

E-business opportunities and challenges for SME's in Macedonia

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Abstract. This paper explores the potential of adoption and use of ICT in small and medium sized enterprises (SMEs) in Macedonia. In the paper we present preliminary results of a survey of around 60 SMEs. The purpose of the study is to explore the factors enabling or impeding the successful adoption and use of ICT by SMEs. The study investigates the types of ICT adoption and applications, the overall motivation for ICT investments, the advantages gained from ICT, the motive of using Internet and the difficulties in implementing e-commerce applications. We find that SMEs are generally satisfied with their investment in ICT but they are concerned about the cost of such investments and are uncertain about the business benefits, failing to recognize ICT's strategic potential to increase business flexibility, to increase productivity and to support globalization. Besides the concern about the ICT related cost, other major obstacles in adopting ICT were lack of internal ICT capabilities and lack of information about selecting, implementing and evaluating suitable ICT and e-business solutions. Our findings have important implications for policy aimed at ICT and e-business adoption and use by SMEs and will provide a foundation for future research by helping policy makers to understand, assist and support the SME sector.

Keywords: SMEs, ICT, e-commerce, adoption, challenges, obstacles

1 Introduction

The adoption and use of ICT is critical for the competitiveness of Macedonian's SMEs in the emerging global market, while promoting significant positive consequences on the nation's economy. Through this research we would like to know more about the effects and usage of ICT by SMEs. We investigate the types of ICT adoption and applications, the overall motivation for ICT investments, the advantages gained from ICT, the motive of using Internet and the difficulties in implementing e-commerce applications.

2 ICT adoption in SMEs – theoretical framework

Many studies show that SMEs are the driving engine of growth, job creation, and competitiveness in domestic and global markets. They also play a pivotal role in innovation and productivity growth (Blackburn and Athayde, 2000). In the USA more than half of all employment comes from firms with fewer than 500 employees (Baldwin et al. 2001). In the UK, SMEs employ 67% of the workforce (Lange et al. 2000). In most EU member status SMEs make up over 99% of enterprises, 67% of jobs and 59% of GDP.

It remains a concern for many reasons including for example the scale of global ICT investment and the dissatisfaction expressed by Chief Executive Officers (CEOs) with ICT investment returns. ICT adoption in organisations has grown considerably throughout the past three decades. By 1998, in the developed world, ICT accounted for more than 50% of organisations annual capital investments and was expected to account for 5% of revenues by 2010 (Powell, 1999). The main driving force behind this large-scale ICT investment is the promise of increased competitive advantage (Hu and Plant, 2001; Piccoli and Ives, 2005), as ICT is regarded as a strategic weapon that can positively effect organisational change (Gregor et al, 2006). Most SMEs lag behind the large firms in their use of ICT both operationally and strategically. SMEs characteristically lack of managerial skills to conceive, plan and implement ICT and reluctantly update technology (Caldeira & Ward, 2002). Constrained by resources, hemmed in by competing demands, caution and suspicion often greet new technological opportunities. Large firms for example, have adopted e-commerce much faster than SMEs (Pool et al. 2006). There is certainly evidence that SMEs are reacting with caution to the possibilities of e-commerce, considering it a high-risk strategy (Al-Qirim, 2005), introducing e-commerce very slowly into their existing set of operations (Eriksson & Hultman, 2005).

3 Methodology

All the data for this survey was collected using a structured questionnaire. The SMEs are from different cities and regions of Macedonia, focusing upon three economically significant Macedonians sectors: financial services, touristic services and production. In total, we have surveyed 60 firms that have successfully established their business operations and are in market for more than fifteen years or more.

Through this study, our goal is to find answers to some of the following answers:

- What is the type of ICT used by SMEs?
- What kind of ICT application is being used by SMEs?
- What are the motivations for ICT investments?
- What are the barriers impeding ICT investments?
- Which are the benefits gained by ICT?
- What are the reasons of using the Internet?
- What are the challenges in E-commerce implementation?

- What are the reported sources of ICT advice?
- How many times SMEs use the Internet to advertise their products or services?

The questionnaires were filled out by IT managers or other management people who did understand the nature of the issues investigated by this survey. Companies that do not use any form of ICT are not included in this study.

4 Key Findings

In order to identify and qualify the SMEs, for the purpose of this research, we use the definition given by (Kapurubandara et al, 2006) where businesses with less than ten employees are qualified as Micro Enterprise, between ten and fifty as Small Enterprises, and between fifty to two hundred and fifty employees as Medium sized Enterprises. Based upon these definitions, 32% of SMEs we have surveyed can be classified as Micro Enterprises, 48% as Small Enterprises and 20% are Medium sized Enterprises.

Table 1. Types of surveyed SMEs

Type of SMEs	Percentage
Micro Enterprises	32
Small Enterprises	48
Medium Sized Enterprises	20

4.1 Type of adopted ICT

In this section, we provide the results about the type of adopted and used ICT. Our goal was to investigate if these companies have: Internet connection, website, Extranet, e-mail, any computer network, including wireless technology and EDI (Electronic Data Interchange).

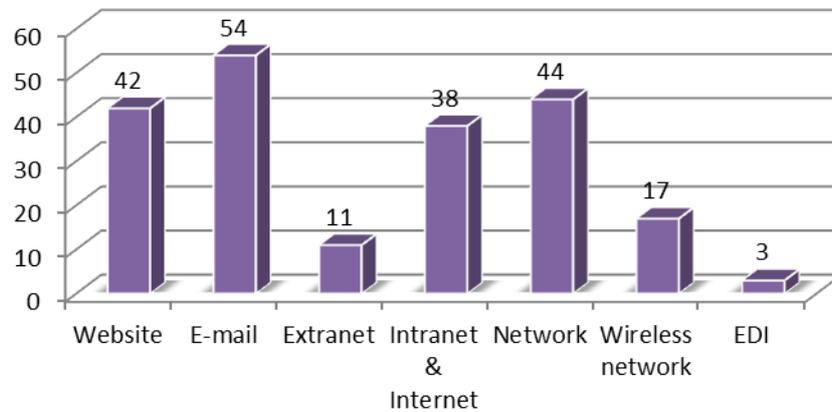


Fig. 1. Type of ICT adopted

Figure 1 indicates that across three sectors, e-mail is widely used by 54 firms. Through this survey we noticed that the majority of firms did not have official e-mail address, but they used standard mail such as hotmail, Yahoo Mail etc. About 44 firms have established network and 42 of them had their own website. Surprisingly, the survey reveals that 38 firms use Intranet whereas only 11 of them have Extranet to control access from the outside for their business purposes. Considering the more advanced and complex technology, only 3 firms from production sector use EDI to transfer electronic documents or business data.

4.2 Type of ICT application

Figure 2 shows the type of ICT application used by SMEs. We can distinguish that ICT applications are mostly used to automate the sales record, manage the documents and for processing orders. About 21 firms use system for design. Applications such as human resource management, market research, enterprise resource planning (ERP), and business intelligence are very modestly spread among investigated firms.

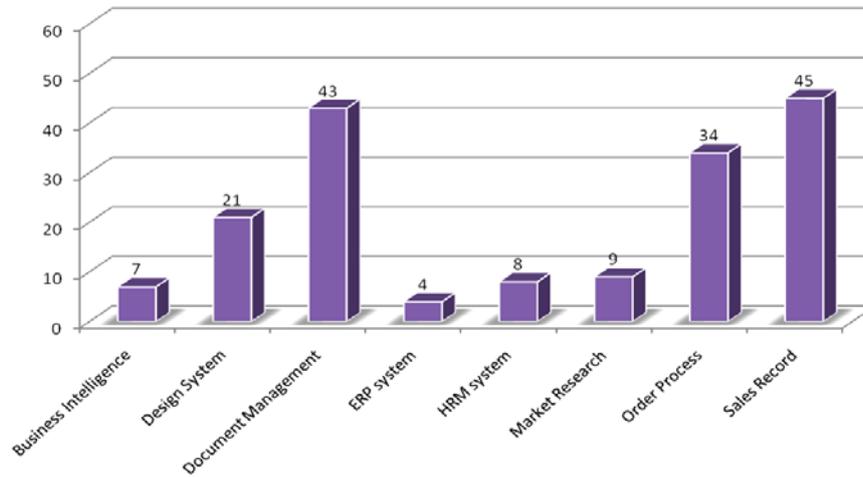


Fig. 2. Type of ICT application

4.3 Motivations for ICT investments

Here we study main driving force behind ICT investments. It is well known that SMEs are constrained by resources to invest in new technological opportunities. Nevertheless, our study reveals that almost all firms are open to invest in ICT in order to gain competitive advantage and to increase their business efficiency. As shown in Figure 3, about 90% of firms are motivated for ICT investments in order to improve relationships with clients and 85% of them are ready to invest in ICT to keep pace with rivals, followed by keeping up with new trend (41 firms) and then increase the operational efficiency. Very few firms (39 firms) invest in ICT to increase the satisfaction among employees.

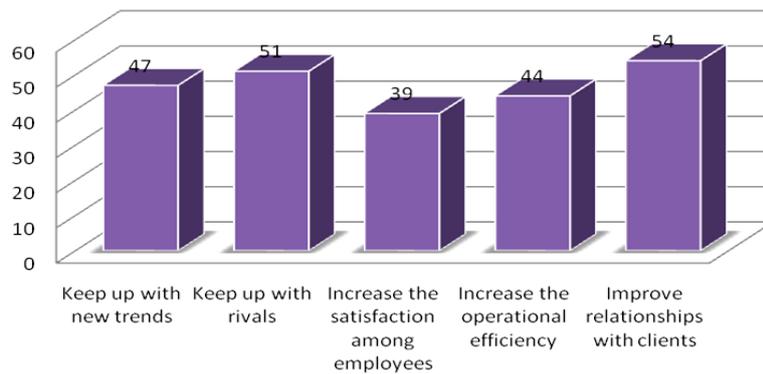


Fig. 3. Motivations for ICT investments

4.4 Barriers impeding ICT investments

Even though some SMEs in Macedonia are aware of ICT benefits, there exist some constraints and barriers to ICT investments. Figure 4 shows that cost and security are the largest barriers cited by firms (above 82% of firms). SMEs are also uncertain over the benefits to their business (28 firms). Just 13 firms (about 22%) answered that they did not have enough IT experience inside the firm. The only barrier which was insignificant and is less cited was the concern about reactions of the staff, cited by only 5% of the firms.

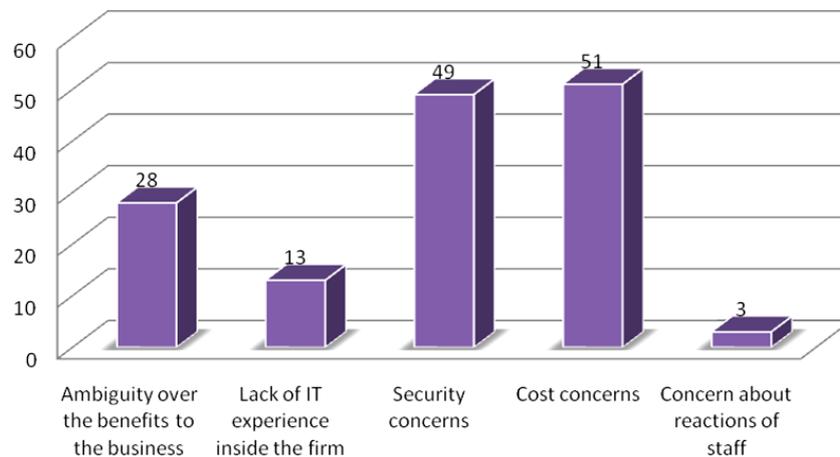


Fig. 4. Barriers impeding ICT investments

4.5 Benefits gained from ICT

In this section we report the benefits gained from ICT. As our next figure shows (Figure 5), the most cited benefit as a result of ICT use and adoption is improved quality of service (85% of firms). The second most answered benefit is keeping up with rivals, experienced by 75% of firms, followed by increasing sales which is cited by 65% of firms. Close to 57% of the firms cited increased productivity as a benefit. ICT is not seen as driving force to improve working on joint projects with other firms (cited by 7 firms), and reduce the staff number (cited by 4 firms). About 5% of firms highlighted that there are no experienced benefits from ICT.

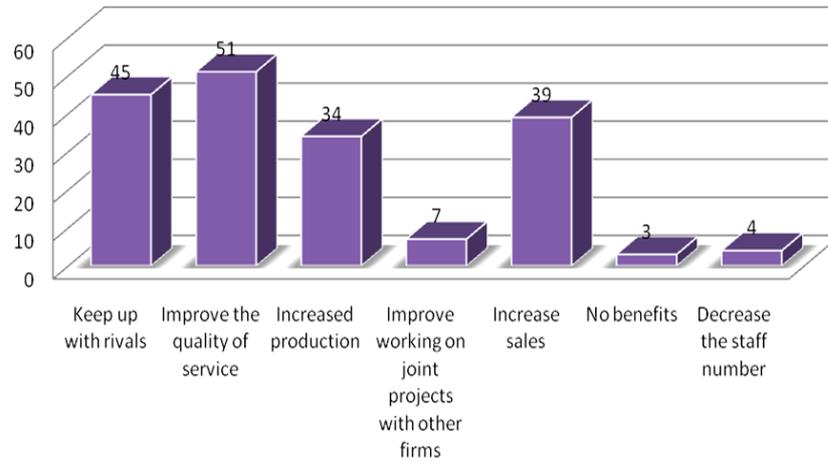


Fig. 5. Benefits gained from ICT

4.6 Reasons for using the Internet

We also questioned SMEs to list a few of the reasons why they're using the Internet. Figure 6 shows that most of the surveyed firms (95% of them) indicated that they use Internet to collect information. They are also using the internet to share information with suppliers (44 firms) and customers (38 firms), followed by making payments to suppliers (highlighted by 36 firms) and placing orders to suppliers (29 firms). Little interest is shown of using the internet to place orders from customers (19 firms) and to get involved in joint projects (only 4 firms).

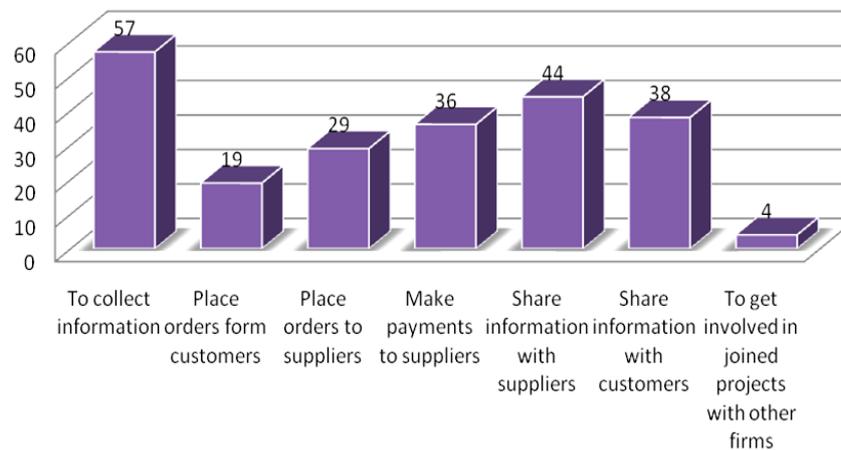


Fig. 6. Reasons for using the Internet

4.7 Challenges in e-commerce implementation

We have also investigated the challenges and problems that SMEs have in implementing e-commerce. As shown in Figure 7, majority of SMEs that participated in this research (51 firms) highlighted the security as a challenge that have found in e-commerce implementation. Another serious challenge to putting e-commerce in place appears to be the internet fraud, cited by 46 firms (about 77% of firms). Less importance is given to the following questions: difficulties in finding technical advice from outside, suppliers are not ready for e-business, the cost of developing the website and customers don't want to change.

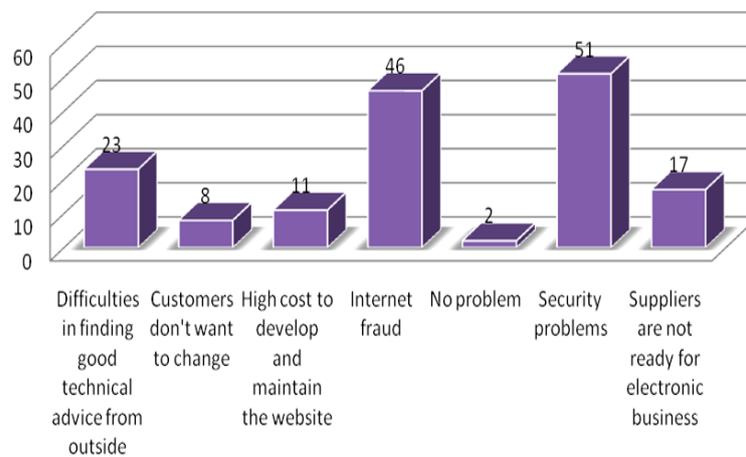


Fig. 7. Challenges in E-commerce implementation

4.8 Reported sources of IT advice

Here we attempt to find out where the firms get advice about ICT. As Figure 8 shows, about 80% of all surveyed firms highlighted the internet as source of advice. Further, the company itself is considered as source for IT advice by 35 firms. IT consultants and governmental/local authorities are also sources to get advice on ICT. Very few of SMEs get ICT advice from suppliers (6 firms) and the media (9 firms).

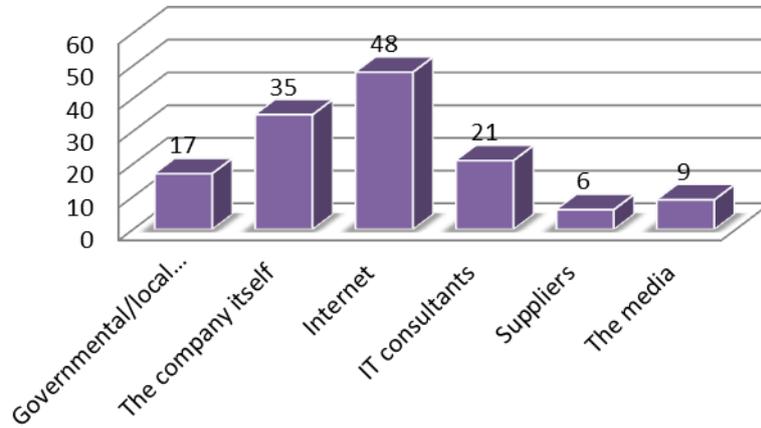


Fig. 8. Reported sources of IT advice

4.9 Internet advertisement of products/services

It is also important to know how many times firms are practicing internet advertisement. Our next figure (Figure 9) shows that majority of firms (34 firms) consider the Internet as inappropriate platform to advertise their products or services. After that, 31 firms advertise their products/services often and only 16 firms advertise many times.

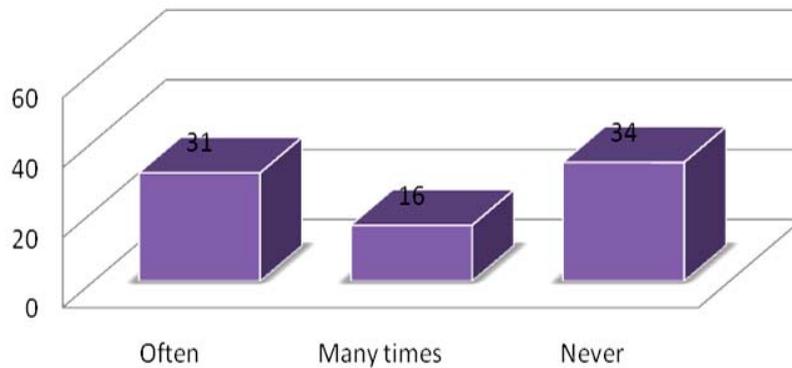


Fig. 9. Internet advertisement

5 Conclusions

This article attempts to discover the challenges and barriers that face SMEs in Macedonia while adopting and using ICT. It addresses the barriers of SMEs to access advanced technologies in order to open up business opportunities and increase productivity. The results of our study show that Macedonians SMEs are doing well in using common technologies such as e-mail, internet access and websites but are very li-

mitted to more sophisticated technologies such as EDI, ERP, HRM and business intelligence systems. Our survey reports that SMEs, in general, are motivated to invest in ICT, whereby the main driving force for ICT investment was to improve relationships with clients, to keep up with rivals and to be updated with new technological trends. Nevertheless, our survey suggests that SMEs share concerns over cost of the ICT equipment and the security. With regard to awareness of the benefits of the internet, almost all of them use the internet for collecting information lacking the vision of internet and e-commerce opportunities.

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