Information and Communication Technologies Adoption: Evidence from Small Firms

Rodrigo Fernandes Malaquias - rodrigofmalaquias@ufu.br
Universidade Federal de Uberlândia - UFU

Fernanda Francielle de Oliveira Malaquias - fernandafrancielle@gmail.com
Universidade Federal de Uberlândia - UFU

Abstract

Information and Communication Technologies (ICTs) can provide a set of benefits for the companies. The ICT literature has studies showing the positive impact that the IT adoption can generate on the company's performance. ICT benefits are also extensive to small business, but their particular characteristics do not always support its adoption by these enterprises, especially when they are enterprises situated in developing countries. In this context, the aim of this paper was to identify how is the ICTs adoption and the ICTs intention of use in Brazilian small firms. We employed a case study and we collected data from four enterprises. The main results showed that the owner's characteristics, the understanding of the ICTs benefits, the ICTs complexity, and the costs / time related to train people are factors associated with the ICTs adoption and intention of use. Based on the literature review and in the empirical evidences, we found that there is an opportunity cost related with the postpone decision of the ICT investments. We also discuss the role of ERP vendors and the geographical localization of the enterprises, which can contribute with the ICT literature.

Keywords: ICTs Adoption; Owner Characteristics; Human Behavior; Small Enterprises.

1. Introduction

It is undeniable that the use of Information and Communication Technology (ICT) can provide many benefits for organizations. The potential benefits that an organization can obtain with ICT adoption involve efficiency gains in administration, control and accountability, improvement of internal processes, costs reduction, elimination of double effort, greater access to information, and faster communication with customers (FINK, 1998; SALMERON and BUENO, 2006; ONGORI and MIGIRO, 2010; KANNABIRAN and DHARMALINGAM, 2012). In this sense, the ICT can generate advantages for organizations of any size and in every sector (FINK, 1998; FEDERICI, 2009). It is important to note that there is a kind of opportunity cost when companies decide to postpone investments in ICT (MALAQUIAS and ALBERTIN, 2011).

Although the ICTs use cannot be exclusively applicable in the context of large business, small enterprises have not been adopting ICTs in the same extent as the large ones (SADOWSKI et al., 2002; ZILBER and ARAÚJO, 2012). The explanations for this lower rate of adoption rely mainly on the lack of knowledge and skills necessary for using information technologies, as well as on the barriers caused by financial constraints. We will discuss these two factors in the following paragraphs.

About the lack of knowledge and skills necessary for using ICTs, Tan et al. (2010) states that the main factors related with a lower level of technology adoption are the lack of technical skills and the lack of vision about the usefulness / benefits of technology (TAN et al., 2010). The study of Mbonyane and Ladzani (2011), for example, identified that 88 percent of the small businesses surveyed in South Africa did not have adequate knowledge of software, Internet and other advanced technologies.

Regarding the financial constraints, as pointed by Zorpas (2010), Small and Medium Enterprises (SMEs) face many financial barriers, especially in developing countries. These businesses "frequently have difficulties in obtaining capital or credit, particularly in the early start-up phase. Their restricted resources may also reduce access to new technologies or innovation" (ZORPAS, 2010, p. 1546).

In addition to the financial and technological barriers, in small businesses the owners usually participate in all procedures and they play a central role in making decisions (MINTZBERG, 1979). As they can consider that most procedures are simple and do not take much of their time, they may decide postpone the investments in ICTs. According to Thong (1999), the complexity of the technology perceived by the owner also affects negatively the intention to adopt information technology.

In Brazil, as in many other developing and developed countries, the small businesses represent one of the main engines of the economy development (POON and SWATMAN, 1999; ZORPAS, 2010; MBONYANE and LADZANI, 2011; CARVALHO and MALAQUIAS, 2012; ZILBER and ARAÚJO, 2012; SEBRAE, 2014). Data from the Brazilian Micro and Small Business Support Service – SEBRAE shows that there are about 9 million of micro and small enterprises in Brazil, which represent more than 98% of the total number of enterprises (SEBRAE, 2014).

Due to the relevance of the small enterprises, many ICT studies have focused on them (SADOWSKI et al., 2002; ZORPAS, 2010; CRAGG et al., 2011). However, there is a lack of ICT studies with focus on small businesses in Latin American developing countries (BARBOSA and MUSETTI, 2010; ZILBER and ARAÚJO, 2012). In this context, the aim of this paper is to identify how is the ICTs adoption and the ICTs intention of use in Brazilian small enterprises. To do so, we employed the case study research strategy (EISENHARDT, 1989), in which we choose four Brazilian enterprises to develop our discussion.

This issue is important for the academics and for the managers and owners of SMEs. For academics, there is a theoretical framework that study and try to explain the ICT adoption and ICT intention of use by SMEs. The inclusion of new data and new discussion in this field can contribute with future research and with future practices by the companies.

Based on the arguments made by Mbonyane and Ladzani (2011), we believe that the inclusion of the particularities of developing countries in the academic papers can generate a positive effect on these markets. In Brazil, the construction of most academic papers and most academic books usually start from international journals and international authors. As science do not have boundaries, knowing the specificities of each country is relevant for the international community.

2. Literature Review

Information Technology (IT) can be defined as "computer-based technology for the storage, accessing, processing and communication of information" (MOLLOY and SCHWENK, 1995, p. 283). The adoption of ICTs for SMEs is a critical factor for their survival (ONGORI and MIGIRO, 2010; MEHRTENS et al., 2001; ONGORI and MIGIRO, 2010; AWIAGAH et al., 2015), since globalization requires companies to expand systems and communicate with the global economy (HWANG and GRANT, 2014).

For example, with e-commerce, the enterprise can overcome geographical limitations and whole world becomes accessible, which can reduce travel time and costs (MBATHA, 2013). However, to access these benefits, there are different factors between the available technology in the market and the need of the small business. One of these factors refers to the own characteristics of these enterprises.

Several authors have described the main characteristics of small businesses: they are usually family-based; they have very "low management"; they operate in a highly competitive environment; they have little access to the new requirements of the market; they are susceptibility to external forces; among others (GABLE, 1991; THONG, 1999; ZORPAS, 2010; ZILBER and ARAÚJO, 2012). Small firms are not simply large companies in a small scale, because the characteristics of these enterprises are very different (ZILBER and ARAÚJO, 2012).

As well as small enterprises, large companies also face constraints and difficulties in their daily activities. However, these constraints and difficulties are more intense on small enterprises (THONG, 1999). The challenges imposed to small business include lack of financial resources; lack of human resources; unsuitability for the type of the business; security and trust of ICT; lower understanding about ICTs benefits (SALMERON and BUENO, 2006; ONGORI and MIGIRO, 2010).

Most challenges faced by small enterprises are common everywhere (MBONYANE and LADZANI, 2011). However, particularly in developing countries, these businesses face a lot of stifling financial and regulatory constraints (ZORPAS, 2010). To analyze the factors related with the use of IT in small business, we used the four dimensions adopted by Thong (1999), which are: owner characteristics, ICT characteristics, organizational characteristics, and environmental characteristics. Besides we used these four dimensions, we include some sub-dimensions in each characteristic, because we consulted other papers published after Thong's research.

In SMEs, "the central role of the CEO suggests that the characteristics of the CEO are even more critical in the decision of small business to adopt IS" (THONG, 1999, p. 188). This argument of Thong (1999) is in accordance with Mahrtens et al. (2001), when the authors state that the owner has a significant role in the ICTs adoption among SMEs. Thus, the

personal characteristics of the owner tend to affect the intention of use ICTs (MPOFU and WATKINS-MATHYS, 2011; KANNABIRAN and DHARMALINGAM, 2012).

These characteristics involve technological knowledge, necessary skills to use ICT and understanding ICT benefits. Previous studies (FINK, 1998; ONGORI and MIGIRO, 2010; KANNABIRAN and DHARMALINGAM, 2012) fundament that these knowledge, skills and understanding have a positive relationship with the ICT adoption.

The absence of a long-term planning is also a characteristic of SMEs, due to their short-term vision. "As a result, owners are often hesitant to make substantial investments when short-term returns are not guaranteed" (MIGIRO and OCHOLLA, 2005, p. 292).

About the ICT characteristics, the complexity of the technology plays an important role in the ICT adoption. According with Thong (1999), there is a negative relationship between the complexity of the technology, perceived by the owner, and the intention in ICT adoption. If the new technology is "not perceived as beneficial to the small business, there is no reason to adopt" it (THONG, 1999, p. 208).

Migiro and Ocholla (2005), with a sample of 57 tourism SMEs service providers from Durban (South Africa), found that the main barriers to ICT adoption were higher costs involved in this adoption and limited financial resources. The limited resources (financial, technical, human, equipment) are part of the organizational characteristics. Fink (1998), with a sample of 87 SMEs from Western Australia, found that internal characteristics of the enterprises were significant in ICT adoption. The presence of products that are intensive in technology also can affect the intention in ICT investments (THONG, 1999).

Due to limited resources (financial, human and technical), SMEs generally adopt packaged software (GABLE, 1991; CHAU, 1995). In this regard, it is important that the package fit the needs of the enterprise, as well as the vendor need to provide the company with adequate support. "ERP increases company performance but piecemeal implementation leads to isolated islands of ERP technologies that reduce performance" (HWANG and GRANT, 2014, p. 6). Upadhyay et al. (2011) reported some agency problems in their study, where some vendors were selling packages that they did not have the necessary knowledge to deliver. The consequences were ineffectiveness in the packaged software and, after the implementation, the investments were treated as sunk costs.

3. Data and Methods

According to Eisenhardt (1989), case studies can involve a single or multiple cases and can combine data collection methods. In case studies, the selection of the cases is an important aspect, once theoretical reasons need to support the choice (EISENHARDT, 1989). About case studies, Yin (2009) states that they are preferred when we have proposed questions like "how" and "why", which is the case of this study.

Thus, after the theoretical revision, we identified an opportunity to develop a new research about ICTs adoption in small enterprises situated in Brazil. Since the aim is to identify the ICTs adoption and the ICTs intention of use in Brazilian small firms, we consulted within our network some small enterprises that would have availability to participate in this research.

After the contacts, we choose four small business and the owners agreed in participating of the study. These enterprises operate in the Southeast region of Brazil and their owners and employees are Brazilian. In all four cases, the owners are involved in the operational activities of their respective business. The four enterprises are formally constituted and some additional information of them are presented in the following paragraphs.

- Enterprise A (Owner A) has two individuals involved in the business, has among 1,000 products included in its portfolio to negotiate/sell and starded in 1999. This company does not have a computer;
- Enterprise B (Owner B) has six individuals involved in the business, has among 12 products included in its portfolio to negotiate/sell and starded in 1987;
- Enterprise C (Owner C) has 12 individuals involved in the business, has among 130 products included in its portfolio to negotiate/sell and starded in 1992;
- Enterprise D (Owner D) has five individuals involved in the business, has among 12 products included in its portfolio to negotiate/sell and starded in 2010. This enterprise is in discontinuity process.

The owners of Enterprise C purchased it in 1992. At that time, the enterprise was with many problems, especially in the services provided to the customers. Thus, in that year, the owners restructured the business completely. The companies A, B, and D started their business with few products and with a very simple structure. None of them has a strategic planning for the next years.

The enterprises have basic technologies like fixed-line telephone, mobile phones, and credit card terminals, but the Enterprise A do not have internet access, as well as computer. The other three observed enterprises have computers with internet access and the Enterprise C provides Wi-Fi access for its customers.

We considered that our selection was in line with the theoretical needs that we presented before, satisfying the recommendations of Eisenhardt (1989), because: i) we selected small business; ii) in all cases the owners are also the managers and they develop operational tasks; iii) the four cases are from Brazil and involves Brazilian owners/employees; and iv) three of the enterprises operate on the market for more than twenty years.

In this study, we employed different methods to collect data, once we intended to make the triangulation (YIN, 2009). Eisenhardt (1989) states that the triangulation can provide stronger substation to case studies. Thus, to collect the data, we used three methods: interviews, that is one of the most important sources of information of case studies (YIN, 2009); direct observation; and documental analysis. The next five paragraphs summarized the details about our data collection and data analysis.

The first stage of the data collection was the direct observation. To do so, we visited each enterprise and we produced annotations about: the available items related with ICT; the organization of the products at the enterprises; the general layout (intern and extern); the personal interaction with customers; the interactions between the employees and the owners; the operational tasks developed by the owners; the existence and the practice of control procedures; among others. This stage was important to analyze the cases and to help us with the developing of the interview guide.

In the second stage, we interviewed one of the owners of each enterprise. In order to develop the first version of the interview guide, we used the studies available in the theoretical revision of this paper. We analyzed the first version of the interview guide in the light of the annotations of the direct observation. After adapt and include some questions, we produced the second version of the guide, which was submitted to an Information Systems Professor. Finally, we made some adjustments and we used the final version with 57 major questions and their sub-questions.

The interviews were performed in the local idiom (Brazilian Portuguese) and the answers were transcript using text-processing software. In order to analyze the content of the

interviews, we employed the content analysis procedure proposed by Bardin (2011). We identified the most common expressions in the responses of each manager and then, using the theoretical framework, we classified these expressions in four categories: owner characteristics; ICTs characteristics; organizational characteristics; and environmental characteristics.

During the interviews, some owners said that they use the internet as a marketing tool, in order to reach new customers. In this way, through free online search portals, we checked up the presence of the enterprises in the internet and collected the online information available. We recorded these results as pdf files and we used them in the documental analysis.

In order to build the discussion of the results, we used all the data that we collected through the interviews, direct observation, and online search about the enterprises information. To organize the discussion, we employed the four categories resulted by the content analysis. Finally, we included the authors that grounded our study to compare the findings and extract the main contributions of our research.

4. Results and Discussion

As we explained before, the content analysis of the interviews' responses resulted in four categories, which we used to present our results and to build the discussion: owner characteristics; ICTs characteristics; organizational characteristics; and environmental characteristics.

4.1 Owner characteristics

One of the owners (Owner A) informed that she does not use computers and she does not make any operations using the internet. She also said that she does not like to use computers in her personal activities and that there was not a computer in her enterprise. When we asked the owners about the interest in investing in a new ICT that fits their enterprise's needs, only Owner A said that this investment could wait.

The other owners have already made some buys through the internet. They generally use the internet to choose new products and opportunities both for the enterprise and for personal purposes. Their enterprises (B, C and D) have, at least, one computer. Among the four cases, Owner B is the only that uses social networks as a marketing canal and his enterprise provides Wi-Fi access for its customers.

In the interviews, some managers (B, C and D) informed that they use the internet as a marketing channel, in order to improve sales. Owner B said that after the adoption of some actions to divulgate the enterprise on the internet, most customers entered in contact with him. He said that in these cases the deal is more effective, once the customer probably made a previous analysis of other companies. Mbatha (2013) consider that the e-commerce adoption can eliminate costs and time related with travel, which we also observed in our cases, because Owner B said that when a customer contact the enterprise through the information available on the internet, he does not need to travel long distances to find the customer. They can negotiate via email or telephone.

In the theoretical framework of this paper, we commented about the globalization and the need of the enterprises in expand their boundaries (MEHRTENS et al., 2001; ONGORI and MIGIRO, 2010; HWANG and GRANT, 2014, AWIAGAH et al., 2015). Our results confirm the relevance of the presence of the companies on the internet, even for small companies.

We searched on the internet the name of all enterprises. We did not find a specific website of companies B and C, but we found details about these two enterprises in Brazilian group buying websites. As the owners of these two enterprises informed that both were available for consult on the internet, we consider that they are underestimating the ICT benefits. Owners B

and C experimented a positive result with the presence of their enterprises only in Brazilian group buying websites. If these enterprises had their own websites, we believe that the positive impact would be more intense.

The theoretical revision also shows that there is a relationship between understanding ICT benefits and ICT adoption (FINK, 1998; ONGORI and MIGIRO, 2010; KANNABIRAN and DHARMALINGAM, 2012). Specifically for the enterprises B and C, we found that the managers seem to undervalue the potential benefits of ICT adoption. According to Malaquias and Albertin (2011), when the companies do not adopt ICT in the level that they need, there is an opportunity cost of this decision. We considered that this opportunity cost also is applicable to the cases that we discussed.

4.2 ICT Characteristics

Many authors have suggested that the ICT adoption should enhance the efficiency and competitiveness of the enterprises (FINK, 1998; SALMERON and BUENO, 2006; ONGORI and MIGIRO, 2010). According to Fink (1998) and Kannabiran and Dharmalingam (2012), ICT can help SMEs in improving internal processes as well as communication with customers. Migiro and Ocholla (2005) found that the majority of the respondents of their survey believes that the IT can provide internal efficiency.

In our study, the owners recognized that ICT could help them in the business administration and control, which is according the arguments of previous papers. On the other hand, the owners think that the benefits of ICT adoption will not cover its necessary costs and efforts. The owners informed that another factor that affect their intention of invest in ICT is the need of establish codes for the products and register them in the system.

The considerations made by Thong (1999) seems to be applicable to this case, because the complexity perceived by owners/managers about the technology can generate a negative impact in the willingness to adopt it. Thus, despite the register of all products could facilitate the management activities and the decision process, the owners prefer to not adopt the ICT tools.

Malaquias and Albertin (2011) found results for a Brazilian company indicating that the owners had a concern about the potential dependence of technology, after its full adoption in the company. Nevertheless, it was not a concern between the owners that we interviewed.

During the interviews, the owners did not disclose any discomfort related to ICT compatibility / incompatibility with the needs of their business. Owners A and C said that their main concurrent use advanced ICT. Even in this case, they believe that the adoption of more advanced ICT will not necessarily bring a positive impact for their enterprise's profitability. This result indicates a strong association between the expected ICT benefits and ICT adoption.

4.3 Organizational Characteristics

The owner's responses revealed that there is a concern about the return of the resources that they could invest in ICT. Owners C and D said that the amount of financial resources represents a barrier for them to invest in ICT. They did not present any comment about restrictions to obtain credit; they concern involves the return of the investment, independently of the source.

Perhaps, due to their short-term planning, the guarantee of short-term returns is very important for them. Migiro and Ocholla (2005) found that the main barriers to ICT adoption were higher costs and limited sources of resources. The authors also show that the absence of guarantee about short-term returns makes the owners hesitant about doing higher investments in ICT. Our results and the results of Migiro and Ocholla (2005) were similar.

The enterprises that we analyzed do not have a formal strategic planning and, in three cases (A, B and D), the owners informed that one of the reasons to postpone ICT investment is the need of training. Thus, they expect that the benefits that the ICT can provide to their enterprises will not cover the costs and the spent time necessary to train the employees. According to Gable (1991), Thong (1999), Ongori and Migiro (2010) and Cragg et al. (2011), small business are subject to a set of challenges such lack of trained personal. Our findings were in line with these studies, because the presence of employees with knowledge about these technologies could reduce spent time in training and improve the intention of doing ICT investments.

Enterprises A and C showed the greatest internal layout and product disposal. Maybe the quantity of different products that they sell explains this observation. Since they do not have any computerized control, they need to organize the products in the best way to facilitate the search, the control, and the supervision.

Owners A and C said that they check their stocks with the range of six months, approximately. They also did not show concerns about the possibility of loss some products or lose some sell due to the lack of a specific product. Malaquias and Albertin (2011) showed that one of the reasons that lead companies to postpone investments in ICT is the trust in the familiar structure that works in the company. In the case of these small enterprises, the owner's presence seems to replace the trust in a familiar structure. This owner's trust can contribute with the ICT investments postpone.

The enterprise that has the highest use of ICTs (Enterprise C) is also the case that is most willing to make new ICTs investments, despite the concerns of the owner about the costs, the time spent to train employees, and the time spent to register all products. On the other hand, enterprise B has more information intensive products, because its music machine rental depends on the technology. This result is in accordance with the results of Thong (1999), as the author did not found a significant relation between these two variables (information intensive products and ICT intention of use).

4.4 Environmental Characteristics

The owners did not mention government programs or incentives related with the adoption of ICT. They also did not disclose concerns about the fact that their concurrent are using more ICT than them. In the interviews, the words more cited were customer, cost, time, and customer's trust. Customer's trust refers to the Enterprise B, which has serious concern about the default risk of its clients. Furthermore, the control of the receivable accounts in this company is still manual.

The owner of the Enterprise A said that one of the reasons that permit that she operates without the use of advanced ICT is the geographical localization of the business. Due to its localization, people of the neighborhood can easily visit the enterprise, choose and buy with high frequency. The customers already know the owner and know the products that she sells. On the other hand, owner B said that if her enterprise was located in another place, like in a big mall for example, the ICTs investment would be highly necessary.

When the owners considered the possibility of implementing an integrated Information System (IS), the general idea was to buy a package. This find is in accordance with Gable (1991) and Chau (1995), when the authors cites that, due the limited resources, SMEs usually buy packaged software developed by other companies. Thong (1999) states that the compatibility of the technology with the respective enterprises practices is a determinant factor to improve IT adoption.

However, Owner B said that all of his main concurrent do not use IS to manage their enterprises. The Enterprise B is in the market for more than 20 years and, if there is no use of software in these companies, is it due to the decision of the owners (of not invest in IS) or is it due to the absence of supply? In another part of the interview, Owner B also said that, in the presence of an ICT that fit adequately his business, he would like to be one of the firsts to adopt it.

The diffusion and popularity of ERP systems, as stated by Federici (2009), is the most relevant phenomenon in ICT sector. With ERP systems, the supplier can know the needs of its customer and implement a package that best fits its necessity. The appropriate implementation of ERP systems can improve business performance (HWANG and GRANT, 2014), once they are an integrated system (GALY and SAUCEDA, 2014). Nevertheless, maybe the suppliers of ERP systems did not offered this software to the Enterprise B (maybe they did not offered it to its concurrent too). This discussion leads us to think that there is a gap here, between the software supplier and the enterprises that could adopt ERP.

Upadhyay et al. (2011) indicated that there was an increasing market for ERP adoption between Micro, Small and Medium-Sized Enterprises (MSME) in India. They reported that there are a lot of vendors that offer simplified and cheaper solution for these enterprises, but some of them fail in the product that they delivery. Their analysis, with MSMEs from India, indicated that the lack of proper expertise from the vendor was damaging the correct implementation of the ERP software. Thus, in Brazil, appropriate teach at the schools and adequate material on the library can avoid this scenery already observed in other markets.

5. Conclusion

ICT investments can benefit large and small companies. Nevertheless, the constraints that are imposed to small companies, as well as their intrinsic characteristics, difficult their access to the ICT benefits. This scenario can be more critical in developing countries. Within this context, we developed this study to identify how is the ICTs adoption and the ICTs intention of use in Brazilian small enterprises.

We selected four cases to analyze and to verify the adherence of the literature, so we was able to discuss and propose our contributions. After the interviews with the owners, the direct observation, and the documental analysis, we found that previous literature developed for small or SMEs, in general, were adherent to our cases. We observed that the main factors associated with the ICT adoption are owner's characteristics, the understanding about ICT benefits, the ICT complexity, and the costs/time related to train people.

Despite the intention of adopting ICTs, the owners would like to obtain some kind of guarantee that these investments will contribute to the business performance. Due to their short-term planning, the owners expect to have these returns in a short-term range as well. Without having sure about these returns, many times they prefer to postpone investments in ICTs.

Using the idea of Malaquias and Albertin (2011), there are opportunity costs related to the owner's decision in postpone ICTs investments. One example of this opportunity cost is the number of customers that the enterprise could reach with the more intensive use of the internet. Whit this, they could improve their sales. Therefore, the enterprises should improve their ICT investment to be more competitive and expand their frontiers.

We expect to generate at least two insights for future research about ICT adoption in small companies: the ERP supply and the geographical localization of the enterprises. The ERP systems suppliers should fit the needs of different kind of organizations. It seems that some economic sectors in Brazil need more attention in this regard, once this fact generate adverse

situations in other parts of the world, as related by Upadhyay et al. (2011) about the case of India.

The geographical localization of the companies seems to take an important place for the decision in ICT investment. One of the owners said that if her company has other location at the same city, it would be very difficult to develop the activities without high ICT investments. Thus, we recommend future research that include in the quantitative models the control of the geographical location of the enterprises.

We adopted the case study strategy to develop our research. With the cases, we generated propositions that future research could test, but these propositions are not necessarily generalizable for all Brazilian small enterprises. We did not listen the suppliers of each enterprise that we analyzed, as well as we only analyzed one company of each sector. Future research could expand these findings and concur with the theory development in this field.

References

AWIAGAH, R.; KANG, J.; LIM, J. I. Factors affecting e-commerce adoption among SMEs in Ghana. **Information Development**, p. 1-12, first published on February 22, 2015.

BARBOSA, D. H.; MUSETTI, M. A. Logistics information systems adoption: an empirical investigation in Brazil. **Industrial Management & Data System**, v. 110, n. 6, p. 787-804, 2010.

BARDIN, L. **Análise de Conteúdo** (Content Analysis). Lisbon: Edições 70, 2011.

CARVALHO, C. J.; MALAQUIAS, R. F. Internal logistics, external communication, information processing and financial control: an analysis with Brazilian Micro and Small Enterprises. **Journal of Operations and Supply Chain Management**, v. 5, n. 1, p. 31-44, 2012.

CHAU, P. Y. K. Factors used in the selection of packaged software in small business: views of owners and managers. **Information & Management**, v. 29, p. 71-78, 1995.

CRAGG, P.; CALDEIRA, M.; WARD, J. Organizational information systems competences in small and medium-sized enterprises. **Information & Management**, v. 48, n. 353-363, 2011.

EISENHARDT, K. M. Building theories from case study research. **The Academy of Management Review**, v. 14, n. 4, p. 532-550, 1989.

FEDERICI, T. Factors influencing ERP outcomes in SMEs: a post-introduction assessment. **Journal of Enterprise Information Management**, v. 22, n. 1/2, p. 81-98, 2009.

FINK, D. Guidelines for the successful adoption of information technology in small and medium enterprises. **International Journal of Information Management**, v. 18, n. 4, p. 243-253, 1998.

GABLE, G. G. Consultant engagement for computer system selection: a pro-active client role in small businesses. **Information & Management**, v. 20, p. 83-93, 1991.

HWANG, Y.; GRANT, D. An empirical study of enterprise resource planning integration: global and local perspectives. **Information Development**, p. 1-11, first published on June 18, 2014.

KANNABIRAN, G.; DHARMALINGAM, P. Enablers and inhibitors of advanced information technologies adoption by SMEs. **Journal of Enterprise Information Management**, v. 25, n. 2, p. 186-209, 2012.

MALAQUIAS, R. F.; ALBERTIN, A. L. Por que os gestores postergam investimentos em tecnologia da informação? Um estudo de caso. **Revista de Administração Contemporânea**, v. 15, n. 6, p. 1120-1136, 2011.

MBATHA, B. Exploring the potential of electronic commerce tools in South African SME tourism service providers. **Information Development**, v. 29, n. 1, p. 10-23, 2013.

MBONYANE, B.; LADZANI, W. Factors that hinder the growth of small businesses in South African townships. **European Business Review**, v. 23, n. 6, p. 550-560, 2011.

MEHRTENS, J.; CRAGG, P. B.; MILLS, A. M. A model of internet adoption by SMEs. **Information & Management**, v. 39, p. 165-176, 2001.

MIGIRO, S. O.; OCHOLLA, D. N. Information and Communication Technologies in Small and Medium Scale Tourism Enterprises in Durban, South Africa. **Information Development**, v. 21, n. 4, p. 283-294, 2005.

MINTZBERG, H. **The structure of organizations**. Prentice Hall: Englewood Cliffs, NJ, 1979.

MOLLOY, S.; SCHWENK, C. R. The Effects of Information Technology on Strategic Decision Making. **Journal of Management Studies**, v. 32, n. 3, p. 283–311, 1995.

MPOFU, K. C.; WATKINS-MATHYS, L. Understanding ICT adoption in the small firm sector in Southern Africa. **Journal of Systems and Information Technology**, v. 13, n. 2, p. 179-199, 2011.

ONGORI, H.; MIGIRO, S. O. Information and communication technologies adoption in SMEs: literature review. **Journal of Chinese Entrepreneurship**, v. 2, n. 1, p. 93-104, 2010.

POON, S.; SWATMAN, P. M. C. An exploratory study of small business Internet commerce issues. **Information & Management**, v. 35, p. 9-18, 1999.

SADOWSKI, B. M.; MAITLAND, C.; VAN DONGEN, J. Strategic use of the Internet by small- and medium-sized companies: an exploratory study. **Information Economics and Policy**, v. 14, p. 75-93, 2002.

SALMERON, J. L.; BUENO, S. An information technologies and information systems industry-based classification in small and medium-sized enterprises: An institutional view. **European Journal of Operational Research**, v. 173, p. 1012-1025, 2006.

SEBRAE – Serviço Brasileiro de Apoio às Micro e Pequenas Empresas [Brazilian Micro and Small Business Support Service] (2014) **Participação das Micro e Pequenas Empresas na Economia Brasileira** [Participation of Micro and Small Enterprises in the Brazilian Economy]. Available at: http://www.sebrae.com.br/. Accessed in: March 29, 2015.

TAN, K. S.; CHONG, S. C.; LIN, B.; EZE, U. C. Internet-based ICT adoption among SMEs. **Journal of Enterprise Information Management**, v. 23, n. 1, p. 27-55, 2010.

THONG, J. Y. L. An Integrated Model of Information Systems Adoption in Small Businesses. **Journal of Management Information Systems**, v. 15, n. 4, p. 187-214, 1999.

UPADHYAY, P; JAHANYAN, S; DAN, P. K. Factors influencing ERP implementation in Indian manufacturing organisations. **Journal of Enterprise Information Management**, v. 24, n. 2, p. 130-145, 2011.

YIN, R. K. **Case Study Research**: design and methods. 4th ed. United Kingdom: SAGE Publications, 2009.

ZILBER, S. N.; ARAÚJO, J. B. Small Companies Innovations in Emerging Countries: E-Business Adoption and its Business Model. **Journal of Technology Management & Innovation**, v. 7, n. 2, p. 102-116, 2012.

ZORPAS, A. Environmental management systems as sustainable tools in the way of life for the SMEs and VSMEs. **Bioresource Technology**, v. 101, p. 1544-1557, 2010.