance for the companies? Under what conditions is this feasible? Which are the ideal fit for management accounting and IIS for the best company performance? Including management accounting as an intermediate variable would offer a lot of interesting studies on performance. Besides, further research is required for performance evaluation of the IIS' support in management accounting.

Nowadays, not only management accountants conduct management accounting, but also a lot of other professionals such as business managers. However, it is not certain that they have the appropriate know-how on management accounting techniques. Thus, further research is required on the skills that non-management accountants need to acquire and the way management accounting techniques are influenced when non-management accountants perform them. In addition, since management accounting is not management accountants' domain anymore, some research questions must be answered: How will this change affect the way we perceive management accounting? Will management accounting blend with other management parts like marketing, strategy or organization? Future research should offer answers to these questions.

There is a lack of profound comprehension of the relationship between management accounting techniques' design and IIS. Consequently, there is a need for more research on the field from a functionalist point of view. The research questions are: what obstacles do people who conduct management accounting find and how do they deal with them? What is the process of designing management accounting and IIS? Likewise, further studies are required regarding IIS and the use of management accounting techniques.

The literature regarding management accounting and IIS is concentrated on the ERP systems and very little research has been done on the other IIS' components. This is strange because most studies do not conclude that there is a strong relationship between management accounting and ERP systems. On the contrary, some studies found that there are other systems (e.g. SEM) that are more effective for management accounting purposes ([Granlund & Malmi, 2002](#)).

The relationship between specialized programs (e.g. ABC, BSC and others) and management accounting techniques is a field that could be further studied. The questions to be answered are: In which way the Corporate BSC program supports the balanced scorecard? Which are the variables that impact the way ERP or analysis-oriented information systems help management accounting? In what way management accountants are influenced by using those systems? Answering these questions will offer a lot in the existing knowledge over the software used in management accounting.

Integration used to be the most important feature of IIS, as researchers believed the more integration the better. However, more recent papers have shown that this is not always true. [Scapens and Jazayeri \(2003\)](#) as well as [Dechow and Mouritsen \(2005\)](#) have shown that the amount of integration that is caused by using ERP systems is excessive.

Booth et al. (2000) supported that we can integrate information systems in three different dimensions: Information, data and hardware/software integration. In addition, Granlund and Malmi (2002) showed that integration's degree is a continuum. According to these studies, integration is not positive per se and further research is needed to find the ideal levels of integration. Future research should also answer the following questions: Is integration necessary in all dimensions? What is the relation between integration and specific components of management accounting techniques such as ABC and BSC?

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