DETECTION OF LATENT RESERVES OF WHOLESALE TRADE IN FOOD INDUSTRY IN CONDITIONS OF ECONOMIC CRISIS

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Abstract: The article considers approaches to identifying and assessing latent reserves in the global economic crisis in the food industry, as strategically important for the country. The aim is to consider the possibility of identifying latent reserves in wholesale trade of the food industry. The measurement model of latent variables is chosen as the research methodology, which allows to take into account internal and external variables and is based on the provisions of factor analysis. Theoretical research of the concept allowed to substantiate the reserve as an untapped opportunity for the development of economic entities, which are enterprises, and increase their competitiveness by identifying hidden values, and for further effective operation of entities used resources. Types of latent reserves of wholesale trade in food industry in crisis conditions are substantiated. Latent reserves with correlated features were selected by factor analysis. The variance of the variables for the five selected factors and the standard deviation of the normalized value are calculated. As a result of the calculations, the treatment for two identified factors was chosen. The coefficients of connections between external and internal latent variables are determined and the probable latent features are singled out. The calculations showed a significant pressure, depending on the severity of external influences, so on the scale of measurement, experts gave higher scores on the last parameters, which are reflected in the constructed matrix. The results of the study allowed us to trace the links between external and internal latent variables and to build a SWOT-analysis for

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food industry enterprises, which allowed to outline the prospects for the functioning of food industry enterprises.

Introduction

The global pandemic caused by the spread of COVID-19 has led to a new economic crisis, which has become significant and outlined the possibility of suspending production capacity and the introduction of quarantine conditions in enterprises. In such a situation, it is important to find hidden reserves in vital industries, which include the food industry. The introduction of lockdown has intensified wholesale trade in the food industry, due to the intensification of new types of services (home delivery of food and ready meals, the introduction of an individual approach to the customer, etc.). Therefore, as a goal we consider it appropriate to consider the possibility of identifying latent reserves in wholesale trade in the food industry. The urgency of the chosen direction is due to the manifestation of the global economic crisis, the search for a way out of which may be finding hidden reserves in strategically important for the country enterprises - the food industry and promising opportunities for wholesale trade.

1. Theoretical and methodological approaches
   ## to determining latent reserves

The study is based on the need to identify hidden reserves that may occur in the food industry, which is appropriate in an economic crisis.

To solve this goal, the following tasks are outlined:

- research of the concept of "latent reserves" and analysis of existing approaches;

- identification of types of latent reserves in the food industry, which are engaged in wholesale trade;

- methods of estimating latent reserves of wholesale trade;

- substantiation of identification of latent reserves in wholesale trade of food industry in crisis conditions;
- estimation of latent reserves of wholesale trade of food industry.

The concept of "latent reserves" has been widely studied in the scientific literature, which clearly traces the two main areas of definition of the term. First, reserves as planned inventories, the availability of which in production and circulation is necessary for the continuous development of production both at the level of any business entity and at the macroeconomic level. Second, reserves are used as untapped opportunities for business development. The last interpretation of reserves also gives a push for improvement of technics, technology, work labor; acts as a lever for the efficient use of raw materials, as well as the ability to make the most of the market situation and formal conditions of activity. In our further research we will rely on the definition of latent reserves - hidden opportunities that can be established only by detailed analysis, using methods of comparing the indicators of the business entity with data from other enterprises, as well as using methods of functional cost analysis (Yankovy, O., 2015). The number of latent reserves is revealed on the basis of regular and comprehensive analysis of quantitative and qualitative changes in production parameters through the prism of causation, which creates an appropriate basis for improving the efficiency of the system (Kolodiychuk, V., 2016), which is the company. Due to the secrecy, such reserves are difficult to assess, because it is a complex multifactorial task that synthesizes the degree of efficiency from different angles (Black A., Yu., 2011). We consider the reserve as an untapped opportunity to develop the business entity and increase its competitiveness by identifying hidden values, and for the further effective operation of enterprises uses resources and sources (available and additional). Identification and use of reserves improve the use of enterprise resources; commissioning of production resources that have not been used before; saving public labor and resources; replenishment of stocks; invention of new sources; introduction of innovations; increasing production efficiency (Nosachenko, O., 2020).

The latent features include the parameters of enterprise functioning: efficiency of employees, financial condition, competitiveness, investment attractiveness, sustainable and investment-innovative

development, as well as product competitiveness, global economic criterion of optimal production program, priority of domestic investment measures and threats (Zamula, I., Travin, V., Olishevskaya, Y., 2019).

Latent features of economic objects can be estimated using multidimensional statistical methods and existing techniques.

A. N. Leonov and A. A. Mykolayiv proposed as methods of research of latent indicators to apply the analysis of financial and economic activity and comparison of parameters of the enterprise with indicators of other enterprises at a stage of an estimation of efficiency of use of available innovative potential that will allow to calculate a difference of reserves of innovative activity and to define hidden reserves of use for innovative potential. Therefore, scientists have developed a comprehensive methodology for assessing the latent reserves of enterprises, which is based on assessing the level of use of reserves of innovation potential (Leonov, A., Nikolaev, A., 2019).

A. Yu. Chorny for the study of latent features proposes to use the method of modeling structural equations, based on the use of traditional statistical methods (Chorny, A.,Yu., 2011, p. 230).

O. G. Yankovy singled out methods for assessing the latent features of economic objects, including and enterprises, which include: methods of expert evaluation; selection of a representative factor-symptom; taxonomic analysis, factor (component) analysis, assessment of latent traits based on a combination of cluster and discriminant analysis, methods of fuzzy logic theory, multidimensional scaling (Yankovy, O., 2015, pp. 29-35).

O. B. Chernyshova proposed to assess the competitiveness of enterprises based on the use of generalizing factors-symptoms, which include: profitability of production, market share or its relevant segment, price elasticity of consumer demand (Competitiveness of the enterprise: assessment of the level and direction of improvement, 2013).

G. V. Koshelyok worked on the issue of assessing the latent feature of investment attractiveness, who proposed the use of factor analysis methods using primary factors-symptoms – components of investment attractiveness and determining the hidden properties of enterprises (Koshelyok, G., 2010).

The research of I. V. Napadovska is devoted to the study of investment attractiveness of enterprises as a hidden property of economic objects. She proposed a method of combining certain factors-symptoms of this latent feature into an integrated indicator based on the principal components method (Napadovska, I., 2014).

O. V. Shikina proved that the functioning of enterprises is a rather complex economic phenomenon, the level of development of which is a latent feature. On the example of enterprises in the service sector, it is proposed to implement in the procedure of diagnosis, formation and ranking of the method of taxonomic analysis by classical, modified and combined algorithms (Shikina, O., 2015).

The analysis of the existing developments on the detection of latent features allowed to work out the existing approaches, to substantiate the need for the allocation of latent reserves and to form a methodology for estimating the latent reserves of wholesale trade.

Scholars consider three groups of reserves, depending on the stages of analysis of internal reserves, corresponding to the level of management decisions: at the stage of analysis of the enterprise reserves are issues of general planning, policy, investment areas, pricing and profit distribution; at the stage of solving specific problems there is an organization of operational production planning, compliance with the technological regime, stimulating the growth of labor quality; at the stage of local decisions include increasing productivity and saving material resources. This interpretation emphasizes that "groups of reserves may be most closely related to the grouping of resources" (Kasyanova, N. V., Solokha, D. V., Moreva, V. V. etc., 2012, p. 234).

A possible option for identifying reserves is to activate innovation potential. In this case, reserves can be obtained from:

– increasing the use intensity of production capacity for innovation and the efficiency of their operation;

– optimization use of the resource base of the enterprise;

– reducing the cost of innovation and minimizing losses;

– use of innovative resources that can be used in the enterprise;

– use of additional opportunities when using innovations at the organizational and managerial, production and personnel levels.

The main indicators for assessing the reserves of innovation potential are increased productivity, innovation activity, the level of capacity utilization (Leonov, A. N., Nikolaev, A. A., 2019, p. 468).

2. Evaluation results of latent reserves of wholesale trade in food industry and prospects of their realization

In today's conditions of high competition in wholesale trade, it is extremely important to identify possible reserves that will mark specific ways to develop the food industry. This search will increase competitiveness in domestic and foreign markets and establish a stable position of the enterprise.

For wholesale enterprises, internal latent reserves can be: upgrade of special equipment for storage and transportation of goods (OSO); re-equipment of premises for new goods (PP); rational use of innovative resources (IP); improvement of loading and unloading works (SD); equipment modification (MU); reconstruction of warehouses (RSP); modernization of the general process of wholesale trade (RAM); introduction of upgrade (ZA). All these improvements in the functioning of wholesale trade are aimed at improving efficiency and competitiveness in the market (Nosachenko, O. A., 2020).

The developed "Methodological approaches to determining the reserves of enterprise development and its potential" are the provisions of probability theory and mathematical statistics (Kasyanova, N. V., Solokha, D. V., Moreva, V. V., etc., 2012, p. 225- 245).

The analysis of the existing methods allowed to choose the approaches of A. Yu. Black (Black A., Yu., 2011). To determine the estimation of latent reserves of wholesale trade, the advantages of applying approaches to the method of modeling by structural equations are: relationships between latent variables and their measuring characteristics; analysis of relationships between latent variables; parallel design and measurement of structural and applied parts of the model. Measuring model of latent variables, proposed by A. Yu. Black, which connects the existing parameters with latent features, has the form (Black A., Yu., 2011):

$$Y = \Lambda_y (B\eta + \Gamma\xi + \zeta) + \varepsilon,$$

where Λy is a matrix of factor loads; B – matrix of coefficients of relations between external and internal latent variables; η – is the vector of dependent (internal) latent variables; Γ – matrix of coefficients of relations between dependent (internal) latent variables; ξ – vectors of independent (external) latent variables; ζ – model errors; ε – is the error of the measurement model for the dependent variable.

LISREL is selected for measuring variables. LISREL is a 64-bit application for standard and multilevel structural equation modeling. These methods are available for the complete and incomplete complex survey data on categorical and continuous variables as well as complete and incomplete simple random sample data on categorical and continuous variables (https://ssicentral.com/index.php/products/hlm-general/hlm-licenses/hlm-licenses-standard/).

Factor analysis was performed to apply the selected model. At the first stage, latent reserves with correlated features were selected. To identify the required indicators, a matrix of factor loads in Statistica: Statistics / Basic Statistics / Correlation Matrices / Ok (Table 1).

Table 1
Factor Loading

Variable	Factor Loading (Unrotated Extraction: Principal Components (Marked loadings are >,700000)				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
OSO	-0,17254	-0,16826	-0,17352	-0,162763	-0,16923
PP	-0,16872	-0,15992	-0,16259	-0,160281	-0,16828
IP	-2,01863	-1,99628	-0,21564	-0,19987	-0,20264
SD	-0,18626	-0,17263	-0,18363	-0,17862	-0,18652
MU	0,162268	0,172988	0,181283	0,192665	0,201677
RSP	0,122457	0,131872	0,129286	0,146219	0,218526
RAM	0,146629	0,156213	0,143126	0,142875	0,161521
ZA	0,216852	0,193647	0,209213	0,201298	0,216579
Expl. Var	-0,0443	-0,4127	0,46524	0,212489	0,071066
Prp. Totl	0,24738	0,42919	0,074263	0,0509835	0,051563

Source: calculated by the author based on expert data.

Calculations of the coefficient of variation of these factors: F1 = 0.24738:(-0.237) = -1.044; F2 = -1.8660; F3 = -8.161; F4 = -91.987; F5 = 7.94.

In the Expl line. Var (Table 1) shows the variance that falls on one or another factor; in the line Prp. Totl shows the standard deviation from the normalized factor. In the calculations, the most important factor was 2, and the least - in factors 4 and 5. Therefore, in further studies we will focus on the last two (Fig. 1).
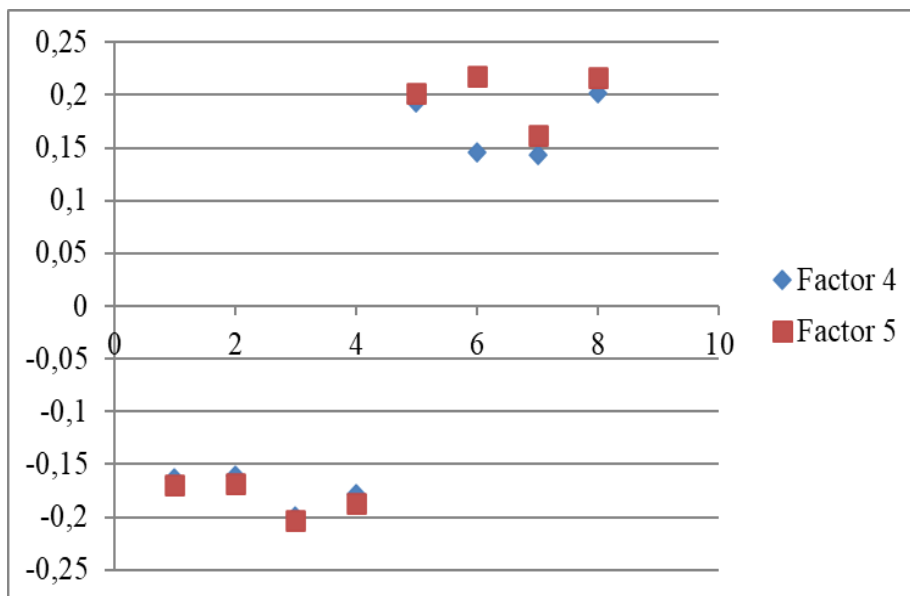
Source: built by the author.

Figure 1. Factor Loading. Factor 4 vs Factor 5. Rotation.
Unrotated. Extraction: Principal component
Figure title

Figure 1 shows the groups of variables from which those that have positive values are selected, so it makes sense to study these variables based on the collection of additional data.

The second step was to determine the relationship coefficients between external (An) and internal (Bn) latent variables (Table 2). External variables include: 1) product quality control; 2) inefficient sales; 3) relationship with suppliers; 4) difficulty with technical re-equipment; 5) low quality of raw materials; 6) access to new market segments; 7) inflation; 8) high competition. Internal variables are outlined above.

Table 2
Matrix of coefficients of relations between external and internal latent variables

	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8
A_1	0.06	0.06	0.0025	0.0025	0.0025	0.01	0.01	0.01
A_2	0.012	0.012	0.005	0.005	0.005	0.02	0.021	0.02
A_3	0.018	0.018	0.008	0.008	0.008	0.003	0.003	0.003
A_4	0.024	0.024	0.01	0.01	0.01	0.04	0.041	0.04
A_5	0.028	0.028	0.012	0.012	0.012	0.05	0.051	0.05
A_6	0.03	0.03	0.013	0.013	0.013	0.05	0.052	0.05
A_7	0.03	0.03	0.014	0.014	0.014	0.054	0.057	0.054
A_8	0.035	0.035	0.015	0.015	0.015	0.058	0.06	0.058

Source: built by the author.

The measurement scale is based on multidimensionality. It contains common components for external and internal latent variables, which were taken into account when constructing the SWOT-analysis. The parameters that determine the latent variables are grouped according to the definitions of the relationship coefficients and corresponded to: 1 – less than 0.0009; 2 – from 0.0009 to 0.002; 3 – from 0.002 to 0.004; 4 – from 0.004 to 0.008; 5 – from 0.008 to 0.012; 6 – from 0.012 to 0.035; 7 – from 0.035 to 0.052; 8 – more than 0.052.

The vectors of the dependent (internal) and independent (external) latent variables are presented in Figure 2.
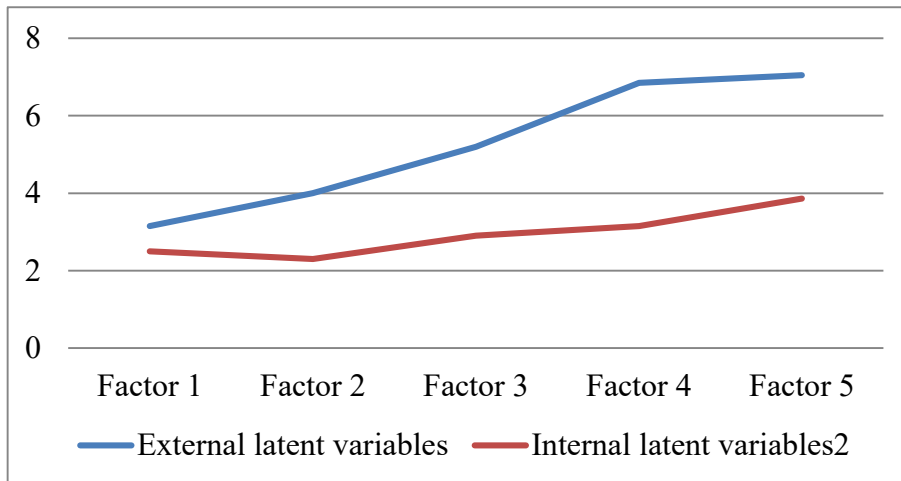
Source: built by the author.

Figure 2. Vectors of latent variables

The calculations show a significant pressure, depending on the severity of external influences, so on the scale of measurement experts gave higher scores on the last parameters, which is reflected in the matrix. Elaboration of existing approaches allowed to build a SWOT-analysis for food industry enterprises (Table 3).

The SIOP field demonstrates what strengths need to be applied to realize opportunities in the external environment; the SLOP field determines the capabilities of the external environment the company is able to overcome existing weaknesses; the SIPG field indicates what strengths need to be used to address potential threats; the SLPG field demonstrates what weaknesses need to be addressed in order to try to prevent existing threats. Analyzing Table 3, it is possible to draw conclusions about the difficult situation of food industry enterprises due to the crisis situation. The majority of enterprises in this industry are characterized by the fact that they do not have officially adopted strategic plans, planning mechanism, there is no system of norms and standards, technologies of the planning process, organizational structures of planning and so on.

Table 3
SWOT-analysis for food industry enterprises

	Opportunities (OP)	Threats (PG)
	1. Product quality control. 2. Relationship with suppliers. 3. Expanding the product range. 4. Development of new technologies. 5. Access to new market segments. 6. Development of the country's economy. 7. Socio-political stability. 8. Reasonable legislation.	1. Inefficient sales. 2. Difficulty with technical re-equipment. 3. Low quality of raw materials. 4. Slow market growth. 5. Inflation. 6. The possibility of new ones competitors (including foreign). 7. Growth in sales of substitute goods. 8. Negative actions at the state level.
Strengths (SI)	SIOP	SIPG
1. Reputation among consumers. 2. Lower costs compared to competitors. 3. Quality management. 4. Highly qualified staff. 5. Purchase of raw materials from various suppliers. 6. Competitive advantages (uniqueness).	1. Systematic analysis of changes in consumer preferences. 2. Increasing labor productivity. 3. Successful promotion policy goods. 4. Introduction of new technological lines.	1. Control and increase requirements for raw materials. 2. Improving product quality. 3. Price flexibility compared to competitors. 4. Activation of advertising activities.
Weaknesses (SL)	SLOP	SLPG
1. Lack of own technologies. 2. Lack of a competent strategy. 3. Old production facilities. 4. Positioning in a competitive confrontation. 5. Lack of financial resources. 6. Loss of reputation among consumers.	1. Development of goods for a new group consumers. 2. Reducing the cost. 3. Product optimization. 4. Timely replacement of products that are not is in demand.	1. Strengthening positions. 2. Advanced training. 3. Optimization of production output. 4. Use of new ideas in marketing. 5. Identification of reserves to reduce costs.

Source: compiled by the author.

Conclusions

Thus, in the process of studying the possibilities of identifying latent reserves in wholesale trade in the food industry, the existing approaches to the definition of "latent reserves" are analyzed and it is justified that the latent reserve should be considered as unused opportunities for enterprise development and competitiveness by identifying hidden values. The separation of internal and external types of latent reserves at the food industry enterprises, which are engaged in wholesale trade, has been carried out. Methods for estimating the latent characteristics of economic objects are considered and the importance of using the measuring model of latent variables to estimate the latent reserves of wholesale trade is determined. The identification of latent reserves of wholesale trade of food industry in crisis conditions is substantiated and the estimation of latent reserves of wholesale trade of food industry is carried out. Using factor analysis, latent reserves with correlated features were selected, which included: equipment modification; reconstruction of warehouses; modernization of the general process of wholesale trade; introduction of upgrade. The connections between external and internal latent variables are traced and the SWOT-analysis for the food industry enterprises is constructed, which allows to outline the probable opportunities and threats based on the identification of strengths and weaknesses in the activity of the food industry enterprises.

The perspective directions of further developments which are directed on development of strategic plans, the mechanism of planning and improvement of technologies of planning process taking into account features of functioning of the enterprises of the food industry are defined.

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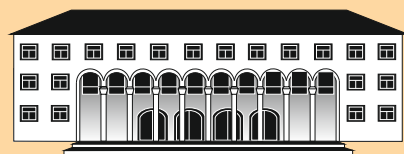
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