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Conditions of Marketing and Organizational Innovation of Small and Medium-Sized Enterprises

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Abstract:

Purpose: The research objective of the article is to propose a model that indicates external factors affecting the introduction of marketing and organizational innovations by Polish small and medium-sized enterprises.

Design/methodology/approach: Empirical research was conducted in 2015 using the CAPI method on a representative sample of 250 small and medium-sized enterprises. We determined the external environment based on seven potential factors. We also included contextual factors. We based the analysis and the assessment on the results of the ordered logit regression model estimation. We prepared our interpretation based on the odds ratios.

Findings: The results obtained indicate the significance of four variables, two from the external environment, namely support for small and medium-sized enterprises and the amount of tax reliefs and two contextual factors - the size of employment and conducting export activity. Their impact turned out to be only positive.

Practical Implications: The results obtained in the scope of the identified external factors affecting the marketing and organizational innovativeness of small and medium-sized enterprises may be a recommendation for entities providing support to subjects operating in this sector.

Originality/value: Determination of external environment factors and contextual factors influencing organizational and marketing innovation of Polish small and medium-sized enterprises. The results can be compared with those obtained for other countries.

Keywords: Organizational innovations, marketing innovations, external environment, small and medium-sized enterprises.

JEL Codes: E69, O38, O39, E20.

Paper type: Research paper.

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1. Introduction

Due to the purpose of this article, which is the desire to determine the factors that affect the introduction of innovation by Polish small and medium-sized enterprises (SMEs), the focus should be on narrowing the analysis to external factors. This is an approach related to the division of determinants of management decisions based on the criterion of the company's point of view. Distinguishing internal factors (potential stimulants and destimulants) as well as those taking into account specific conditions in which the company operates has long been present in the subject literature (Birchall and Armstrong, 2001; Martinez-Roman *et al.*, 2011; Glabiszewski and Zastempowski, 2016).

In this text, only external factors, i.e., those related to the enterprise's environment, have been analysed. However, it should be mentioned that the analysis of the ability to introduce innovation by small and medium-sized enterprises, taking into account the factors shaping it and coming from the environment, is of interest not only to theory and management practice. This subject also applies to related sciences. In the field of economics, the willingness to demonstrate the possibilities and effects of activities of public entities responsible for conducting economic policy is particularly evident (Stern *et al.*, 2006), hence the impact of SMEs support instruments used by public authorities and other entities, such as, for instance, business-related institutions often managing funds from public sources; operating at various levels - local, regional (Koišová *et al.*, 2018) and national (Ignasiak-Szulc, 2007; European Union, 2019) and pursuing development policy at the international level, in particular at the EU level (Elert *et al.*, 2017; European Union, 2017; Breznitz and Ornston, 2017; Thalassinos *et al.*, 2019; Havlicek *et al.*, 2013; Breckova and Havlicek, 2013).

A similar approach and interdisciplinarity are related to the issue of innovation, considered today from many perspectives. One of the basic approaches is the desire to find a specific 'key' for its stimulation and effective management (Kotler and Bes, 2011; Schilling, 2012; Tidd and Bessant, 2013; Trott, 2011). On one hand, the innovativeness of an individual (a human) is examined (Dyer *et al.*, 2011; Kankanhalli, 2015; Río *et al.*, 2015; Romero and Martinez-Roman, 2012), on the other - enterprises (Akman and Yilmaz, 2008; Guan Ma, 2003; Liczmańska-Kopcewicz *et al.*, 2018; Martinez-Roman *et al.*, 2011; Yam *et al.*, 2004). Territorial analyses may concern, for example, the innovativeness of the country (Dutta *et al.*, 2017; Furman *et al.*, 2002; Hollanders *et al.*, 2019) or the region, and those analyses can be carried out in comparative terms (which often takes the form of innovation rankings, such as, for example, the European Innovation Scoreboard), but also by adopting territory as a source of the innovation processes (Panikarowa, 2019).

It should be added at the outset that innovations themselves (and concepts related to them, such as innovativeness) are defined differently, but the division of innovation based on the Oslo methodology has strengthened in the literature, where one can

distinguish the following types: product, process, marketing, and organizational (OECD and Eurostat, 2005). This terminology is included in this analysis.

Against this background and taking into account the fact that the impact of various factors on creating technological (product and process) innovations is usually examined (Zastempowski and Przybylska, 2016), it was decided to ask about the impact of external environment factors on a much less frequently analysed aspect, i.e., marketing and organizational innovation of small and medium-sized enterprises.

2. Theoretical Background

The external environment plays an important role in the functioning of enterprises (Furman *et al.*, 2002; Özsomer *et al.*, 1997; Ramanathan *et al.*, 2018), including small and medium-sized enterprises (Martinez-Roman and Romero, 2017; Romero and Martinez-Roman, 2012; Yam *et al.*, 2011). It is a source of both opportunities and threats to their current and future activities. The very enterprise and above all its resources (Aas and Breunig, 2017; Barney, 2001), organizational routines, key competencies and dynamic abilities (Alves *et al.*, 2017; Stronen *et al.*, 2017; Teece and Leih, 2016) determine whether it is able to use them properly or not (Cohen and Levinthal, 1990; Zahra and George, 2002).

Analysing the research conducted in recent years regarding the external environment of innovation, one can indicate several most frequent tendencies that can be observed in them and which constitute the basis for determining the variables for the proposed study. These will be factors related to various types of support for small and medium-sized enterprises (Martinez-Roman *et al.*, 2011; del Rio *at al.*, 2015), in particular of a financial nature (Romijn and Albaladejo, 2002) and the competition prevailing in the sector in which the company operates (Özsomer *et al.*, 1997; Zhao *et al.*, 2005; Assink, 2006; Martinez-Roman *et al.*, 2011).

Considering the above overview of research, the following selected external factors were adopted as variables: European funds, amount of tax reliefs, support for SMEs (e.g. consulting, training, financial), price competition in the sector, qualitative competition in the sector, availability of bank loans and availability of other sources of financing innovation (venture capital, business angels).

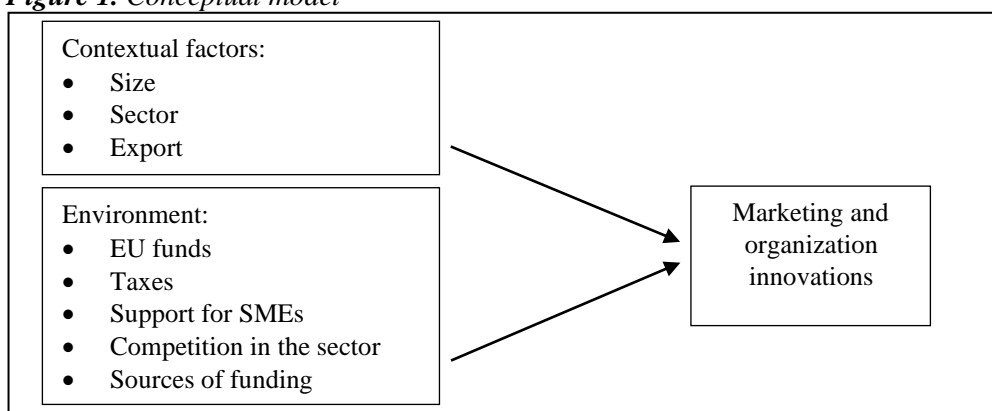
Contextual factors are also used in innovation research. The most commonly used include the size of the enterprise (Guan and Ma, 2003; Hurley and Hult, 1998; Martinez-Roman *et al.*, 2011). Other relevant contextual factors include the industry or sector of operation, and the type of market (domestic or foreign) (Alves *et al.*, 2017; Liu *et al.*, 2017; Martinez-Roman and Romero, 2017; Yam *et al.*, 2011).

In turn, when assessing the level of innovation, most often two basic types are analysed - product and process, but marketing and organizational ones are omitted. We decided to put them in the centre of attention. Due to the high degree of use of

these concepts in statistical and research activities, it should be pointed out that we understand marketing and organizational innovations in accordance with the 3rd edition of the Oslo Manual (OECD and Eurostat, 2005). As a consequence, marketing innovation is the implementation of a new marketing method involving significant changes in the product's design/construction or packaging, distribution, promotion or price strategy, while organizational innovation is the implementation of a new organizational method in the company's operating principles, in organization jobs or in relations with the environment (OECD and Eurostat, 2005).

As a result of the above considerations, we formulated the conceptual model presented in Figure 1.

Figure 1. Conceptual model



Source: Own research.

3. Research methodology

Empirical studies, the fragment of which is discussed here, were conducted in 2015, as a part of a research project of the Polish National Science Center⁴. The main part of the research was conducted using the CAPI method and a representative sample of Polish small and medium-sized enterprises. The representativeness was based on the following criteria: company size, type of business activity according to the Polish Activity Classification sections (PAC) and a minimum five-year period of market activity. The size of the research sample was defined assuming that the total SMEs population (without micro ones) is 176,276 entities; $p = 0.95$, the fraction share (% of innovation in the population) – 0.2), the maximum error - 0.05. Assuming such criteria, the minimum size sample should be 246 entities. Finally, the research involved 250 SMEs.

⁴*Innovativeness of small and medium enterprises in the period of economic crisis - determinants, trends and models, No DEC-2013/09 /B/HS4/01971.*

Table 1 presents the description and scales of all variables of the model. As can be observed, the model includes the explanatory variables (contextual factors and environment), labelled from x1 to x10 and the explained variable (marketing and organization innovation), labelled as y. The variables constituting the environment were assessed from the perspective of their importance in the process of creating and implementing innovations, and the following ordinal scale was used: 1 – very bad, 2 - bad, 3 - neither good nor bad, 4 – good, 5 – very good. The innovation, as the ordered variable, could have the following values: 0 - no innovation; 1 - marketing or organization innovation; 2 - marketing and organization innovation.

Table 1. Description of variables

Categories	Description	Scales and variables	
EXPLANATORY VARIABLES			
Contextual factors			
Size	Number of employees	Numerical	x1
Sector	Service activities	Dichotomous	x2
Export	Sale on a foreign market	Dichotomous	x3
Environment			
EU funds	European funds	Ordinal	x4
Taxes	Amount of tax reliefs	Ordinal	x5
Support	Support for SMEs (consulting, training, financial)	Ordinal	x6
Competition in the sector	Price competition	Ordinal	x7
	Qualitative competition	Ordinal	x8
Source of funding	Availability of bank loans	Ordinal	x9
	Availability of other sources of funding	Ordinal	x10
EXPLAINED VARIABLE			
Innovation	Marketing and organization innovations	Ordinal (0.2)	y

Source: Own research.

We used the ordered logit model whose specification is an extension of the binary model specification to more threshold. The model is described by the following equation:

$$y^* = x'\beta + u \quad (1)$$

where y^* is the exact but unobserved dependent variable, x' is the vector of independent variables, u is the error term and β is the vector of regression coefficients which we wish to estimate. To estimate the model, we use the maximum likelihood estimation method and the STATA.16 software.

4. Results and Discussion

In order to identify the factors that significantly determine the introduction of marketing and organizational innovations by SMEs, the ordered logit model was

estimated using the maximum likelihood estimation method. The model estimation results are presented in Table 2.

Table 2. *Ordered logistic regression*

Variables	β	SE	z	P > z	[95% conf. interval]	
x ₁	2.375488	.5474916	4.34	0.000***	1.302424	3.448551
x ₂	.2257936	.2956158	0.76	0.445	-.3536027	.8051899
x ₃	1.244769	.6073283	2.05	0.040**	.0544271	2.43511
x ₄	-.1606485	.1905017	-0.84	0.399	-.534025	.212728
x ₅	.3066829	.1583641	1.94	0.053*	-.003705	.6170708
x ₆	.4623401	.1665622	2.78	0.006***	.1358841	.788796
x ₇	.0243771	.2032744	0.12	0.905	-.3740333	.4227876
x ₈	.1571142	.2125454	0.74	0.460	-.2594672	.5736955
x ₉	.0859622	.2064657	0.42	0.677	-.3187031	.4906276
x ₁₀	.0532363	.2259695	0.24	0.814	-.3896558	.4961284
N	250					
LR chi2 (10)	64.27					
Prob > chi2	0.0000					
Pseudo R ²	0.1416					

Note: *** *p*-Value <=0.01. ** *p*-Value <=0.05. * *p*-Value <=0.1.

Source: *Own research.*

The conducted test (LR chi2 (10) = 64.27; Prob> chi2, 0.0000) indicates the significance of the whole model, which gives grounds for further interpretation of the results obtained. McFadden's pseudo-R² is a measure of the quality of matching logit models to data. It is 0.1400. This means a relatively small degree of explanation of the dependent variable.

As can be seen, in this model parameter estimates take only positive signs. In other words, the impact of the explanatory variables included in the model on the dependent variable causes an increase in the chances of introducing marketing and organization innovations by SMEs. The variables that proved to be statistically significant were: x₁ –the number of employees, x₃ - sale on a foreign market, x₅ – the amount of tax reliefs and x₆ – support for SMEs (consulting, training and financial).

Interpretation of the obtained model can be carried out on the basis of odds ratios - Table 3. Bearing in mind the assumption of *ceteris paribus* - that is other variables of the model unchanged - the following information was obtained:

- a higher number of employees increases the odds ratio (chance) of introducing marketing and/or organization innovation by 10.7 times on average;
- sale on a foreign market increases the chance of introducing marketing and/or organization innovation by SMEs by 3.4 times on average;

- a higher evaluation of the amount of tax reliefs increases the chance of introducing marketing and/or organization innovation by 35% on average;
- a higher evaluation of support for SMEs increases the chance of introducing marketing and/or organization innovation by 58% on average.

Table 3. Odds ratio

Variables	Odds ratio	SE	z	P > z	[95% conf. interval]	
X ₁	10.75626	5.88896	4.34	0.000***	3.678201	31.4548
X ₂	1.253317	.3705003	0.76	0.445	.7021539	2.237121
X ₃	3.472132	2.108724	2.05	0.040**	1.055936	11.41708
X ₄	.8515913	.1622296	-0.84	0.399	.5862406	1.237048
X ₅	1.35891	.2152025	1.94	0.053*	.9963018	1.853491
X ₆	1.587785	.264465	2.78	0.006***	1.145549	2.200745
X ₇	1.024677	.2082905	0.12	0.905	.687954	1.52621
X ₈	1.170129	.2487056	0.74	0.460	.7714625	1.774814
X ₉	1.089765	.2249991	0.42	0.677	.7270914	1.633341
X ₁₀	1.054679	.2383253	0.24	0.814	.67729	1.64235

Note: *** *p*-Value <=0.01. ** *p*-Value <=0.05. * *p*-Value <=0.1.

Source: Own research.

The results obtained show some interesting conclusions. First of all, in the group of contextual factors, two of them turned out to be statistically significant, these were the size of employment and conducting export activity. The first of them indicates that the higher the employment level in an enterprise, the stronger the chances for creating marketing and organizational innovations. While in the case of product and process innovations, specialist knowledge is often required to create them, in the area of organizational and marketing innovations - generally, a larger number of employees translates into a potentially greater number of ideas and proposals for improvement in the functioning of the enterprise.

We do not want to claim that these innovations do not require specialized knowledge, but for their implementation, it is often not necessary to involve RD department employees, as is the case in the field of technological innovation. In turn, the statistically significant significance of conducting export activity seems to correspond with the results of other research on innovation. It is clearly seen that the internationalization of business, resulting in contacts with foreign competition, actually compels SMEs to introduce marketing and organizational innovations, and thus ensures a high level of adaptability to changes and appropriate parameters of the products/services offered.

Secondly, only two of them turned out to be statistically significant in terms of external factors - support for SMEs and the amount of tax reliefs. The former indicates that the higher the rating of various aspects of support for SMEs (consulting, training, financial), the higher their organizational and marketing innovation. On the one hand, this result seems to confirm the correctness of the

SMEs sector support policy. On the other hand, however, it is an important signal for its creators - supporting entities of this sector increases their innovativeness. It is worth noting that small and medium-sized enterprises, due to their limited ability to acquire resources (especially small companies), especially need this support. The results suggest that they can 'pay back' for this help to the economy. The latter, i.e., the amount of tax reliefs - translates into an increase in innovation as well. Also, this factor, directly related to the state's economic policy, indicates the effectiveness of its stimulation of SMEs innovation.

5. Conclusion

The research objective of the article was to propose a model that indicates significant external factors affecting the introduction of marketing and organizational innovations by Polish small and medium-sized enterprises. We determined the external environment based on seven potential factors: European funds, amount of tax reliefs, support for SMEs (e.g. consulting, training, financial), price competition in the sector, qualitative competition in the sector, availability of bank loans and availability of other sources of financing innovation (venture capital, business angels). We also included contextual factors in the model. We based the analysis and assessment of the results of the estimation of the ordered logit regression model. We conducted an interpretation based on the odds ratios. The results obtained indicate the significance of four variables, two from the external environment - support for SMEs and the amount of tax reliefs and two contextual factors - the size of employment and conducting export activity. Their impact turned out to be only positive.

In conclusion, it is worth emphasizing that the issue of SMEs innovation, not only organizational and marketing, despite a vast number of studies carried out, is still very interesting and still discovering new research fields. This text and the conclusions drawn from it elucidate only a narrow fragment of it. However, it seems that they may constitute a contribution to further research in this area, especially in the context of the policy of supporting the development of the SMEs sector and its innovativeness, both at the national and EU levels.

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