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## **THE EFFECTIVENESS OF DIVERSIFICATION OF CONSTRUCTION ENTERPRISE ACTIVITIES**

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### **ABSTRACT**

The dynamic transformation of the environment, as well as growing competition make enterprises search for various methods and ways of adapting themselves to the complicated and changing operating conditions. One of these methods is the expansion of the scope of enterprise activities or diversification. Investigations focusing on the problem of construction enterprise activities' diversification are scarce. The analysis of correlation between diversification level of construction enterprises and their financial activities' efficiency shows that the existing correlation is strong.

### **KEYWORDS**

Efficiency of activities, diversification, indices

### **1. INTRODUCTION**

The dynamic transformation of the environment, as well as growing competition make enterprises search for various methods and ways of adapting themselves to the complicated and changing operating conditions. One of these methods is the expansion of the scope of enterprise activities or diversification. A complex strategy of expanding enterprise activities is controversial, resulting either in great profit or great losses. Though this way of adapting to the constantly changing conditions is widely used all over the world, many problems associated with diversification arise. They include the ways of measur-

ing diversification and determining its optimal level and influence on enterprise management, etc. It is also important to determine the influence of diversification on the effectiveness of enterprise commercial activities.

### **2. THE EFFECT OF DIVERSIFICATION ON COMMERCIAL ACTIVITIES OF CONSTRUCTION ENTERPRISES**

Investigations focusing on the problem of construction enterprise (CE) activities' diversification are scarce. Some of them are aimed at determining its optimal level. For this purpose, the dependence of the economic effect of construction enterprise per-

formance on its diversification level expressed as the number of enterprise activities [1, 2]. The results obtained are presented in Fig 1.

Based on the data given in 1 Figure, some important conclusions can be made. First, irrespective of the time of investigation, similar parabolic dependencies of enterprise commercial and economic activities and their effectiveness on enterprise diversification level were obtained. They confirm theoretical assumptions that the highest effectiveness of performance can be expected if an enterprise has a certain differentiation level matching a particular number of activities. When this number is increased or decreased, the effectiveness drops. Second, differentiation level corresponding to the highest effectiveness of enterprise performance is growing year after year. This means that the quality of construction enterprise management has grown and enterprises are ready to implement diversification strategy by restructuring their management system.

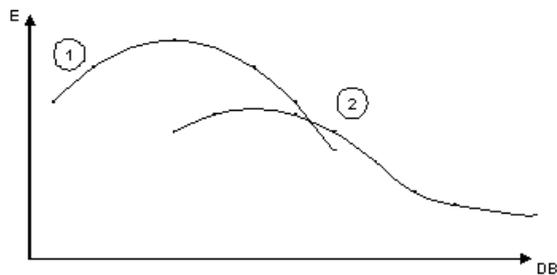


Figure 1. The dependence of construction enterprise performance on its diversification level (1– research carried out in 1994; 2 – research carried out in 1998)

The organization theory states that diversification is a way of adapting to ever changing market conditions. Though this statement is very important, there are very few works devoted to the analysis of diversification effect on enterprise performance, depending on the type of market, which may be either in a steady state, or be expanding or getting narrower.

For some years now, there has been a boom of construction in Lithuania. This means that this market sector is growing, which allows us to investigate the effect of diversification on enterprise commercial activity in this situation. To establish the relationship between the issues analysed, diversification level of

construction enterprises, as well as the criterion describing the effectiveness of their performance, should be determined.

The first quantity, i.e. diversification level, may be obtained by applying a widely used Berry's index  $D_B$  [3]:

$$D_B = 1 - \sum_{i=1}^n P_i^2, \quad (1)$$

where  $P_i$  is relative volume of the  $i$ -th activity;  $n$  is the number of activities ( $i=1, 2, \dots, n$ ).

The calculation results obtained using Berry's index for the considered enterprises are given in Table 1.

The values of financial activities' coefficients of construction enterprises are given in Table 2.

As shown in Table 2, the values of some coefficients are better for some particular enterprises, while the values of others are better for other enterprises. In this environment, it is hardly possible to determine which enterprises perform better than the others. To solve this problem, the values of financial activity coefficients should be integrated into a single quantity. However, this process is complicated by the fact that the values are changing in opposite directions, implying that when some of the coefficient values are growing, the situation is getting better, while the growth of other values means that the situation is getting worse. Moreover, the influence of some particular coefficients on the phenomenon considered and overall effectiveness of the financial activities may differ considerably.

In this controversial situation multicriteria evaluation methods, integrating all the criteria of the considered object into a single quantity, not taking into account the nature of their change, dimensions and significance [4] should be used.

The criteria of the financial activities of enterprises adequately describe the results of their commercial and economic activities. These are coefficients (ratios) of current, overall and critical liquidity and debts [5].

*Current liquidity ratio* shows the ability of an enterprise to meet short-term liabilities by using its short-term capital. The value of this criterion which is

smaller than one shows that an enterprise cannot always meet short-term obligations, therefore, the increase of this value demonstrates that the state of an enterprise is getting better.

*Overall liquidity ratio* shows how many times enterprise own capital exceeds all liabilities. The larger the ratio, the higher the solvency and the lower the financial risk and threat of bankruptcy. The state of an enterprise is very good when the ratio is equal to 2.

*Critical liquidity ratio* shows how much enterprise liquid property (it is assumed that stock is not liquid) exceeds short-term liabilities. An enterprise has a good liquidity level if critical liquidity ratio is equal at least to 1.

*Ratio of assets to liabilities* shows how much capital falls at each monetary unit of all liabilities.

The variation limits of financial activity coefficients (ratios) are given in Fig. 2.

To use multicriteria methods for evaluating the financial state of construction enterprises, weights of the coefficients given in Table 2 should be known and their values should be appropriately converted because some evaluation methods require that all coefficient values be maximized.

The coefficient weights given in Table 3 had been already determined [5] when performing complex evaluation of the financial activities of enterprises by AHP, a method suggested by T. Saaty [6, 7].

One of the four enterprise financial activity coefficients, i. e. ratio of assets to liabilities is minimizing, while others are maximizing. This ratio can be maximized by the following formula [5]:

$$r_{ij}^m = \frac{r_{ij}}{\min r_i}, \quad (2)$$

where  $r_{ij}^m$  is a maximizing  $i$ -th value of  $j$ -th object;  $r_{ij}$  is  $i$ -th value of  $j$ -th object;  $\min r_i$  is the smallest value of  $i$ -th criterion.

**Table 1.** Diversification level of CE activities in 2006

Enterprise No	1	2	3	4	5	6	7	8	9	10
Diversification level of enterprise activities	0.054	0.320	0.242	0.299	0.492	0.308	0.557	0.252	0.370	0.496

**Table 2.** The values of enterprise financial activities' coefficients in 2006

Coefficients (ratios) of CE financial activities	Construction enterprises									
	1	2	3	4	5	6	7	8	9	10
Current liquidity	1.2	1.45	0.89	1.40	1.30	1.30	1.83	1.48	1.50	1.20
Critical liquidity	1.0	0.70	0.78	1.39	1.095	1.30	1.25	1.27	1.46	0.90
Overall liquidity	0.7	1.70	0.72	0.16	1.10	0.50	0.14	0.82	0.39	0.63
Assets to liabilities	0.6	0.84	0.64	0.88	0.47	0.68	0.88	0.39	0.72	0.61

**Table 3.** The coefficient weights of enterprise financial activities

Coefficient (ratio)	Current liquidity	Critical liquidity	Overall liquidity	Assets to liabilities	Total
Coefficient weight	0.33	0.28	0.26	0.13	1.0

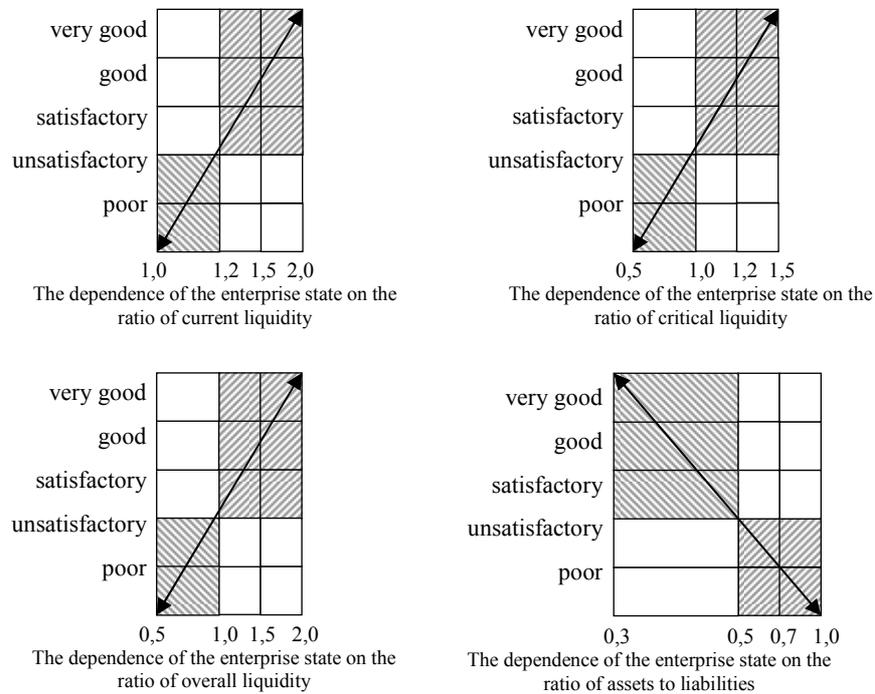


Figure 2. The values of financial activity coefficients

Multicriteria evaluation requires that the criteria values of the particular object's alternatives should be compared. For this purpose, they should be normalized. Normalization may be made by the formula:

$$\tilde{r}_{ij} = \frac{r_{ij}}{\sum_{i=1}^n r_{ij}}, \quad (3)$$

where  $\tilde{r}_{ij}$  is normalized  $i$ -th value of  $j$ -th alternative of the considered object.

The criteria values normalized by formulas (2) and (3) are given in Table 4.

Now, multicriteria evaluation of the financial activities of the considered construction enterprises can be performed. This is made by using the method SAW (Simple Additive Weighting) written as follows [4]:

$$S_j = \sum_{i=1}^n \omega_i \tilde{r}_{ij}, \quad (4)$$

where  $S_j$  is the value characterizing the financial state of  $j$ -th construction enterprise obtained by SAW;  $\omega_i$  is the criterion weight of  $i$ -th financial state.

Multicriteria evaluation of the financial state of the considered construction enterprises by the method SAW is demonstrated in Table 5.

By calculating the effectiveness (E) of the financial activities of the considered enterprises a correlation, also including diversification level  $D_B$ , can be determined.

As shown in Figures 1, 2, the influence of CE diversification on the effectiveness of enterprise financial activities is actually the same, irrespective of the time of investigation. It implies that, when diversification level is low, the effectiveness of activities is

also low. Then, when  $D_B$  is growing, it is also increasing. However, when a maximum is reached, it starts decreasing. This confirms the validity of theoretical assumptions about enterprise performance, stating that diversification is closely associated with great changes in enterprise performance, particularly, in the area of management. The decrease in financial activity effectiveness, when the highest

diversification level is reached, indicates that enterprises could not restructure their management systems which were not meeting the requirements changed, and, therefore, could not get the expected results. Low correlation flexibility shows that the influence of diversification on the effectiveness of enterprise financial activities is not considerable in the expanding market.

**Table 4.** Normalized values of financial activity coefficients of the considered enterprises

Coefficients (ratios) of CE financial activities	Weights	Construction enterprises									
		1	2	3	4	5	6	7	8	9	10
Current liquidity	0.33	0.66	0.79	0.49	0.77	0.71	0.71	1.00	0.81	0.82	0.66
Critical liquidity	0.28	0.68	0.48	0.53	0.68	0.96	0.89	0.86	0.87	1.00	0.62
Overall liquidity	0.26	0.41	1.00	0.42	0.09	0.65	0.29	0.08	0.48	0.23	0.37
Assets to liabilities	0.13	0.65	0.46	0.61	0.44	0.83	0.57	0.44	1.00	0.54	0.64

**Table 5.** Multicriteria evaluation of the financial state of construction enterprises by SAW method

Criteria	Values $\omega_i \tilde{r}_{ij}$ of construction enterprises									
	1	2	3	4	5	6	7	8	9	10
Current liquidity	0.0292	0.0353	0.0217	0.0341	0.0316	0.0316	0.0446	0.0360	0.0365	0.0292
Critical liquidity	0.0251	0.0176	0.0196	0.0349	0.0275	0.0326	0.0314	0.0319	0.0367	0.0226
Overall liquidity	0.0265	0.0644	0.0273	0.0061	0.0417	0.0190	0.0053	0.0311	0.0148	0.0239
Assets to liabilities	0.0136	0.0098	0.0128	0.0093	0.0174	0.0120	0.0093	0.0210	0.0114	0.0134
$S_j$	0.0945	0.1271	0.0813	0.0844	0.1183	0.0953	0.0906	0.1200	0.0944	0.0891

### 3. CONCLUSIONS

The analysis of correlation between diversification level of construction enterprises and their financial activities' efficiency shows that, first, the existing correlation is strong. Second, the variation of the above correlation confirms theoretical assumptions of diversification effect on enterprise performance, stating that, when the diversification level is growing, enterprise performance is gradually being improved. However, reaching the maximum, it starts worsening. This may be accounted for by the fact that enterprises cannot adequately restructure their management systems.

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