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Analysis of fixed assets for bakery enterprises in imperfect accounting practices

Scientific problem. Efficiency of functioning of baking industry can be evidence of stability and balanced state of the national economy development of the country and is a basis of forming of the competitive food sector of the national economy.

One of the reasons of attractiveness of the market of bakery products is not its profitability, but first of all - stability and necessity in the relatively small scope of capital investments for the beginning of work in this industry.

However, today there are many problems in baking industry of Ukraine, including, at first, necessary to specify the statistically-analytical range of the analysis of financial results of work of the bakery subindustry of the food industry of Ukraine within the time context.

The following problem is related to the error of accounting and it is concerned with availability of small private bakeries. Information on this matter is different in various sources. In other words, while analyzing the situation and the condition at the bakery products market, we deal with enterprises of different sizes, forms of property and type of management. Complicity of the situation for large enterprises is that work of large bakeries is strictly controlled by the state, while small and underground bakeries are flourishing and the bodies of state power do not intervene into their activity.

The third problem – bakery equipment becomes obsolete morally and physically and it is used by so-called «inherited enterprises» (baker's plants, which were built in the time of the USSR). Today practically all baker's plants are privatized and transformed into private and public joint-stock companies. Generally they are focused on economic priorities in exploita-

tion of the available fixed assets and they are supported from investment in their renewal, execution of reconstruction, replacement of obsolete equipment by modern one, in particular, equipment with energy conservation. Therefore the question of efficiency of use of the fixed assets at bakery enterprises is considered as actual enough.

As an example let's consider use of the fixed assets at bakery enterprises at the regional level (as an example of Vinnytska oblast). Baking industry of Vinnytska oblast is under influence of dynamic changes, conditioned by features of modern conditions of management. Changes are confirmed by the following negative dynamics: number of enterprises producing bread and bakery products is reduced from 237 in 2003 to 111 in 2008, and in 2010 there were 86 enterprises, and in 2011 the number of such enterprises was 42, but according to the experts opinions, presently 85 bakery enterprises [18] operate in Vinnytska oblast that indicates the differences between accounting and reporting.

Taking into consideration the aforesaid information, it is necessary to say, that the process of use of the fixed assets in bakery industry is a very interesting object for investigation that is why we have made an attempt to apply specific methods of its investigation.

Analysis of recent researches and publications. Determination of concept and essence of the fixed assets were identified in works of many famous scientists, such as Meknyk L.Yu., Plaksiyenko K., Sirko Yu.I. [11], Pidlisetsky G.M. [13], as well as by foreign scientists-economists, such as - Stone D., Hitching K.F. [14], Bateman T., Snell S. [17], Needles B., Anderson H., Caldwell D. [12] etc. The following persons have investigated the essence of such categories as «fixed assets» and «capital assets»: Andriychuk V.G. [1], Bunich P. [4],

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Gorodyanska L.V. [7], Vygovska N.G. [6], Suk L.K. [15], Kvasha Ya.B. [9] etc.

Problems of functioning and development of bakery industry of Ukraine, as well as efficiency of use of the fixed assets in this industry were identified in labours of such domestic economists as: Boyko V.I. [2], Bokovets V.V. [3], Komisarenko Ye.M. [10], Dzyuba O.M. [8] many others. In addition to that a question of efficiency of functioning of bakery industry in the part relative to use of the fixed assets, problems of its resource provision and use of market mechanisms for stimulation of development of bakery industry in the future remain incomplete.

The objective of the article. To analyze use of the fixed assets of enterprises, taking into account the features of bakery industry.

Statement of the main results of the study. In our work we chose such primary initial data from public information (statistical and financial accounting) for enterprises such as: average annual cost of the fixed assets of enterprises (thousand UAH), annual quantity of workers (persons) and average annual cost of marketable products (thousand UAH). Based upon these data we calculated expected derivative indices: availability in service for fund (capital investment), yield on capital investment. We considered these data as random values with the purpose to identify specific relations.

For this purpose we calculated the values of arithmetic average, root-mean-square deviation, dispersion, median and variation coefficient for each index. Based upon these data we have made an assumption relative to the type of statistical distribution of these values as random values. A hypothesis concerning the type of distribution was checked up with use of goodness-of-fit test of Kolmagorov. Except for it we identified the crowd conditions of correlation connections between initial indices by means of cross-correlation analysis.

For the analysis of efficiency of use of the fixed assets by enterprises of bakery industry we used the following data. We compared public information about the number of enterprises for the last few years (from 2003 to 2011) with the expert evaluation relative to their quantity, and we chosen a number of enterprises for the analysis, taking into account the expert evaluation and availability of information.

Initial data for grounding of the quantity of enterprises for subsequent analysis are specified in Fig.1. Data relative to 28 bakery enterprises of Vinnytska oblast were used, that is approximately 33 % of the expert evaluation of their possible quantity and 67 % of quantity, stated in the corresponding public information, acknowledged by reliability the analysis results.

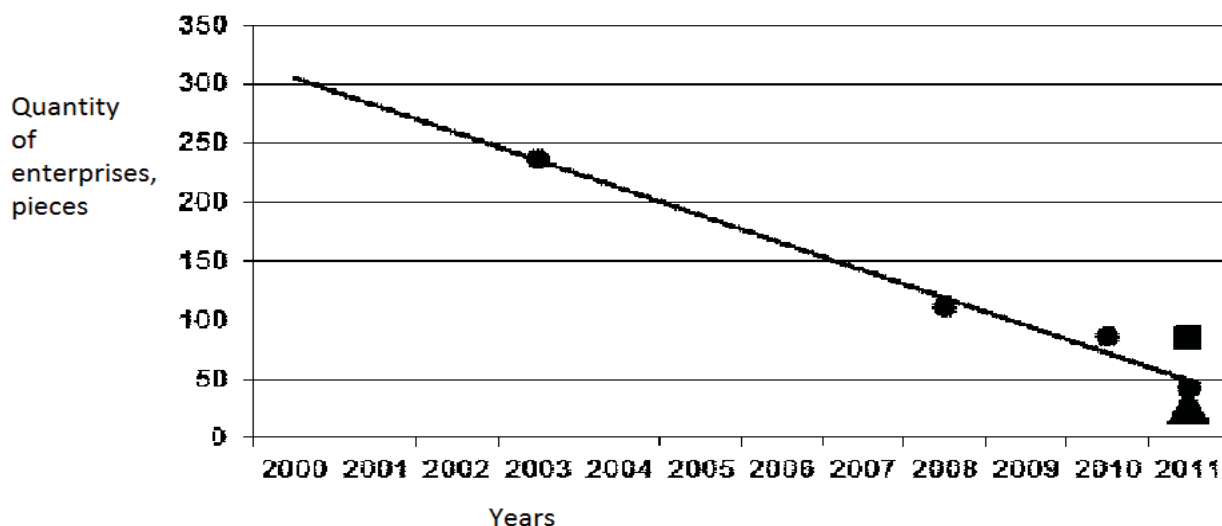


Figure 1. Dynamics of quantity of bakery enterprises of Vinnytska oblast for a period from 2003 to 2011:

- – quantity of bakery enterprises of Vinnytska oblast according to the public information;
- – quantity of bakery enterprises of Vinnytska oblast according to the expert evaluation;
- ▲ – taken for analysis.

* Diagram was executed by the author.

The results of cross-correlation analysis of initial indices of bakery enterprises of Vinnytska oblast are given in table 1.

1. Coefficients of correlation between the values of the initial data of baking enterprises of Vinnytska oblast in 2011

	Average annual cost of the fixed assets, thousand UAH	Quantity of workers, persons.	Cost of marketable products, thousand UAH
Average annual cost of the fixed assets, thousand UAH	1	-	-
Quantity of workers, persons.	0,956	1	-
Cost of marketable products, thousand UAH	0,962	0,987	1

* Results in the table are obtained by own calculations of the author.

Thus, it is safe to say that the cost of marketable products of baking enterprises more depends upon the quantity of workers (coefficient of correlation is 0,98), than upon the average annual cost of the fixed assets (coefficient of correlation is 0,962). Thus, the quantity of workers is closely enough correlated (coeffi-

cient of correlation 0,956) with the cost of the fixed assets. It gives rise to put in question at least nomenclature of the considered fixed assets or methods of their evaluation.

The basic indices of distribution measure for the reduced indices are given in table 2.

2. Statistical characteristics of distribution of the basic indices of baking enterprises as random values

Statistical characteristics		Average annual cost of the fixed assets	Quantity of workers	Cost of marketed products	Availability in service for fund (capital investment)	Yield on capital investment
Arithmetic average	unit of measurement	5 thousand UAH	5 persons	thousand UAH	thousand UAH / persons	3,8
	value	644,9	14,5	1045,8	43,1	
Dispersion		328597,6	131,8	1348010	1498,2	20
Root-mean-square deviation		573,2	11,5	1161	38,7	4,5
Median		425,75	11	649	28,89	3,09
Coefficient of variation		88,9	79,4	111	89,9	117,4

* Results in the table are obtained by own calculations of the author.

Statistical characteristics of distribution of economic performance indicators of baking enterprises first of all give evidence of considerable measure of their changeability (variability) – more than 50 %. Herewith this index (coefficient of variation) for the average annual quantity of workers (79,4 %) is considerably less than for the average annual cost of the fixed assets (88,9 % – it is another evidence of problematic character in accounting and estimation of the fixed assets), and, accordingly, it remains high for availability in service for fund (capital investment), as derivative from these two indices – 89,9 %.

Data of the table 2 also give an answer to a question about the investigated economic parameters of average (representative) enterprise from the number of those taken for research, and namely: this enterprise has availability in

service for fund (capital investment) 43,1, and yield on capital investment – 10,02, herewith the average annual cost of the fixed assets is equal to 644,9 thousand UAH, average annual quantity of workers is 15 persons, and it makes products for 1045,8 thousand UAH per year. It means that the reduced in the future more detailed researches on the data from existing enterprises, which have indices approximate to the representative one, enabling to spread the obtained conclusions for all enterprises. In particular, such existing enterprise as the Company Private Enterprise «Onur» in the city of Vinnytsa has the indices approximated to the representative one: availability in service for fund (capital investment) – 20 thousand UAH / persons, yield on capital investment – 3, cost of the fixed assets – 314,6 thousand UAH, average annual quantity of workers – 16 persons, cost of

marketable products – 878,4 thousand UAH; and Complex of co-operative industry in the city of Zhmerynka with the indexes: availability in service for fund (capital investment) – 20 thousand UAH, yield on capital investment – 4, cost of the fixed assets – 563 thousand UAH, average annual quantity of workers – 27 persons, cost of marketable products – 2496 thousand UAH.

Furthermore in table 2 the fact draws attention that for the investigated indices average arithmetic is too close in its value to root-mean-square deviations (cost of the fixed assets –

644,9 and 573,2; quantity of workers 15 and 12; cost of marketable products – 1045,8 and 1161). It makes possible to hypothesize about the type of law for distribution of aggregates of the stated indices, as random values. According to Venetskyy I.G. [5] – it is a sign of exponential distribution.

As an example on Fig. 2 and 3 there is a graphical interpretation of the type of distribution of cost of the fixed assets and quantity of workers on baking enterprises in Vinnytska oblast as random values approximated by exponent.

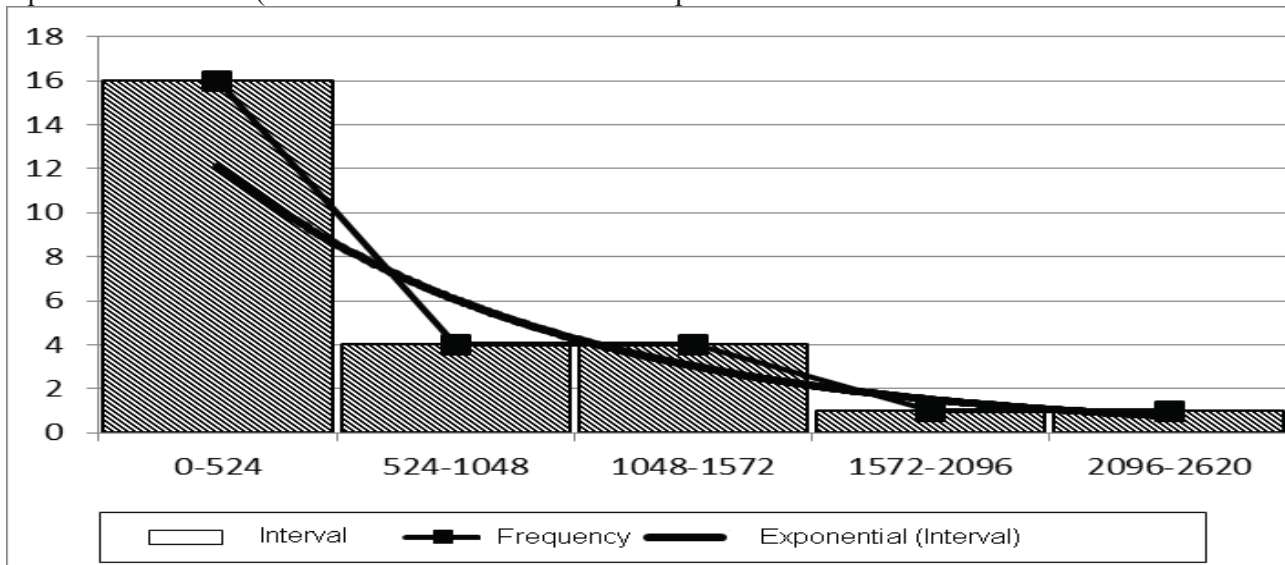


Figure 2. Histogram, ground and theoretical distribution curve of cost of the fixed assets of baking enterprises of Vinnytska oblast in 2011

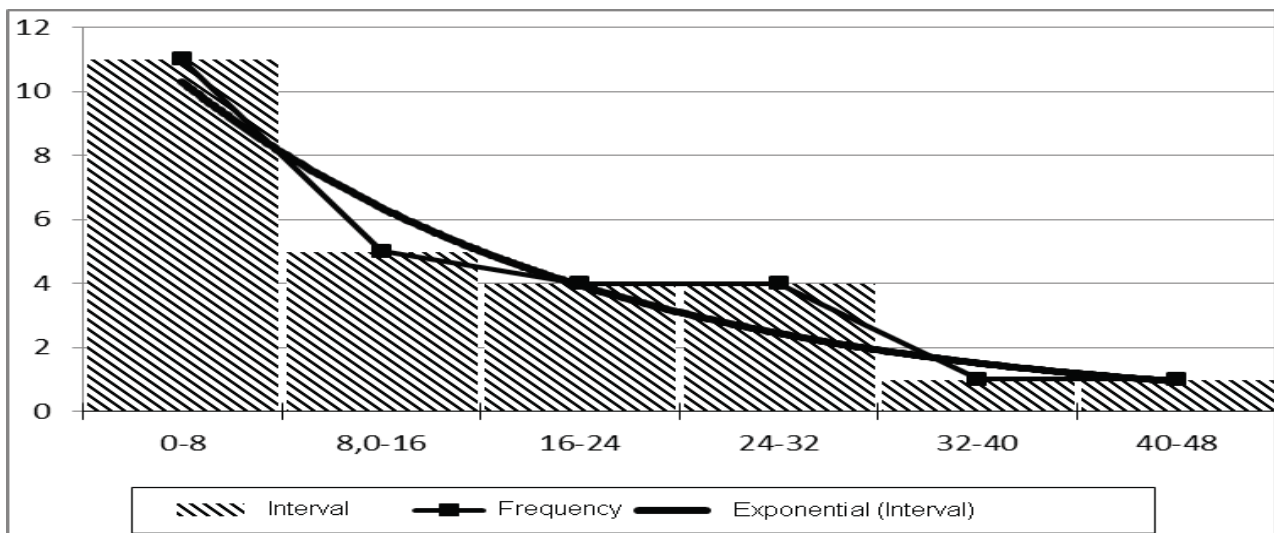


Figure 3. Histogram, ground and theoretical distribution curve of quantity of workers of baking enterprises of Vinnytska oblast in 2011:

- - experimental data;
- - theoretical curve.

* Diagrams are executed based upon own calculations of the author.

According to the goodness-of-fit test of Kolmogorov reliability of such approximation is high enough (about 0,96). And according to Regina Storm [16] it gives grounds to confirm that the cost of the fixed assets and quantity of workers were formed as enough permanent statistical aggregates of resources, which do not have a tendency to the change their quantity, at least without additional organizational-economic measures. At the same time high variability of the cost of marketable products (111%) can be a result of high variability of cost of the fixed assets (88,9 %) in comparison with variability of the quantity of workers (39,4) and gives grounds to pay attention to the possible ambiguousness in accounting and evaluation of cost of the fixed assets.

Conclusions. From our researches it is possible to do such conclusions:

The cost of marketable products of baking enterprises more depends upon the quantity of workers (0,987), than upon the average annual cost of the fixed assets (0,962), but to a large extent are the results of the correlation analysis due to the imperfection of the accounting and valuation of assets.

For objectivity of the analysis relative to availability and use of the fixed assets by baking enterprises it is necessary to effect a series of measures on improvement of accounting and evaluation of cost of the fixed assets of enterprises, to specify accounting categories and select the group of basic production assets from the number of total cost of the fixed assets of enterprises, to specify statistical data relative to the accounting number of existing baking enterprises in the whole territory of Ukraine.

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