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INTERORGANIZATIONAL COOPERATION AS AN ELEMENT OF CREATING ENTERPRISE INNOVATION

It may be presumed that innovation is linked to the concept of competitiveness and organizational capabilities. Thus innovation may be based on commencing and actively developing inter-organizational cooperation. This approach can be the thesis for putting forward post factum research hypotheses. Therefore, a research concept of a problem which undertakes an issue of innovation and interorganizational cooperation of enterprises will be suggested. In order to indicate variables of examined enterprises, W.R. Scott and G.F. Davis' (2007) organization typology was used. ANOVA variance analysis was conducted.

Keywords: innovation, cooperation, value chain, management, organizational structures, small enterprises.

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СПІВПРАЦЯ ОРГАНІЗАЦІЙ ЯК ЕЛЕМЕНТ СТВОРЕННЯ ПІДПРИЄМНИЦЬКОЇ ІННОВАЦІЇ

У статті показано, що інновації пов'язані з поняттям конкурентоспроможності та організаційних можливостей. Інновації можуть бути засновані на активному розвитку співробітництва між організаціями. Цей підхід — основа даного дослідження. Запропоновано концепцію дослідження інновацій і співпраці між організаціями. Для позначення змінних даних обстежених підприємств було використано типологію організацій Скотта і Девіса (2007), проведено дисперсійний аналіз ANOVA.

Ключові слова: інновації, співпраця, ланцюжки створення вартості, управління, організаційні структури, малі підприємства.

Рис. 1. Таб. 9. Літ. 12.

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СОТРУДНИЧЕСТВО ОРГАНИЗАЦИЙ КАК ЭЛЕМЕНТ СОЗДАНИЯ ПРЕДПРИНИМАТЕЛЬСКОЙ ИННОВАЦИИ

В статье показано, что инновации связаны с понятием конкурентоспособности и организационных возможностей. Инновации могут быть основаны на активном развитии сотрудничества между организациями. Этот подход — основа данного исследования. Предложена концепция исследования инноваций и сотрудничества между организациями. Для обозначения переменных данных обследованных предприятий была использована типология организаций Скотта и Дэвиса (2007), проведен дисперсионный анализ ANOVA.

Ключевые слова: инновации, сотрудничество, цепочки создания стоимости, управление, организационные структуры, малые предприятия.

Introduction. Introducing on the market a product/service which is new and innovative when compared to the products offered by competitors can be a significant foundation for creating sustained competitive advantage of an enterprise. Understanding customers' needs accompanied by gradual and evolutionary process of creating organizational capabilities within the framework of a value chain provide the condition for a successful launch of this sort of a product or service. If the implementation of innovation occurs in a start-up firm, these capabilities can be directly

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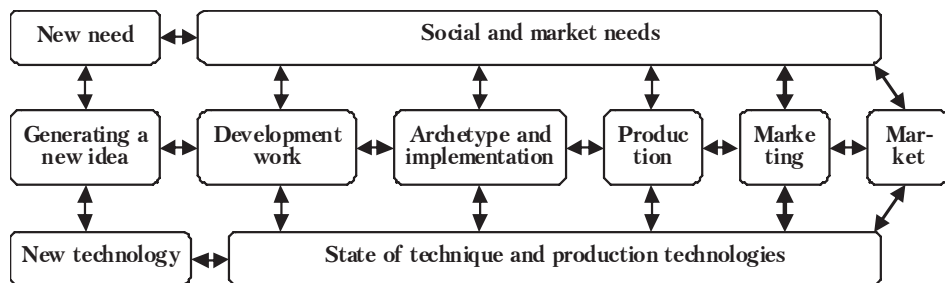
linked to managers developing a newly established enterprise and referred to their knowledge and, possibly, to the experience gained in the course of previous economic activity. Enterprises boasting a relatively long activity can implement innovations as a result of planned restructuring or adaptive adjustment of capabilities to the environment. According to G.S. Day (1994), organizational capabilities are deeply embedded in organization beams of complex abilities and knowledge which constitute a product of a collective learning process (Day, 1994: 37-52). A. Drejer, however, sees capabilities as a system of technologies, people and organizational (formal) and cultural (informal) elements which remain in a process of mutual interaction (Drejer, 2002: 206). Both definitions of organizational capabilities can be referred to the functioning of enterprise in a value chain and to the basic management components within the framework of a value chain, which are, as follows:

- a) division of roles among the participants of a value chain, then their coordination and integration (classically understood as a value chain concept);
- b) collaboration (inter-organizational cooperation), due to which creating value through integration, disintegration or deconstruction of a value chain occurs;
- c) configuration and coordination within the framework of a globally organized system of creating value and reconfiguration, that is, allocation of activity to the places with the best conditions for achieving higher effectiveness within the framework of a global system. Coordination is necessary for effective reconfiguration (Vahlne, Ivarsson and Johanson, 2011: 1-14).

R. Rothwell (1993) suggested a coupling model of innovation (Figure 1) which corresponds to the systemic (comprehensive) logic of viewing an organization, accepts that innovation is a kind of process with no definite beginning or end and assumes early technological response to the identification of new needs.

Cooperation with other organizations can be a fundamental element in creating competitive advantage and the basic management tool within the framework of a value chain. Simultaneously, contemporary literature points at the role of innovation in the process of building competitiveness. This may lead to an attempt to compile processes of interorganizational cooperation and innovation in an enterprise, and to embark on research aiming at identification of cooperation as an element of introducing innovation in an enterprise.

Thesis. Above considerations can induce a thesis assuming that innovations are linked to the process of building competitiveness and organizational capabilities of an enterprise. It can be presumed that acceleration of this process occurs based on commencing and actively developing interorganizational cooperation. Such a thesis is of general character and can be the basis for putting forward research hypotheses which will be a verifiable and measurable expectation towards reality. The process itself will require introducing (operationalization of) certain variables which will make it possible to define features of organizations which are characterized by a relatively high potential of creating network and organizational cooperation. The next stage in operationalization of variables will be proposing qualitative meters of motives and prerequisites of cooperation. In this way, a research concept of a problem which undertakes an issue of innovation and inter-organizational cooperation of enterprises will be suggested.



Source: Hobday, 2005. Firm-level Innovation Models: Perspectives on Research in Developed and Developing Countries.

Figure 1. Rothwell's coupling model of innovation

Sampling units and methods of measurement. Sampling units comprised Ukrainian, Polish and Spanish companies dealing within textile and clothing industries. Employment in enterprises chosen for research wavered from 20 to 50 people (Patora-Wysocka, 2011: 8-11). The study was anonymous. Random selection of the sample was made using the method of a snowball, in which an examined respondent recommended the firm he knew and quite often phoned it requesting managers to facilitate the study. Certain sources regard random sampling as a form of non-probability sampling, which is appropriate for exploratory studies (see: Babbie, 2004: 205-206). Due to the fact that the aims of the study were exploratory ones — as their result was supposed to be the formulation of major research hypotheses — it was accepted that the method of a snowball is appropriate and logically justified.

The examined sample referred to, respectively: 51 enterprises from Ukraine (Lviv Region), 51 enterprises from Spain (Madrid Autonomy), 47 enterprises from Poland (Lodz Voivodeship). The total of 149 companies were examined altogether.

The study was conducted using a questionnaire made up of 25 closed, single and multiple-choice questions. Some issues brought up in the study were prepared in the form of tabular questions. The data obtained from the questionnaire was coded in a binary system and processed with the use of quantitative methods.

Observation of data percentage share was carried out, the coefficient of contingency was calculated and, finally, the analysis of ANOVA variance and Duncan test were conducted.

Selected study results.

Typology of enterprises. In order to determine the variables defining the features of examined organizations, W.R. Scott and G.F. Davis's typology (Scott and Davis, 2007: 131-135) was used, distinguishing the following types of organizations:

1. Small organizations, characterized by simple structure and run directly by an owner.
2. Organizations built in a functional way, characterized by a complex centralized structure.
3. Complex organizations within the framework of which the following are distinguished: a) classical divisional structures, b) hierarchical forms of matrices (work being organized in the form of projects).
4. Networks and organizations established ad hoc (temporarily), characterized by decentralization, flexibility, heavily reduced formal structure, relatively high

potential of creating networks and inter-organizational cooperation (Scott and Davis, 2007: 131-135).

In this study, therefore, it was accepted that enterprises can represent the following types of organizations:

a) entrepreneurial company, in which the founder manages the whole firm on his own in order to create a product/service and gain an established position at a market;

b) hierarchical model, characterized by an increase in employment, formation of various departments, hierarchy. In organizational structure an owner is the most important element;

c) company which is made up of teams (team model), in which employees cooperate with one another fulfilling tasks in a relatively independent way. Such organizations are characterized by a great deal of initiative on the part of their qualified workers;

d) network model — comprises small companies which are eager to cooperate with their counterparts as well as with big companies. Such organizations are small size (Patora-Wysocka, 2012: 33).

Table 1 indicates the structure of organizational forms in relation to the countries of origin. Entrepreneurial type is the most common organizational form for small and medium-sized companies in Poland, Spain and Ukraine — it comprises around 65% of the examined units, with over 90% of the sample falling on enterprises coming from Spain. Network structures constituted the lowest percentage, representing 4% of the sample. The model of organization structured in a process (team structures) and "paraclassical" way (hierarchical organizations) comprised respectively 17% and 15% of the companies.

Table 1. Organizational form vs. country of origin, %

	Organizational form				Total
	Entrepreneurial	Hierarchical	Team model	Network model	
Poland	60.9	10.9	19.6	8.7	100
Spain	90.2	7.8	2.0	0.0	100
Ukraine	40.4	26.9	28.8	3.8	100
Total	63.8	15.4	16.8	4.0	100

Source: Patora-Wysocka, 2012: 35.

ANOVA variance analysis is "a statistical method used to decide about the existence of differences among means in a few populations" (Aczel, 2000: 389) used for checking if a dependent variable (a factor grouping an examined community according to the type of organization) takes different values depending on the change of a dependent variable — that is an index which is the number of indications measured as the intensity of the feature. Variables which are subject to the analysis are of quasi-measurable character, which means that the variables described in Likert scale were used. In some cases, certain variables were adjusted to Likert scale according to the key measuring the potential for introducing innovations (Patora-Wysocka, 2012: 34):

In this study, the grouping factor took 4 values:

1 - entrepreneurial organizational type;

2 - hierarchical organization;

3 - team model;

4 - network organizational type.

These values, respectively, marked out a range from the lowest to the highest potential of innovation. It was assumed that organization of the entrepreneurial type has relatively the most limited resources for introducing innovations, which is connected to a limited organizational, ownership and financial structure. However, it doesn't have to affect innovations which don't require high involvement of resources. If such is the case, the entrepreneurial type may be, to the contrary, characterized by the highest potential of innovation and resemble Schumpeterian entrepreneur-innovator (Piasecki, 1997). In the study it was assumed, however, that implementation of innovation is a process requiring involvement of resources. That is why the company's owner, trying to avoid risk, may be afraid of introducing "resource-consuming" innovations, financed mainly by his own funds.

The following types of organizations are characterized by potentially wider access to foreign funds, in case of the presence of a larger number of shareholders — spread financial risk, a higher level of decision-making autonomy, also the one referring to establishing various relations of an enterprise and the external environment, within the framework of individual organizational units of the company.

Finally, the network organization — in line with the adopted thesis — is characterized by the highest potential for creating interorganizational relations, and, what follows, relatively the highest potential level of innovation absorption.

b) Forms and motives of interorganizational cooperation.

The study was conducted based on one-way ANOVA analysis (Malhotra, Birks and Wills, 2010: 663-689), in which the type of organization acted as a grouping factor and motives of establishing interorganizational cooperation were an independent variable (marked as index 5) which took 6 values:

1 — Increase in savings (passive functioning within the framework of a value chain; the lowest potential of actively creating value within the framework of a chain);

2 — Decrease in costs;

3 — Possibilities of higher sale (relatively higher functioning potential within the framework of a value chain);

4 — Access to technology (higher potential of coordination and interorganizational cooperation within the framework of a value chain; potential of absorption and innovation diffusion);

5 — Possibility of development abroad (functioning potential in a value chain increased by the possibility to internationalize the company);

6 — Export opportunities (the highest potential of configuration and coordination within the framework of a globally organized system of creating values).

In the study, it was accepted that when the statistical significance for F test reaches the value below 0.05, the null hypothesis is rejected as a result, namely the one which assumes that means for features describing the functioning potential in a value chain (measured by motivation for interorganizational cooperation) aren't different from one another, and thus, it is allowed to proceed to the next stage of the test.

The study reveals the existence of a significant interaction effect as test significance was established for F test (shown in Table 2) simultaneously rejecting H_0 for the sake of H_1 , which proves the existence of differences among individual groups. That is why it is advisable to examine an effect of one factor (in this case, index 5 — an independent variable) at all levels of the other factor (that is, type of organization —

a dependent variable). In order to do that, post hoc Duncan test is conducted, due to which it is possible to obtain information about the existence of homogeneous groups, namely groups which don't differ from one another significantly from the statistical point of view. Data interpretation should be carried out by reading out values from Table 3 which indicate that the biggest differences concerning the motives of interorganizational cooperation exist among entrepreneurial type of organizations, that is enterprises for which the lowest potential of innovation ($\alpha = 1.00$) was assumed, and team structure organizations, that is for enterprises with a relatively higher potential ($\alpha = 2.04$). Hierarchical model constitutes the most homogeneous subgroup, which means that in case of the necessity to reduce the value of the dependent defining organizational structure, it is possible to add a value indicating hierarchical model to the common category.

Table 2. Results of significance test for index 5 – one-way ANOVA

	Sum of squares	df (number of degrees of freedom)	Mean squares	F – empirical statistics of F test	Significance
Between groups	25.928	3	8.643	7.343	0.000
Within groups	170.663	145	1.177		
Total	196.591	148			

Source: own research.

Table 3. Competition structure (index 5). Post hoc Duncan test. Means for individual groups within the framework of homogeneous subsets

Type of organization	N	Homogeneous groups, $\alpha = 0.05$	
		1	2
Entrepreneurial	95	1.00	
Network model	6	1.17	
Hierarchical	23	1.70	1.70
Team model	25		2.04
Significance		0.095	0.381

Source: own research.

The percentage analysis shows that differences concerning the motives of organizational cooperation among examined types of organizations are bigger, the higher is the potential of active functioning within the framework of a value chain. It can be observed in the percentage analysis, comparing the motives connected with increase in savings, where the smallest differences were noted (88,4% of entrepreneurial companies and 84,0% of team type companies), shown in Table 4, and, at the same time, decrease in costs and possibility of higher sale, where differences gradually start going up, which is shown in Tables 5 and 6. Entrepreneurial companies manifest relatively smaller motivation with the increasing functioning potential within the framework of a value chain.

Table 4. Organizational type vs. cooperation motives – increase in savings, %

Type of organization	Motives for cooperation: increase in savings		Total
	No	Yes	
Entrepreneurial	88.4	11.6	100.0
Hierarchical	95.7	4.3	100.0
Team model	84.0	16.0	100.0
Network model	66.7	33.3	100.0
Total	87.9	12.1	100.0

Source: own research.

Table 5. Organizational type vs. motives for cooperation – decrease in costs, %

Type of organization	Motives for cooperation – decrease in costs		Total
	No	Yes	
Entrepreneurial	64.2	35.8	100.0
Hierarchical	69.6	30.4	100.0
Team model	44.0	56.0	100.0
Network model	83.3	16.7	100.0
Total	62.4	37.6	100.0

Source: own research.

Table 6. Organizational types vs. motives for cooperation – higher sales

Type of organization	Motives for cooperation – higher sales		Total
	No	Yes	
Entrepreneurial	64.2	35.8	100,0
Hierarchical	30.4	69.6	100,0
Team model	24.0	72.0	100,0
Network model	66.7	33.3	100,0
Total	53.0	47.0	100.0

Source: own research.

In the percentage analysis a certain boundary concerning active participation of examined companies in a value chain was observed. Since observation of motives connected with a high potential of involvement in international value chains, a general decrease in indications has been noticed for all types of organizations. It can suggest a poor real involvement of companies in foreign activity. This observation refers to the whole sample. It should be noted that the study covered small enterprises with relatively weaker than in the case of big ones purchasing and bargaining power, as shown in Tables 7, 8 and 9. It can, therefore, point to the existence of a relation between innovation and functioning within the framework of global or international value chains (namely, internationalization of enterprises).

Table 7. Organizational type vs. motives for cooperation – access to technology, %

Type of organization	Motives for cooperation – access to technology		Total
	No	Yes	
Entrepreneurial	93.7	6.3	100.0
Hierarchical	69.6	30.4	100.0
Team model	76.0	24.0	100.0
Network model	66.7	33.3	100.0
Total	85.9	14.1	100.0

Source: own research.

Table 8. Organizational type vs. motives for cooperation – possibility of development abroad, %

Type of organization	Motives for cooperation – possibilities of development abroad		Total
	No	Yes	
Entrepreneurial	95.8	4.2	100.0
Hierarchical	91.3	8.7	100.0
Team model	80.0	20.0	100.0
Network model	100.0	0	100.0
Total	85.9	14.1	100.0

Source: own research.

Table 9. Organizational type vs. motives for cooperation – export opportunities

Type of organization	Motives for cooperation – export opportunities		Total
	No	Yes	
Entrepreneurial	93.7	6.3	100.0
Hierarchical	73.9	26.1	100.0
Team model	84.0	16.0	100.0
Network model	100.0	0	100.0
Total	89.3	14.1	100.0

Source: own research.

Instead of conclusions. Post factum hypotheses and further direction of research.

Based on the conducted study, the following research hypotheses can be formulated:

1. Innovation increases in the enterprises characterized by complex organizational structure (also network one) than in organizations of a simple structure.

2. Innovation increases in the enterprises which function in international and global value chains than in the companies operating in local and national chains.

These hypotheses can be confirmed or profested in further comparative studies of small and medium enterprises. It will be, therefore, justified to compare enterprises which function, first of all, in local chains with the ones operating in global chains.

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