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ASSESSMENT OF THE INTERNAL ENVIRONMENT OF THE UKRAINIAN CONSTRUCTION INDUSTRY

ABSTRACT:

The variety of different levels of factors indicative of the development of the Ukrainian construction industry provides for their systematization, characteristic and identification of the level of influence. Determining the nature of the factor influence preconditions the identification of positive and negative evolution factors, which, in their turn, ensure the effectiveness of the strategic management in the construction industry at the national level. Establishing the dependence of the industry development on these two categories of impact factors will allow substantiating the level of effectiveness of strategies for the development of the Ukrainian construction industry, which will be calculated in the article research. The development of the construction industry of the country depends on external factors (at the national level), internal factors of economic activities, and factors of the international environment, which, although belonging to the category of external ones, cause the reduction or development in functioning of the industry entities at international markets. The study of influence of the internal environment factors will be built according to the author's methodology formed by analogy with the author's methodology developed for the factor analysis of influence of the external environment on the development of the Ukrainian construction industry. This article presents a diagram of the methodology for assessing the influence of internal factors on the development of the country's construction industry.

INTRODUCTION.

The study investigates the scientific novelty of the author's methodology is related to the fact that the procedure for assessing the influence of internal factors, whose effect is evaluated both on other internal factors of the respective category and the performance indicator of the construction industry evolution (growth rates of the manufactured building products volume (or Index of building products (Ibp)), has been firstly developed and substantiated. With the identified purposes, the procedure for using the method of weighting coefficients has been modified. In addition, there has been proposed the creation of annual formulas for the industry development by categories of internal factors and relevant indicators within the presented methodology.

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THE METHODOLOGY FOR ASSESSING THE INFLUENCE OF INTERNAL FACTORS ON THE DEVELOPMENT OF THE COUNTRY'S CONSTRUCTION INDUSTRY.

In accordance with the data of Table 1, the assessment involves the following stages of the study pursuant to the provisions of the author's methodology, in particular:

1) regarding the effect of the internal environment:

- identification of main categories of the internal environment factors that affect the development of the Ukrainian construction industry. As part of the said categories, the following has been selected:

Financial and economic category with factors (statistical indicators):

Table 1

Diagram of the methodology for assessing the influence of internal factors on the development of the country's construction industry

1-st stage
↓
Identification of categories of the internal environment factors that affect the development of the Ukrainian construction industry: Financial and economic category with factors (statistical indicators): a) positive factors: growth in direct intra-company investments in the industry development; optimization of prices for building products (reduction in prices), which causes the growth in demand and production; b) negative factors: reduction in direct intra-company investments in the industry development; increase in prices for building products (rise in prices), which causes the decrease in demand and production; technological and production category with factors (statistical indicators): a) positive factors: increasing investments in the innovative development of technologies and materials; growth of the level of the technological equipment upgrade; b) negative factors: disinvestment in the innovative development of technologies and materials; reducing the level of the technological equipment upgrade. Using the statistical method of the factor analysis.
2-nd stage
↓
Assessment of influencing the identified internal factors on the development of the Ukrainian construction industry
↓
1. Establishing values of indicators (factors) for the period under review (2014-2018). 2. Estimation of the growth rates, or decrease in the development of factors based on relevant indicators over a certain period (five years according to annual data). Using the method of statistical interval series of dynamics. 3. Determination of change factors (100%: - the reporting value of the factor). Using the method of statistical interval series of dynamics. 4. Determining the weight of a factor in dependence to the impact on the state and development of others and the performance indicator of the industry development using the method of weighting coefficients. The criteria for these indicators are defined according to the following scale:

Table 1 (continued)

affects the state and development of all factors in a particular category (or within factors that are measured without correlation with categories); A minimum value of 0,1 is assigned to a factor that has no effect on the state and development of other factors and only affects the state of the industry development; Intermediate values ranging from 1 to 0,1 are assigned to factors within a category (or without correlation with categories) according to the level of impact on the state and development of factors and the industry, etc.
3-rd stage
↓
Determination of the general level of influence of internal factors on the development of the Ukrainian construction industry. The sum of effects on the state of the industry development is estimated and the annual formula for the industry development is determined by categories of factors and indicators. Summarizing conclusions

the authors' development

a) positive factors: growth in direct intra-company investments in the industry development; optimization of prices for building products (price reductions), which causes the increase in demand and production;

b) negative factors: reduction in direct intra-company investments in the industry development; growing prices for building products (rise in prices), which causes the decrease in demand and production;

Technological and production category with factors (statistical indicators):

a) positive factors: increasing investments in the innovative development of technologies and materials; growth of the level of the technological equipment upgrade;

b) negative factors: disinvestment in the innovative development of technologies and materials; reducing the level of the technological equipment upgrade;

- estimation of the overall level of influence of internal factors and determination of annual formulas for the industry development by categories of factors and indicators.

FACTOR OF INFLUENCE OF DIRECT INTRA-COMPANY INVESTMENTS IN THE INDUSTRY DEVELOPMENT, INFLUENCE OF OPTIMIZING THE PRICES FOR BUILDING PRODUCTS, INFLUENCE OF INVESTMENTS IN THE INNOVATIVE DEVELOPMENT OF TECHNOLOGIES AND MATERIALS AND INFLUENCE OF THE TECHNOLOGICAL EQUIPMENT UPGRADE ON THE DEVELOPMENT OF THE UKRAINIAN CONSTRUCTION INDUSTRY.

Based on the author's approach presented, we will assess the state of the internal environment of the Ukrainian construction industry.

Table 2 defines the factor of influence of direct intra-company investments in the industry development on the development of the Ukrainian construction

industry. We can note that during the period under review, there were fluctuations in the volumes of direct intra-company investments in the development of the Ukrainian construction industry. Particularly, in 2015 the volume of this indicator was reduced following the results of activities of the construction industry entities in the country, namely, if in 2014, the index of changes in direct intra-company investments in the industry development was 112,2%, in 2015 this indicator was 82,4%. For the period of 2016-2017, the value of this indicator increased, indicating the positive development results, but in 2018 there was a certain reduction, which, in its turn, affected the performance indicator of the industry development that also decreased. More specifically, the Index of building products in 2018 was less than that in 2017.

Table 2

Factor of influence of direct intra-company investments in the industry development on the development of the Ukrainian construction industry

No.	Factor / indicator	2014	2015	2016	2017	2018
1	2	3	4	5	6	7
1	Index of changes in direct intra-company investments in the industry development, %	112,2	82,4	84,8	94,5	88,1
2	Impact factor of direct intra-company investments in the industry development, %	12,18	-17,60	-15,19	-5,51	-11,87
3	Impact factor of direct intra-company investments in the industry development adjusted for weighting values of the effect on another factor and the industry (the weighting coefficient of 0,5 is assigned, since there is the influence on another factor of the category), %	6,09	-8,80	-7,60	-2,75	-5,93

compiled by the author based on materials [1]

In Table 3, the calculation of the factor of influence of optimizing the prices for building products on the development of the Ukrainian construction industry is presented.

According to the results of Table 3, it can be noted that during the period under review (2014-2018), there was a lack of optimizing the prices for building products; that is, the prices for building products in Ukraine increased every year. It should be emphasized that the highest growth level for this factor was observed in 2015, which was due to the additional effect of external impact factors. Accordingly, the rise in price parameters affects the reduction in growth rates of the Index of building products in Ukraine.

Table 3

Factor of influence of optimizing the prices for building products on the development of the Ukrainian construction industry

No.	Factor / indicator	2014	2015	2016	2017	2018
1	2	3	4	5	6	7
1	Index of changes in the prices for building products (rise / reduction in prices), %	109,5	127,1	109,2	113,4	123
2	Impact factor of optimizing the prices for building products (+ reduction in prices, - rise in prices), %	-9,5	-27,1	-9,2	-13,4	-23
3	Impact factor of optimizing the prices for building products adjusted for weighting values of the effect on another factor and the industry (the weighting coefficient of 0,5 is assigned, since there is the influence on another factor of the category), %	-4,75	-13,55	-4,6	-6,7	-11,5

compiled by the authors based on materials [2]

In Table 4, the calculation of the factor of influence of investments in the innovative development of technologies and materials on the development of the Ukrainian construction industry is given. According to the results of calculations presented in Table 4, we can note that the specified factor had the negative effect only in 2014 in view of the negative trends in the financial and economic sphere, as well as action of the military and political factors. Starting from 2015, the impact of this factor has been improving.

Table 4

Factor of influence of investments in the innovative development of technologies and materials on the development of the Ukrainian construction industry

No.	Factor / indicator	2014	2015	2016	2017	2018
1	2	3	4	5	6	7
1	Index of changes in the volume of investments in the innovative development of technologies and materials, %	92,575	115,980	104,790	116,032	125,371
2	Impact factor of investments in the innovative development of technologies and materials, %	-7,43	15,98	4,79	16,03	25,37
3	Impact factor of investments in the innovative development of technologies and materials adjusted for weighting values of the effect on another factor and the industry (the weighting coefficient of 0,5 is assigned, since there is the influence on another factor of the category), %	-3,71	7,99	2,40	8,02	12,69

compiled by the authors based on materials [3]

In Table 5, the calculation of the factor of influence of the technological equipment upgrade on the development of the Ukrainian construction industry is presented. According to the results of Table 5, it can be noted that the factor of the technological equipment upgrade had the greatest influence in 2016, when in Ukraine, the improvement of the construction industry started after the period, during which both external factors and the internal price factor had the negative effect on the development of the said sector.

Table 5

Factor of influence of the technological equipment upgrade on the development of the Ukrainian construction industry

No.	Factor / indicator	2014	2015	2016	2017	2018
1	2	3	4	5	6	7
1	Index of changes in the level of the technological equipment upgrade, %	110,2	114,1	114,3	113,5	107
2	Impact factor of the technological equipment upgrade, %	10,2	14,1	14,3	13,5	7,0
3	Impact factor of the technological equipment upgrade adjusted for weighting values of the effect on another factor and the industry (the weighting coefficient of 0,5 is assigned, since there is the influence on another factor of the category), %	5,10	7,05	7,15	6,75	3,5

compiled by the authors based on materials [4]

ASSESSMENT OF INFLUENCE OF INTERNAL FACTORS ON THE DEVELOPMENT OF THE UKRAINIAN CONSTRUCTION INDUSTRY.

According to the results of calculations, the systematization of the estimated figures given in Table 6 has been carried out.

Table 6

Assessment of influence of internal factors on the development of the Ukrainian construction industry

No.	Factor / indicator	2014	2015	2016	2017	2018
1	2	3	4	5	6	7
1	Performance indicator of the construction industry development: – Growth rates of the manufactured building products volume (or Index of building products (Ibp))	43,9	73,3	117,9	138,8	130,3
1.1	Factor of changes (positive + / negative -)	-56,1	-26,7	17,9	38,8	30,3
2	Internal environment factors					

Table 6 (continued)

1	2	3	4	5	6	7
2.1	Financial and economic impact factors (positive + / negative -)					
2.1.1	Impact factor of direct intra-company investments in the industry development adjusted for weighting values of the effect on another factor and the industry, % (a)	6,09	-8,80	-7,60	-2,75	-5,93
2.1.2	Impact factor of optimizing the prices for building products adjusted for weighting values of the effect on another factor and the industry, % (b)	-4,75	-13,55	-4,6	-6,7	-11,5
2.2	Technological and production impact factors (positive + / negative -)					
2.2.1	Impact factor of investments in the innovative development of technologies and materials adjusted for weighting values of the effect on another factor and the industry, % (c)	-3,71	7,99	2,40	8,02	12,69
2.2.2	Impact factor of the technological equipment upgrade adjusted for weighting values of the effect on another factor and the industry, % (d)	5,10	7,05	7,15	6,75	3,5
3	Overall level of influence of internal factors on the development of the Ukrainian construction industry, % (from line 2.1.1 to line 2.2.2)	2,73	-7,31	-2,65	5,32	-1,24
4	Annual formula of the industry development by categories of factors and indicators					
	2014	6,09a - 4,75b - 3,71c + 5,1d				
	2015	-8,8a - 13,55b + 7,99c + 7,05d				
	2016	-7,6a - 4,6b + 2,4c + 7,15d				
	2017	-2,75a - 6,7b + 8,02c + 6,75d				
	2018	-5,93a - 11,5b + 12,69c + 3,5d				

compiled by the authors

CONCLUSIONS.

According to the results of Table 6, it can be concluded that the value of the overall level of influence of internal factors on the development of the Ukrainian construction industry was positive only in 2014 and in 2017. Upon that, the most negative effect of the internal environment began to be observed in 2015 due to the action of military political events, and deterioration of the financial and economic position. The study of the composition and nature of annual formulas for the industry development by categories of factors and indicators shows that the most negative impact on the industry state was

exerted by the financial and economic factor of the prices for building products in 2015, and the most positive one – by the impact factor of investments in the innovative development of technologies and materials in 2018.

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