THE LINK BETWEEN INNOVATION AND PERFORMANCE: A COMPARATIVE STUDY BETWEEN ROMANIAN AND GERMAN SMES

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ABSTRACT: The aim of this study is threefold. The first aim is to identify if there is any difference regarding the innovation capacity of manufacturing companies in comparison to retail companies. Second aim is to establish if the innovation process is pursued differently by companies from different countries. The third aim is to investigate the impact that innovation has over the competitiveness of companies. The research undertaken focused on two samples of small and medium-sized enterprises (SMEs) from two regions pertaining to Romania and Germany, respectively. The study uses a quantitative approach with data gathered from 208 SMEs from these two countries. The data were analyzed using inferential statistics, like independent t-test and regression analysis. According to the results of the study, the innovation capacity does not differ significantly due to the type of industry the companies act, or due to country context. At the same time, findings show that innovation capacity proves to be a powerful predictor of performance, which enables higher competitive position for companies. These results offer substantial information for both manufacturing and retail companies which could be used in a manner that would allow them to better compete within their markets.

KEYWORDS: innovation, performance, manufacturing, retail, small and medium sized enterprises, competitiveness.

1. INTRODUCTION

Innovation of small and medium sized enterprises (SMEs) offers significant challenges for researchers interested of this field. Thus, this article aims to clarify several aspects related to innovation within SMEs in two business environments: a developed economy, like the one of Germany and a developing economy, like the one of Romania.

The present study tries to fill in these gaps as it addresses the issue of innovation and it envisions answering the following research questions:

(1) Is there any difference between innovation of manufacturing companies and retail companies?

(2) Does innovation differ for companies in a developed country and companies in a developing country?

(3) Does innovation have an impact on the performance of the companies?

The paper starts with a thorough review of the literature of innovation and performance in SMEs and continues with a description of the research methodology used within the empirical study. Next the results are presented and an interpretation of the main findings is provided. The paper concludes with remarks on the practical implications of this study and future areas of research.

2. LITERATURE REVIEW

Due to the economic crisis the meaning of competitiveness and the ways of its achieving becomes of utter importance in countries like Romania with lowest rate of investments in innovation. Innovation persistently attracts the attention of both economists and politicians as a driver of competitiveness and firm performance. Apart from being important in its own right, the link between the innovative capacities of SMEs in developing economies remains not fully researched revealing knowledge gaps and theoretical inconsistencies in comparison with the various findings from developed countries.

As it was emphasized in a research performed on Romanian SMEs, the tendency is to focus on creation of new products rather than on other types of innovation. The link between the performance achieved and the development of new products was emphasized by the large portion of the SMEs (47.50%) that have achieved higher performance in comparison with other SMEs that have chosen not to innovate [1].

Some scholars identified fourteen essential factors that influence the innovation process [2]. The most important factor from the ones mentioned by these authors would be the unique advantages of the product (quality, function, quality-price ratio, design). The investment in quality by increasing the client-orientation, by developing technical and marketing knowledge, developing competences, ongoing training, all under the umbrella of human resources management, is essential for the innovation process. Marketing activities play also an important role because the small enterprise as the large one, need appropriate ways to enter certain markets, where a previous testing of the prototypes, are being needed, and the strengthening of the distribution channels or advertising approach is also crucial for their success. To succeed in, the innovation process needs a clear definition of the target aims, like a target customer group, a proper position of the product and the proper choice of the target market [2].

The reactions of the small and medium-sized enterprises to the decisive changes within the environmental frame described in the literature were: development of new products, product-innovation, innovation at the level of production process, innovation of development of some markets, marketing innovation, administrative innovation, these being the most relevant kinds of innovation within SMEs [3]. The product innovation is regarded as an important strategy for the survival of the SMEs, especially in dynamic environments [4]. Previous researches have showed that the strategy of differentiation by innovation and quality can create a competitive advantage. Unfortunately, not all the small and medium-sized enterprises are innovative, especially because they have conservative managers [3].

The following classification of small and medium-sized enterprises can be made considering innovation as an important characteristic of them: small and medium-sized enterprises led by innovation, small and medium-sized enterprises that follow the innovation and small and medium-sized enterprises that are indifferent to innovation. All these kinds of small and medium sized enterprises reflect either, an incremental innovation, which follows the achievement of some small modifications at the commercialized products being rather an evolutionary and linear process, or a radical innovation, which is revolutionary, the process being non-linear [5]. Thus, innovation influences the competitiveness, but because innovation is different from one sector to another, one can assert that the sector influences the competiveness at its turn [6]. The most used type of innovation within the small and medium-sized enterprises from Romania that act in the service industry, between the years 2004-2006 is the product and process innovation [1].

Sometimes enterprises have no clear established strategies or a suitable project management to develop new products, due to the need to achieve competitiveness through innovation. In this case the enterprise does not evaluate its resources, launching more products without a thorough analysis of the market. Also the preparation cycles, are too long and therefore leading to high rates of failure [7]. Most of the new ideas about a product will not be realized. A new product is not always successful on the market, it depends on the understanding the dynamics of innovation, a well-based innovation strategy and well defined implementation processes of the innovation strategy.

One may conclude there is an acute necessity in the past few decades in, defining and explaining the concept of performance because it is a basic fact of human existence but also as it applies, to a new challenging business environment due to progressive globalization, increased competition, and ever shorter innovation cycles. The literature review on the subject usually refers to the efficiency, between how the scarce resources of the enterprise are allocated and the achievement of objectives, measured with monetary and non-monetary indicators.

It is important to distinguish between performance measurement and performance management. While performance measurement includes only the measurement of performance, the second concept is much broader since it includes also planning, management and control of the performance [8]. The performance measurement must be implemented in accordance with the characteristics of the enterprise [9]. According to some past studies, one of the most popular techniques for measuring organizational performance is the Balanced Scorecard [10]. This measurement technique, which is very easy to use was developed by Kaplan and Norton and allows the transformation of organizations mission and strategy into a set of indicators in order to facilitate the measurement of performance regularly, in order to assess the appropriateness and effectiveness of the enterprises processes [11].

Some of the criteria used for performance evaluation in quantitative terms are the production capacity and quantity sold. On the other hand criteria for determining performance in terms of value are turnover and added value [12]. Other authors [13] have measured the impact of the strategic orientation of SMEs upon performance by a variety of indicators monitored for a period of five years as the profit, return on equity (ROE) and return on assets (ROA). The challenge in measuring the performance of SMEs would be the fact that most managers use in their analysis mainly historical data. Key performance indicators are sometimes not relevant or easily measurable; sometimes the qualitative data is questionable which determines the top-management not use them in decision making.

In most studies that were performed in developed economies, various authors [14] [15] [16] [17] underlined that SME's innovative capacity has a positive influence on its performance in both manufacturing and service, linking performance, with productivity. Competitiveness is interconnected with innovation, fact emphasized also by Grant [18].

3. RESEARCH METHODOLOGY

The proposed research framework highlights the relationship between the industry type and the impact of the SMEs characteristics to foster SMEs innovative capacity. Based on the research purposes, literature review, and generalized outcomes, the research framework is as shown in Figure 1.
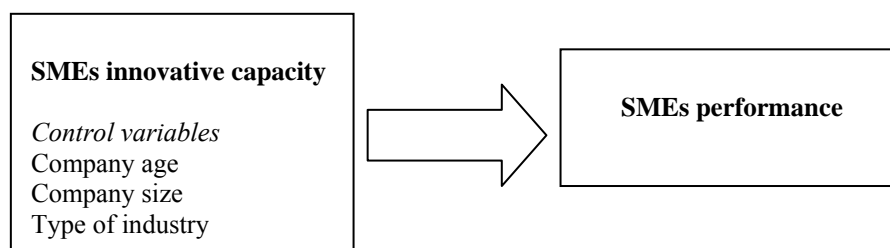
Figure 1. Proposed research framework

The questionnaire based survey is important for the desired analysis being a proper instrument for collecting information. To ensure a high rate of responses the method of direct contact with the managers was used. However, because of geographic limitations questionnaires were also sent by e-mail. The study is intended to compare also the difference in terms of innovation capacity of manufacturing and retail companies. The type of industry is another variable that was introduced within the current study.

The innovation capacity was measured through three statements for which the respondents had to express their level of agreement using a 5 point Likert scale (1 – total disagreement, 5 – total agreement). The performance of the enterprise was measured in the form of perceptual measures: respondents were asked to rate their performances (return on assets - ROA) relative to their main competitors on a 5 point Likert scale (1 - much worse, 5 - much better). This is a highly used method within the performance literature [19] [20]. ROA was used as it offers a clear, holistic image on how effective a company captures market opportunities in a highly uncertain environment, both in manufacturing and retail sector [21] [22].

The research sample includes a number of 208 small and medium enterprises, 102 from Romania and 106 from Germany, selected, from the most dynamic regions of the two countries: the north-western development region of Romania (Bihor, Bistriţa-Năsăud, Cluj, Maramureş, Satu-Mare and Sălaj county) and the German Land of Baden-Württemberg that has four regions (Freiburg, Karlsruhe, Stuttgart and Tübingen), underlying the differences between the SMEs from a developed country and from a developing country. In order to process the data from the sample, statistical software SPSS 17 and Microsoft Excel were used.

The following hypotheses concerning the linkage between innovation and performance are then proposed by comparing the effects of critical factors of innovation on the SME performance in two different countries:

H1: Innovation is pursued in a different manner by the retail companies and manufacturing companies.

H2: Innovation is different for the Romanian companies and for German companies.

H3: Innovation capacity leads to better performance of the companies.

4. RESULTS AND DISCUSSIONS

This study analyzes the results of a survey that included 208 SMEs from Germany and Romania acting in the manufacturing and retail sector. Table 1 shows the demographic information of the sample.

Table 1. Demographic information of the two samples

Demographic characteristics	Romania		Germany	
	N	%	N	%
Type of industry				
Manufacturing	37	36.27	26	24.53
Retail	65	63.73	80	75.47
Size of the companies				
Micro (<10 employees)	42	41.18	62	58.49
Small (<50 employees)	36	35.29	20	18.87
Medium-size (<250 employees)	24	23.53	24	22.64
Year of establishment				
Before 1989	11	10.78	43	40.57
Between 1990-1995	26	25.49	10	9.43
Between 1996-2000	20	19.61	15	14.15
Between 2001-2005	18	17.65	16	15.09
After 2006	27	26.47	22	20.76

Source: Authors' own calculations

A first analysis was meant to measure the internal reliability of the three items that defined the innovation capacity of the companies within the two samples. Hence, the Cronbach's alpha reliability coefficient was used. The Cronbach's alpha coefficient for both the Romanian and German samples was higher than 0.70, adding accuracy to the interpretation of the data.

In order to test the first and second hypotheses the independent t-test was used. This test allows comparing the means of two groups on the same variable. Table 2 presents the results of the independent t-test for the groups of manufacturers and retailers according to their implication in the innovation processes. The findings show that manufacturers put a higher emphasis on the innovative practices (*M = 3.95, SD = .75*) than retailers (M = *3.89, SD = .69*). However, the results show that the innovation capacity does not differ significantly between manufacturing companies and retail companies ($t_{(206)} = .53 ; p = .59$).

These results state the fact that both types of companies have reacted quickly to a changing environment. In the recent years the manufacturing sector has undergone some changes, and as the retail sector it begun realizing the importance of the involvement of customers in all decisions concerning innovation [23] and also the establishment of a network of good business partners, both as mentioned in a study conducted on 151 German manufacturing SMEs [24] and demonstrated in retailer–supplier relationship (up-stream behavior) and retailer–consumer relationship [25].

Table 2. Results of independent t-test for the innovation capacity according to the type of industry

Innovation capacity	Type of industry	N	M	SD	t	p
	Manufacturing	63	3.95	.75	.534	.59
	Retail	145	3.89	.69		

Source: The data was processed using SPSS software

Table 3 shows the results of the independent t-test for the samples of SMEs from Romania and Germany in accordance to the innovation process. As expected, German SMEs are more innovative (*M = 3.96, SD = .69*) than Romanian SMEs (*M = 3.85, SD = .73*). Business services in Germany are creating bridges for innovation through knowledge, creativity and market and management skills. In Romania, on the other hand, the retail market rates are lower and lower as the sector is characterized by the tendency of concentration; the number of companies diminishes, but the size of the surfaces increases. Still, there was no significant difference found between the innovation processes of the Romanian companies and German companies ($t_{(206)}$ = *-1.12; p = .26*). Although at first glance it is a surprising result, this situation could be explained by the fact that the majority of the German companies belonged to the logistics sector. Evidence from a recent study that compared the logistics sector to other sectors of the German economy suggested that companies from the logistics perform little innovation especially in the optimization of logistics processes. Further research has referred to the lack of innovative capacity of retailers, who only adopt innovations [23].

Table 3. Results of independent t-test for the innovation capacity according to the country of origin (Romania vs. Germany)

Innovation capacity	Country of origin	N	M	SD	t	p
	Romania	102	3.85	.73	-1.129	.26
	Germany	106	3.96	.69		

Source: The data was processed using SPSS software

Tables 4 and 5 highlight the results of the Spearman correlation for the companies within the two samples (Romania and Germany). Within the Romanian sample, there had been found positive correlations between the innovation capacity of the companies and the performance (*p = .000*), but also between the age of the company and the type of industry (*p = .013*). At the same time, there had been found negative correlations between the company age and company size (*p = .011*), and also between company size and the type of industry (*p = .003*).

Table 4. Correlations results for the Romanian SMEs

Variables	N	1	2	3	4	5
1. Company age	102	1				
2. Company size	102	-.22*	1			
3. Type of industry	102	.22*	-.27**	1		
4. Innovation capacity	102	.01	.12	-.06	1	
5. Performance	102	.08	.05	-.11	.71***	1

* p < 0.05; ** p < 0.01; *** p < 0.001.

Source: The data was processed using SPSS software

Large, financially well-established companies succeed usually much faster in innovating. Such companies have special departments that deal with the establishment of new products and implementing changes in processes within the company. Even the display and implementation of these innovations succeed in larger companies better, due to attention in the media and in the eyes of the customers, confirmed by empirical findings that show that larger retail groups are more efficient than the smaller retailers [22].

Within the German sample of SMEs there were found positive associations between the performance and innovation variables (*p = .000*), whereas company size negatively associates with company age (*p = .000*) and type of industry (*p = .001*).

Table 5. Correlations results for the German SMEs

Variables	N	1	2	3	4	5
1. Company age	106	1				
2. Company size	106	-.39**	1			
3. Type of industry	106	.23*	-.30*	1		
4. Innovation capacity	106	-.01	.02	-.02	1	
5. Performance	106	.00	.12	.01	.51**	1

$* p < 0.01; ** p < 0.001.$

Source: The data was processed using SPSS software

In order to test the third hypothesis two regressions models had been developed, each for both samples (Romanian SMEs and German SMEs). Thus, in both models, the performance variable was regressed against innovation capacity and the other three control variables. The first model accounts for 52.1% of the variation and the second model accounts for only 28.5% of the variation. The results in Table 6 show that innovation capacity of both Romanian SMEs ($\beta = 1.03, p = .000$) and German SMEs ($\beta = .73, p = .000$) are significantly and positively related to the performance of these companies.

Table 6. Results of the regression analysis (Dependent variable: Performance)

Independent variables	Model 1		Model 2	
	Romanian sample		German sample	
	β	t value	β	t value
Company age	.06	1.16	.03	.57
Company size	-.05	-.58	.17	1.61
Type of industry	-.21	-1.32	.13	.68
Innovation capacity	1.03*	10.00	.73*	6.12
R^2	.521		.285	
Adjusted R^2	.502		.257	
F value	26.42*		10.07*	
N	102		106	

$* p < 0.001.$

Source: The data was processed using SPSS software

These results suggest that companies from both samples independent from their country of origin have increased their performance with the help of the innovation processes. In general the performance generates again funds. By the instrumentality of these funds the manager can handle and execute innovative strategies and also the practical implementation of technological developments, important for both manufacturing and retail companies.

5. CONCLUSIONS

This study addressed the issue of innovation within the retail sector through a comparative approach that allowed for generating valuable insights for both manufacturing and retail managers. At the same time, the research was undertaken over SMEs which are seen as the lifeblood of economic growth. The issue of innovation had been addressed in previous studies within the Romanian context, but not from the point of retail industry [26] [27]. The paper makes a thorough contribution to the existing literature of innovation within the retail sector and has both theoretical and practical implications.

In terms of theoretical implications, the paper's main strength relies on its ability to conceptualize the notion of innovation within the retail industry. The capacity of innovation within the retail sector is comparable with the capacity of innovation within the manufacturing sector. This is an argument that sustains the previous theoretical findings that addressed the retail industry based on the generalization made from manufacturing companies.

Managerial implications that result from the study are also important to be taken into consideration. In Germany in order to gain innovation the management puts great emphasis on technology. The owner or manager of German SMEs is trying to create a system that is so

good that the middle and low managers and employees within small enterprises can operate and be able to develop new ideas without the daily presence of the owner or top manager. In Romania due to a reminiscent of the communist system, the businesses are still focused on a centralized business management, so the middle managers and employees have no or limited access to companies' top management, which affects the level of innovation and culture of the enterprise. Hence, the management of the Romanian SMEs should be more open to innovative ideas coming from the employees as this practice could foster further innovations within their companies.

The results of the study suggest that innovation capacity is a predictor of higher performance. Managers of retail firms should try to do their best in order to take advantage of the innovation processes. Some suggestions for them would be to: create networks with other SMEs in order to work together towards the attainment of a common goal (increase the innovation ability); allocate financial resources for sustain innovation activities; and develop an organizational culture that enables innovation advances.

The results of this paper are subject to some limitations that should be taken into consideration when trying to generalize the results. Firstly, it must acknowledge those samples included within the research framework are drawn from only two regions pertaining to Romania and Germany, respectively. In order to be able to generalize the findings at a country level, the study should be elaborated further on and more SMEs from other regions should be included in the survey.

Secondly, a restricted number of variables related to SMEs were addressed in the study. Future researches could also consider the role of the entrepreneur of the retail companies on the achievement of performance. In addition, one could also take into consideration the influence of the extern factors on SMEs from the retail industry performance.

Overall, the results suggest that the innovation processes in place at the Romanian SMEs are comparable with the ones of the German SMEs, suggesting that Romanian entrepreneurs are aware of the importance of these practices as their survival on the market depends on the ability to implement innovation strategies.

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