



Copyright © 2021 by KAD International
All rights reserved.
Published in the Ghana

<http://kadint.net/our-journal.html>



ISSN 2410-4981

Matrix Method for Assessing Investment Resources of the Retail Trade Enterprise

Iryna O. Zhuvahina ^{a,*}

^aAdmiral Makarov National University of Shipbuilding, Mykolaiv, Ukraine

Abstract

The necessity to assess the inner investment potential of the retail trade enterprise to provide simple and/or expanded reproduction purposes and the feasibility of their implementation through comparing existing resources and their needs has been outlined. The methodology for determining the retail trade enterprise needs in investment resources has been presented based on the type and form of reproduction of the retail trade enterprise of Ukraine. The matrix “Sufficiency – Perspectivity” has been developed, which provides an analysis of the ratio of dynamics of available investment resources and their needs in the form of indexes of relevant analytical indicators in accordance with the general strategy of development of domestic retail.

Keywords: evaluation, extended reproduction, investment attractiveness, investment potential, market economy, matrix method, resource, retail trade, simple reproduction, trade turnover, Ukraine.

1. Introduction

The competitive market environment requires enterprises of Ukraine to constantly stay at a high competitive level developing effective growth strategies. Their implementation demands a thorough assessment of the enterprise’s investment potential, making it possible to identify our own ability to achieve the objectives and determine the volume of necessary external impacts. The basis for strengthening the investment potential of trading enterprises is the application of effective management, which is an integral part of the evaluation. The problem of investment resources of the retail trade enterprise is represented by a lot of Ukrainian researchers (Boichuk, 2003; Vlasova, Bezghinova, 2006; Halushchak, 2007; Koltcova, Riabykh, 2007; Hrechyna, Sukharev, 2010; Vashchenko, Mykhailenko, 2011), as well as foreign scientists (Lazonick, 1991, 2002; Tumusov, 1995; Abykaev, 1999; Anishchenko, 2008; Galieva, 2008; Shulekina, 2009).

These factors determine the necessity to improve the system of assessing the domestic investment potential of retail trade enterprises and ensuring compliance with the current practice requirements.

2. Research methods

The theoretical basis of the study is the scientific works of domestic and foreign scientists, laws and acts/regulations of Ukraine. The general scientific and special research methods have been used in the article. Achieving the research goal is based on the systematic approach to the study of economic phenomena, particularly on the fundamental provisions of economic theory and management theory, methodology of economic analysis, and decision making.

* Corresponding author

E-mail addresses: irene.zhuvagina@gmail.com (Z.I. Oleksandrivna)

Theoretical and applied aspects have been studied using the following methods such as structural and logical analysis (to assess and substantiate the components of the investment potential of the retail trade enterprise); comparative analysis (to systematise methods for assessing the investment potential of the retail trade enterprise) (Boichuk, 2003); comprehensive analysis (to evaluate the impact of environmental factors on the formation of investment potential of the retail trade enterprises); correlation analysis (to determine the strength of the relationship between the main factors influencing the formation of investment potential of modern retail trade enterprises); coefficient (to assess the investment attractiveness of trade enterprises' network) (Halushchak, 2007); expert evaluation (to determine the significance of individual indicators and different groups in the overall system of indicators for assessing the investment attractiveness of retail trade enterprises); matrix (to assess the ability to meet the needs of simple/extended reproduction of retail trade enterprises); economic-statistical and economic-mathematical (to assess the level of domestic investment potential of retail trade enterprises) (Halushchak, 2007).

Determining the needs of the retail trade enterprise in terms of investment resources

The assessment of the domestic investment potential of a retail trade enterprise to achieve simple and/or expanded reproduction purposes is appropriate by comparing existing resources and their needs. Calculations must be made for each element of material, financial and labour resources (Tumusov, 1995).

By comparing the value of the demand for the relevant resources of the retail trade enterprise with real values, it can be determined its capabilities for simple and/or extended reproduction (State Information Bulletin on Privatisation, 1998). It is advisable to make such a comparison using the indexes of the relevant resources, in particular:

$$I_{MR} = \frac{MR}{MR_{\text{expected}}}, \quad (1.1)$$

$$I_{FR} = \frac{FR}{FR_{\text{expected}}}, \quad (1.2)$$

$$I_{LR} = \frac{LR}{LR_{\text{expected}}}, \quad (1.3)$$

where I_{MR} is the index of material resources of the i retail trade enterprise;

I_{FR} is the index of financial resources of the i retail trade enterprise;

I_{LR} is the index of labour resources of the i retail trade enterprise;

MR is the amount of available material resources of the i retail trade enterprise;

FR is the amount of available financial resources of the i retail trade enterprise;

LR is the amount of available labour resources of the i retail trade enterprise;

MR_{EXPECTED} is the expected volume (desired value) of material resources of the i retail trade enterprise for simple reproduction;

FR_{EXPECTED} is the expected volume (desired value) of financial resources of the i retail trade enterprise for simple reproduction;

LR_{EXPECTED} is the expected volume (desired value) of labour resources of the i retail trade enterprise for simple reproduction;

If:

$I_{MR} = 1, I_{FR} = 1, I_{LR} = 1$, the investment potential of the retail trade enterprise of the relevant component is sufficient to ensure simple reproduction;

$I_{MR} > 1, I_{FR} > 1, I_{LR} > 1$, the investment potential of the retail trade enterprise exceeds the needs of simple reproduction;

$I_{MR} < 1, I_{FR} < 1, I_{LR} < 1$ means that the investment potential of the retail trade enterprise is not sufficient to ensure simple reproduction, i. e. the available resources are less than needed.

There are other combinations of indices, based on the general direction of each index;

according to which their interpretation will differ.

The important task of assessing the domestic investment potential is to determine the scope of needs of the retail trade enterprise in investment resources (Hrechyna, Sukharev, 2010; Tumusov, 1995).

We offer the following sequence of actions to determine the needs of the retail trade enterprise in terms of investment resources (material, labour and financial) for the future in the form of a diagram in Figure 1.

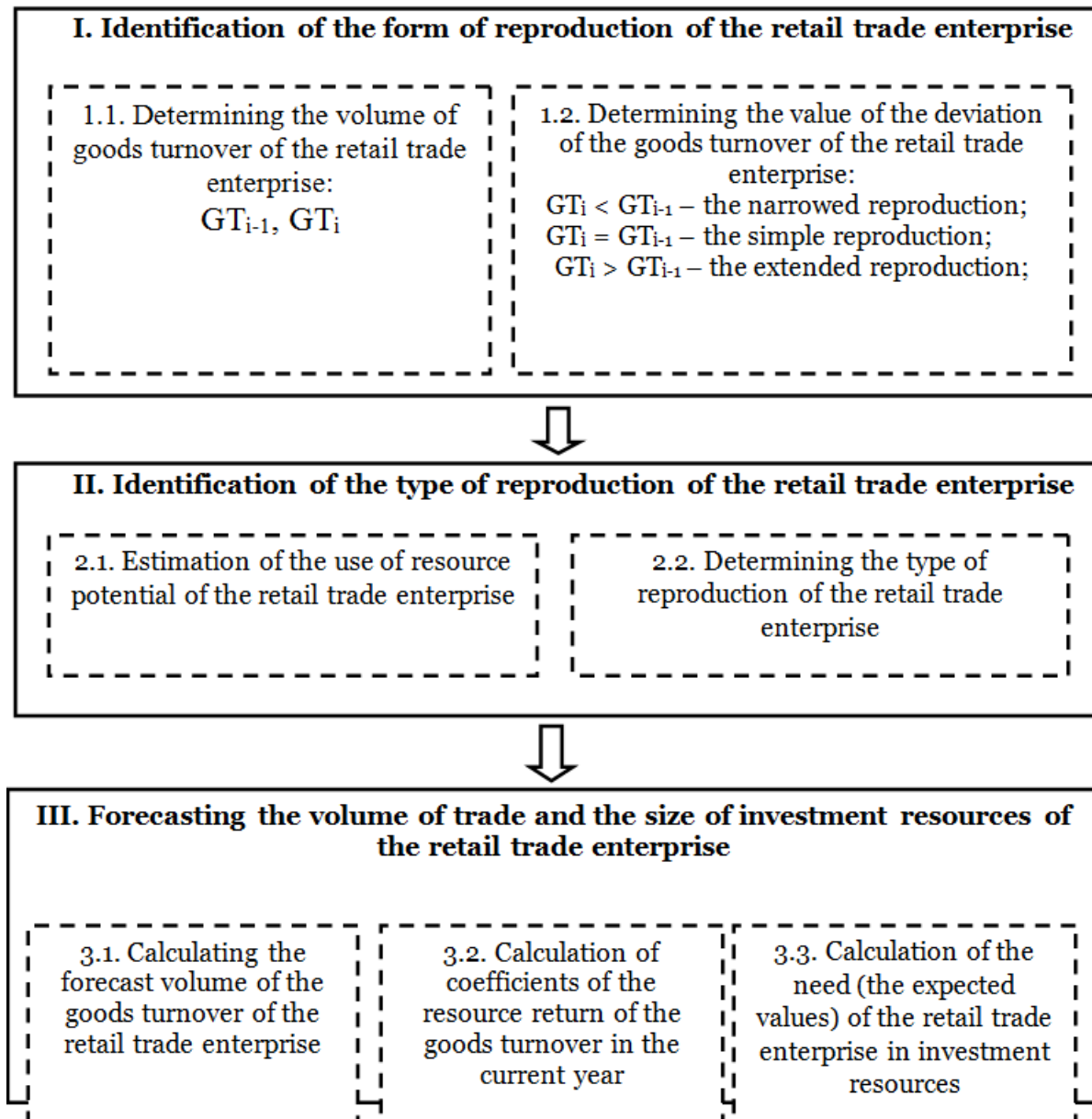


Fig. 1. Scheme for determining the needs of the retail trade enterprise in investment resources
Source: developed by the author

Stage I. Identification of the form of reproduction of the retail trade enterprise (narrowed, simple and extended) by determining the dynamics of goods turnover (GT), taking into account the impact of inflation (Zhuvahina, 2011).

The compared values of the goods turnover indicator are calculated by bringing the actual values of the corresponding year to the baseline with the help of inflation indices.

The conclusion is made about the form of reproduction based on the revealed dynamics of volumes of activity of the retail trade enterprise:

if $GT_i < GT_{i-1}$ is a narrowed reproduction activity;

if $GT_i = GT_{i-1}$ is a simple reproduction activity;
 if $GT_i > GT_{i-1}$ is an extended reproduction activity.

To specify the conclusions on the form of reproduction, the deviation of the goods turnover of the i retail trade enterprise was determined by expertise within the following limits:

1) if the deviation of the goods turnover of the enterprise in the current period (GT_i) from the goods turnover of the base period (GT_{i-1}), expressed as a percentage, is within $[-5; 5]$, the reproduction is narrowed;

2) if the deviation of the goods turnover of the enterprise of the current period (GT_i) from the goods turnover of the base (GT_{i-1}), expressed as a percentage, is within $[-5; 5]$, the reproduction is simple;

3) if the deviation of the goods turnover of the enterprise of the current period (GT_i) from the goods turnover of the base (GT_{i-1}), expressed as a percentage, is within $[5; \infty]$, the reproduction is considered extended.

Stage II. Determining the type of reproduction of the retail trade enterprise.

The type of reproduction depends on the qualitative characteristics of the application of the factors of production of the enterprise and it can be extensive and intensive (Abykaev, 1999).

Extensive reproduction is a process of expanding the scale of economic activity by attracting additional resources on the former technological basis. Among the ways of extensive reproduction in trade are: increasing the number of trade and operational staff, increasing the working day, increasing investment and capital investment, the introduction of new retail space and more. Labour productivity and the efficiency of the means of production remain unchanged.

Intensive reproduction is a process of increasing the volume of production due to the qualitative improvement of technologies and equipment used in the activities of retail trade enterprises. This type of reproduction is characterised by the following ways to ensure: updating of trade and warehousing equipment, more efficient use of resources, training of trade and operational staff, strengthening labour discipline, intensification of management and more.

In their pure form, extensive and intensive types of reproduction do not exist, so we can only talk about a predominantly extensive or predominantly intensive type of reproduction (Anishchenko, 2008).

Thus, the identification of the type of reproduction of economic activity of the retail trade enterprise should be carried out on the basis of the analysis of efficiency of use of material, financial and labour resources by it.

The sequence of such analysis is as follows.

Firstly, the efficiency of using the investment potential of the retail trade enterprise is assessed.

Based on the fact that one or another form of reproduction is determined by the dynamics of the main indicator of economic activity of the retail trade enterprise, which in turn is achieved through the use of various resources, when assessing the efficiency of investment potential of the retail trade enterprise, the main indicator of efficiency was selected the goods turnover per 1 m² of retail area (GT_1):

$$GT_1 = \frac{GT}{A}, \quad (1.4)$$

where GT is the volume of goods turnover;

A is the size of the retail area, m².

Secondly, the type of reproduction of the retail trade enterprise in each year of the study is identified. It is noted that the allocation of extensive and intensive types of reproduction is characteristic only of its extended form. However, there is also a need to determine the degree of effectiveness of simple reproduction during the study. Therefore, in order to ensure the equivalence of the results of further research, it is proposed to identify the most effective and inefficient types of simple and/or extended reproduction.

The identification of the type of reproduction is carried out on the basis of determining the size of the fluctuation of the value of goods turnover per 1 m² of the retail area from the average value in the group for a particular year.

Stage III. Forecasting the volume of goods turnover and the size of investment resources of

the retail trade enterprise for the next year.

This step involves forecasting the investment potential in several ways, depending on the form and type of reproduction of activities in the pre-forecast period, which are schematically shown in Figure 2.

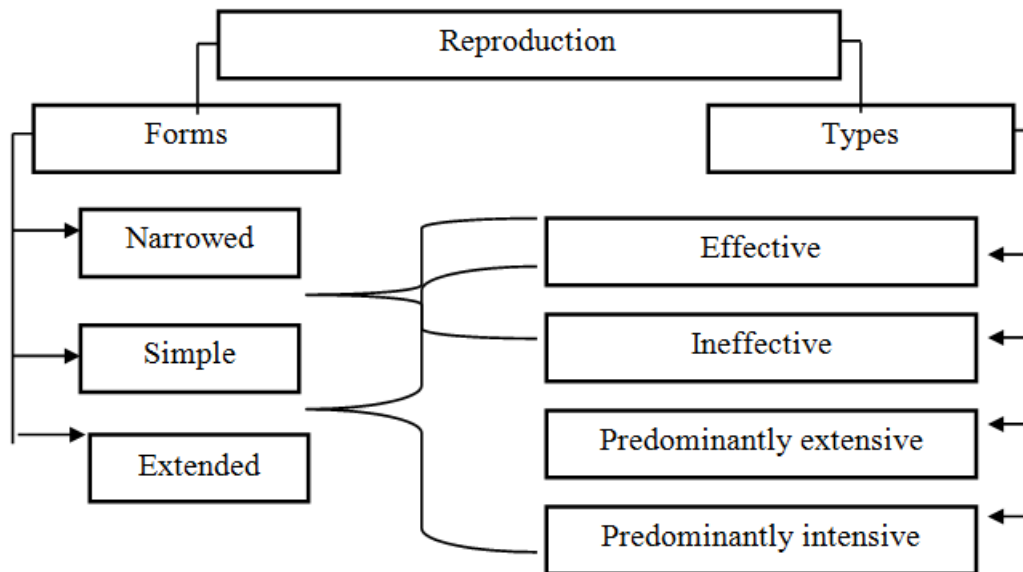


Fig. 2. Forms and types of reproduction of the retail trade enterprise

Thus, if the form of reproduction in the current year is defined as simple, then the company can be predicted as simple and extended reproduction for the next year. If the enterprise’s reproduction type in the current year is defined as inefficient, the forecast for the next year should be described as “effective” (Lazonick, 2002).

We offer the following sequence of actions to determine the forecast of the retail trade enterprise in the context of investment resources (material, labour and financial).

Firstly, we determine the forecast goods turnover of the retail trade enterprise for the next year by the formula:

$$GT_{expected} = GT_{1\text{maximum}(average)} \times A_i \times F_{correction} \times I_p , \tag{1.5}$$

where $GT_{EXPECTED}$ is the forecast volume of goods turnover of the i retail trade enterprise, the investment potential of which is estimated, at last year’s prices;

$GT_{1\text{maximum}(average)}$ is maximum (or group average) value of goods turnover in the calculation per 1 m² of retail area (depending on forecasting goals);

A_i is the size of the retail area of the i retail trade enterprise under study;

$F_{correction}$ is the correction factor that takes into account trends in goods turnover of the i retail trade enterprise. It is calculated in the absence of deviations in the amount of retail area of the enterprise:

$$F_{correction}^* = \frac{\Delta GT_e + \Delta GT_{e+1} + \dots + \Delta GT_m}{m} , \tag{1.6}$$

where $\Delta GT_e, \Delta GT_{e+1}, \dots, \Delta GT_m$ is the chain rate of change in goods turnover of the i retail trade enterprise during the period m , the investment potential of which is estimated;

m is the total duration of the study period preceding the forecast;

I_p is the price index to bring the value of goods turnover in the reduced prices to real prices.

Secondly, we determine the forecast values of resources for the i retail trade enterprise.

This calculation is carried out using resource efficiency indicators that reflect the efficiency of the use of relevant types of resources and determine their sufficiency or insufficiency in relation to

current or projected sales (Lazonick, 1991). The fact of the matter is that the excess investment in resources reduces the firm's free cash flow and value, and insufficient investment leads to a decrease in sales, which also reduces the firm's free cash flow and value.

The calculation is carried out for each form of investment resources according to the formulas:

$$RR_{MRe} = \frac{GT}{MR}, \quad (1.7)$$

$$RR_{FRe} = \frac{GT}{FR}, \quad (1.8)$$

$$RR_{LRe} = \frac{GT}{LR}, \quad (1.9)$$

where RR_{MRe} is the rate of return material resources of the i retail trade enterprise in the current year;

RR_{FRe} is the rate of return on financial resources of the i retail trade enterprise in the current year;

RR_{LRe} is the rate of return of resources of the i retail trade enterprise in the current year;

MR is the amount of material resources of the i retail trade enterprise;

FR is the amount of financial resources of the i retail trade enterprise;

LR is the volume of labour resources of the i retail trade enterprise;

GT is the volume of goods turnover of the i retail trade enterprise.

When calculating the forecast values of investment resources of the retail trade enterprise, it is assumed that the resource return in the forecast period will not change, i.e., $RRe = RR_{expected}$.

Therefore, the forecast values of investment resources are determined by the formulas:

$$MR_{expected} = \frac{GT_{expected}}{RR_{MRe}}, \quad (1.10)$$

$$FR_{expected} = \frac{GT_{expected}}{RR_{FRe}}, \quad (1.11)$$

$$LR_{expected} = \frac{GT_{expected}}{RR_{LRe}}. \quad (1.12)$$

where $GT_{EXPECTED}$ is the forecast volume of goods turnover of the i retail trade enterprise, the investment potential of which is estimated, at last year's prices;

$MR_{EXPECTED}$ is the forecast values of material resources of the i retail trade enterprise;

$FR_{EXPECTED}$ is the forecast values of financial resources of the i retail trade enterprise;

$LR_{EXPECTED}$ is the forecast values of labour resources of the i retail trade enterprise.

Thus, it is possible to determine the need of the retail trade enterprise in material, financial and labour resources (N_i) to ensure simple and / or extended reproduction.

The matrix "Sufficiency – Perspectivity" as a tool for effective assessment of investment potential

To solve this problem, we propose to use the matrix "Sufficiency – Perspectivity" of investment resources assessment of the retail trade enterprise to meet the needs of investment development, the quadrants of which characterise a certain state of the corresponding component of internal investment potential of the retail trade enterprise, in which analytical indicators of available resources and needs acquire certain values (Figure 3).

Table 1. Matrix “Sufficiency – Perspectivity”

$I_{Ne} \backslash I_{Ar}$	$I_{Ar} < 1$	$I_{Ar} = 1$	$I_{Ar} > 1$
$I_{Ne} < 1$	1 $I_{Ar} < 1$ $I_{Ne} < 1$	2 $I_{Ar} = 1$ $I_{Ne} < 1$	3 $I_{Ar} > 1$ $I_{Ne} < 1$
$I_{Ne} = 1$	4 $I_{Ar} < 1$ $I_{Ne} = 1$	5 $I_{Ar} = 1$ $I_{Ne} = 1$	6 $I_{Ar} > 1$ $I_{Ne} = 1$
$I_{Ne} > 1$	7 $I_{Ar} < 1$ $I_{Ne} > 1$	8 $I_{Ar} = 1$ $I_{Ne} > 1$	9 $I_{Ar} > 1$ $I_{Ne} > 1$

Source: developed by the author

Note:

I_{Ar} is the index of available resources of the retail trade enterprise;

I_{Ne} is the index of the needs of the retail trade enterprise in the i resources.

The matrix “Sufficiency – Perspectivity”, as one of the tools for effective assessment of investment potential, is a two-dimensional model that compares the available investment resources of the retail trade enterprise with the need for them to ensure the goals of simple and expanded reproduction (Galieva, 2008).

Thus, there are three options for the values of the proposed indices: when the value of the index is greater than 1; when the value is close to or equal to 1; when the index value exceeds 1.

The use of the matrix requires the use of data indices for the calculation of at least two years, as it involves comparing the values of available resources and their needs in the dynamics.

Dynamic evaluation is an analysis of the ratio of the dynamics of the available investment resources (A_i) and the need for them (N_i) to ensure the objectives of simple and/or extended reproduction (in the form of indices of relevant analytical indicators) (Chernaia et al., 2012):

$$I_{Ai} = \frac{Ai_1}{Ai_0}, \tag{1.13}$$

$$I_{Ni} = \frac{Ni_1}{Ni_0}, \tag{1.14}$$

where I_{Ar} , I_{Ne} – the indices of change of available and forecasted volumes of i investment resources of the retail trade enterprise;

Ar_1 , Ar_0 – the amount of i investment resources (material, financial, labour) of the retail trade enterprise in the reporting and base period;

Ni_1 , Ni_0 – the need for the i investment resources (material, financial, labour) of the retail trade enterprise in the reporting and base period.

The presence of the retail trade enterprise in quadrant 1 indicates a reduction not only in the available investment resources as a whole (or their specific type) but also the need for them. This situation can be explained by the curtailment of the retail trade enterprise’s activities, which manifests in a decrease in goods turnover, market exit, and so on.

Quadrant 2. The volume of investment resources of the retail trade enterprise remains unchanged ($I_A = 1$) while reducing the need for them ($I_N < 1$). That means that the enterprise has more resources than it needs to carry out effective investment activities.

Quadrant 3. This situation is a continuation of the previous one. It can negatively characterise the use of investment potential because when the need for resources decreases, their number increases, which can negatively affect the resulting performance and efficiency indicators due to excess resources and increased costs for their use.

Quadrant 4. The volume of available investment resources is declining, which indicates a deterioration in the efficiency of the retail trade enterprise and may be explained by a decrease in

sales, a decrease in market share, etc.; and the constant dynamics of demand for these resources confirms the conclusion about the low investment potential of the enterprise.

Quadrant 5. Positioning in this quadrant of the matrix indicates that the enterprise has opportunities for simple reproduction, which positively characterises the investment potential by the criterion of sufficiency. However, extended reproduction is not provided due to lack of adequate resources.

Quadrant 6. The growth of available investment resources with a constant amount of demand for them is possible under the conditions of the enterprise's use of opportunities for expanded reproduction. Of course, such growth should be accompanied by raising goods turnover.

Quadrant 7. The decrease in available investment resources with increasing demand for them indicates the inefficient formation and the use of the enterprise not only investment but also the overall economic potential in a very favourable situation in the consumer market.

Quadrant 8. The volume of available resources of the retail trade enterprise is at a constant level. However, the need for these resources increases, which indicates a lack of opportunities or unwillingness of the company to carry out expanded reproduction.

Quadrant 9. The volumes of available investment resources and the need for them have positive dynamics and indicate the expanded reproduction of the retail trade enterprise and positively characterise the investment potential by the criterion of prospects.

Such comparisons provide an opportunity to assess the investment potential from the standpoint of the sufficiency of certain types of resources for the purposes of simple and/or expanded reproduction. However, there are situations in the economic activity of the enterprise when the results of comparing the values of indices of change of coefficients of resources may be different, ie $I_{Ar} \{<, =, >\} 1$; where the notation $\{\leq, =, \geq\}$ indicates the possibility of one of the signs "less", "equal" or "more".

Therefore, to ensure the unambiguous results of calculations, the following assumptions have been made (Vlasova, Bezghinova, 2006):

if $I_{Ar} > 1$ or $I_{Ar} \rightarrow \infty$, we assume that it will correspond to the value 1, a ; where a is any natural number;

if $I_{Ar} = 1$ or $I_{Ar} \rightarrow 1$, then it will correspond to the value 1;

if $I_{Ar} < 1$, then it will correspond to the value 0, a ; where a is any natural number.

Taking into account the above mentioned, the mathematical problem of estimating the domestic investment potential has been formulated as follows:

$$f(\bar{X}) = f(I_{MR}, I_{FR}, I_{LR}), \quad (1.15)$$

where $f(\bar{X})$ is the mathematical record of the criterion of sufficiency or perspectivity, the objective function;

with restrictions

$$\varphi(I_{MR}, I_{FR}, I_{LR}) \{<, =, >\} \overline{0, \alpha; \infty}. \quad (1.16)$$

The estimation of internal investment potential of the retail trade enterprise is supplemented by definition of the generalising indicator which algorithm of calculation is presented below:

$$II = \sqrt[3]{I_{MR} \times I_{FR} \times I_{LR}}, \quad (1.17)$$

where II is an integrated indicator of the internal investment potential of the retail trade enterprise.

The following scale of interpretation of values of the indicator of II for the retail trade enterprises has been offered:

II < 1 means no ability to simple reproduction;

II \rightarrow 1 characterises the simple reproduction of economic activity, but there are no opportunities for expanded reproduction;

II > 1 is a simple and extended reproduction of the activities of the retail trade enterprise.

3. Conclusion

Approbation of the proposed matrix approach according to the network of retail trade enterprises of Ukraine has helped:

– to get the answer about the investment attractiveness of a particular business for its owners

and external users;

- to provide recommendations on the strategy of development of retail trade enterprises for the future period;

- to assess the sufficiency of the formed investment potential to ensure the objectives of simple and/or extended reproduction, taking into account the identified forms and type of reproduction;

- to identify the place of a particular retail trade enterprise in terms of investment potential in a competitive group.

The following publications of the author will be devoted to the implementation of these aspects.

References

[Abykaev, 1999](#) – *Abykaev, N.A.* (1999). Investment potential and optimisation of its use in a market economy. Doctor's thesis. Moscow, 351 p.

[Anishchenko, 2008](#) – *Anishchenko, Iu.A.* (2008). Assessment of the investment attractiveness of domestic enterprises. *Economics and efficiency of production organisation: Proceedings of the International Scientific and Technical Conference*, Is. 9, 275 p. Bryansk: BGITA.

[Boichuk, 2003](#) – *Boichuk, R.M.* (2003). Management of formation and use of investment potential of industrial enterprises. Candidate's thesis. Lviv, 175 p.

[Chernaia et al., 2012](#) – *Chernaia, M., Bezginova, L., Zhuvahina, I.* (2012). The influence of the external environment on the development of the investment potential of retail trade enterprises. *Actual problems of regional economic management. Regional development in innovative conditions: Proceedings of the IX All-Russian scientific and practical conference with international participation*, (2012, May 24-25, St. Petersburg, Russia), 320 p.

[Galieva, 2008](#) – *Galieva, R. R. & Timirianova, V. M.* (2008). Methods for assessing the consumer market and forecasting the retail turnover of the retail trade enterprise. *Problems of modern economics. Economics, Management and Accounting at the Enterprise*. 3(27): 265-270.

[Halushchak, 2007](#) – *Halushchak, V.L.* (2007). Factor of growth of investment opportunities of regions. *Economic sciences. Series: Accounting and Finance*. 4(16): 56-65.

[Hrechyna, Sukharev, 2010](#) – *Hrechyna, I.V., Sukharev, P.M.* (2010). Estimation of investment attractiveness of retail trade enterprises: monograph. Donetsk: DonNUET, 417 p.

[Koltcova, Riabykh, 2007](#) – *Koltcova, I.V., Riabykh D.A.* (2007). Practice of financial diagnostics and project evaluation. Moscow: Viliams, 416 p.

[Lazonick, 1991](#) – *Lazonick, W.* (1991). Business Organization and the Myth of the Market Economy. Cambridge: Cambridge University Press, 372 p.

[Lazonick, 2002](#) – *Lazonick, W.* (2002). The Theory of Innovative Enterprise International Encyclopaedia of Business and Management (2nd ed.) (pp. 3055 – 3076). Thomson Learning.

[Shulekina, 2009](#) – *Shulekina, E.N.* (2009). Methodological and practical problems of assessing the investment potential of the enterprise and ways to solve them. *Innovative development and industrial policy: Proceedings of the II All-Russian scientific and practical conference*, 143 p.

[State Information Bulletin on Privatisation, 1998](#) – State Information Bulletin on Privatisation. (1998). Methods of integrated assessment of investment attractiveness of enterprises and organisations: approved by the order of the Bankruptcy Prevention Agency No. 22 (1998, November 23). 7: 18-28.

[Tumusov, 1995](#) – *Tumusov, F.S.* (1995). Strategy of formation and realisation of investment potential of the region. Moscow: RAGS, 270 p.

[Vashchenko, Mykhailenko, 2011](#) – *Vashchenko, N.V., Mykhailenko, M.V.* (2011). Theoretical bases of the enterprise potential formation. *Trade and market of Ukraine*. Donetsk: DonNUET. 31(2): 31-36.

[Vlasova, Bezghinova, 2006](#) – *Vlasova, N.O., Bezghinova, L.I.* (2006). Formation of optimal capital structure in retail trade enterprises. *Economic strategy and prospects for trade and services*. Kharkiv: Kharkiv State University of Food Technology and Trade, 160 p.

[Zhuvahina, 2011](#) – *Zhuvahina, I.* (2011). Conceptual model of estimation enterprise's investment potential of the retail trade enterprise. *East*. 5(112): 24-30.