BUDOWNICTWO
CZASOPISMO TECHNICZNE
TECHNICAL TRANSACTIONS
CIVIL ENGINEERING
WYDAWNICTWO POLITECHNIKI KRAKOWSKIEJ
1-B/2010
ZESZYT 2
ROK 107
ISSUE 2
YEAR 107

ELŻBIETA RADZISZEWSKA-ZIELINA*
FRANTIŠEK MESÁROŠ**

ANALYSIS OF THE IMPORTANCE AND EFFECT OF TRANSACTORS IN THE ENVIRONMENT ON THE OPERATION OF CONSTRUCTION ENTERPRISES IN SELECTED COUNTRIES

BADANIE WAGI I WPŁYWU PODMIOTÓW OTOCZENIA NA FUNKCJONOWANIE PRZEDSIĘBIORSTW BUDOWLANYCH W WYBRANYCH KRAJACH

Streszczenie

Tematem niniejszego artykułu jest zbadanie wagi i wpływu podmiotów otoczenia na funkcjonowanie przedsiębiorstw budowlanych, na przykładzie wybranych regionów w trzech krajach: Polska, Słowacja, Ukraina. Wyniki badań wskazują, że w przypadku czterech podmiotów ich waga i wpływ jest wysoko oceniana. Są to podmioty: dostawcy materiałów, dostawcy maszyn budowlanych, podwykonawcy/generalnymi wykonawcami oraz inwestorzy/ inwestorzy zastępczy.

Słowa kluczowe: przedsiębiorstwo budowlane, otoczenie, podmioty otoczenia

Abstract

The present paper examines the importance and effect of transactors in the environment on the functioning of construction enterprises as exemplified by selected regions of three countries: Poland, Slovakia and Ukraine. According to research results, in the case of four transactors their importance and effect are assessed as large. The transactors are: building material suppliers, building equipment suppliers, subcontractors/main contractors and investors/investors' representatives.

Keywords: construction enterprise, environment, transactors in the environment

* Dr inż. Elżbieta, Radziszewska-Zielina, Zakład Technologii i Organizacji Budowy, Wydział Inżynierii Lądowej, Politechnika Krakowska.
** Doc. Ing. CSc František, Mesároš, Ústav technológií, ekonomiky a manažmentu v stavebníctve, Stavebná fakulta, Technická univerzita v Košiciach.

1. Introduction

1.1. A construction enterprise and its environment

In this paper, a construction enterprise is defined as one which provides exclusively or mainly construction services as the general contractor or a subcontractor. A construction service is understood as the performance of one or several construction operations where the scope of these operations, the means to perform them, the materials used, the price and the deadline are agreed with the investor, who pays for this service. Such a definition of a construction enterprise is found e.g. in textbooks [6, 7]. A construction enterprise may additionally offer to design the objects which it is going to build. Some construction enterprises also act as developers. In practice, a developer usually has the role of an investor.

A construction enterprise may act as a buyer and a supplier. In order to be able to sell a construction service, it has to buy appropriate products first (goods and services) (Fig. 1).

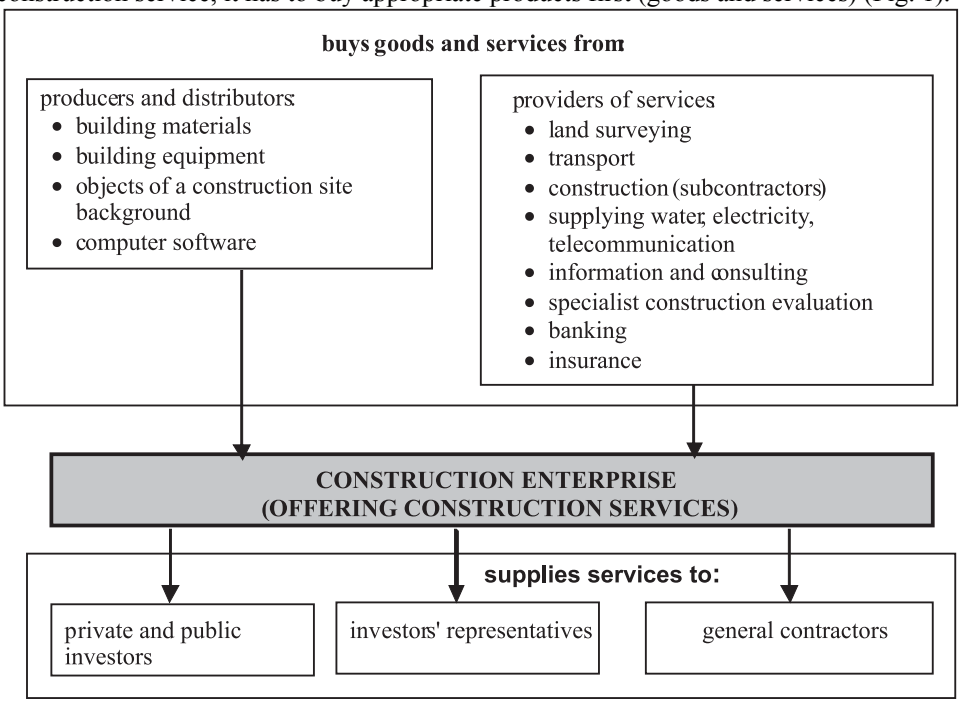

Fig. 1. A construction enterprise in the relation: buyer-supplier

Rys. 1. Przedsiębiorstwo budowlane w relacji nabywca–dostawca

The construction market is a type of market where the offered product and object of transactions are constituted by the performance of construction work. The markets connected with the construction market are e.g. the building material market, the building equipment market and the design service market. The real estate market may be treated as a competitive one. This is particularly evident in the case of the secondary real estate

market. Instead of commissioning a construction enterprise to perform the service of building a house, an investor may buy in a real estate agency a ready object, e.g. a house built 10 years ago. Also the authors of the textbook [7] treat the real estate market as antagonistic to the construction market. However, it is worth noting that the primary real estate market in a way co-operates with the construction market as developers build flats and sell them at the same time.

The institutional (business-to-business, B2B) market is understood as the total of relations occurring in the process of buying and selling between enterprises [1]. In the case of the relations of construction enterprises on institutional markets, what is meant, are relations between construction enterprises and e.g. subcontractors, building material suppliers, building equipment suppliers. Most construction enterprises act mainly or exclusively on institutional markets.

A construction enterprise's environment can be divided into the macro- and microenvironment. The microenvironment consists of transactors, institutions and individuals in the direct range of an enterprise's activity. The most important element of the microenvironment are clients and other, competitive construction enterprises. A construction enterprise and its clients, competitors, suppliers, cooperators act in a broader environment: that of a region, country, Europe and the world. This is the macroenvironment. It is characterized by constant changes (demographic, economic, technical, political, social). Examples of the elements of the macro- and microenvironment are presented in many publications, such as [2, 4, 6].

The topic of the present paper is analysis of the importance and effect of transactors in the environment on the functioning of construction enterprises, using as an example some selected regions of three countries: Poland, Slovakia and Ukraine.

2. The present Author's own research in selected regions

2.1. Research description

The present author's chosen research method was a standardized interview based on a questionnaire. Marketing research methods were presented in such publications as [3]. Questionnaire research methods and the range of their application in the construction industry are described in the textbook [6].

The arrangement and course of the present research were as follows. Three countries, namely Poland, Slovakia and Ukraine, were selected for the analysis. Next, a region was chosen in each country. For financial and logistic reasons, the małopolskie province was selected in Poland, the Košice and Prešov region in Slovakia and the Transcarpathian Region in Ukraine. The research area in each country was approximately between 13 and 15 thousand km^2. The number of registered construction enterprises in these regions was different. Most enterprises were noted in the małopolskie province. While it may be shown that the selected regions of Poland and Slovakia are representative of their respective countries (the regions are typical, average, neither very rich nor very poor, and neither contains its country's capital), this is not true for the selected region of Ukraine. The Transcarpathian Region is definitely poorer in each respect, including the activity of

construction enterprises; it is also specific due to its geographical location (it borders with three countries).

It was assumed that the research would concern mainly medium and large enterprises. A commonly used classification was adopted, according to which construction microenterprises have up to 9 employees, small enterprises have between 10 and 49 employees, medium ones have from 50 to 249 employees while large ones employ over 249 people. Microenterprises were disregarded in all three countries; their number is therefore not included in Table 1. The research was conducted in 2008. Because in the analysed regions of Ukraine and Slovakia there are over 50% fewer construction enterprises than in the małopolskie province, the research included the largest enterprises in the group of small ones. The respondents were selected experts from construction enterprises, who were able to answer the research questions, i.e. owners, managers, construction site managers.

Table 1

Statistical data concerning research done in 2008. The author's own study based on data obtained from statistical offices in particular countries and on information from construction industry experts

Country name	Area in km^2	Number of inhabitants	Number of construction enterprises			
			Small ones	Medium ones	Large ones	Analysed ones
Poland	małopolskie province (Cracow + surroundings)					
	15 200	3 282 000	888	148	19	147
Slovakia	Košicky region (Košice + surroundings)					
	6 753	770 000	282	37	3	81
	Prešovsky region (Prešov + surroundings)					
	8 998	803 000	328	38	0	87
	altogether (Košicky and Prešovsky regions)					
	14 751	1 573 000	610	75	3	168
Ukraine	Transcarpathian region (Uzhhorod + surroundings)					
	12 777	1 258 264	350	35	2	112

Data in Table 2 concerning the number of enterprises in Ukraine are approximate as there are no respective publications. The only information the authors obtained from the Ukrainian statistical office is the total number of 1036 construction enterprises in Transcarpathian region.

For the sake of clarity, whenever the results of the research done in the above-mentioned regions are referred to, the authors will refer to the enterprises in those regions simply as Polish, Slovak or Ukrainian enterprises.

2.2. Research results

Figure 2 presents a sample network of relations between a construction enterprise and other individuals and organizations. The transactors in this figure affect an enterprise's activity. An enterprise may form relations with some of them, e.g. with subcontractors or building material suppliers. Other institutions, such as the government ones, which issue

legal regulations, affect an enterprise's activity (e.g. unfavourable regulations may cause an enterprise's crisis) but do not enter into market relations with it. There is no buy-sell relation.

In order to assess all transactors listed in Figure 2, the following 2 indices were selected: importance and effect. Experts from Polish, Slovak and Ukrainian construction enterprises assessed, on the 10-point scale (from –5: small to +5: large) the importance of particular transactors for a construction enterprise and, also on the 10-point scale (from –5: negative to +5: positive), the effect of particular transactors on the functioning of a construction enterprise.

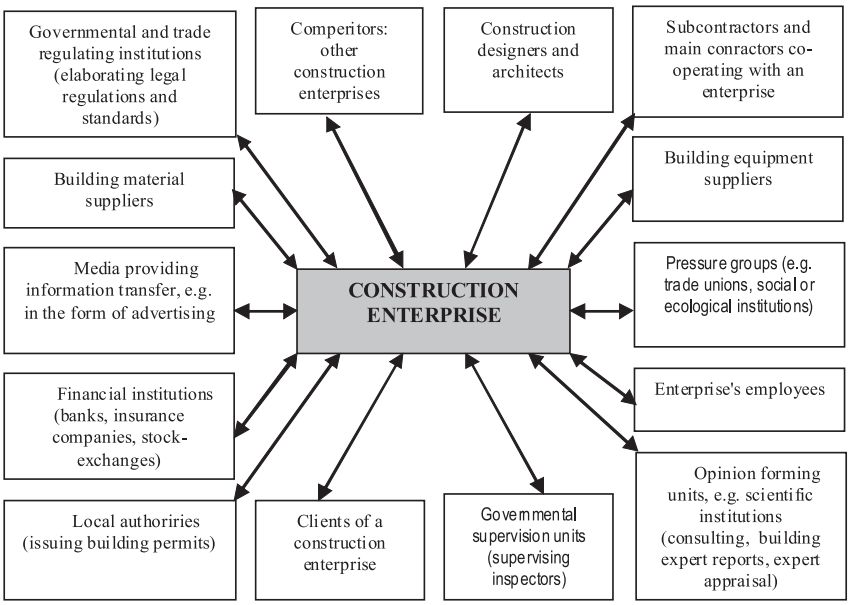

Fig. 2. A diagram of a construction enterprise's relations with selected transactors in the environment

Rys. 2. Schemat relacji przedsiębiorstwa budowlanego z wybranymi podmiotami otoczenia

For selected regions in the se three countries, mean values were determined for the importance and effect of particular transactors on the operations of a construction enterprise according to the following formula:

$$\bar{x}_j^{(wag)} = \frac{1}{n} \cdot \sum_{i=1}^{n} x_{i,j}^{(wag)} \tag{1}$$

$$\bar{x}_j^{(wp)} = \frac{1}{n} \cdot \sum_{i=1}^{n} x_{i,j}^{(wp)} \tag{2}$$

where:

$x_{i,j}^{(wag)} = -5,-4\ldots,0,\ldots 4,5$ – the reply of an expert from the *i - th* construction enterprise to the question about the importance of the *j-th* transactor,

$x_{i,j}^{(wp)} = -5,-4,\ldots,0,\ldots 4,5$ – the reply of an expert from the *i - th* construction enterprise to the question about the effect of the *j-th* transactor on the enterprise,

n – the number of examined construction enterprises in particular countries (e.g. for Poland n = 147),

$j = 1,\ldots,m$ – the number of assessed transactors, m = 14.

The research results were presented graphically on diagrams (Figures 3-5). The letters symbolizing the transactors were adopted as in Table 2. The diagrams were created as follows. The assessment of a transactor's importance was marked on the vertical axis whereas a transactor's effect was noted on the horizontal axis. For each transactor, the mean importance and mean effect were determined for the selected region in each country as the arithmetic mean of the assessments given by experts from the examined construction enterprises. The diagrams show that the effect of the transactors was assessed as positive. The average assessment of the transactors' effect is in all three cases positive, which means that enterprises assess the transactors' effect on their functioning quite well. The mean importance of the transactors is also positive, which, however, may result from the fear of disregarding the importance of one of the transactors. The above analysis is a reason to divide the diagram into 4 areas by introducing a vertical straight line with the x coordinate which is the mean value (the mean of the mean assessments) of the transactors' effect on the functioning of construction enterprises in the selected region of a given country, and by introducing a horizontal straight line with the y coordinate which is the mean value (the mean of the mean assessments) of the transactors' importance, according to the following formulas:

$$\bar{x}^{(wag)} = \frac{1}{m} \cdot \sum_{j=1}^{m} \bar{x}_j^{(wag)} \tag{3}$$

$$\bar{x}^{(wp)} = \frac{1}{m} \cdot \sum_{j=1}^{m} \bar{x}_j^{(wp)} \tag{4}$$

where:

$\bar{x}^{(wag)}$ – the mean assessment of importance for all transactors,

$\bar{x}^{(wp)}$ – the mean assessment of effect for all transactors,

m – the number of the assessed transactors (m = 14).

In this way, a new system of reference is formed; it is the reference to the mean value.

In the upper right field in Figures 3-5 there are those transactors which are regarded as important (their importance is larger than average) and having a positive effect (their effect is larger than the average effect assessment) on a construction enterprise. Relations with these important transactors are very good and that is why a construction enterprise should do its best in order not to make them worse. For Polish enterprises, these are the following

transactors: an enterprise's clients, an enterprise's employees, building material suppliers, subcontractors and general contractors which co-operate with the enterprise, construction designers, architects and financial institutions. For Slovak construction enterprises, these transactors are: an enterprise's clients, an enterprise's employees, building material suppliers, subcontractors and general contractors which co-operate with the enterprise, competitors – other construction enterprises, construction designers, architects and – on the border with the upper left field – building equipment suppliers and financial institutions. For Ukrainian construction enterprises, these are: building material suppliers, an enterprise's clients, construction designers, architects, subcontractors and general contractors which co-operate with the enterprise, building equipment suppliers, an enterprise's employees and competitors – other construction enterprises.

In the upper left field there are transactors perceived as important but having a less positive effect (assessment of influence lower than average) on a construction enterprise. An enterprise should do its best to improve the relations with these transactors. For Polish construction enterprises these transactors are: competitors – other construction enterprises and governmental supervision units. For Slovak ones, these are financial institutions and, bordering with the upper right field in the diagram, building equipment suppliers. For Ukrainian enterprises there are no such transactors.

Table 2

Symbols of transactors

Transactor	Transactor's name
A	Clients of a construction enterprise
B	Competitors – other construction enterprises
C	Subcontractors and main contractors co-operating with an enterprise
D	Building material suppliers
E	Building equipment suppliers
F	Construction designers and architects
G	Media providing information transfer by such means as advertising
H	Enterprise's employees
I	Governmental and trade regulating institutions (elaborating legal regulations and standards)
J	Local authoriries (issuing building permits)
K	Governmental supervision units (supervising inspectors)
L	Opinion forming units, e.g. scientific institutions (consulting, building expert reports, expert appraisal)
M	Pressure groups (e.g. trade unions, social or ecological institutions)
N	Financial institutions (banks, insurance companies, stock-exchanges)

In the bottom left field there are the transactors considered less important (importance lower than average) and having a less positive effect on a construction enterprise. Whenever possible, the relations with these transactors should also be improved but only in the second place (the upper left field is a priority). For Polish construction enterprises these transactors are: local authoriries, trade and governmental regulating institutions, building equipment suppliers, opinion-forming units such as scientific institutions, the media providing

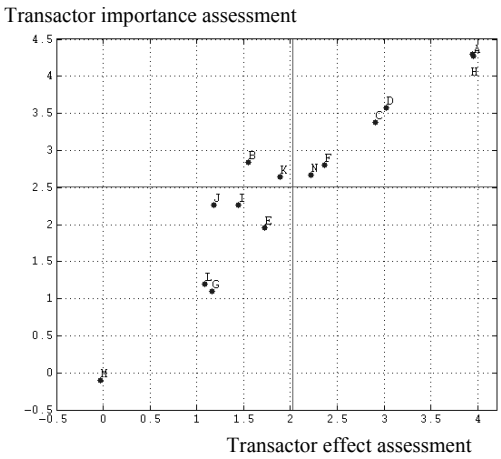

Fig. 3. Assessment of the importance and effect of transactors on the functioning of Polish construction enterprises

Rys. 3. Ocena ważności i wpływu podmiotów na działalność polskich przedsiębiorstw budowlanych

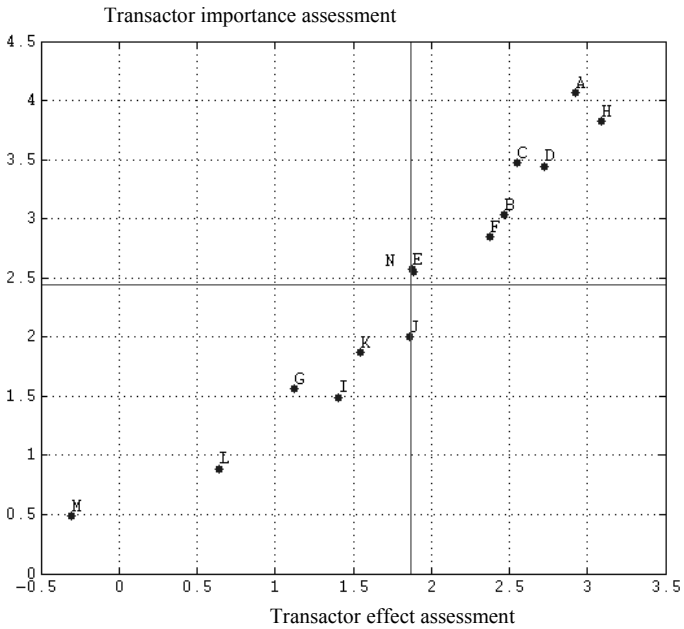

Fig. 4. Assessment of the importance and effect of transactors on the functioning of Slovak construction enterprises

Rys. 4. Ocena ważności i wpływu podmiotów na działalność słowackich przedsiębiorstw budowlanych

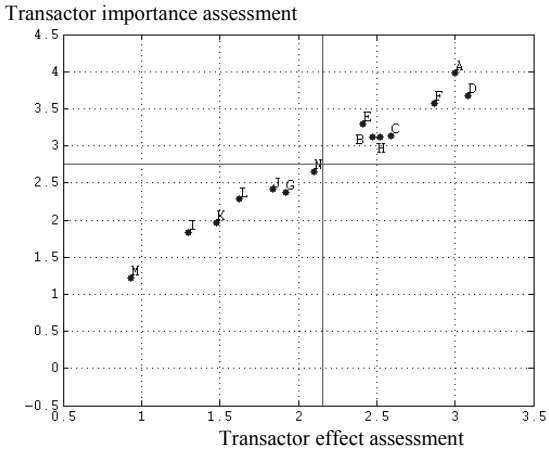

Fig. 5. Assessment of the importance and effect of transactors on the functioning of Ukrainian construction enterprises

Rys. 5. Ocena ważności i wpływu podmiotów na działalność ukraińskich przedsiębiorstw budowlanych

information transfer by such means as advertising, and pressure groups. For Slovak ones, these are the media providing information transfer by such means as advertising, trade and governmental regulating institutions, opinion-forming units such as scientific institutions, pressure groups and, bordering with the bottom right field in the diagram, local authorities. For Ukrainian enterprises these are: financial institutions, the media providing information transfer by such means as advertising, local authorities, opinion-forming units such as scientific institutions, state supervision units, trade and governmental regulating institutions and pressure groups.

In the bottom right corner, there are the transactors regarded as less important but still having a positive effect on a construction enterprise. A construction enterprise should take the best advantage of this situation. Only Slovak construction enterprises have a transactor in this field in the diagram: local authorities are at the border with this field. For the other countries these fields are empty.

One can notice that, on the diagram of transactor importance and effect, transactors are concentrated around the straight line with a positive angle which is close to 1. The transactors which are more important than others also have a larger positive effect on a construction enterprise. In practice this is a positive phenomenon.

3. Conclusions

In all of the analysed regions of the three countries in question, the transactors regarded as important and having a positive effect on the operation of a construction enterprise are: the clients of a construction enterprise, subcontractors and main contractors co-operating with an enterprise, building material suppliers, construction designers and architects, an enterprise's employees. It is worth maintaining good relations with these entities, at least on the present level. In all of the analysed regions, the transactors considered less important

and having a smaller effect on a construction enterprise are: the media providing information transfer by such means as advertising, local authoriries (issuing building permits), governmental and trade regulating institutions (elaborating legal regulations and standards), opinion forming units, e.g. scientific institutions (consulting, building expert reports, expert appraisal), pressure groups (e.g. trade unions, social or ecological institutions). If possible, the relations with these transactors should be improved.

The present research shows that it is justified to further analyse in detail the relations of construction enterprises with four transactors: building material suppliers, building equipment suppliers, subcontractors/main contractors, investors/investor's representatives. Their importance and effect received a high assessment. Among these four transactors, the lowest assessment was received by building equipment suppliers. The reason is that some construction enterprises have their own set of building equipment.

References

[1] Fonfara K., *Marketing partnerski na rynku przedsiębiorstw*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2004.

[2] Kozlovská, M., Mesároš F., Čepelová A., *Ako úspešne riadiť malú stavebnú firmu*. Eurostav, Bratislava 2003.

[3] Mesárošová M., Mesároš P., Mesároš F., *Teória a prax marketingového výskumu*, VÚSI, Košice 2008.

[4] Pabian A., *Marketing w budownictwie*, *Poradnik przedsiębiorcy budowlanego*, Wyd. COIB, Warszawa 1999.

[5] Radziszewska-Zielina E., *A building enterprise on the market*, Economics and Business Management, Journal for economics theory and practice, Vol. 6, No. 1, 2008, 33-43.

[6] Radziszewska-Zielina E., *Metody badań marketingowych w budownictwie*, Wyd. KNOW-HOW, Kraków 2006.

[7] Starzyk E., Juszczyk M., Kozik R., *Analiza strategiczna przedsiębiorstwa budowlanego i jego otoczenia*, Wyd. Politechniki Krakowskiej, Kraków 2007.