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The Propensity of SMEs to Innovate: A Cross - Country Outlook

Irene Fafaliou[a], Marinos Stefanitsis[b], Aelita Skaržauskienė[c]

[a]*University of Piraeus, Department of Economics, 80, M. Karaoli & A. Dimitriou Str, 18534 Piraeus, Greece, e-mail: fafaliou@unipi.gr*
[b]*National Bank of Greece , Business Processes Department, 86 Gargitou Street, 153 44, Athens, Greece,* e *-mail: mstefan@nbg.gr*
[c]*Mykolas Romeris University, Faculty of Social Informatics, Ateities st. 20, LT-08303 Vilnius, Lithuania, e-mail: aelita@mruni.eu*

Abstract

Although small and medium-sized enterprises' (SMEs) involvement in the innovation process is a long standing issue and recently has resurged in the relevant literature, building and sustaining innovation is a hard and non linear work. The purpose of the paper is to explore the propensity of SMEs to innovate drawing evidence from three different countries and a wide variety of sectors and firms' ages and sizes. In particular, this paper focuses on differences between various characteristics of the surveyed SMEs and attempts to establish links with firms' tendency to innovate. Data were collected through a questionnaire survey addressed to a sample of 336 firms located in Greece, Croatia, and Lithuania. Findings suggest a somewhat problematic relationship between Greek and Croatian firms and their involvement to innovation. Lithuanian firms, however, seem to be more committed to innovation since they employ a more dynamic approach to innovation process and its implementation.

JEL Classification: O31; L20; O57.
Keywords: innovation; small and medium-sized enterprises; Greece; Croatia; Lithuania

1. Introduction

The role and importance of innovative small and medium-sized enterprises (SMEs) in economic development has been growing intensively during the last decade (Keilbach et al., 2009). Globalization, the spread of capitalism and the rise of the entrepreneurial economy characterized by a fall in the importance of economies of scale in production, have shifted the attention of scholars and policy makers from larger to smaller firms (OECD, 2010). Since turbulent competitive environment rewards creativity, flexibility and continuous innovation, change capabilities and the

readiness of firms to explore and innovate have been resurged as key factors of economic growth and firms' sustainability (Isaksen and Tidd, 2006; Bessant and Tidd, 2011).

Existing research suggests that both larger and smaller firms exhibit certain advantages and disadvantages in terms of their ability to innovate (Rothwell and Zegveld, 1986; Acs and Audretsch, 1988; OECD, 1996, 2004; Freel, 2005; Audretsch et al., 2006; Marques and Ferreira, 2009). However, although firm size do influence on various business issues (e.g., economics of scale, organization design, global market presence, resource allocation, etc.), innovation practices worldwide are substantially performed by smaller firms. Therefore, SMEs have been recognized as a driving force of economic development. Their innovativeness, a term employed to measure a firm's propensity to innovate, is what makes a difference in the business arena.

There are different definitions about innovativeness. Wang and Ahmed (2004) defined innovativeness as "an organization's overall innovative capability of introducing new product to the market, or opening up new markets, through combining strategic orientation with innovative behaviour and process", while Hult, Hurley and Knight (2004) as "the firm's capacity to engage in innovation". The innovativeness is considered as an unpredictable process dependent on the interplay of multiple, complex internal and external factors, specific to the firm (Dodgson et al., 2005; Rosenbusch et al., 2010). It is a social construct with various subjective meanings attached to it (Damanpour, 1991). It is an important and still empirically under investigated topic.

The imperative to focus on the self-reported nature of innovation and the way innovativeness is approached and practiced by individual SMEs in a country-specific context is well documented in the literature. For example, Loveman and Sengenberger (1990) have long before established evidence for the diversity existing among SMEs operating in the same country.

Although the relationship between SMEs and innovativeness is already somewhat investigated, it is still inconclusive and directs greater specification in the particular SMEs context. Obviously, there is a lack of comparative cross-country findings that could shed a new light on the issue. The main reason why such findings are missing, besides the complexity of conducting a cross-cultural research in general, could be definitions' criteria of the SMEs in the European Union[1] (EU) countries (or elsewhere). Those criteria somewhat vary depending on the institutional and historical context of each country and industry (EU Commission, 2005; Bos-Brouwers, 2010), making their entrepreneurial and innovative activities harder to compare. Nevertheless, aforementioned obstacles should not discourage researchers for investigating and comparing the innovativeness of SMEs across countries and within different contexts.
Drawing from the existing literature, this research focuses on the exploration of the nexus between the innovativeness and the SMEs in different country-specific contexts. In particular, our purpose is to explore how SMEs perceive innovation in practice, interpret their readiness to innovate, recognize relevant funding opportunities and hurdles, and make use of a range of means in order to be better informed on the innovation activity developed in their markets. By doing so, we hope to provide an updated empirical case which gets a better insight regarding the way individual SMEs'

[1]For statistical reasons the OECD definition of SMEs considers factors like the number of employees employed (i.e. less than 500 employees in the USA) etc. Source: OECD Glossary of Statistical Terms, http://stats.oecd.org/glossary/detail.asp?ID=3123

owners, managers and business professionals perceive, develop, transform, and implement innovation. Our cross-country findings can be used by policy makers and stakeholders for supporting and encouraging SMEs innovation in a more appropriate way.

The paper is structured as follows. After the introduction, Section 2 starts with a description of the strategic importance of the SMEs in EU, followed by a focused literature review. In Section 3, five hypotheses are developed. Section 4 describes the research methodology employed. Section 5 presents and discusses the results of the empirical survey and Section 6 concludes the paper and considers possibilities for further research.

2. Literature Review of SMEs' Innovativeness

The strategic importance of the SMEs is strongly addressed by their numerical significance, particularly within the developed EU countries. According to the EU 2010 annual report on European SMEs (Ecorys and Cambridge Econometrics, 2011), there is almost 20.8 million of SMEs in European Union. The majority of them (that is 19.2 million or 92.1 percent) are micro-firms with less than ten employees. SMEs constitute the major source of employment in all the EU-27 countries (i.e. in 2010 they provided more than two-thirds, that is 87.5 million jobs in the private sector), and account for 58.4 percent of the total Gross-Value Added (GVA). Furthermore, the report also shows that SMEs kept their significant position in the European economy throughout 2010, despite the downturn of the economy.

Nevertheless, we should be aware of the notable differences present among SMEs from various EU countries. SMEs within some countries are more successful and innovative (e.g., Germany, Poland) than their counterparts from other countries (e.g., Greece, Romania, Spain). As the EU 2010 annual report on European SMEs states, "Germany is the leading economy in the EU consisting of 20 percent of the EU's GDP… Poland is the only country that managed to avoid a recession since the onset of the crisis in 2008, demonstrated by a GDP growth of 1.7 percent in 2009 and a continued growth of 3.8 percent in 2010… In Romania, despite the negative GDP growth, the country's SMEs were still thriving …whereas countries such as Greece, Portugal and Ireland have performed poorly due to budgetary problems and the subsequent implementation of tough austerity programmes" (Wymenga et al., 2011).

In order to gain a better understanding of the relationship between SMEs and innovativeness, determinants of innovation capability should be observed in-depth within different contexts. Potential determinants that influence the innovativeness of SMEs across countries could be historical, political, economic, and institutional. Although we are looking forward to offer new explanation of the importance of particular determinants of SMEs' innovativeness, some of the differences and explanations emerge from the previous research findings. However, despite the unquestionable imperative for entrepreneurs to "innovate or die", innovation activities of the SMEs, the characteristics of their innovation process, and the factors assumed to influence their capacity to innovate vary considerably from one study to another, and especially across different countries.

For example, according to the *European Association of Craft, Small and Medium-Sized Enterprises Report* (UEAPME, 2010), the overwhelming majority of SMEs carry out innovation activities which are neither based on R&D nor follow a linear process. Thus, innovation in SMEs is more like an on-going process driven by small entrepreneurs and their staff. It includes new and improved products and services,

newly designed or redesigned processes, new market entries, modern work arrangements and novel management concepts. Interestingly, the report showed that only 6 to 10% of all innovation is based on new technologies. Furthermore, innovation within SMEs mostly resulted from the need to react to customer requirements or to apply quality standards with the aim to get a new contract or to stay in business.

Another study, based on a literature review and the results of an online survey aiming at innovation stakeholders, stated the top five barriers that hinder most the SMEs' innovation capacity as follows: 1) shortage of financial resources and access to finance; 2) shortage in skills in innovation management; 3) insufficient use of public procurement to foster innovation in SMEs; 4) shortage in skills to manage intellectual property and 5) weaknesses in networking and cooperation with external parties (Innova Europe Technopolis Group, 2011).

Additionally, it was confirmed that SMEs seeking to internationalize their business encounter significant non-policy barriers to new market entry. Main export barriers are related to: 1) gaining access to networks and contacts, including identifying potentially useful contacts and establishing a dialogue once they have identified the right people; 2) navigating unfamiliar business environments, including and language and cultural differences; 3) procedural barriers, including issues relating to product standards and other aspects of the legal and regulatory framework; 4) finding the confidence, management time and other resources to investigate and pursue overseas opportunities; 5) knowing how to deploy efforts effectively, including understanding of the competitive environment and how to assess potential benefits and risks (BIS, 2010).

However, there are recognized some notable differences among countries. During the *SMEs Conference Business Symposium* in Bologna experts stated the following: "Experience has shown that some governments have been able to engender a climate where SME innovation can flourish, creating a more dynamic economy and greater employment opportunities. Indeed, the national climate for private sector innovation has an impact on businesses of all sizes, but public policies and attitudes that constrain creativity, competition, risk-taking and appropriate financial returns on successful ventures can particularly affect SMEs" (OECD, 2000). In spite of detrimental conditions, SMEs are trying to find their road to success.

For instance, a survey conducted among 605 Dutch innovating SMEs clearly showed that "SMEs are increasingly adapting open innovation practices. Moreover, it recognized a significant difference among manufacturing and services firms, as well as larger and smaller SMEs, regarding the firm's adaptation to open innovation. In fact, the larger SMEs were able to adapt more quickly and in a more structured and professionalized way to open innovation than smaller ones. The survey results also addressed the organizational and cultural differences as the most important barriers when cooperating with other partners. Other serious barriers for boosting SME's innovativeness that were also recognized are administrative burdens, financing and knowledge transfer problems" (Vrande et al., 2008).

Policymakers in the Baltic countries (Estonia, Latvia, Lithuania and Poland) are also increasingly recognizing the importance of innovation policy for competitiveness and economic development, and try to improve linkages between theirs' innovation systems. Even more, both Baltic and Nordic countries are currently looking very much to innovation policy to tackle the structural challenges facing their respective economies (IKED, 2004).

Unfortunately, there are some less successful stories as well. For instance, Romanian firms are not competitive and innovative enough because they were not able to adapt to the European standards or due to their incapacity to attract financing resources. Although the access to financing is one of the most significant obstacles to the survival and growth of Romanian SMEs, the limited market power and the lack of management skills, high uncertainty and informational asymmetries, among other reasons, tend to increase the risk profile of SMEs (Vasilescu, 2009).

Besides good or bad examples, research findings within the same country could be also somewhat mixed. For instance, firm size and R&D intensity of Italian SMEs, along with investment in equipment, enhance the likelihood of having both process and product innovation. Both these types of innovation have a positive impact on firm's productivity, especially process innovation. Among SMEs, larger and older firms seem to be less productive (Hall et al., 2009). However, most SMEs in Italy lack the adequate resources to conduct R&D, which is traditionally considered as the main source of innovation (Rodríguez-Pose and Refolo, 2003).

3. Hypothesis Development

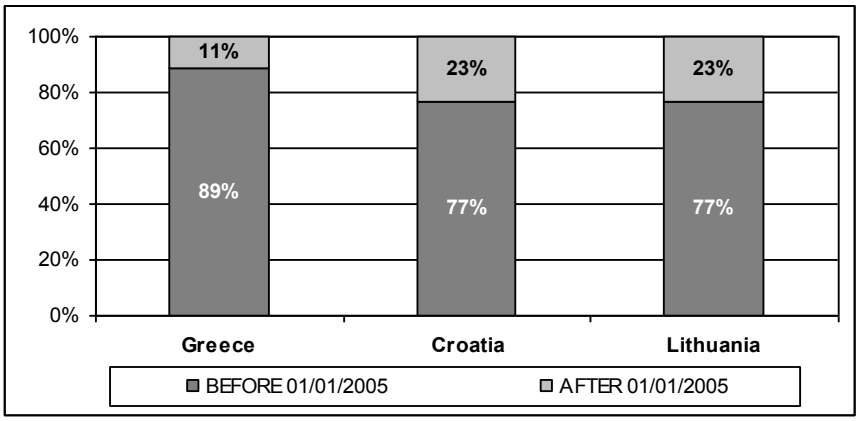
In order to explore the propensity of SMEs, analyze country-specific differences and highlight key facilitators (for example age and size, funding initiatives etc.) and shortcomings that SMEs experience in the process of their innovativeness, we developed five hypotheses, which will form the basis for our research analysis.

3.1 Firm's year of establishment

Little was explored in the literature to determine whether the age of the company has an impact on a company's innovativeness. Many scholars, despite inconclusive results, argue that the date of founding of the company is, as expected, positively related to the number of new products implying that firms' age and new products are inversely related (see for example Hansen, 1992). Further, Reid and Garnsey (1996) in their study on small hi-tech companies asserted that companies spent the first ten years to contract out and began a program of product innovation later. In the same vein, Yahya et al. (2011) also suggest that age may have an impact on company innovativeness. In order to investigate whether firm's year of establishment determines how innovative the firm is, the following hypothesis is set-up:

H_1. SMEs recently established (after 1/1/2005[2]) are more innovative than older ones (before 1/1/2005).

Figure 1. Year of Establishment (%)



As Figure 1 illustrates the majority of our sample firms have been established before 2005 whilst the remaining has been established after 01/01/2005.

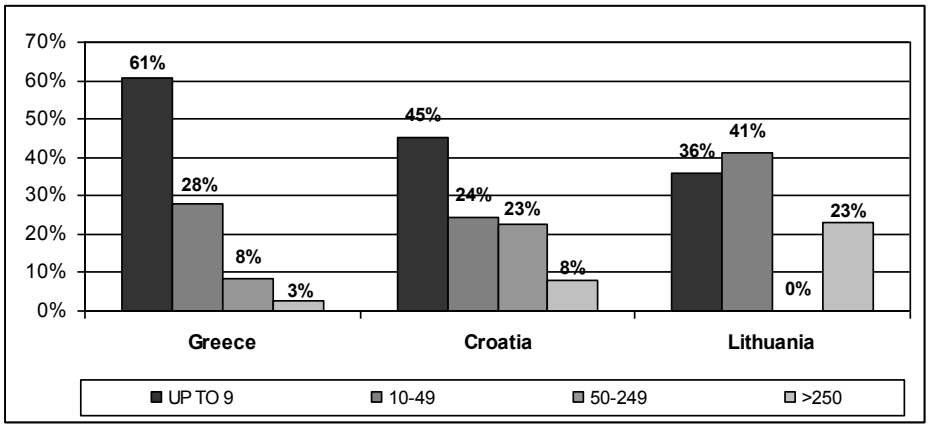
3.2 Number of Employees

All country samples reveal that SMEs mostly employ 1-9 employees or alternatively 10-49 employees (Figure 2). Size, age and flatter hierarchies were found to have effects on company innovativeness. White et al. (1988), for example, suggested that the smallest firms (< 20 employees) had the benefit of individualism, the larger firms (> 50 employees) the benefit of more resources and systems, while the intermediate group (20-49 employees) lacked the best of either world. Ettlie and Rubenstein (1987) also suggested the type of innovation that moderated the size relationship. They further stated for radical innovations may require additional funds for technical work, capital investment for plant and equipment, marketing and promotions. Larger size may be a key enabling condition because of access to key resources and addressing these key issues. Whereas Rothwell and Zegveld (1986) contrasted firm size and innovation across several industries and concluded that the issue of innovation by firm size has not to do with the question of "big" or "small" firms, but with other factors such as different phases in the industry cycle that would vary with technology, markets and government policy (Yahya et al., 2011). Accordingly, we construct our second hypothesis:

[2] According to Kelley, Singer and Herrington (2011:10) as new firms are considered those operating from three and a half up to five years of their establishment. Based on this finding and since our research design and the implementation of the field research started initially in Greece in the year 2011, we set the threshold of the year 2005 in order to differentiate the recently established firms (year of establishment ≥ 2005) from the older ones (year of establishment < 2005).

H_2. Smaller SMEs (Number of employees ≤ 49) are more innovative than bigger ones (Number of employees ≥ 50).

Figure 2. Number of Employees (%)



3.3 SMEs Channels to targeted Customers and Modes of selling

The majority of the firms in examined countries reported to focus both on Business-to-Business (B2B) and Business-to-Customers (B2C) marketing strategies, with most of them reaching their clients either via traditional modes of selling (offline) or a mixture of offline and online modes of selling (Figures 3 and 4). In order to investigate whether firm's way of selling determines how innovative the firm is, the following hypothesis is set-up:

H3. SMEs using online platforms to sell their products and services or a mixture of online and offline selling are more innovative than SMEs which solely use offline market transactions.

Figure 3. SMEs Channels to targeted Customers (%)

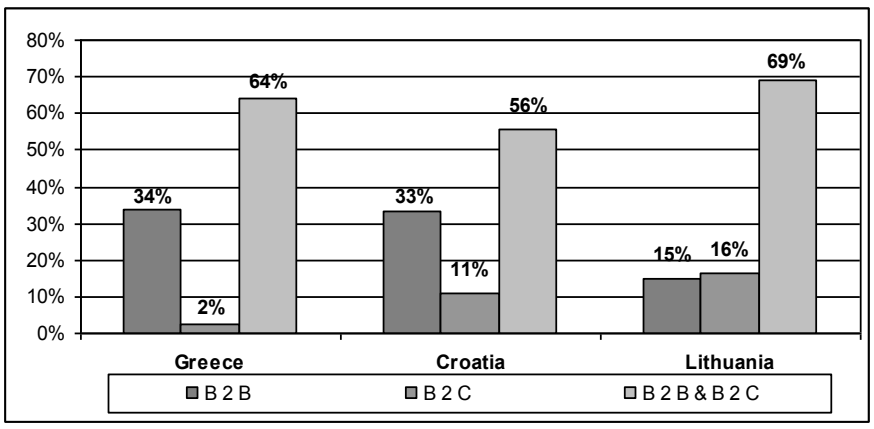
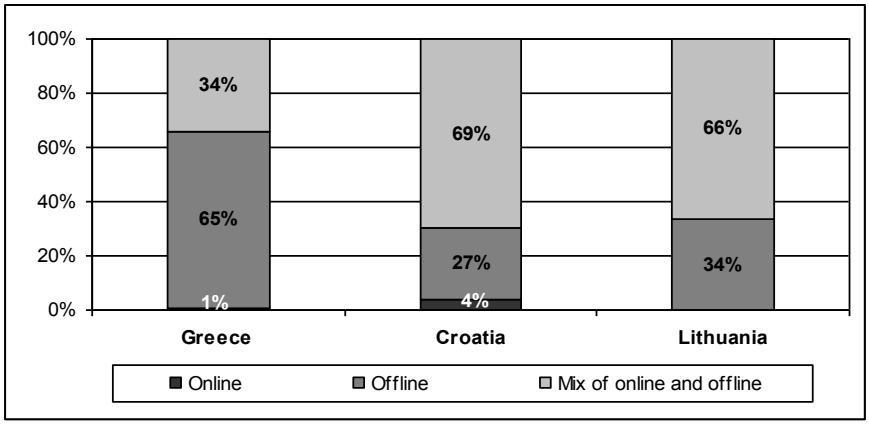


Figure 4. SMEs modes of market transactions (%)



3.4 Financial resources

As stated in a study issued from the Hamburg University of Technology, "the lack of financial resources hinders many SMEs from initiating or – even worse – completing their innovative ideas. Financial constraints as a barrier to innovation in German SMEs were just recently confirmed by the DIHK[3]. They found out that SMEs have problems to acquire loans because financial institutions are often reluctant to (co-) finance risky innovation projects" (DIHK, 2007). Another constraint refers to the already stated problem of getting access to public funding for innovative ideas. Further, according to Tiwari and Buse (2007) "German SMEs complained about non-transparency caused by a large number of local, national and EU programs and the bureaucratic application procedures associated with them… it was pointed out that innovation projects must be delayed owing to regulatory reasons until the application has been approved". Taking the lead from the last observation, the following hypothesis was constructed:

H_4. SMEs that have been funded / co-financed by a National or European program in order to develop innovations are more innovative than others.

According to a study undertaken by the European Association of Craft, Small and Medium-Sized Enterprises (UEAPME, 2010), the main problems for SMEs to innovate are more or less the following: 1) SMEs are largely dependent on debt financing. However, the main sources of SMEs funding (i.e. either banks or private investors) are not able or unwilling to provide finance for riskier projects, such as innovation and start-ups, with credits and loans Further, SMEs and financial intermediaries argue that European financial support mechanisms are not easily accessible by SMEs or not appropriate for their needs, 2) SMEs report a lack of specialized staff and training opportunities, 3) SMEs owners also anticipate difficulties in the design and management of innovation projects and relative processes, especially if they operate in more technologically sophisticated environments, 4) The lack of specialized internal resources at national level, inhibits SMEs from cooperative efforts, 5) SMEs, especially those from new Member States, reported complaints relating to

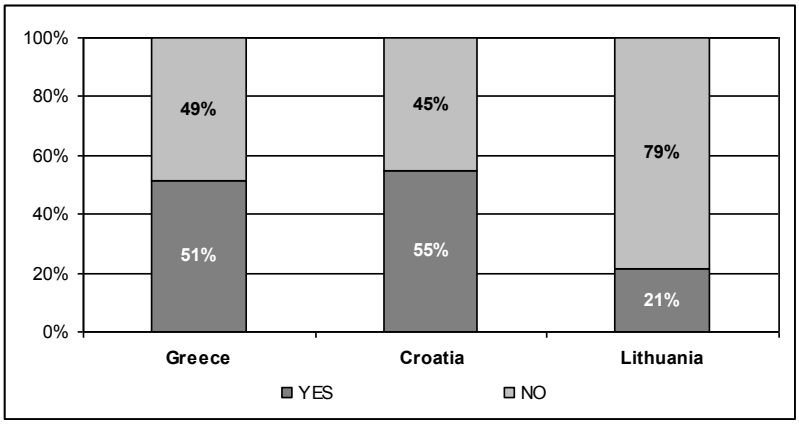
3 DIHK: German Chambers of Industry and Commerce

the available infrastructure, the quality of administration and the stability of the regulatory system. All the above discourage SMEs to invest in innovative activity and high risk projects (UEAPME, 2010).

According to the data collected, with the exception of Lithuania, almost half or more than half of our sample reported that they abandoned innovative activities and plans during the last five years (2006-2010) (Figure 5). Therefore, the following hypothesis is proposed:

H_5. SMEs that have been funded / co-financed by a National or European program in order to develop innovations tend to abandon business activities or innovative plans less.

Figure 5. Were there any business activities or innovative plans abandoned in your company, during the last five years? (%)



4. Research Methodology

4.1 Data collection, sample and questionnaire construction

For the purpose of our research, data were collected through a structured questionnaire addressed to a convenient sample comprised of *owners, managers* and *business professionals* of SMEs, located in Greece, Croatia, and Lithuania. To capture uniformity in the three countries, first the questionnaire was constructed in English and was pre-tested through a pilot survey undertaken in each country by the researchers involved who sent the questionnaire to several local SMEs. The same procedure was employed for pre-testing the e-mail which described the aim of the survey and invited the recipients to participate in the survey by answering and submitting back the questionnaire. Following the pilot survey in each country, both the resulted version of the e-mail and the questionnaire, subsequently, were translated into Greek, Croatian, and Lithuanian.

The data collection process started in August 2011 and was completed in September 2012. The researchers in each country were free to circulate the questionnaire to any convenient to them SME, that is to say of any age, from any sector of their economy, and with no limitation in terms of their national geographic distribution. Each country's researchers were asked from the Greek leading team to send back up to 110 well completed questionnaires. The circulation of the questionnaire addressed to Greek SMEs was set off on the 3rd of August 2011 and

completed on the 8th of November 2011. For Croatia, and Lithuania the circulation of the questionnaire was set off on the 15th of December 2011 and completed on the 12th September 2012 for Croatia, and on the 25th September 2012 for Lithuania. Of the SMEs which initially responded positively to our invitation, 336 managed to complete it in full.

Due to the limited number of our sample, as in all market surveys, and unavailable secondary data on comparative analysis among the three countries examined, we cannot generalize our results. However, the authors of this paper believe that our research findings primarily give a better insight as far as the relationship between certain characteristics of SMEs and trend to innovation is concerned. Additionally, our findings can set out a further comparative discussion on links between SMEs in the three countries and their tendency to innovate.

As far as the survey's questionnaire is concerned, that was composed of 33 items which were developed from existing scholarly literature on innovation and SMEs. Thus, consistent with previous studies we assumed that the perception of innovation process and its impact on firm is very complex and depends on a number of inter-related factors. To cover most of those factors the questionnaire was divided into four different thematic sections: general information, current innovation status, ease of funding, and availability of sources of information about innovation.

As stated earlier, the *first section* comprises a set of general questions regarding respondents' *personal data* and *firm's identity*. We assumed that the level of the innovation is likely to be a function of respondent demographics such as gender, age, academic credentials, major field of study and hierarchical position within the firm. As far as firm demographics are concerned, we examined the year of establishment (Reid and Garnsey 1996; Yahya et al., 2011), number of employees and the legal status. Additionally, we have also collected firm data about their business sector, market dispersion and firm's marketing strategy (Rosenbusch et al., 2010).

The *second section* comprises questions about the perceived barriers to innovation in SMEs which have been the object of investigation in a large body of previous both national and international studies (BIS, 2010). Our intention was to analyze whether SMEs in Greece, Croatia, and Lithuania are facing similar barriers to innovation as firms from the other developed economies. In this part of the questionnaire, there were also several questions about resource constraints coupled with a few other factors which limit the ability of SMEs to indulge in dedicated R&D and eventually to innovate. This section also comprises questions concerning the definition of the terminological base for innovation and the establishment of the need for innovation in SMEs, while elaborating the crucial internal and external factors that SMEs encompass in the innovation process.

The *third section* examines the current ease of obtaining various forms of finance as well as the financing tools available for the development of SMEs' innovation. Finally, the *fourth section* deals with the major means used in order for SMEs to keep up to date with what is happening with innovation issues, as well as the important features that must be reinforced, in order to develop the firm's innovative activities.

4.2 General Information on Method and SMEs Descriptive Statistics

In our survey, all statistical calculations were performed on the SPSS version 17.0 software (SPSS Inc, Chicago, Il, USA). The categorical variables are summarized as relative frequencies (%). Associations between categorical variables were tested by the use of contingency tables and the calculation of chi-square tests (Pearson x^2 test) without the correction of continuity. A probability value of 5% has been considered as

statistically significant. A regression analysis was also performed, however without providing statistically significant results.

Table 1 illustrates descriptive statistics of SMEs characteristics. As it is indicated the majority of the respondents are males, finding that confirms that entrepreneurship in our sample is dominated by men (Galloway et al, 2004). The dominance of the age groups 30-39 and 40-49 within the examined countries could be interpreted that young people, despite high unemployment problems are not yet quite familiar with the idea of entrepreneurship. Given that, we strongly believe that if governmental initiatives for youth entrepreneurship continue, more and more young people will attempt to enter in entrepreneurship. Lithuania seems to be in line with this perspective.

Table 1. General Information: Personal Data (%)

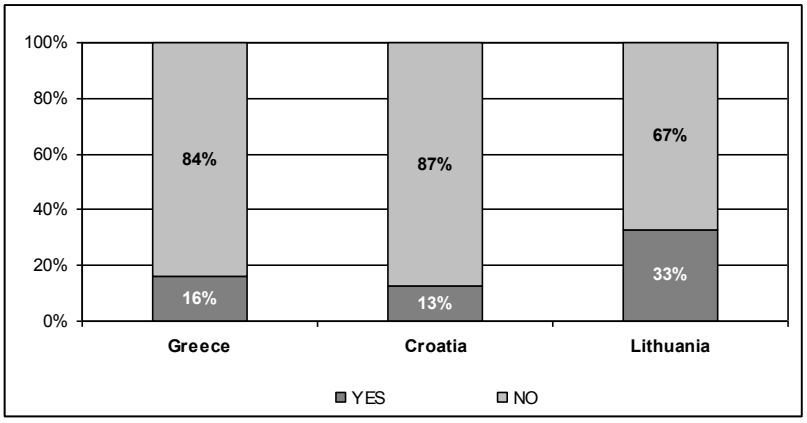
	Greece	Croatia	Lithuania
Gender			
Male	66.1	66.7	63.1
Female	33.9	33.3	36.9
Age			
18-29	8.3	10.8	63.1
30-39	36.1	32.4	8.2
40-49	38.9	27	9.0
50-59	11.1	20.7	19.7
60-69	5.6	9.0	-
Hierarchical position			
Owner	31.8	37.8	19.7
Partner	44.9	7.2	6.6
Business Professionals	18.7	52.3	63.1
Other	4.7	2.7	10.7
Academic credentials			
Primary	0.9	21.6	-
Secondary	29.6	53.2	33.6
Higher	49.1	7.2	57.4
Master	19.4	-	9.0
Doctorate	0.9	18.0	-
Major field of study			
Human sciences	1.8	2.7	34.4
Economics-management-business	52.6	53.2	29.5
Law	3.5	4.5	9.8
Institute of technology-polytechnic	21.1	16.2	9.8
Medical	1.8	2.7	0
Art-cultural	0	0	0
Media	1.8	0	0
Other	17.5	20.7	16.4

The high percent of the owners of the respondents in the survey somehow confirms their dominant role in SMEs whereas their high educational level creates prospects for upgrading entrepreneurship in the future. This finding is also in alignment with previous research work (see, for example, Barnett and Storey, 2000).

As far as patents of certificate for innovations developed in house is concerned, only a small portion of the examined sample has been awarded a patent certificate for innovations developed in house (Figure 6). The study undertaken by the European Association of Craft, Small and Medium-Sized Enterprises (UEAPME, 2010), reveals that "…2) Even highly innovative SMEs refrain from protecting their intellectual

property rights, because of the current IPR regime in Europe, which is complex, costly and does not meet the needs of smaller innovators. 3) The main barriers as regards access to existing technologies are high information costs for SMEs and the expensive and complicate patent systems. Furthermore, the results of publicly sponsored research are not always made available at reasonable costs…" (UEAPME, 2010).

Figure 6. Has your Company been awarded any patent certificate for innovations developed in house? (%)



5. Empirical Analysis

5.1 Findings and Interpretation

Test of H_1: Partially Confirmed

In the first hypothesis we stated that SMEs recently established (after 1/1/2005) are more innovative than older ones (before 1/1/2005). Initially, as shown in Table 2, the majority of respondents from recently established SMEs (except those from Greece), reported that their firms are more innovative than the older ones. It is also important to mention that in the case of Lithuania, all SMEs (percentage 100%) that have been established after 1/1/2005 stated that they are innovative. According to Pearson Chi-Square test, the results for Lithuania are statistically significant, χ^2 (1, N=122) =11.85, p=.001.

Table 2. Do you believe that your firm is innovative / Year of establishment

Do you believe that your Firm is innovative?		Year of establishment:		
		before 01/01/2005	after 01/01/2005	Total
GREECE	**YES**	**43**	**3**	**46**
		44.30%	25.00%	42.20%
	NO	**54**	**9**	**63**
		55.70%	75.00%	57.80%
	Total	**97**	**12**	**109**
		100.00%	100.00%	100.00%
CROATIA	**YES**	**54**	**18**	**72**
		63.50%	69.20%	64.90%
	NO	**31**	**8**	**39**
		36.50%	30.80%	35.10%
	Total	**85**	**26**	**111**
		100.00%	100.00%	100.00%
LITHUANIA	**YES**	**64**	**28**	**92**
		68.10%	100.00%	75.40%
	NO	**30**	**0**	**30**
		31.90%	0.00%	24.60%
	Total	**94**	**28**	**122**
		100.00%	100.00%	100.00%

Similarly, when it comes to the point that we should measure innovativeness through the provision of a patent certificate (Table 3), we end up to the conclusion that the hypothesis is again not fully confirmed. According to Pearson Chi-Square test, results from each examined country are not statistically significant.

Table 3. Has your Firm ever been awarded any patent certificate for innovation developed in house / Year of establishment?

Has your Firm been awarded any patent certificate for innovations developed in house?		Year of establishment:		
		before 01/01/2005	after 01/01/2005	Total
GREECE	**YES**	**16**	**1**	**17**
		16.80%	8.30%	15.90%
	NO	**79**	**11**	**90**
		83.20%	91.70%	84.10%
	Total	**95**	**12**	**107**
		100.00%	100.00%	100.00%
CROATIA	**YES**	**13**	**1**	**14**
		15.30%	3.80%	12.60%
	NO	**72**	**25**	**97**
		84.70%	96.20%	87.40%
	Total	**85**	**26**	**111**
		100.00%	100.00%	100.00%
LITHUANIA	**YES**	**30**	**10**	**40**
		31.90%	35.70%	32.80%
	NO	**64**	**18**	**82**
		68.10%	64.30%	67.20%
	Total	**94**	**28**	**122**
		100.00%	100.00%	100.00%

Test of H_2: Partially Confirmed

In the second hypothesis we proposed that smaller SMEs (Number of employees ≤ 49) are more innovative than bigger ones (Number of employees ≥ 50). As shown in Table 4, the majority of large-sized SMEs from Greece and Lithuania that employ more than 50 persons, according to respondents' perception are more innovative than the smaller SMEs that employ less than 50 persons. In the case of Lithuania, all SMEs (percentage 100%) that are employing more than 50 employees believe that they are innovative and the results are statistically significant as far as considering Pearson Chi-Square test, χ^2 (1, N = 122) = 11.85, p =.001.

Table 4. Do you believe that your Firm is innovative? / Number of employees

Do you believe that your Firm is innovative?		Number of employees:		
		Below 50	Above or equal 50	Total
GREECE	**YES**	**37**	**8**	**45**
		38.90%	66.70%	42.10%
	NO	**58**	**4**	**62**
		61.10%	33.30%	57.90%
	Total	**95**	**12**	**107**
		100.00%	100.00%	100.00%
CROATIA	**YES**	**51**	**21**	**72**
		66.20%	61.80%	64.90%
	NO	**26**	**13**	**39**
		33.80%	38.20%	35.10%
	Total	**77**	**34**	**111**
		100.00%	100.00%	100.00%
LITHUANIA	**YES**	**64**	**28**	**92**
		68.10%	100.00%	75.40%
	NO	**30**	**0**	**30**
		31.90%	0.00%	24.60%
	Total	**94**	**28**	**122**
		100.00%	100.00%	100.00%

The evaluation of the SME's innovativeness from innovation development research or support organizations (Table 5) clearly shows that the second hypothesis should be rejected for each country subsample. Namely, according to Pearson Chi-Square test, only the results for Lithuania are statistically significant, χ^2 (1, N = 122) = 34.57, p =.000.

Table 5. Has your Firm ever been awarded any patent certificate for innovation developed in house? / No. of employees

Has your Firm been awarded any patent certificate for innovations developed in house?		Number of employees:		
		Below 50	Above or equal 50	Total
GREECE	**YES**	**15**	**2**	**17**
		16.00%	18.20%	16.20%
	NO	**79**	**9**	**88**
		84.00%	81.80%	83.80%
	Total	**94**	**11**	**105**
		100.00%	100.00%	100.00%
CROATIA	**YES**	**8**	**6**	**14**
		10.40%	17.60%	12.60%
	NO	**69**	**28**	**97**
		89.60%	82.40%	87.40%
	Total	**77**	**34**	**111**
		100.00%	100.00%	100.00%
LITHUANIA	**YES**	**18**	**22**	**40**
		19.10%	78.60%	32.80%
	NO	**76**	**6**	**82**
		80.90%	21.40%	67.20%
	Total	**94**	**28**	**122**
		100.00%	100.00%	100.00%

Test of H_3: Partially Confirmed

In the third hypothesis we examined if SMEs adopting a mixture of online and offline selling strategies are more innovative than SMEs employing just offline strategies to reach their customers. As Table 6 presents, the hypothesis is confirmed more clearly in the case of Croatia. As far as innovativeness through the provision of a patent certificate (see Table 7), our findings show that this hypothesis is confirmed for Greece and Lithuania but not in the Croatian case. The analysis did not reveal any statistical significance.

Table 6. Do you believe that your Firm is innovative? / Marketing Strategy

Do you believe that your Firm is innovative?		Marketing Strategy		
		Offline	Offline & Online	Total
GREECE	**YES**	**30**	**16**	**46**
		42.90%	43.20%	43.00%
	NO	**40**	**21**	**61**
		57.10%	56.80%	57.00%
	Total	**70**	**37**	**107**
		100.00%	100.00%	100.00%
CROATIA	**YES**	**17**	**52**	**69**
		56.70%	67.50%	64.50%
	NO	**13**	**25**	**38**
		43.30%	32.50%	35.50%
	Total	**30**	**77**	**107**
		100.00%	100.00%	100.00%
LITHUANIA	**YES**	**31**	**61**	**92**
		75.60%	75.30%	75.40%
	NO	**10**	**20**	**30**
		24.40%	24.70%	24.60%
	Total	**41**	**81**	**122**
		100.00%	100.00%	100.00%

Table 7. Has your Firm ever been awarded any patent certificate for innovation developed in house / Marketing Strategy?

Has your Firm been awarded any patent certificate for innovations developed in house?		Marketing Strategy		
		Offline	Offline & Online	Total
GREECE	**YES**	**7**	**8**	**15**
		10.30%	21.60%	14.30%
	NO	**61**	**29**	**90**
		89.70%	78.40%	85.70%
	Total	**68**	**37**	**105**
		100.00%	100.00%	100.00%
CROATIA	**YES**	**5**	**9**	**14**
		16.70%	11.70%	13.10%
	NO	**25**	**68**	**93**
		83.30%	88.30%	86.90%
	Total	**30**	**77**	**107**
		100.00%	100.00%	100.00%
LITHUANIA	**YES**	**12**	**28**	**40**
		29.30%	34.60%	32.80%
	NO	**29**	**53**	**82**
		70.70%	65.40%	67.20%
	Total	**41**	**81**	**122**
		100.00%	100.00%	100.00%

Test of H_4: Partially confirmed

In the fourth hypothesis we assumed that SMEs that have an easier access to public funding (either National or European program) in order to develop innovations are more innovative than their counterparts. For example, a study in Germany suggests that most innovative SMEs in Germany have an easy access to public grants, fact that may uncover a correlation (Belitz and Lejpras, 2014). Without being able to draw general conclusions on the matter, according to table 8 the hypothesis is fully confirmed throughout the sample. Pearson Chi-Square test reveals that only the results for Lithuania are statistically significant, χ^2 (1, N=122) =6.95, p=.008.

Table 8. Has the Firm ever been funded / co-financed by any National or European program in order to develop innovations? / Do you believe that your Firm is innovative?

Do you believe that your Firm is innovative?		Has the Firm ever been funded / co-financed by any National or European program in order to develop innovations?		
		YES	NO	Total
GREECE	**YES**	**13**	**31**	**44**
		54.20%	37.80%	41.50%
	NO	**11**	**51**	**62**
		45.80%	62.20%	58.50%
	Total	**24**	**82**	**106**
		100.00%	100.00%	100.00%
CROATIA	**YES**	**4**	**67**	**71**
		66.70%	64.40%	64.50%
	NO	**2**	**37**	**39**
		33.30%	35.60%	35.50%
	Total	**6**	**104**	**110**
		100.00%	100.00%	100.00%
LITHUANIA	**YES**	**50**	**42**	**92**
		86.20%	65.60%	75.40%
	NO	**8**	**22**	**30**
		13.80%	34.40%	24.60%
	Total	**58**	**64**	**122**
		100.00%	100.00%	100.00%

The above results do not substantially change when we analyze SMEs innovativeness through the provision of a patent certificate. As Table 9 depicts the fourth hypothesis is confirmed only in the cases of Lithuania and Croatia. According to Pearson Chi-Square test, the results for Lithuania are statistically significant, χ^2 (1, N=122) =65.67, p=.000.

Table 9. Has the Firm ever been funded / co-financed by any National or European program in order to develop innovations?/ Has your Firm been awarded any patent certificate for innovations developed in house?

Has your Firm been awarded any patent certificate for innovations developed in house?		Has the Firm ever been funded / co-financed by any National or European program in order to develop innovations?		
		YES	NO	Total
GREECE	**YES**	**3**	**14**	**17**
		13.00%	17.30%	16.30%
	NO	**20**	**67**	**87**
		87.00%	82.70%	83.70%
	Total	**23**	**81**	**104**
		100.00%	100.00%	100.00%
CROATIA	**YES**	**2**	**12**	**14**
		33.30%	11.50%	12.70%
	NO	**4**	**92**	**96**
		66.70%	88.50%	87.30%
	Total	**6**	**104**	**110**
		100.00%	100.00%	100.00%
LITHUANIA	**YES**	**40**	**0**	**40**
		69.00%	0.00%	32.80%
	NO	**18**	**64**	**82**
		31.00%	100.00%	67.20%
	Total	**58**	**64**	**122**
		100.00%	100.00%	100.00%

Test of H_5: Completely Confirmed

Finally, the fifth hypothesis proposed that SMEs that have been funded / co-financed by a National or European program in order to develop innovations tend to abandon business activities or innovative plans less than those that have not been funded. Table 10 shows that the hypothesis is strongly confirmed in all samples. The results are statistically significant for Lithuania, χ^2 (1, N=122) =7.93, p=.005.

Table 10. Has the Firm ever been funded / co-financed by any National or European program in order to develop innovations? / Were there any business activities or innovative plans abandoned in your company, during the last five years?

Were there any business activities or innovative plans abandoned in your firm, during the last five years?		Has the Firm ever been funded / co-financed by any National or European program in order to develop innovations?		
		YES	NO	Total
GREECE	**YES**	**12**	**41**	**53**
		50.00%	51.30%	51.00%
	NO	**12**	**39**	**51**
		50.00%	48.80%	49.00%
	Total	**24**	**80**	**104**
		100.00%	100.00%	100.00%
CROATIA	**YES**	**3**	**57**	**60**
		50.00%	54.80%	54.50%
	NO	**3**	**47**	**50**
		50.00%	45.20%	45.50%
	Total	**6**	**104**	**110**
		100.00%	100.00%	100.00%
LITHUANIA	**YES**	**6**	**20**	**26**
		10.30%	31.30%	21.30%
	NO	**52**	**44**	**96**
		89.70%	68.80%	78.70%
	Total	**58**	**64**	**122**
		100.00%	100.00%	100.00%

6. Discussion and Conclusion

In this paper we sought to explore the innovativeness of a sample of Greek, Croatian, and Lithuanian SMEs by considering a number of core variables forming innovation and revealing relevant practices of this type of enterprises. Data were collected through a questionnaire survey. As stated earlier, without being able to generalize results due to the nature of our survey and the small number of our sample, we infer that our analysis of data and results obtained, among others, give a first insight that the national or European support programmes which seek to reinforce innovativeness in SMEs are almost unknown to most of them. In particular, 77.4% of the participants in Greek sample, 94.5% in the Croatian sample and 52.5% in the Lithuanian sample reported that they had never been funded by such a program. Further, the majority of SMEs in the three countries examined has never been awarded any patent certificate for innovations developed in house (Figure 6), whilst in the case of Greece, and Croatia, more than half claimed that there were innovative plans and relative business activities which were abandoned in the company, during the last five years, for various reasons (Figure 5).

Now more than ever, SMEs must become much more efficient based on rapid actions and solutions adjusted to market conditions and entrepreneurs should combine skills, ideas, and processes in order to gain a competitive edge.

Thus, the contribution of this survey to the research field of the SMEs' relationship between entrepreneurship and innovativeness is useful in many respects. Understanding the links existing in practice between 'entrepreneurial activity' and 'innovativeness' by investigating the patterns under which SMEs perceive and manage

innovative solutions is a critical condition for their financial performance, growth and prosperity. Furthermore, our findings could be used as a starting point for research of the determinants (historical, political, economic and institutional) that influence the differences of innovation in SME's in international comparison.

Of course, there are certain limitations that apply to our study. Future research should consider and examine other countries' experiences. It is also important to explore the policies which can boost innovation by improving the environment for small and medium sized firms' development and increasing the innovative capacities of enterprises. In particular, a much larger sample of SMEs may provide additional evidence in the field and inform better SMEs managers and policy makers. Also, a supplementary qualitative analysis through the use of in-depth interviews with owners and managers of SMEs could add further value to our reasoning and increase our understanding of the role that innovation plays to SMEs innovative activities. In addition, it would be useful to make more cross-countries comparisons. Finally, it would be also useful to compare the results of the present study against the results of an identical study after the financial crisis. This is a matter of great concern for the authors of this paper.

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