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INNOVATION IN SMEs – FINDINGS FROM ROMANIA

ABSTRACT. The present paper has as a starting point the close relationship existing between entrepreneurial activity, innovations and the development of Small and Medium Sized Enterprises (SMEs). Most SMEs result from implementing the entrepreneurial spirit, through which the entrepreneurs' activity is conducted in different domains. One aspect of utmost importance is the innovation in SMEs as an indicator of the entrepreneurial activity, on the one hand and as a contributor to the organization's performance, on the other hand. Therefore, we will study and analyse the SMEs innovation activity over a period of time as an indication of how entrepreneurship evolved and manifested in Romania as a European country that integrated relatively recently into the European Union. The paper envisages looking at how innovations in SMEs from Romania evolved in the period 2003/2004 – 2010/2011. The innovative activities in SMEs are examined from a dynamic perspective and the analysis is based on the study of a number of aspects related to innovations, such as: types of innovative activities, investments in innovations, the intensity of renewing the existing products, the use of IT, the use of the Internet, etc. Based on these findings, the paper attempts to characterize the innovative activities in Romanian SMEs and their evolution in time with emphasis on the recent period.

JEL Classification: M19, O33 **Keywords:** SMEs, Romania, innovation.

Introduction

The paper starts from the highly recognized idea in the literature that a business strategy that focuses on innovations represents an effective way to ensure success for firms in a market economy (Hardie, 2010). The relationship between innovation and company performance is characterized by being mutual as “a company's strategic orientation plays a major role in its innovativeness and that innovation is a key driver of competitiveness and company performance” (Kumar, Boesso, Favotto and Menini, 2012, p. 132). Even more, SMEs' survival and growth is seen as being contingent upon a progressive innovative propensity (Demirbas, Hussain and Matlay, 2011).

While innovations in large firms have received greater attention from researchers, little research has been done on innovation in SMEs (Laforet and Tann, 2006). Therefore, studies

that analyse innovations in SMEs shed more light on the characteristics and consequences of innovations in SMEs and contribute to the enrichment of the literature on the subject.

The present study looks at the evolution of innovative activities in Romanian SMEs for the period 2003/2004 – 2010/2011 and has the purpose of identifying the characteristics of these activities in the studied period and to comment on the influence of the recent economic crisis on them. It has a descriptive character, offering a general image of innovations in Romanian SMEs, ending with a couple of advices for policy and organisational decision making.

SMEs and the innovative activity – a literature review

Innovation is recognized as an important contributor to the organizational performance and success. This is also the case for the SMEs sector. Generally speaking, innovation can be defined as: “the multistage process whereby organizations transform ideas into new/improved products/services or processes, in order to advance, compete and differentiate themselves successfully in their marketplace” (Baregheh, Rowley and Sambrook, 2009, p. 1334). Also, McAdam, Keogh, Reid and Mitchell (2007, p. 386) defined innovation as “the harnessing of creative ability within customers, suppliers and the workforce by doing things differently or better across products, processes and procedures”.

There are also many classifications of innovation types, among which the one presented by Baregheh, Rowley, Sambrook and Davies (2012) includes innovations of: organizational structure, production process, people and product/service. Other authors presented another typology of innovations: product innovation, process innovation, position innovation and paradigm innovation (Bessant and Tidd, 2007). Product and process innovations are seen by many as the most important forms of innovation in SMEs (Menrad, 2004; Avermaete, Viaene, Morgan, Pitts, Crawford and Mahon, 2004; Baregheh, Rowley, Sambrook and Davies, 2012). However, technological innovation is also mentioned by others (Rodgers, 2008; Bigliardi and Dormio, 2009) as being an important form of innovation. It is even suggested that studies in SMEs that relate to innovation should include a theoretical conception that systematically incorporates people, process and technological innovation (McAdam, Keogh, Reid and Mitchell, 2007, p. 386). As part of the innovative process, the use of the Internet is considered increasingly important for SMEs by influencing aspects such as competitiveness, buying and selling behaviour, distribution systems, cost reduction, customer service improvements and customized production development (Tseng and Johnsen, 2011, p. 574).

Different studies have been conducted over time in respect of innovations in SMEs, dealing with different issues, different industries and different countries. Laforet and Tann (2006) discuss the different streams in SMEs innovation research (as being economics-oriented stream, the organization-oriented stream and the project-oriented stream), as well as the success factors for innovations (such as promoting a corporate culture, the effective use of systems and technology, analysing competitors, networking, etc.). Baregheh, Rowley, Sambrook and Davies (2012) explored the food SMEs sector in the UK for the various types of innovations, as also the degree of organizational innovativeness exemplifying the characteristics of innovativeness. Lin and Chen (2007) have studied SMEs in Taiwan in the manufacturing and service sector and revealed that the major types of innovations adopted by the studied firms were technological and marketing innovations. Hardie (2010) explored influences on innovation in small construction businesses from Australia and noticed that “both attitudinal and structural changes are needed if small construction businesses are to participate more fully in the innovation process” (p. 397). A longitudinal study was conducted in the UK on innovation management in manufacturing SMEs (McAdam, Keogh, Reid and

Mitchell, 2007) and concluded that innovation studies in SMEs must be highly contextualized and take into consideration the dynamic settings of the SMEs.

Country specific influencing factors for SMEs' innovation have also been identified by some authors. For instance, Demirbas, Hussain and Matlay (2011) looked at Turkish SMEs' owners/managers' perceptions of the barriers to innovation and found four main categories of barriers in Turkey: formal barriers (lack of R&D and technology orientation in government policy, instability of tax policies, too much government regulation, insufficient property rights, inappropriate standards), informal barriers (corruption, cultural attitudes to bribery, lack of transparency, informal economy), environmental barriers and skill barriers. A completely different situation was portrayed for SMEs in the food and drink industry in UK, which showed that their collaboration and relationship with larger organizations (supermarkets) increased the process of absorption of IT innovative businesses practices and procedures (Ngugi, Johnsen and Erdelyi, 2010).

Networking is seen as a path to innovation in SMEs, as SMEs can benefit from cooperation for their innovation processes by forming innovation networks in which exchanging, trusting and sharing of benefits are common processes (Gardet and Mothe, 2012). Supporting the same idea the study of Kumar, Boesso, Favottoans, Menini (2012) illustrates how in Italy, SMEs operating in the yogurt industry, in order to introduce new and more sophisticated products (the clinical functional category) had to frequently involve an external partner. Furthermore, in order to overcome the "liability of smallness" and make successful strategic adaptations, the studied Italian SMEs created cooperative relationships (p. 142).

In Romania, there is an annual publication, called the "White Charter of SMEs from Romanian" that contains comprehensive information on SMEs, including results of surveys conducted with SMEs. Among the topics of interest included in the survey, the innovations and innovative activities is comprised. We will be using this source to conduct an analysis in dynamics in this paper.

A synthesis of all these various studies and researches on innovations in SMEs from different fields of activity and from different parts of the world, revealed that there are some important issues to be considered when analysing innovation in SMEs: forms of innovation, the resources designated to innovations in SMEs, influencing factors either as barriers or incentivizing factors, the specific context of SMEs, besides the use of IT and related technologies as a specific and state-of-the-art form of innovation.

The present paper tries to look at some of these aspects in the context of Romanian SMEs and their involvement in innovative activities over time.

The Romanian economic context – economic crisis and effects

Romania was and still is influenced by the economic evolutions at the world level. The economic crisis that hit the world in 2007, was also felt by the Romanian economy, even though with a particular time lag. The global financial crisis that determined the collapse of a number of financial institutions, the closing down of many companies and consequently the loss of jobs affected many economies, including the Romanian one. In an unstable international economic context, the first obvious sign of the economic crisis were felt in Romania in 2009, when it took place a drastic contraction of the economic activity reflected in the decrease of the real GDP with 6.6%. The decreasing trend continued in 2010, when the contraction of the real GDP was of 1.5% and only in 2011, there was a positive evolution of the real GDP with 2.5% (IMF, 2012). Inflation increased immediately in 2008 with 3% from 4.8% in 2007 to 7.8% in 2008 and maintained relatively high levels up to 2011, when it was 5.8% (IMF, 2012). Unemployment also started to increase after 2007, when it was 4% and

peaked in 2009 when it reached 7.8%, keeping the high level at present with 7% in 2011 (INS, Statistical Yearbook, 2008, 2012). Due to the economic crisis the level of economic activity diminished in Romania in the last years and SMEs had to adapt their level of business to the market conditions from both the internal and the external markets. The results were a decreasing contribution of the SMEs' sector to the total turnover in Romania, from 61% in 2008 to 59% in 2010 (INS, Statistical Yearbooks, 2008; 2012). Similarly, the contribution of the SMEs' sector to exports started to decrease right away, as in 2007 was 30% and in 2010 reached 27.9% (INS, Statistical Yearbooks, 2008, 2011).

On overall, the number of SMEs started to decrease in 2009 when it was 611.142 as compared to 2008 when it was 661.990, a 8% decrease due to closing down of Romanian SMEs (White Charter of SMEs from Romania, 2011).

Methodology of the study

The objectives of this study is to analyse the evolution of the innovative activities in Romanian SMEs in the period 2003/2004-2010/2011 and to offer a general image of the innovative activities in Romanian SMEs looked at in a dynamic perspective.

The study uses as main documentation sources the annual editions of the White Charter of SMEs from Romanian from the years 2004-2011. The researches from the White Charter that were used to conduct the analysis were based on a number of yearly surveys organized with SMEs samples from Romania. *Table 1* presents the structure of the samples used, samples presented as representative at national level. Samples were relatively similar for all years. However, it can be noticed that the percentage of older SMEs (over 15 years old) grew in the last years, as a consequence of SMEs growing older, as compared to the earlier years, when the number of old SMEs was smaller given that the majority of SMEs in Romania started their activity after 1990. Another change in the samples refers to the decrease of the percentage of medium sized companies, as in the last years, hit by the economic crisis many SMEs went from the medium to small size due to the decrease in the number of employees. Similarly, the percentage of SMEs operating in the manufacturing and the construction fields decreased in the last two years, as the domains have been affected by the economic decline, while the percentage of SMEs in the tourism field increased in the samples, due to the diminishing number of companies in other fields, as the ones operating in the tourism fields remained relatively constant.

Table 1. The structure of the SMEs samples 2004-2011

| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Structure of SMEs age | | | | | | | | |
| – TOTAL number | 1378 | 1398 | 1306 | 1178 | 1256 | 1099 | 1485 | 1723 |
| Under 5 years | 35.39% | 40.49% | 37.33% | 40.58% | 43.31% | 36.81% | 34.83% | 37.05% |
| 5-10 years | 32.89% | 30.76% | 24.65% | 24.36% | 23.17% | 31.85% | 22.76% | 23.75% |
| 10-15 years | 29.66% | 27.54% | 36.48% | 24.49% | 21.10% | 11.87% | 15.75% | 21.45% |
| Over 15 years | 2.06% | 1.22% | 1.54% | 8.57% | 12.42% | 19.47% | 26.75% | 17.76% |
| Structure of SMEs size | | | | | | | | |
| – TOTAL number | 1378 | 1398 | 1306 | 1178 | 1256 | 1099 | 1485 | 1723 |
| Micro- enterprises | 53.97% | 55.29% | 62.43% | 53.48% | 64.10% | 52.68% | 66.20% | 71.83% |
| Small enterprises | 32.35% | 30.83% | 27.73% | 33.45% | 26.44% | 34.85% | 24.32% | 21.83% |
| Medium enterprises | 13.68% | 13.88% | 9.84% | 13.07% | 9.46% | 12.47% | 9.48% | 6.44% |
| Structure of SMEs | 1378 | 1398 | 1306 | 1178 | 1256 | 1099 | 1485 | 1723 |

economic branches –**TOTAL number**

| | | | | | | | | |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Industry | 26.44% | 17.17% | 17.50% | 21.41% | 22.41% | 21.05% | 19.48% | 17.22% |
| Construction | 8.01% | 7.65% | 6.66% | 11.61% | 12.67% | 10.43% | 6.79% | 6.67% |
| Trade | 34.31% | 45.92% | 44.78% | 38.95% | 34.45% | 38.60% | 35.60% | 37.64% |
| Tourism | 2.54% | 4.86% | 2.81% | 3.18% | 3.48% | 2.31% | 8.88% | 7.49% |
| Transport | 6.14% | 6.44% | 6.66% | 7.57% | 8.21% | 5.63% | 5.75% | 10.48% |
| Services | 22.56% | 17.95% | 21.59% | 17.28% | 18.78% | 21.98% | 23.51% | 20.49% |

Sources: Carta Albă a IMM-urilor din România (White Charter of SMEs from Romania), Editions 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011.

Surveys conducted in all years used the same methodology and a set of similar questions and consequently this ensures the comparability of the results for all years included in the analysis. The surveys included questions about the different possible forms of innovations, the level of investment in innovative activities and about specific innovative aspects such as renewing products and using the internet and the intranet in the activities.

The SMEs respondents' answers contained self declarations about the required aspects related to innovations in their organizations. The annual survey is usually organized at the beginning of each calendar year and the SMEs' answers from a particular year are holistically seen as, in fact, reflecting the situation from the previous year. Therefore, the results are presented as being from 2003/2004 if they are taken from the 2004 edition of the document. The results obtained in the surveys conducted in the 8 years included in the study are used to characterize the evolution in time of the way the Romanian SMEs approached innovations.

Innovations in Romanian SMEs – a dynamic perspective

The role of innovations for SMEs has been acknowledged, as surviving by maintaining or increasing market share through innovation is seen as a major issue for all SMEs (Laforet and Tann, 2006). The surveys conducted in Romanian SMEs in the period 2003/2004 – 2010/2011 illustrate what the dynamics of innovation are in this type of companies, by looking at **forms of innovation** such as new or renewed products, the use of new technologies (including IT), applying new management and marketing approaches, modernizing the information system and applying new human resource methods. The implementation of these forms of innovations also require changes at the organizational level, technical changes, strategic changes and procedural changes, implying a more complex innovative process at organisational level.

Table 2. Innovative activities in Romanian SMEs in 2003/2004 – 2010/2011

| Innovation activities | 2003/ 2004 | 2004/ 2005 | 2005/ 2006 | 2006/ 2007 | 2007/ 2008 | 2008/ 2009 | 2009/ 2010 | 2010/ 2011 |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| It is not the case | 15.63% | 14.24% | 19.98% | 16.21% | 21.18% | 19.38% | 36.63% | 35.53% |
| New products | 38.79% | 30.73% | 40.96% | 32.7% | 34.87% | 37.49% | 29.90% | 32.01% |
| New technologies | 17.95% | 20.39% | 28.57% | 35.23% | 26.99% | 28.75% | 20.54% | 20.24% |
| New managerial/ marketing approaches | 17.95% | 20.89% | 22.74% | 24.70% | 15.92% | 24.02% | 14.01% | 15.07% |
| Information system | 9.68% | 13.74% | 10.84% | 17.06% | 13.77% | 15.92% | 10.24% | 10.29% |
| Human resources | N/A | N/A | N/A | 13.41% | 13.46% | 13.47% | 9.09% | 7.79% |

Sources: Carta Albă a IMM-urilor din România (White Charter of SMEs from Romania), Editions 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011.

Technical innovations in new products, in new technologies and in the IT system, as well as innovations in new managerial and marketing approaches and human resources can contribute to the improvement of the efficiency of the firm's activity. *Table 2* and *Figure 1* illustrate how this kind of innovative activities evolved in the studied period in the SMEs included in the samples. Results show that the most frequent innovations for the whole period were the introduction or the renewal of new products and services. In every studied year, 30-40% of the surveyed SMEs declared that they pursued this form of innovation. This is consistent with the results of other studies conducted in other countries, for instance in UK, where, in SMEs, the process of innovation consists of developing new products, but also includes developing new ways of producing products and services and new ways of delivering them to customers (Blumentritt, 2004; Laforet and Tann, 2006). In Taiwan, SMEs have technological and marketing innovations as major types of innovations, according to Lin and Chen (2007). In Romania, only small percentages of SMEs pursue new managerial and new marketing approaches (15% in 2010) and new human resource techniques (8% in 2010), in spite of the fact that some of these types of innovations do not have high costs and have potentially high organisational impacts. Other research studies have shown the important role of new managerial techniques and approaches in SMEs as they are seen as part of the organisational learning that is a contributing factor to the increase in company innovative performance (Laforet and Tann, 2006). Furthermore, highly innovative firms were found to place great emphasis on employee development training (Laforet and Tann, 2006, p. 366), and this is also the case in some Romanian SMEs that were found to have invested in training half of their employees (24% in 2010) (Nicolescu, Nicolescu and Nicolae, 2012).

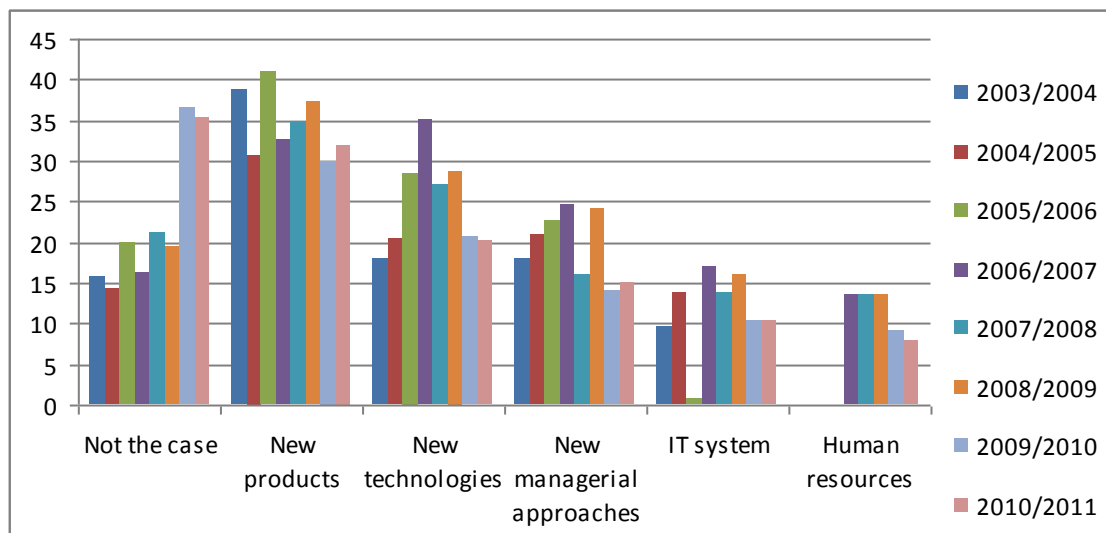


Figure 1. The dynamics of innovation activities in Romanian SMEs in 2003/2004 – 2010/2011

The introduction of new technologies is the second frequently mentioned form of innovation encountered by the studied Romanian SMEs. Its use fluctuates in the analysed period with an increasing trend at the beginning of the period when the Romanian economy had an ascending economic trend, the peak being registered in 2006/2007 when 35% of the SMEs included in the sample, declared that they had introduced new technologies during the

last year. However, starting 2007/2008 – once the global economic crisis had begun – the trend towards introducing new technologies decreased.

Similar tendencies have been found in relationship with other types of innovative activities, illustrating the negative influence of the economic crisis on innovative activities in Romanian SMEs.

Other negative tendencies include the doubling of the percentage of SMEs that have not conducted innovative activities at all, reaching 35% in 2010/2011 as compared to 14% in 2004/2005, for instance. This also reflects a certain state of mind of the entrepreneurs and SMEs managers, who are more focused on short term survival rather than innovating in a period of economic crisis.

The **level of investment in innovative activities** illustrates the propensity towards implementing organizational changes that would sustain the future growth of the organization. *Table 3* and *Figure 2* present the dynamics of the level of investment in innovations in the studied SMEs.

Table 3. Investments in innovations in Romanian SMEs in 2003/2004 – 2010/2011

| Percentage out of total investments | 2003/2004 | 2004/2005 | 2005/2006 | 2006/2007 | 2007/2008 | 2008/2009 | 2009/2010 | 2010/2011 |
|-------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 0% | 22.87% | 24.72% | 24.51% | 17.95% | 22.17% | 20.27% | 46.58% | 47.48% |
| 0-5% | 19.13% | 14.61% | 17.73% | 19.87% | 18.21% | 19.69% | 19.53% | 19.26% |
| 5-10% | 16.54% | 18.80% | 19.44% | 23.26% | 20% | 17.56% | 13.60% | 12.76% |
| 10-20% | 16.16% | 18.88% | 20.10% | 19.87% | 19.25% | 18.43% | 8.56% | 9.69% |
| 20-50% | 13.64% | 13.11% | 11.19% | 10.81% | 13.40% | 15.71% | 7.21% | 6.13% |
| Over 50% | 11.66% | 9.89% | 7.03% | 8.24% | 6.98% | 8.34% | 4.51% | 4.66% |

Sources: Carta Albă a IMM-urilor din România (White Charter of SMEs from Romania), Editions 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011.

The majority (over 70-75%) of the SMEs studied, invested in innovations on an yearly basis between 0-20% from the total investment funds, over the whole period considered. However, while the percentages of SMEs that invested small percentages (0-5%) of their overall investments remained constant over time, the ones investing larger percentages (10-20%) decreased over time. The percentage of SMEs that invested considerable amounts of funds representing 20-50% and over 50% of their investments in innovations was on the entire period small (less than 10%), but in the last two years this diminished to half, reaching 4.5% in 2010/2011. Another very visible change in the last two years was the doubling of the percentage of SMEs that had no investments in innovations, reaching 47% of the questioned SMEs in 2010/2011. This trend is attributable also to the economic crisis. On overall, in the analyzed period, the percentage of SMEs investing g highly in innovations is small and after 2007/2008 the percentage of investments allocated to innovating products, processes and the organization in the SMEs studied diminished further, especially in the firms that used to plough back large percentages of their investible funds into innovation. Generally speaking, it is considered that the SMEs' limited access to finance and capital for innovations, limits innovation and that investments can act as a constraint for SMEs engagement in innovations (Chao and Chandra, 2012).

Certain authors (Thomas, Packham, Miller and Brooksbank, 2004) even specify that the cost of the latest technology, as a form of innovation can be prohibitive for SMEs that have limited financial and technological resources. Overall, financial difficulties are common for

most SMEs, especially in times of economic recession, and this also affects investments for innovations. This is also the case for Romanian SMEs.

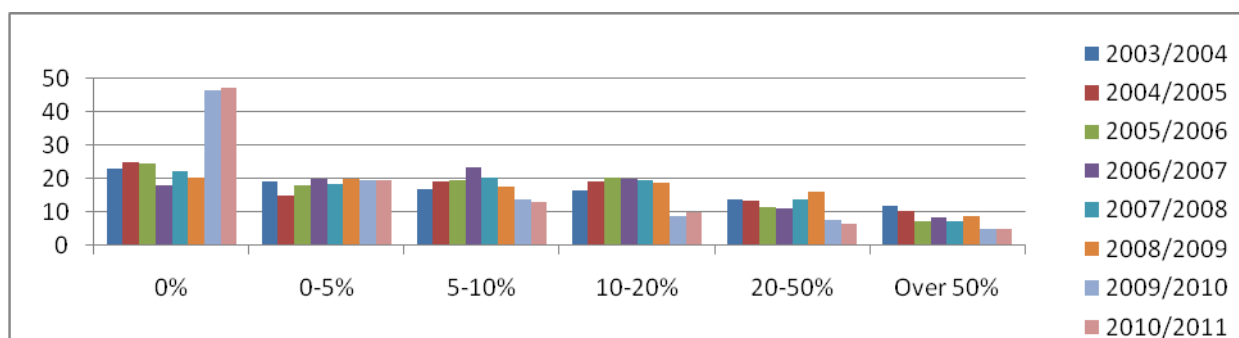


Figure 2. Dynamics of investments in innovations in Romanian SMEs

Renewing products either as new products/services or modernized products/services, as a main form of innovative activities took place in Romanian SMEs at different levels. *Table 4* and *Figure 3* illustrate this. Researchers who have studied how resources were allocated for innovations, looked at the type of innovations envisaged by SMEs through their investments, and found that product innovation have received the majority of attention (Baregheh, Rowley, Sambrock and Davies, 2012). The analysis of the level of renewing products in Romanian SMEs in the period 2003/2004 – 2010/2011, measured as the percentage of the turnover brought by innovative products, shows that the majority of the SMEs had, over time, levels of renewing their products up to 20%. Less SMEs (under 10-15%) had levels of renewing their products between 20-50% or over 50%, illustrating a low level of extensive product innovativeness in Romanian SMEs.

As a trend, it can be stated that the renewing of products in Romanian SMEs is decreasing in the last years, both as intensity of renewal (lower percentages of the turnover obtained from new and improved products), but also as a percentage of SMEs that modernized their products or created new ones. The decreasing trend can be explained in two ways: a) in the years from the beginning of the period SMEs had fewer products in their portfolio and any new product would add up as a high percentage of the total number of products, while in the recent years when SMEs already had accumulated larger number of products in their portfolios, the few new or renewed products would represent less of the total and b) less new innovative products were introduced in Romanian SMEs in the last years.

Table 4. The level of renewing products and services in Romanian SMEs in 2003/2004 – 2010/2011 (percentage of the turnover collected from the sale of innovative products)

| The level of renewing products/services | 2003/2004 | 2004/2005 | 2005/2006 | 2006/2007 | 2007/2008 | 2008/2009 | 2009/2010 | 2010/2011 |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 0% | 22.10% | 22.44% | 21.70% | 18.81% | 21.24% | 19.84% | 45.50% | 45.61% |
| 0-5% | 16.70% | 13.78% | 17.62% | 16.61% | 17.86% | 22.09% | 16.50% | 18.44% |
| 5-10% | 17.62% | 17.56% | 20.55% | 20.92% | 21.53% | 19.16% | 13.25% | 13.95% |
| 10-20% | 20.88% | 20.81% | 18.68% | 24.22% | 19.31% | 19.84% | 12.11% | 10.88% |
| 20-50% | 13.36% | 15.41% | 13.30% | 13.85% | 14.58% | 13.10% | 8.40% | 7.25% |
| Over 50% | 9.34% | 10% | 8.16% | 5.60% | 5.50% | 5.96% | 4.24% | 3.87% |

Sources: Carta Albă a IMM-urilor din România (White Charter of SMEs from Romania), Editions 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011.

Once again, it can be noticed that an ascending percentage of SMEs did NOT obtain income from either new or modernized products in the last two years 2009-2011: 45% of the SMEs declared that they have not obtained income from new products after 2009.

Both incremental innovations (renewing of products in our case) and radical innovations (new products) as forms of innovations encountered in Romanian SMEs, are recognized in the literature as being important forms of innovations in the product innovation category (Oke, Burke and Myers, 2007). The decreasing trends in product innovations in Romanian SMEs is not a good sign for their future competitiveness and sustainability.

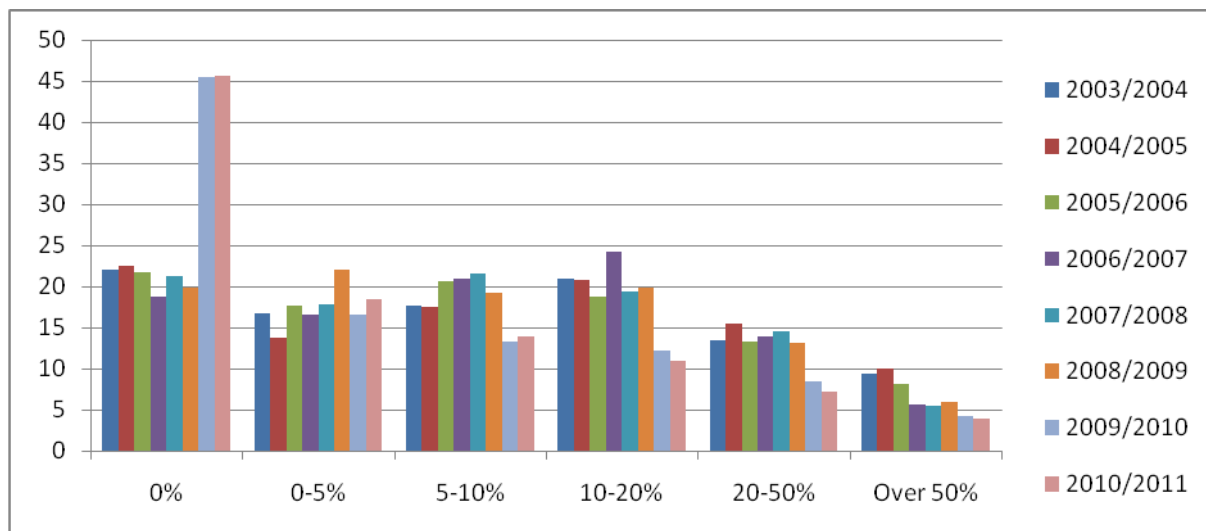


Figure 3. The dynamics of the renewing intensity in Romanian SMEs in 2003/2004 – 2010/2011

Another aspect associated with innovation is the integration of information technology. Starting a couple of decades ago, information technology plays a critical role both in large and in small businesses. The impact of using information technology can be strong in SMEs from all fields of activity. The Romanian SMEs included in studied samples indicated the main **forms of information technology** they use. See *Table 5* and *Figure 4*.

The most frequently used form of IT mentioned by Romanian SMEs is the utilisation of the computer, encountered in around 80% of the SMEs, a proportion that remained relatively constant in the period 2004-2011. The exploitation of Internet and of e-mail are the next most frequently used forms of IT in Romanian SMEs, as they registered an increasing trend in the same period.

One of the IT activities that intensified in Romanian SMEs was the on-line trade (buying/selling on line). In the last two years, there was a noticeable increase in the percentage of SMEs that created their own Internet sites, illustrating a tendency towards greater use of the virtual environment for disseminating information about the organization and its products. This comes as an argument for previously encountered findings that state that “internet developments have been found to be critical for SMEs to build successful interactions with business customers” (Tseng and Johnsen, 2011, p. 573).

After an initial increase, the use of the intranet diminished in Romanian SMEs in the last two years, possibly due to a decrease in the number of large SMEs, where the use of the intranet is needed at larger extents.

However, even though the exploitation of information technologies is seen as being part of the process of innovation, this is also seen in the literature as being used only moderately by SMEs (Baregheh, Rowley, Sambrock and Davies, 2012). One reason can be related to the fact that the use of IT resources, both for strategic as well as tactical purposes, are dependant (in SMEs) on the IT capabilities of the owner/manager (Chao and Chandra, 2012), as well as on the (limited) resources.

Overall, it is recognized that IT has a positive impact on SMEs by helping small firms to enhance their operational efficiency (Beheshti, 2004). IT can be used for multiple purposes in organisations, but at SMEs level their use is limited, as also encountered in this study.

Table 5. The use of IT in Romanian SMEs in 2004/2005 – 2010/2011

| Forms of IT used | 2004/2005 | 2005/2006 | 2006/2007 | 2007/2008 | 2008/2009 | 2009/2010 | 2010/2011 |
|------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Computers | 81.90% | 82.08% | 82.51% | 82.25% | 83.26% | 81.55% | 77.09% |
| Internet | 64.16% | 70.14% | 66.64% | 72.93% | 81.44% | 78.59% | 73.22% |
| E-mail | 56.51% | 62.86% | 61.54% | 61.07% | 72.52% | 74.81% | 69.93% |
| Own site | 27.97% | 24.12% | 23.77% | 11.54% | 16.20% | 33.33% | 33.26% |
| Trade on line | 7.51% | 7.89% | 9.59% | 6.77% | 11.01% | 11.78% | 14.21% |
| Intranet | N/A | 12.40% | 9.93% | 21.50% | 36.56% | 15.49% | 5.69% |
| Others | 0.79% | 1.45% | 0.68% | 0% | 0% | 0.88% | 0.23% |
| None | 15.52% | 12.94% | 10.78% | 7.32% | 9.37% | 7% | 14.16% |

Sources: Carta Albă a IMM-urilor din România (White Charter of SMEs from Romania), Editions 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011.

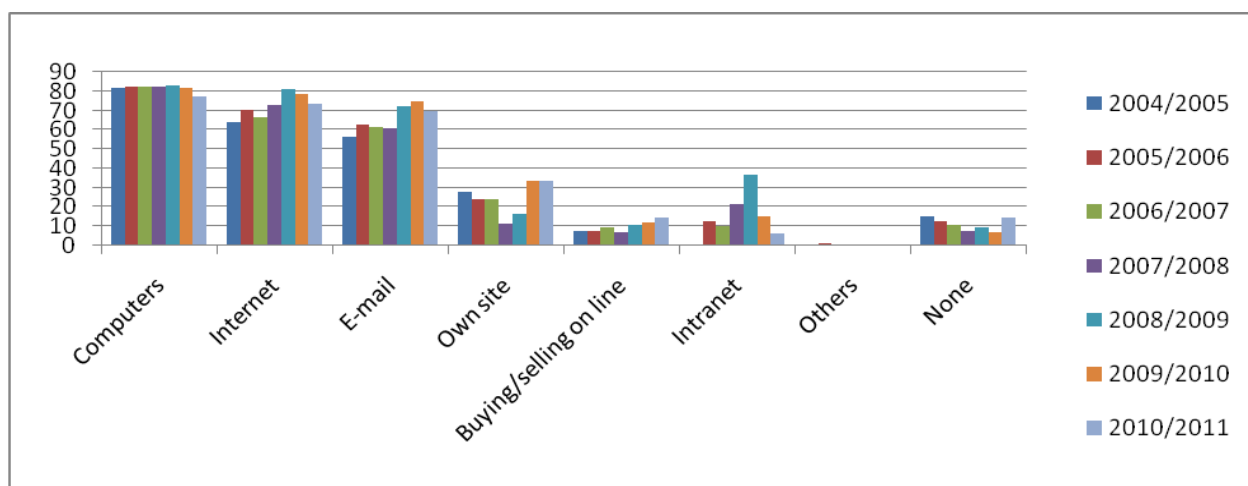


Figure 4. Dynamics of the use of IT in Romanian SMEs in 2004/2005 – 2010/2011

Information technology is used in Romanian SMEs mainly for communication purposes, illustrating once more what others (Baregheh, Rowley, Sambrock and Davies, 2012) have discovered, namely, that SMEs are exploiting information technology in a limited or, at best moderate way to improve product development processes. However, it is acknowledged that in more developed countries such as UK and Ireland, the web-based

electronic commerce has increasing trends in SMEs, including the use of inter-organizational systems (particularly the Internet), due to positive experiences of SMEs with web based electronic commerce on the one hand and to the continued desire of larger firms to achieve full compliance with their inter-organizational systems on the other hand (Hughes, Golden and Powell, 2003). Similarly, Ngugi, Johnsen and Erdelyi (2010) illustrated how the participation of SMEs from the organic food and drink industry from UK in Internet based information systems with large supermarkets lead to the creation of inter-organizational systems that contribute to innovative processes in SMEs.

Detailed analysis of the **purposes for which SMEs used the Internet and Intranet** as IT mediums, shows that there was a change of priorities in the utilization of these means of communication. At the beginning of the 2004/2005 – 2007/2008, these means were used for connecting with the external environment of the organisation: mainly to communicate with suppliers and clients and to collect information about the business environment. The last years have shown a higher increase of the use of these virtual means for on-line transactions and payments (from 20% in 2004 to 53% in 2011), illustrating how SMEs adapted to recently developed ways of doing business. A shift towards a more intense use of IT for facilitating communication and activities within the company, took place over the period, doubling in 2010/2011 as compared to 2004/2005. The years after 2007, when the economic difficulties started to manifest, have know higher increases in this respect, illustrating once again the reorientation from outside towards the inside of the company. The inward orientation tendency might be explained by the decrease in demand and, lately, in business opportunities, not only as fallout of the economic crisis, but also as potentially improved internal communication and business mechanisms within the company.

Table 6. The use of Internet/Intranet in SMEs from Romania in 2004/2005 – 2010/2011

| The purposes of using the Internet /Intranet | 2004/ 2005 | 2005/ 2006 | 2006/ 2007 | 2007/ 2008 | 2008/ 2009 | 2009/ 2010 | 2010/ 2011 |
|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Facilitating communication within the firm | 29.61% | 27.87% | 28.52% | 28.50% | 44.04% | 38.79% | 65.21% |
| Transactions, contracts, payments | 19.67% | 27.64% | 28.95% | 24.84% | 38.49% | 33.94% | 53.16% |
| Obtaining information about the business environment | 59.01% | 56.89% | 55.52% | 61.86% | 62.88% | 61.55% | 37.58% |
| Communicating with suppliers, clients | 55.87% | 58.73% | 60.87% | 62.34% | 75.43% | 70.51% | 31.38% |
| Others | 0.93% | 3.83% | 1.78% | 0.64% | 1.64% | 1.62% | 1.65% |

Sources: Carta Albă a IMM-urilor din România (White Charter of SMEs from Romania), Editions 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011.

Other researchers (Chao and Chandra, 2012) found a number of factors that inhibit the strategic utilisation of IT in SMEs, including: lack of top management vision, lack of computer expertise, poor planning, inability to identify the strategic benefit of using IT, etc. The results of their study are similar to the results of the present study in the sense that Romanian SMEs tend to use the Internet in limited ways, such as finding new suppliers and emailing prospective customers. Generally speaking, SMEs are perceived to lag behind large

firms both in terms of innovation as well as in terms of the use of IT as a strategic tool (Tseng and Johnsen, 2011).

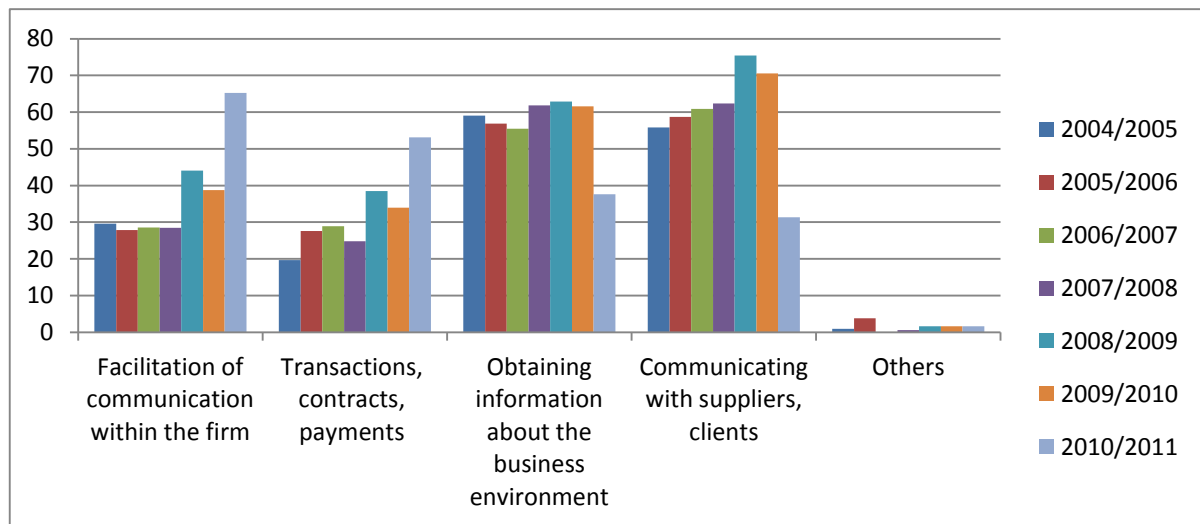


Figure 5. Dynamics of the use of Internet/Intranet in Romanian SMEs in 2004/2005 – 2010/2011

Conclusion

This study provided a general image over the changes that took place in Romanian SMEs in relationship with innovative activities conducted over a period of eight years (2004-2011). Even though the results are based on self declared assertions coming from SMEs surveyed on an yearly basis, there are a number of features that appear by studying these aspects in dynamics. Therefore, the main characteristics of innovations in Romanian SMEs in the studied period as considered to be the following:

a) in terms of forms of innovation, the majority of innovations in Romanian SMEs were product oriented. This includes the introduction of new and modernized products. Some other forms of innovations were process oriented innovations including the introduction of new technologies and new managerial approaches.

b) investments in innovations are limited in Romanian SMEs. The economic crisis had a negative impact on them in the last few years. Investments for innovations decreased in time in SMEs, especially since the economic crisis reached Romania as well, which ended up in 2011 with almost half of SMEs without any investible surplus at all for innovations.

c) innovations decreased in the last few years in Romanian SMEs. Even though product innovation was the main form of innovation in Romanian SMEs, the intensity of renewing products (seen as a percentage of the total company turnover that is accounted for by innovative products) decreased over time, culminating with only 45% of the SMEs declaring that they do not have new or modernized products in 2011.

d) IT innovations play an important and ascending role in Romanian SMEs. The use of IT was increasing in SMEs in the studied period and new forms of IT technologies were added (company web sites, buying/selling on-line) to the already existing ones (Internet, e-mail).

Based on this general analysis conducted on innovative activities in Romanian SMEs for the period 2003/2004-2010/2011, we can conclude that:

a) as expected, the difficult economic situation prevailing in Romania, as a country affected by the economic crisis much like the whole Europe and the practically the entire globe world, is also seen as having negatively impacted SMEs' activity and their innovative activity in particular – the aspect that was studied in this paper. Almost all types of innovative activities have diminished in SMEs since the start of the economic crisis with more than 35% of SMEs not being involved at all in innovative activities after 2009.

b) in spite of the generally decreasing trends in innovative activities in SMEs, some of the IT related activities grew even after the start of the crisis and we refer here to the use of internet for different commercial and informative purposes. This can be interpreted from a number of angles: a) as complying with existing technological trends that imply the increased use of IT at business levels; b) as one way to better cope with the economic crisis, by assimilating cheaper ways of doing business. The use and the integration of the new IT technologies in the current activities of SMEs, ensures the development of communication, promotion, advertising, and selling activities at lower costs than through the traditional means.

Using the analysis conducted as a guide, we propose as ways to support innovations in Romanian SMEs:

a) At policy level. In order to develop innovative processes and activities in SMEs, measures that governmental and industry level policy makers can take, include: trainings of SMEs on topics related to innovative business thinking, innovative marketing, innovative management, etc; supporting the larger and faster adoption of IT in SMEs by facilitating financially and from the know-how point of view the IT integration; governmental financial facilities (such as decrease or tax exemption for profit re-invested in innovations).

b) At organisational level. In order to increase the level of innovation in Romanian SMEs, there is a felt need to emphasize more on the process of organisational learning. This includes looking for less costly ways to innovate, such as new ways of working and of organizing activities differently within the company (human resources, marketing) — ways that do not necessarily involve large investments, but a different and better organisational way of getting things done.

The present study brings contributions to the literature on innovations in SMEs, as it: a) offers information about innovative activities in SMEs, seen at a general level, within an economy wide sample, not only at an industry level, presenting an overall image of innovative activities in the SMEs sector; b) it is specific in the sense that it looked at SMEs' innovations in a particular country, Romania; c) it makes an analysis in dynamics, allowing one to identify changes over time as well as potential trends related to the progress of innovations in SMEs; d) it identified a number of general characteristics of innovations in SMEs in Romania through the study of specific aspects related to innovations.

However, the study also has a couple of limitations. One limitation consists of the fixed and low number of issues that have been included in the surveys about innovations in SMEs, restricting the scope of the analysis. Another limitation refers to the predominantly quantitative character of the data collected, diminishing the possibility of identifying motivations and other explanatory aspects related to innovative behaviour and activities in SMEs.

Further research could include a qualitative study based on interviews within SMEs that can look at the details of innovations such as: the development of the decision making processes related to innovations in SMEs; identifying the motivations of introducing innovations in SMEs and how the different forms of innovations are chosen and implemented in SMEs.

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