



Information technology implementation: evidence in Spanish SMEs

Information
technology
implementation

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Abstract

Purpose – The purpose of this paper is to use empirical evidence to measure if the small and medium enterprises (SMEs) have adapted to information technologies (ITs) and analyse the extent of IT knowledge and interest in new international accounting standards as factors that align strategies and organizational culture towards continuous improvement.

Design/methodology/approach – The empirical study acquires knowledge of the situation of SMEs in Spain and carries out an analysis of variables based on the results. Contingency tables have been developed to find out whether there are dependent-effect relationships between the survey items.

Findings – When analysing the sample by sectors, the paper finds that the manufacturing sector has a high level of short-term IT implementation, using it to deal with accounting, fiscal and financial issues, while the services sector is using IT intensively and is also very interested in sophisticated IT. Moreover, research results reveal a trend towards continuous improvement of Spanish SMEs of all sizes in all sectors as the majority show considerable interest in international accounting standards.

Research limitations/implications – The study has some limitations such as the way in which data are obtained, determining the type and number of questions and the fact that a majority of those responding to the survey are medium-sized businesses. In addition, those answering are the accounting department managers, leading to a possible bias if the paper tries to extrapolate the results.

Originality/value – This paper provides new information for SMEs, public administrations and academics. The increasing interest in the subject can lead to additional research with causal relationships between IT implementation, SMEs strategy and financial results.

Keywords Small to medium-sized enterprises, Communication technologies, Accounting standards, Continuous improvement, Spain

Paper type Research paper

1. Introduction

The globalization of the economy is forcing many companies to change in order to survive. To compete in global markets, many small and medium enterprises (SMEs) need to develop new strategies and employ new technologies.

This empirical research paper has three main objectives. The first is to measure to what extent information technologies (ITs) and international accounting standards

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(IAS) are adopted and used by SMEs, segmented by sectors. We suggest that knowledge of, interest in and implementation of IT and IAS are factors that can align the strategies and organizational culture of SMEs towards continuous improvement. Our second objective is to provide empirical evidence from Spanish SMEs, on how they have assimilated IT and the information society, as well as their knowledge of and interest in the new international standards, since they represent the primary source of innovation and job creation in the Spanish economy and are a key element for business growth. Finally, our third objective in this research paper is to make an empirical analysis of IT use in SMEs, to see whether they perceive overall improvements in company management, in order to evaluate the organizational culture with regard to IT and IAS use and implementation. The existence of lines of research concerning the impact of IT on organizational strategy and culture and, additionally, empirical studies on the impact of international standards in European SMEs provide backing for this research.

Our research has been designed to determine the different factors that have a bearing on business environments, the current problems of these environments and the influence that such factors have on the strategy and organizational culture of SMEs.

Currently, there is a surge of publications pointing out the path SMEs must follow to survive in a hostile environment with fierce international competition. Competitive advantages are eroded day by day and there seems to be only one response: innovation. Indeed, innovation can be seen as the stimulus required starting a virtuous circle, leading to the improvement of business performance, the overcoming of financial hurdles and thereby the access to securities markets (Galia and Legros, 2005). Investment in staff training, product quality improvement, internal processes and IT will be the road to achieving a stronger and more flexible business culture.

In the twenty-first century, new sociological approaches have shown that individual workers have different ways of dealing with IT assimilation, which in turn strongly influences the organizational culture's view of innovation as a means for the company to achieve success. Insofar as company workers are open to the introduction of new ITs, there will be a more holistic business vision as well as a more dynamic, flexible business culture. There is extensive research on organizational culture; and we must take into account the interrelationship between IT development, organizational culture and strategy.

Additionally, the question of whether Spain's new accounting rules are too complex for SMEs is a cause for concern among business executives, as SMEs in Spain account for more than 90 per cent of the country's business. Although the new General Accounting Plan for SMEs published (Ministerio de Economía y Hacienda, 2007) in order to simplify accounting standards and harmonise them with IAS, serious difficulties are arising when it comes to complying with complex new procedures such as valuation criteria (Sánchez Fernández de Valderrama, 2006).

In this research paper, we analyse whether SMEs in Spain feel that their business management has improved as a result of using IT. We have found from analysing the companies in the sample by sectors that the manufacturing sector has a high degree of short-term IT implementation, using it to deal with accounting, fiscal and financial issues. When firms are asked about their interest in more sophisticated IT, the levels of knowledge and implementation are both very low. In contrast, companies belonging to the services sector are not only using IT intensively for accounting, fiscal and financial issues but are also very interested in more sophisticated IT. However, research results

reveal a trend towards continuous improvement in the long-term for Spanish SMEs of all sectors, as the majority show considerable interest in IAS.

This paper points to various possible lines of research. It would be interesting to obtain more extensive responses and delve deeper into issues concerning organizational strategy and culture, analysing possible strategic IT improvements for SMEs.

This research paper also provides new information for companies themselves and public administrations, since both are showing growing interest in the subject.

The paper is structured in three parts. The first part involves a brief bibliographical overview of IT development and IAS as leading factors in management and business culture change for ongoing improvement. The second part presents a statistical analysis of, on the one hand, whether support for IT and the new international standards for SMEs lead to changes in strategic planning and, on the other, the possible dependent relationship between experience of software use and knowledge of new IT trends. These factors are the key to understanding the flexibility of the organizational culture *vis-à-vis* long-term innovation strategies. The results are discussed in the third part, with a view to reaching conclusions which might in turn open up new lines of research.

2. Theoretical framework

2.1 Information technology

The business world has, for some years now, been experiencing a profound transformation leading to increasing complexity for the players as well as in terms of the products and services being offered. These circumstances spell out the need for increasingly refined working tools, including IT, in order to face the challenges posed by a changing and ever more demanding business environment. The relationship between such developments has been analysed by the contingency theory (Drury, 2005; Chenhall, 2003; Fischer, 1995). Alongside the analysis of contingency factors, it is also important to address current concomitant problems and their influence on SME strategies (Reheul and Jorissen, 2007). These strategies have led to the implementation of information and management control tools, so as to make the work of those responsible easier by providing a whole set of interrelated information. Integration of business strategy and information systems planning is critical for organizational success. Poor integration between change initiatives and systems poses a challenge in implementing change strategies (Joseph and George, 2007).

In recent years, researchers have analysed the design and use of management systems as they relate to the environment, IT, structure, strategy and size and culture of SMEs (Galloway and Mochrie, 2005). Traditionally, SMEs have been at a disadvantage because they are more restricted when it comes to resources. On the other hand, SMEs enjoy greater flexibility in adapting to environmental changes (Nieto and Fernandez, 2006; Dubois, 1993). Some authors have engaged in empirical analyses to determine whether SMEs have managed to align IT use, strategy and accounting and whether this is a factor leading to an improvement in their financial and organizational results (Schubert and Leimstoll, 2007; Azizi and King, 2005; Cragg *et al.*, 2002; Lesjak, 2001; Chan *et al.*, 1997; Bridge and Peel, 1999; Raymond *et al.*, 1995).

Many other studies have been conducted on the relationship between business development and proper IT use (Dozier and Chang, 2006). These studies support the theory that proper IT use increases productivity, thereby having a decisive influence

on a country's wealth and growth. According to the OECD (2000), countries with greater IT investment also achieve the best productivity growth indexes.

An optimal implementation of IT by SMEs (Castillo and García Dotor, 2006; Davis and Sun, 2006) means adapting more successfully to a changing environment, making it possible to manage long-distance relationships and show a high degree of competitiveness, thus enhancing the dynamic character of a company. Even when a company is small, it must assimilate the use of IT. Furthermore, the more intercommunication there is among companies, the greater the likelihood of achieving diversification in their traditional business. The improvement of outside business relations, chiefly with foreign clients through their company web site, is a significant factor. We may also assume that there are improvements in administrative management regarding accountancy and finance. By using IT, it is possible to gauge the risk of some operations or predict future earnings with sophisticated statistical software applications. All these benefits have been developed and tested in larger companies and it should be possible to extend them to SMEs. Nevertheless, it has also been pointed out that the challenges of successful development in the information society lie not so much in the availability of good technological infrastructure as in improving business disposition toward IT use (Scapens and Jazayeri, 2003; Scapens *et al.*, 1998).

In an economy such as Spain's, composed largely of SMEs, IT use is a requirement for economic development and growth (López Sánchez, 2004). If we analyse the adoption of IT according to the size of the firm, it has taken place at a faster rate in large firms than in SMEs, although this imbalance will be steadily reduced in the period 2007-2010, as firms adopt more sophisticated technologies, according to a global study analysing the evolution of IT adoption in 20 countries and its repercussions in firms (BIT Global Research Network). In the opinion of those consulted, the indexes representing the take up of technology by large Spanish firms are comparable to those of large American firms, whereas SMEs have fewer financial resources, less technical experience and fewer management skills, and have begun to use IT later on (Caldeira and Ward, 2003), their adoption of technology still lagging behind the big firms.

We wish to examine the suggestion that the use of IT supports the improvement of business management from a financial, fiscal and legal viewpoint in the area of accounting. Therefore, the following postulate has been formulated and will be tested:

RQ1. There is a relationship of dependence between IT accounting use to directly manage their financial position with banks and fiscal management with public administrations.

2.1.1 New information technologies. Optimal implementation of IT by SMEs means they adapt more successfully to a changing environment, are better able to manage distance relationships and are more competitive, enhancing the dynamic character of the company. The task of implementing information and management control tools involves providing a set of interrelated information which encompasses the organizational aspects of the companies *per se* and data reflecting market competition, customer preferences, competitor initiatives and so forth. Also, as a consequence of the criticism to which the international business community has been subjected, the need to include non-financial objectives has grown and information needs to be recorded regarding new concerns of an organizational, ethical and human nature. The arrival of IT in Spain has brought about significant changes in the business world. The revolution in communications and the

array of possibilities for accounting, using facilities such as electronic banking and the dispatch of tax statements by internet, have led to easier, more reliable and swifter data exchange.

Currently, there is a proliferation of sophisticated IT. In order to choose the most representative application used in companies, we decided to ask SMEs about their knowledge of and interest in aspects relating to their value chain and key processes (enterprise resource planning (ERP)) and about information related to their customer management (customer relationship management (CRM)). Finally, because of the lack of compatibility among the different accounting software applications used by companies, we have chosen to ask about their knowledge of extensible business reporting language (XBRL, www.xbrl.org).

ERP is the planning of how business resources (materials, employees, customers, etc.) are acquired and change from one state to another. An ERP system is a business support system, based on modular software design, which maintains, in a single common database, the data needed for a variety of business functions such as manufacturing, supply chain management, financials, projects, human resources and CRM. The common database allows every department in a company to store and retrieve information in real-time. The modular software design should mean that the company can select the modules they need, mix and match them as well as add new modules of their own to improve business performance. Ideally, the data for the various business functions are integrated. In practice, the ERP system may comprise a set of discrete applications, each maintaining a discrete data store within one physical database.

CRM is derived from ERP and CRM software is used to store information on customers and prospective customers. Information in the system can then be accessed and entered by employees in different departments, such as sales, marketing, customer service, training, professional development, performance management and human resource development. Details on customer contacts can also be stored in the system. The rationale behind this approach is to improve services provided directly to customers and to use the information in the system for targeted marketing and sales. While the term is generally used to refer to a software-based approach to handling customer relationships, a successful CRM strategy requires a holistic approach (Scapens and Jazayeri, 2003). In practice, CRM initiatives often fail because implementation is limited to software installation, without providing the appropriate motivation for employees or taking full advantage of information systems (Rigby *et al.*, 2002).

The language used for accounting and financial data exchange is known by the acronym XBRL, developed to simplify the automation of financial information exchange in extensible markup language (XML) and to satisfy the growing need for financial and economic information (Hodge *et al.*, 2004; Debreceny and Gray, 2001). The interest of this new system lies mainly in two features: cost and access speed (Wagenhofer, 2003; Larrán and Giner, 2002). In Spain, the use of XBRL should be fostered because it allows the exchange of accounting and financial files among different programs, increasing the versatility and efficiency of accounting tools (AECA, 2003; Bonson *et al.*, 2007). Recently, Spanish companies listed on the stock exchange have a great interest in this standard because it provides them with a common language for financial statement consolidation (Lorca *et al.*, 2007). The technological revolution, along with the new accounting standards and recent changes in legislation, is going to bring about a radical change in

the organizational culture of companies, particularly SMEs, in Spain and their attitude to ongoing improvement.

Both ERP and CRM need a legal accounting base to prepare financial and accounting information, and this support is found in the IAS standards through the XBRL language. The SAP company has adopted this approach and has adapted its data to the IAS with the XBRL language for large firms. In a similar way, firms specialising in computer software for medium-sized firms (MEs) are adopting the standards for the same purpose (for example, Navision Business Solution).

In *RQ2*, we raise the issue of whether a strategy of investment in IT as a means of business management support is a short- or long-term strategy. If it is a long-term strategy, we may expect the companies concerned to be interested in and have knowledge of the latest IT. It is therefore proposed that:

RQ2. There is a relationship of dependence between the number of years a company has been using IT as a support for business management and knowledge of new technologies such as ERP, CRM and XML.

2.2 Organizational culture of SMEs

Currently, there is a range of publications pointing out the path SMEs must follow to survive in a hostile environment with fierce international competition. There seems to be only one response: innovation. Investing in worker training, product quality improvement, internal processes and IT are seen as the road to achieving a stronger, more flexible business culture that can confront an ever-changing environment and attain the competence and skills needed to face its volatility (Agarwal and Audretsch, 2001).

Nevertheless, innovation in companies does not normally have the desired impact, unless it is coupled with a parallel change in organizational structure and human resource management. IT investment alone is not enough: it is of the utmost importance that a company accepts the significance that human capital plays in terms of business survival (Brynjolfsson and Hitt, 2002). By organizational culture, we understand a set of forces, which are layered and determined by the behaviour, values and beliefs of the individuals working for a company (Karahanna *et al.*, 2005; Gallivan and Srite, 2005; Bostrom and Heinen, 1977). These authors have also researched the existence of causality between IT use and the development of organizations.

The core work on organizational culture in companies appeared in management literature during the 1980s and extensive bibliography can be found dating from the latter years of the twentieth century (von Meier, 1999; Knights *et al.*, 1997; Robey and Azevedo, 1994; Prasad, 1993; Porter and Millar, 1985). This presents different models and methodologies to analyse the implementation of IT in companies in pursuit of improvements in quantitative results, without taking account of workers' feelings and emotions in the face of an IT invasion. In the twenty-first century, new publications have emerged with new sociological approaches, describing how the individual worker has different ways of assimilating IT. These greatly condition the success of a company's innovations (McGrath, 2006; Nicolau and Bhattacharya, 2006; Lapointe and Rivard, 2005; Avgerou, 2002; Ciborra, 2002; Asaro, 2000).

Recently, a proactive organizational culture is needed to achieve strategic objectives for the sustainable growth of a company. As long as a business culture remains open to

the introduction of new IT, there will be a more holistic vision of the company, thereby boosting the flexibility and dynamism of the organizational culture.

These factors lead us to formulate and evaluate the next two propositions:

RQ3. There is a relationship of dependence between the use of IT by SMEs to manage their accounting and their financial position with banks and their perception of a general improvement in the management of the company as a whole.

RQ4. There is a relationship of dependence between the use of IT by SMEs to perform their fiscal operations with public administrations and their perception of there being an improvement in the management of the company as a whole.

2.3 International accounting standards

There is a dearth of empirical studies on SMEs and the usefulness of financial accounting information in Spain. At an international level, we could point to the works of Paolini *et al.* (2003), Moneva *et al.* (2001), Collins and Jarvis (2000) and Moneva (1999). The great economic and social importance of SMEs in Spain and Europe is a good reason to capitalise on the current landscape of accounting reform, as fostered by Regulation 1606/2002 for the improvement of business computer software (Milanés and Texeira, 2006). Recently, in Spain, Law 16/2007 on the Reform and adaptation of business legislation in accounting for international harmonization based on European Union rules, the first General Accounting Plan published in 2007 and the second additional provision to section 200 of the TRLSA (Revised Text of the Limited Companies Act), have reopened the controversy over the need for accounting rules to be adapted for SMEs. Spain has published a General Accounting Plan adapted to SMEs but there is still disagreement over whether SMEs should have their own international standards to abide by, different from the IAS intended for large companies listed on the stock exchange. The main issue that arises is whether the new requirements laid down by the European rules are appropriate for SMEs or, on the contrary, may amount to yet another administrative burden. In the latter case, they would be in conflict with the European Union and public administrations' objective of doing away with unnecessary hurdles for the creation and preservation of SMEs (Gonzalo, 2003). There are positive and negative implications in making SMEs follow international regulations, which in principle were meant for large businesses of great complexity with different needs (International Accounting Standards Board (IASB, 2004, 2007); Evans *et al.*, 2005; ICAS, 2002). On the one hand, there are arguments against a distinct set of regulations for SMEs. If there were two systems, then there would be two different real sets of values and different reasonable values depending on company size, thus running counter to the very objective of the standards. Comparability of company-produced information would not be achieved (Barker and Noonan, 1996). Instead, accounting reform at a European level would be implemented at two speeds, SMEs always taking second place (Harvey and Walton, 1996). Some researchers (Haller and Eierle, 2004) think that the new regulations, given how complex they are for SMEs, would lead to further adaptation costs for SMEs in contrast with potential gains. On the other hand, researchers have also argued in favour of different regulations (Harvey and Walton, 1996), as is the case of generally accepted accounting principles in the UK, in Holland and in Poland (Jaruga *et al.*, 2007). These researchers state that neither the number nor the type of users are the same across SMEs, and therefore strategies are very different and would thus require a different kind

of accounting information for decision making. In 2003, the IASB voted for the drafting of a specific set of standards for SMEs in the wake of a survey of 30 institutions (Pacter, 2004) and, in February 2007, the Board sent its subscribers a project for adapting International Financial Reporting Standards to SMEs.

Currently, Spain, where the General Accounting Plan for SMEs has been published two years ago, and Europe, where a final version of the International Standards for Financial and Accounting Information was published and adapted to SMEs, has defended a different model for SMEs. Our research results from SMEs in Spain reveal a trend toward continuous improvement in long-term business management for enterprises that show an interest in new technologies and IAS. This is reflected in the next proposition:

RQ5. There is a relationship of dependence between the company's knowledge of the new IAS and their business implementation.

3. Empirical background

An empirical study has been conducted in order to acquire first-hand knowledge of the real situation of SMEs in Spain. For this study, a survey was carried out, reviewed and validated at a conceptual level by a group of experts and compared via on-site interviews with seven managers belonging to firms from the sample. As most of the cited literature on SME financial reporting is based on surveys, this method was considered to be appropriate for the present analysis. Once the responses had been collected, we processed them through SPSS. Contingency tables were developed with the Pearson χ^2 analysis to find out whether there were dependent-effect relationships between the items referred to in the survey. Existing lines of research into the impact of IT on organizational culture and strategy and, additionally, empirical studies on the impact of international standards in European SMEs provide backing for this research (Schubert and Leimstoll, 2007; Zeghal and Mhedhbi, 2006; Evans *et al.*, 2005; Claessen, 2005; Haller and Eierle, 2004; Pacter, 2004; Bonson and Escobar, 2002; Collis and Jarvis, 2000; Moneva *et al.*, 2001).

3.1 Sample selection

The sample of companies interviewed was obtained from a selection drawn from the Iberian Balance Sheets Analysis (SABI) database. The aim was to carry out a study of SMEs to find out the extent to which these have engaged with the information society, as well as their interest in the new IAS as a feature of long-term strategy for ongoing improvement.

The starting point is an overview of the different definitions of an SME (Maroto, 2008; Milanés, 2007; Ruiz Lamas *et al.*, 2007; Nieto and Fernandez, 2006; Duc Son *et al.*, 2006; Caldeira and Ward, 2003) in terms of size, operating profit/loss, assets of the company and extent of compliance with financial disclosure requirements.

Specifically, the criteria for the choice of firms were:

- number of employees: minimum ten, maximum 250;
- legal status: public limited company/public enterprise/limited liability company;
- date when company was formed: after 1 January 2000;
- total assets: maximum €12,320,000;

- operating income: maximum €24,640,000; and
- auditors' opinion: audited accounts passed.

According to these criteria a sample of 632 companies was obtained from SABI and a survey sent to them. From the total of questionnaires which were replied to a 12 per cent valid response was achieved.

In order to carry out the analysis of firms with regard to size, the European Union limitation on the segmentation of companies based on number of employees has been followed:

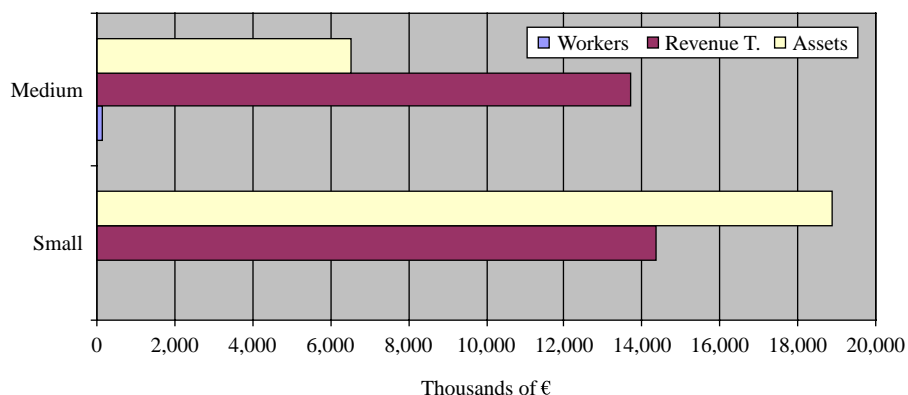
- from 10 to 49 employees: small firms; and
- from 50 to 249 employees: MEs.

From the total number of firms replying to the survey, 96 per cent are medium-sized and the remaining 4 per cent are small businesses. As small firms are such a minority in our sample, the data analysis has concentrated exclusively on MEs, which are those showing the greatest interest in IT. In Figure 1, the values for number of employees, revenue turnover and total assets are shown.

We have also carried out segmentation by sectors in order to give more depth to the results analysis. The sectors the companies belonged to were mainly the manufacturing (40 per cent) and services (55 per cent) sectors; the rest correspond to the agricultural sector, therefore they have not been considered in the sector analysis (Figure 2).

3.2 Research methodology

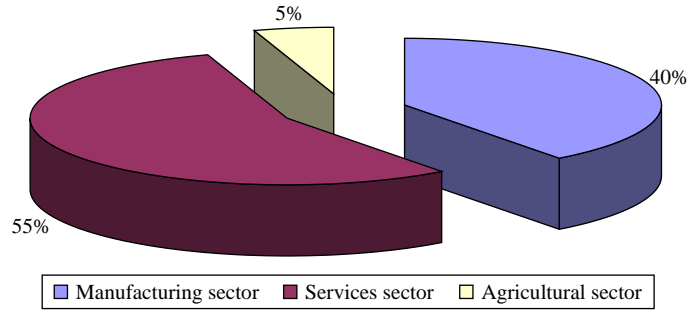
The questionnaire prepared was used to measure the degree of assimilation of IT as well as the new international standards. In order to get a clear picture of the situation in Spain, the questionnaire was divided into four parts. In the first part, all the companies were asked to complete some general questions about firm size, legal form, etc. In the second part, we asked the accounting managers about the degree of adaptation to IT in SMEs. In the third part, we asked them about the degree of knowledge of new ITs. Finally, in the last part, we asked those responsible for accounting about their interest



Source: Own compilation

Figure 1.
Main criteria
in the sample by size

Figure 2.
Sector analysis in the
SMEs survey



Source: Own compilation

in the new IAS as well as the degree of assimilation. The survey is shown in Appendix 1. Some initial results were obtained which had already been shown in previous research papers (Urquía and Pérez, 2008) (Appendix 2).

4. Results

We analysed the relationship of dependence between qualitative variables (the results) through the interdependence test (χ^2 -test). The purpose was, on the one hand, to verify whether support for IT and the new international standards for SMEs are bringing about a long-term strategy revolution in companies for the attainment of continuous improvement, and, on the other, if there is dependence between the computer software sophistication of a company and its knowledge and interest in new ITs as a long-term basis for technological innovation. Furthermore, the relationship of dependence between the variables for firms in the industry and services sectors has been studied.

Once the results have been processed and the contingency tables prepared, the empirical work is drawn from an analysis of the dependence among the qualitative variables (χ^2 -test).

With regard to *RQ1* the results conclude that, globally, there is dependence between IT accounting use in SMEs direct management of their financial position with banks and their fiscal transactions with public administrations. On the other hand, it is not so clear that IT facilitates financial and fiscal management for the SMEs in the manufacturing sector. The results of the analysis are shown in Table I.

With respect to *RQ2* the deviation between the proposition and the research findings is much more interesting when dividing the SMEs by sectors. Thus, there is a significant dependence between the years a company has been using IT as a support for business management and knowledge of new ITs such as ERP, CRM and XML for the SMEs in the services sector. This means that longer experience using IT for

Table I.
Relationship between IT
accounting use and
finance/fiscal
management

	χ^2	Degrees of freedom	Valid cases (n)
Global	11.865**	1	74
Industry	0.490	1	29
Services	10.438**	1	42

Note: *p*-value significant at *95 and **99 per cent

accounting, finance and fiscal issues leads to higher levels of interest and knowledge for these SMEs. However, the χ^2 analysis shows a larger percentage of negative responses regarding interest in or knowledge of new IT technologies in those SMEs belonging to the manufacturing sector which has longer experience in accounting IT (Table II). In the discussion on the findings below, we will deal with this remarkable result, which could be an effect of problems related to the organizational culture in the manufacturing sector when adapting to IT implementation.

Regarding *RQ3*, there is no dependence between IT used by SMEs to directly manage their accounting and financial issues and the user's perception of an improvement as a whole in the management of the company (Table III). Although we have segmented the sample by sectors, there is no reliable result to comment on.

RQ4 stated that there is a relationship of dependence between IT used for fiscal management with public administrations and the SMEs perception of improvement in management as a whole. However, as we can observe from the deviation in Table IV, there is no dependence between IT use by SMEs to deal with fiscal matters and the user's perception of an improvement in the management of the company as a whole.

Below, in the discussion of the findings, we will deal with the results of *RQ3* and *RQ4*, which are very appealing with respect to the double disparity between the results when segmenting by sector and between IT implementation and the user's perception of an improvement, which could be another effect of problems related to organizational culture in adapting to IT implementation.

Finally, the results of contingency tables for the relation of dependence between knowledge of the new IAS and their business implementation are shown in Table V.

	χ^2	Degrees of freedom	Valid cases (n)
Global	1.723	2	77
Industry	2.041	2	31
Services	1.930 **	2	43

Note: *p*-value significant at *95 and **99 per cent

Table II.
Relationship between years using IT and knowledge of new technologies

	χ^2	Degrees of freedom	Valid cases (n)
Global	3.209	1	75
Industry	(a)	1	
Services	(a)	1	

Notes: *p*-value significant at *95 and **99 per cent; (a), one of the variables to be related is a constant

Table III.
Relationship between accounting and financial IT and improvement in the company's management

	χ^2	Degrees of freedom	Valid cases (n)
Global	0.216	1	74
Industry	(a)	1	
Services	(a)	1	

Notes: *p*-value significant at *95 and **99 per cent; (a), one of the variables to be related is a constant

Table IV.
Relationship between fiscal IT and improvement in the company's management

We can observe that the deviation between what the proposition states and what the findings show is significant. Thus, there is dependence between knowledge of the new IAS and their business implementation, overall and individually in both sectors.

5. Discussion findings

From these results, we can observe a number of remarkable findings. First of all, the results of *RQ1* analysis show that Spanish services firms make intensive use of IT accounting for banking and fiscal management. However, the results do not show a clear dependence relationship in the use of IT for banking and fiscal management in firms in the industrial sector.

In our opinion, this is due to the fact that in the last 20 years Spanish business has developed significantly towards the service sector and has made considerable efforts to reorganise and innovate (Banegas and Myro, 2008).

The results of *RQ2* indicate that firms in the services sector are interested in learning about and using the new ITs and that this interest increases as the years go by, after IT is implemented and developed in firms. However, the results for industrial firms do not show a dependence relationship in this sense. These results are again consistent with the effort put into reorganising and innovating by firms in the service sector.

In line with the previous results, regarding the relationship between knowledge of the IAS and interest in putting them into practice, *RQ5* was totally proved: the degree of knowledge of the new international financial and accounting standards is directly linked to the implementation of the new standards in companies. This can work as a driving force for strategy change in SMEs, favouring openness to internationalization and long-term continuous improvement. Regarding analysis by sectors, the service sector continues to show the most favourable results: they are more interested in the IAS and have a greater wish to put them into practice. Regarding industrial firms, unlike the previous results, where the relationship between the variables were not clear, in this case there is indeed an interest in using the IAS as they become known. This may be a consequence of industrial firms being aware that, if they want to make their mark in the international market, they must present financial and accounting balance sheets which are compatible with those of other international firms, so that they are intelligible to suppliers, customers, investors and transnational financial bodies.

6. Conclusions

This research provides information in the form of empirical evidence for companies themselves and public administrations. Considering the growing interest of the subject both nationally and internationally, it is hoped that it will be a contribution to both the academic and practitioners' world.

Table V.
Relationship between
knowledge of the IAS and
their business
implementation

	χ^2	Degrees of freedom	Valid cases (n)
Global	14.545**	1	67
Industry	6.014*	1	27
Services	8.157**	1	37

Note: *p*-value significant at *95 and **99 per cent

Global results indicate that SMEs use IT for their banking and fiscal transactions, are not familiar with the new IT and, nonetheless, are interested in the new international accounting norms that are supported by new generation IT. On closer analysis, regarding segmentation by sectors, we have found results which are even more interesting.

The manufacturing sector has a high degree of short-term IT implementation, and uses it to deal with its accounting, fiscal and financial issues, but, when asked about their interest in more sophisticated IT, both levels of knowledge and implementation are very low. The companies belonging to the services sector are using IT intensively for accounting, fiscal and financial issues and are also very interested in more sophisticated IT. In Spain, SMEs from the services sector seem to be integrated into the information society and utilise their resources in conducting their activities, including accounting, financial, fiscal issues and public administration management. They are also aware of the changes that are in store for their accounting procedures in the wake of the new international standards. They are receptive to the changes their accounting statements may have to undergo. On the other hand, the SMEs from the manufacturing sector in Spain still have a short-term approach, since – even though they use IT to support business management – the great majority is not aware of the new technologies and do not even seem to show interest in the subject, despite the benefits these technologies may offer them in the long term. This apparent contradiction between the short and long-term in firms in the industrial sector may well be because the cost of installing and maintaining IT is very high for these firms compared to the benefits they think they may obtain. Another factor might be that industrial firms are less flexible than those in the service sector, where SMEs are making considerable efforts to reorganise and innovate. What is more, the results indicate that Spanish service firms are interested in getting to know and apply IT in the firm, while the results obtained for industrial firms do not show a dependence relationship. This finding is once more in line with the efforts made by service firms to reorganise and innovate in the last few years.

On the other hand, research results reveal a trend toward continuous improvement in the long-term of Spanish SMEs in all sectors, as the majority show clear interest in IAS. All the SMEs in our sample are making efforts to get to know and adapt to the new IAS, which is a driving force for openness to long-term business internationalization. Moreover, to the extent that the IAS are continually developing, accounting information systems need to be able to adapt to changes. With regard to the analysis by sector, although the results continue to be better in the service firms than in the industrial ones, it should be pointed out that in this case the latter are interested in IAS and wish to introduce them in their firms, even though not required to do so; this could be due to their needing to open up to international markets and because they are aware that to facilitate all types of transactions, they must present financial and accounting balance sheets written in the same language.

From the point of view of organizational culture and the changes it must undergo to support a long-term SME strategy, we can say that there is still reluctance to accept the spread of IT in all SME sectors. The companies' perception is that the use of computer resources makes accounting, financial and fiscal procedures easier in the short term but when asked if the whole management area has improved thanks to accounting software there is no correspondence and, it seems, no overall long-term view.

The limitations of this study are those usually associated with an empirical, survey-based paper, particularly obtaining data and the definition of question types and numbers. Another limitation is the fact that 96 per cent of those responding to the survey were medium-sized enterprises, while only 4 per cent were small companies. Moreover, within these medium-sized businesses the respondents were generally the Accounting Department managers. Thus, there is the possibility that further results concerning business planning, strategy and culture obtained by extrapolation may be biased.

This research paper opens up various lines of research such as: trying to increase the response rate and delving deeper into the topic of organizational strategy and culture, which the results point to as a very interesting area. There are further opportunities for research on the possible causal relationships between financial results and the strategic improvement afforded by the support of IT and SME organizational culture.

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Further reading

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Appendix 1. Survey items used in this study

Trade Name	
Person Interviewed	
Post	
Firm's Legal Status	
Web Page	
e-mail	
Year Founded	
Number of Partners	
Activity	
Company Registration Number	

Information technologies

1. Do ITs play an important role in planning the firm's strategies?
2. Does your firm use any IT for its financial and economic management?
3. What shortcomings do you find in the ITs you use?
4. Do you use the same computerised accounting program for financial, cost and management accounting?
5. How long have you been doing your accounting with a computer program?
6. Does computerised accounting ITs allow you to manage your cash assets with banks?
7. Do ITs allow you to manage your fiscal affairs with public bodies?
8. Generally speaking, do you feel that the organisation and administration in your firm have improved since using ITs in your accounting?

New information technologies

9. Are you familiar with new technologies such as ERP, CRM and XML (Extensible Markup Language)?
10. If the answer is "yes", would you be interested in using this free language to keep your accounts?

International accounting standards

11. Are you familiar with the new international accounting standards (IAS)?
12. Do you plan to introduce these new international accounting regulations in your firm?

Appendix 2. Questionnaire frequency results (Figure A1)

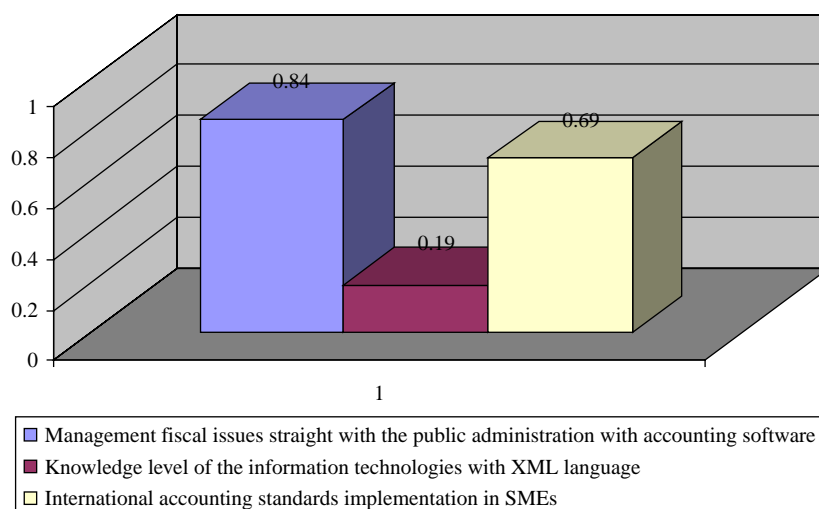
The majority of the SMEs use a software package for their accounting. Of these, 32 per cent use the SAP package although there is a broad range of computer packages used by the different SMEs.

With respect to experience in the use of computer accounting packages, 65 per cent of the companies have been using them for more than six years, 28 per cent have been using them for between three and six years and only 7 per cent have used them for less than three years.

Of the SMEs that use accounting software packages, 77 per cent use them for their financial management directly with the banks and 84 per cent use them to manage their fiscal transactions directly with public administrations.

However, the majority of the SMEs do not have knowledge of the XML language.

Finally, 75 per cent of the SMEs interviewed are familiar with the IAS and are considering their immediate implementation in their businesses.



Source: Own compilation

Figure A1.
Questionnaire frequency
results

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