Graphical-analytic model to form investment policy of industrial enterprise

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Abstract. The article is devoted to the research of graphical-analytic method to form investment policy of industrial enterprise in the capacity of a specific tool to achieve the strategic aim at various stages of life-cycle (LCS). The necessary to formalize the system of estimations is caused by lack of methodological basis of defining quantitative characteristics relying on qualified criteria. To designing graphical-analytic pattern in the capacity of a tool forming investment policy of organisation within the stated development strategy. The comparative analysis of factors that are influencing the investment policy and the stage of organisation life-cycle has been carried out. Theoretical-methodological basis concepts of the development have been considered. All criteria for quantitative estimation of the stage of organisation life-cycle and the performance of investment policy have been proved in the course of the research. The classific characteristics of criteria to estimate the stage of the life-cycle and concepts of investment policy have been formalized. The choice of criteria and interval boundary and its characteristics has been made. The estimation method of the stage of the organisation life-cycle has been introduced. The research, that has been carried out, proves the possibility to develop practical application of graphical-analytic pattern forming investment policy and estimating the stage of life-cycle and type of the investment policy of an analyzed organisation.

1 Introduction

Forming effective investment policy in the frame of the stated development strategy of an organisation is a crucial element involved into the process of strategic management. The concepts of the policy are defined due to subjective and objective factors which influence the functioning and development of an undertaking. One of these factors is the realization of the development strategy of the undertaking should correspond to its stage of the life-cycle (LCS). The scholarly interest in problems of the organisation development at various stages of its life-cycle has increased for the last years (Shirokova 2007). The factors are tightly connected with the fact that each economic system is dependent on subjective assumptions to take some administrative measures. One of the lines of the research is to make an accurate choise of the stated development strategy in the frame of the investment policy. Therefore, a crucial issue of forming the investment policy is to account and control dynamic characteristics of the external environment and investment possibilities of the undertaking to correct its investment policy according to the stated development strategy.

The notion of the investment policy is debatable in scholarly literature. The main definitions of the investment policy. Table 1.

Table 1. Characteristics of the investment policy.

Authors	The concept of the notion
Blank I.A.	A component of the general financial strategy that consists in choosing and realization of the most effective financial investments aimed at high rates of the development and permanent growth of the marketing cost of a company.
Yendovitsky D.A	Factual realization of investment policy (Yendovitsky, 1998)
Charayeva M.V.	A system of arrangements providing a beneficial investment and quick payback period to guarantee the financial stability, financial solvency, increased competitive ability and providing conditions for the future development (Charayeva, 2010).

In the frame of the study the investment policy is considered to be a system of arrangements (business processes) providing a beneficial investment and quick payback period aimed at the realization of strategic objectives for the organisation development. Ultimately, the organisation development, standing on a particular type of the development strategy, may involve the following types of the investment policy. Table 2 (Blank, 2012).

Table 2. The main types of the investment policy.

The type	The concept of the notion
Concervative	aimed at minimization of the investment risk as a priority objective
Moderate	aimed at choosing investment objects which obtain mid-market level of the current profitability, rates of capital expansion and risk level.
Aggressive	aimed at maximization of the current profit from the investing of capital the nearest period

The type of the investment policy is defined by the Coefficient of investment activity (Cia).

2 The impact of the development strategy on the investment policy

According to the theory and practice of organisation management there are basic classifications and ways of the investment policy which correspond to a particular type of strategies. The main types and ways of strategies of the investment policy. They present in table 3.

In spite of the traditional point of view new classific characteristics are included in the table: strategies of traditional and specific development. This classification criterion is defined by the correlation of the type of investment policy and the life-cycle stage (LCS):

• strategies of "natural development" are considered as realization of eventual strategic changes in the organisation development using standard strategies and ways of investment policy in accordance with the life-cycle stage (LCS) of the undertaking (Table 3);

• strategies of "specific development" reflect the formation of the business renovation. This process is based on the usage of strategies aimed at diversification of business activities (Table 3).

Thus investment policy is a tool for accomplishing strategic objectives at various life-cycle stages (LCS) of undertaking development. It's characterized by different intensity of the investment policy.

Table 3. The main strategies and ways of the investment policy of natural development at different stages of the life-cycle.

Stages	Types of strategies	Ways of the investment policy
		Strategies of the "natural development"
Birth	The strategy aimed at the exploration of new business types	assimilation, formation new business types, new types of products, technology, materials and new markets; development of new manufacture; recruitment of investors for development of venture business and etc.
Growth	Concentrated growth strategy and/or integrative growth strategy	increase production volumes; capital-raising for acquisition of high-technology equipment and expansion of the circulating capital; Improve results of activity by means of application of new technological systems or new technology; Development of economy management subject by means of expansion with the help of integrative processes within the industrial chain (amalgamation, takeover, consolidation) increase fixed assets based on the engaging of long-term financial sources; optimization of financial sources by means of bringing long-term liabilities, strengthening of financial stability, increase of creditworthiness and investment attraction of an economic entity;
Stabilization	Strategy of economizing costs or integrative growth strategy	preservation of competitive position at the market; providing effective usage of resource organisation possibilities; insurance and acquisition of pertinent guarantees against non-commercial risks and etc. development of the economic entity by means of expansion of integrative processes within industrial chain (amalgamation, takeover, consolidation);
Stagna-tion	Strategy of economizing costs	reduction and restructuring of assets; providing effective usage of resource organisation possibilities; warning of bankruptcy based on winding up of unprofitable enterprises, downsizing, selling a part of the assets and etc.
		Strategies of "specific development"
Stabilization	Strategy of diversification	assimilation, formation of new business types, new types of productes, technology, materials and new markets. development of new manufacture; bringing of long-term capital repurposing, reconstruction, modernization and renovation of separate types of equipment; modernization and implementation of new equipment;
Stagnation	Strategy of diversification	anti-recessionary policy aimed at financial stabilization of the undertaking in the process of crisis recovery; warning of bankruptcy based on winding up of unprofitable enterprises, selling a part of the assets and etc.

3 Impact of the life-cycle stage (LCS) on the business investment policy

There is no a traditional method of the LCS impact on business characteristics in the economic science (Ivashkovskaya and Yangel, 2007). In different surveys (Shirokova, 2007; Kushelevich, 2004; Morgunov, 2006; Glazl, 2000) researchers mention several models/patterns describing organisation development and LCS.

Of special importance can be mentioned: theoretical and empirical models of the LCS organisation of the following authors: Greiner, 2002; Miller, 1984; Lester et al., 2003; Ivashkovskaya, 2007; Shirokova, 2006 and etc. (Lester et al., 2003), (Ivashkovskaya, 2007), (Shirokova, 2006) and etc. The authors argue that the life-cycle is targeting that is made by means of analyzing economic and financial characteristics. However, there is no general understanding of the organisation transition from one stage to another and quantitative estimate methods of qualitative LCS characteristics (Shirokova and Serov, 2006). Although the researchers agree upon the fact that each LCS stage obtains a set of unique qualitative characteristics; sequence of LCS stages; and every stage is a result of the previous one; models have a broad range of organisational contextual characteristics (Shirokova, 2006).

In this work the Greiner's model has been adapted (Greiner, 2002) due to the result of empirical research devoted to the number of stages, choosing of LCS characteristics and transition mechanism from one stage to another. The 5-phased model is included in the LCS theory and constitutes 5 stages of organisation development: birth, growth, stabilization, stagnation and decay (bankruptcy). In this work only the first four stages are considered: birth, growth, stabilization and stagnation. The decay stage is out of the list because the organisation management is subject to specific legal norms (Federal Law, NO 127 - FZ 17.09.09 On Insolvency (Bankruptcy)). So that the 5-point estimate scale of LCS within the description of each point is used. Table 4. (Pluzhnikov and Shikina, 2015).

Table 4. Estimate scale LCS.

No. Name of the stage	Scale meaning	Note
1 Birth	from 0 to 1	The company age is less than 10 years, has informal structure, owner is a head of management. Characteristic meaning can be negative
2 Growth	from 1 to 2	Growth: formalization of management solutions, economic indicators, formalization of organisational structure and investment policy
3 Stabilizatio n	from 2 to 3	Sales gain reduces, deterioration of economic indicators, bureaucratization of

		the organisational structure and company policy
4 Stagnation	from 3 to 4	Production volume is limited, financial indicators are falling down
5 Decay	from 4 to 5	Production volumes are limited, financial indicators are falling down, deficit of financial resources

The chosen model has shown results of the economic indicators in the process of organisation development. The realization changes in terms of LCS in various aspects: liquidity indicators; possibility to create positive cash flows (Ivashkovskaya, 2007); either for the undertaking itself or for separate business-processes (Pluzhnikov and Shikina, 2014); accounting of aggregates for business growth (Ivashkovskaya, 2007); dependence of investment activity of industrial undertaking (Smagin and Shikina, 2015).

The solution, that is necessary to find out a development stage, is crucial for developing investment policy of the pertinent strategy. Thus, the process for forming particular investment policy should take under consideration the level of business investment activity in correlation with its LCS.

4   Estimation of LCS

Qualitative estimation of LCS is a debatable issue that requires the usage of many theoretical approaches reflecting various market participants' interactions and characteristics. The problem is the lack of traditional theories forming markets and undertakings from the concept of the life-cycle. Contemporary theoretical models cannot choose correctly testing empirical data, so that available characteristics of industrial undertakings are used in order to do research of illustrating variables: organisation age (A), number of employees (N), total assets (TA), total revenue (V), rate of assets increase (I) (Pluzhnikov and Shikina, 2015), Table 5.

Table 5. Criteria of integrated index LCS.

#	Index name	Mea ning	Shifts of index			
			Birth	Growth	Stabilization	Stagn ation
1	Index of increments of assets	I	$\geq 4,0$	$2,0 \div 4,0$	$1,0 \div 2,0$	$< 1,0$
2	Number of people (thous. of people)	N	$\leq 0,1$	$0,1 \div 1,0$	$1,0 \div 10,0$	reduce
3	Total Assets (RUB bn)	TA	$\leq 0,02$	$0,02 \div 1,5$	$1,5 \div 15,0$	reduce
4	Sales (RUB bn)	V	$\leq 0,06$	$0,06 \div 1,5$	$1,5 \div 25,0$	reduce
5	Enterprise age (years)	A	$\leq 3,0$	$3,0 \div 10,0$	$10,0 \div 20,0$	$20,0 \div 5 0,0$

The next stage is formalization of interval frame for identification LCS according to the previous

stated criteria (Table 5). One part of changing interval frame characteristics of LCS (Table 5) corresponds to Federal Law NO 209 - FZ 24.07.07. On developing small and medium scale entrepreneurship in the Russian Federation; with the Amendments and Additions of 22. 07. 08. № 556 On limits of revenue from sales (works, service) for each category of small and medium business. The other part is carried out by means of expert opinions.

Choosing of numerical expert score of criteria LCS is based on expert opinions of qualitative characteristics. We use the method of quantitative estimation of qualitative characteristics - numerical expert score of Kharrington scale. Due to the chosen method we get quantitative estimation x_i of qualitative characteristics LCS with the usage of formulae $1-5$:

$$X_1 = \begin{cases} 0,20 & I \geq 4,0 \\ 0,37 & 2,0 \leq I < 4,0 \\ 0,64 & 1,0 \leq I < 2,0 \\ 0,80 & 0 \leq I < 1,0 \\ 1,00 & I < 0 \end{cases} \quad (1)$$

$$X_2 = \begin{cases} 0,20 & N \leq 0,1 \\ 0,37 & 0,1 < N < 1,0 \\ 0,64 & 1,0 \leq N < 10,0 \\ 0,80 & 10,0 \leq N < 20,0 \\ 1,00 & N_t < N_{t-1} \end{cases} \quad (2)$$

$$X_3 = \begin{cases} 0,20 & TA \leq 0,02 \\ 0,37 & 0,02 < TA < 1,5 \\ 0,64 & 1,5 \leq TA < 15,0 \\ 0,80 & 15,0 \leq TA < 50,0 \\ 1,00 & TA_t < TA_{t-1} \end{cases} \quad (3)$$

$$X_4 = \begin{cases} 0,20 & V \leq 0,06 \\ 0,37 & 0,06 < V < 1,5 \\ 0,64 & 1,5 \leq V < 25,0 \\ 0,80 & V \geq 25,0 \\ 1,00 & V_t < V_{t-1} \end{cases} \quad (4)$$

$$X_5 = \begin{cases} 0,20 & A \leq 3,0 \\ 0,37 & 3,0 < A < 10,0 \\ 0,64 & 10,0 \leq A < 20,0 \\ 0,80 & 20,0 \leq A < 50,0 \\ 1,00 & A \geq 50,0 \end{cases} \quad (5)$$

At the next stage we carry out result consolidation x_i with the formula 6 and define the value (estimation) of the integrated index LCS:

$$C_{LC} = \sum_{i=1}^{5} X_i, \quad (6)$$

where C_{LC} - are integrated criterion of LCS; x_i - numerical expert score of qualitative criteria that have been gathered by formulae $1-5$.

According to the concept of traditional organisation development the investment policy is characterized by a definite level of investment activity and dependent on the LCS (Pluzhnikov et al., 2015).

5 Criterion of investment activity (Cia)

The investment activity is considered as intensity of the company investment work characterizing raise capital dynamics that are aimed at the accomplishment of strategic objectives (Damodaran, 2006; Walsh, 2000; Tikhonov, 2003; Pluzhnikov *et al.*, 2015). Some authors argue that it's connected with the amount of revenues to the rate of capital investment. They approve the positive line between revenue increase and capital investment of a company (Gordon, 1996; Young, 2006; Ashirov, 2000; Yendovizhky and Isayenko, 2007). Therefore the index of investment activity characterizes dynamics of real capital raises as a specific vector index for accomplishing strategic development objectives.

To solve all necessary issues the quantitative criterion of investment activity (Cia) should be used. It is defined through the correlation of increase value of fixed and current assets for the financial reference period (ΔNcA+ΔCA), as a result of general investment (real investments) to the rate of internal development sources (NP+Am) (Pluzhnikov *et al.*, 2015):

$$C_{ia} = \frac{(\Delta NcA + \Delta CA)}{(NP + Am)}, \quad (7)$$

where: Cia – index of investment activity; (ΔNcA+ΔCA) – increase of fixed and current assets value; NP – net profit for the financial reference period; Am – rate of amortization expenses for the reference period.

The criterion of the investment activity Cia is based on the results of three types of activity (investment, operational, financial) in which increase value of aggregated assets characterizes the results of the investment

activity. The rate of internal sources characterizes results of the operational activity. The financial activity is aimed at the balance of cash flows(inflow/outflow) connected with the realization of the investment and operational activities (Плужников *et al.*, 2015).

The criterion of investment activity may estimate not only the dynamic vector of the investment activity but reflect risks of the investment activity in the realization of the stated development strategy. The organisation develops at various life-cycle stages so that different aspects and issues at diverse stages presuppose choosing several criteria to form investment policy.

6 Graphical-analytic model to estimate investment policy

It is extensively used in the economic theory as a tool for analyzing portfolio strategies to define reasonable diversification of undertaking activity. The most popular matrixes are following: BKG (The Boston Consulting Group), GE/McKinsey, ADL/LC (Osel and Wright, 1980), Shell/DPM, SPACE, Hofer/Shendel, Thompson, Strickland, strategic charts (BSC) (Lawrence, 1992) and etc. However, the data of the model doesn't open up opportunities to develop investment policy in accordance with its stated development strategy.

As a tool for developing investment policy in accordance with its stated development strategy the authors suggest graphical-analytic (diagnostic) model to form investment policy (Smaginand Shikina, 2012). The model (4x4) is based on qualitative characteristics reflecting criterion of investment activity Cia (Y-axis) and integrated criterion for estimating life-cycle stage C_{LC} (X-axis) fig. 1.

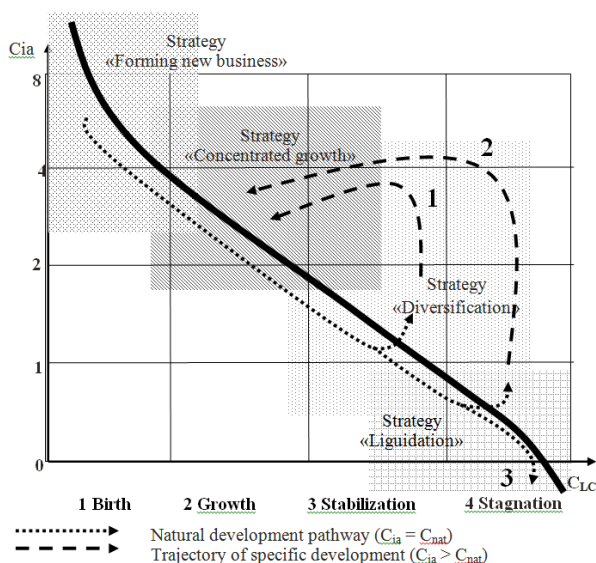**Fig. 1.** Diagnostic matrix of strategies (natural, specific development).

Possible trajectories of Cia index transition in the diagnostic model (fig.1) in the development process of the organisation at different life-cycle stages:

1 – trajectory of natural level of investment activity ($C_{ia} = C_{nat}$) is characterized by eventual strategic changes in

the process of realization reference strategies of natural development and ways of investment policy in accordance with business life-cycle. Trajectory 3, fig. 1;

2 – trajectory of the specific level of investment activity ($C_{ia} > C_{nat}$) is characterized by intermittent nature of strategic changes in the process of redical business renovation If strategies "diversification" and correlated investment policies are conducted correctly, the trajectory of Cia is directed to the transmission of Cia from the stabilization or stagnation to the growth. Trajectory 1, 2. fig. 1.

Thus, investment policies directed to the realization of strategies which provide Cia rate to the rate that is similar to the natural level of investment activity are rational investment policies (Cnat) (Smagin and Shikina, 2012).

The diagnostic model based on the analysis and estimating vector of Cia defines the type of realized investment policy in accordance with the stated development strategy (Table 6). Defining the type of realized investment policy is based on the comparison of Cia to the rate of the natural level of investment policy (Cnat) with its correlated LCS.

Table 6. Correlation of the type of investment policy and Cia.

The type of investment policy	Criterion of intensity of investment activity (Cia)
Concervative	$K_{ИА} < Cnat$, (passive)
Moderate	$K_{ИА} = Cnat$ (moderate)
Aggressive	$K_{ИА} > Cnat$ (active, high)

On the basis of research results on data from the table 7 (Smaginand Shikina, 2012), it can be possible to mark LCS and Cia rates which are corresponded to its natural level of investment activity (Cnat).

Table 7. Rate of Cnat on LCS.

№	The type	Rate of Cnat
1	The stage birth - area of strategies "forming new business"	$Cia > 4,0$
2	The stage growth - area of strategies "growth"	$2,0 < Cia < 4,0$
3	The stage stabilization - area of strategies "cost saving"	$1,0 \quad Cia \quad 2,0$
4	The stage "stagnation" - area of strategies "liquidation"	$Cia \quad 1,0$

Range of Cia rates for different branches in accordance with industry specialization may vary but functional dependence Cnat on LCS has a unique character. fig. 2, table 7.
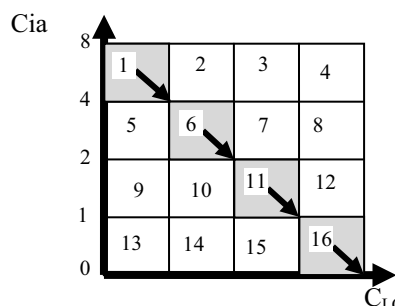

Fig. 2. Area of natural business development.

Diagnostic matrix includes 4 areas introduced in the table 8.

**Table 8.** Areas of choosing investment policies.

The area	Concept
Mainstream business development (natural)	Corresponds to sequent life-cycle stages of business development (matrix cells or positions 1; 6; 11; 16, fig. 2). On the diagonal rates of investment activity (Cia=Cnat, table 7) for corresponding life-cycle stage (fig. 2);
Eventual development (higher risk)	The rate of coefficient of investment activity (Cia>Cnat, table 7). In result of realizing development strategy another capital raising leads to higher financing business and risk growth (matrix cells or positions 2; 3; 4; 7; 8; 12 fig. 3). Investment policies should be aimed at putting Cia to its natural level (positions 1; 6; 11; 16, fig. 3 a, b, c);
Eventual development (low risk)	In the process of natural development the organisation needs to cary out more active policy and putting Cia = Cnat (fig. 4, a, b, c). If an undertaking has no opportunities to raise necessary volume of investments to provide business development, it should liquidate its business;
Cash generation	The rate of Cia is lower 1.0 that is lower natural level Cia<Cnat (matrix cell or positions 15, fig. 4 c).

To each area of forming investment policy belong a particular rate of assets change and amount of investments. Corresponding ways of investment policy for each matrix position obtain the following economic meaning:
• Position 1. Forming new business (fig. 2) - at this stage internal investment sources (NP+Am) are very small because of inability to generate necessary volume of cash flow so that relative Cia rate of investment activity is large (Cia> 4,0);
• Position 6. Concentrated integrated growth (fig. 2) - characterized by sales growth that is described by significant increase assets. So that external development sources are not necessary. It is reflected in the relative coefficient reduction (2,0 $\leq$ Cnat < 4,0);
• Position 11. Cost saving (fig. 2). Production volumes and increase of assets are slow so that it leads to the further coefficient decrease (1, 0 $\leq$ Cnat $\leq$ 2, 0). According to the further natural development this position is unpromising because it leads to the position 16 (fig. 2). To renovate business a new type of development is necessary that is realization strategies "specific development". Investment policy is directed to putting Cia at the growth stage (trajectory 1 fig. 1);

• Position 16. Liquidation (fig. 2). The assets growth decreases because the production volume falls. Business stagnates, the undertaking business results in "death" without radical changes of natural development strategies (trajectory 3, fig. 1; 2) (Cnat < 1, 0). For prolongation of life undertakings need radical business renovation and realization of specific development strategy that is putting Cia at the growth stage (trajectory 2, fig. 1).

Positions of the diagnostic model (positions 1; 6; 11; 16) points out the area of higher investment activity (fig. 4). Corresponding ways of investment policy for each matrix position obtain the following economic meaning:
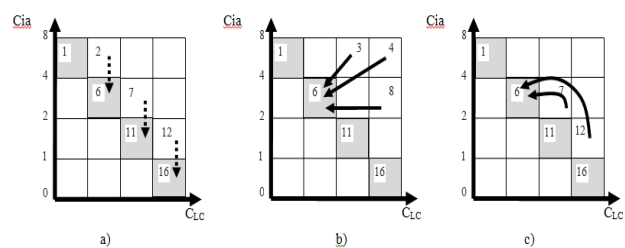

Fig. 3. Area of extra encouraging financial sources of business development.

Corresponding ways of investment policy for each matrix position obtain the following economic meaning:
• Positions 2, 7, 12. The rate of the coefficient of investment activity Cia>Cnat that is it's higher than natural level. This situation can be considered as realization of concentrated (integrated) growth and/or diversification. Assets grow due to encouraging extra financial sources that lead to overaged risk growth. In the frame of natural business development (fig. 3a) the business has overaged assets growth and realization of investment policy, correlated cost saving strategy. It may lead coefficient of investment activity to its natural Cia=Cnat. Or it can be considered as diversification strategy. In this case the rate of Cia>Cnat is higher than the natural level and aimed at the development of new business types.
• Positions 3, 4, 8 should not be considered from the position of natural business development. As a rule they are coefficients of realizing diversification strategies (fig. 3 b).

Positions of the diagnostic model are placed lower than the diagonal (of natural level) and point out the area of low investment activity of a company (fig. 4).
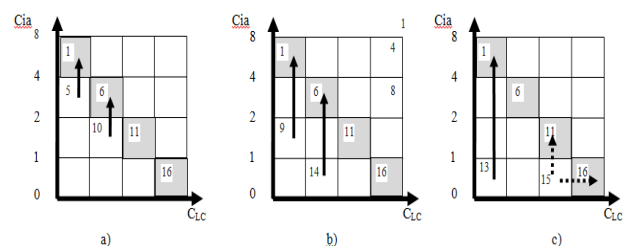
Fig. 4. Insufficient financing of business development.

Corresponded ways of investment policy for each position of the matrix (fig. 4a, 4b, 4c) obtains the following economic sense:
• The level of investment activity is not enough for the positions 5 and 10. The investment policy should be aimed at Cia growth and putting Cia to the natural level (Cnat) so that to natural business development (positions 1; 6; fig. 4a)
• Positions 9, 13, 14. The rate of investment activity is critical, the undertaking can be estimated as a potential bankrupt (fig. 4b, 4c).
• The position 15 of cash generation that is Cia<1,0. Business stagnates. The undertaking has 2 options for development. In the frame of natural development it's necessary to carry out investment policy and correlated cost saving strategies. As a result, Cia transmits from the position 15 to the position 16 (fig. 4c). In the frame of specific development the investment policy is directed to diversification of activity and putting Cia from the position 15 to the position 11 (fig. 4c).

7 Analysis of investment policy

For approbation of the given method the analysis of investment policy of 2 leading pipe and tube production companies in the Russian Federation should be conducted. The research is conducted at several stages. At the first stage the analysis and estimate of the life-cycle stage is carried out.

Undertakings OAO Sinarsky Pipe Manufacturer (OAO SinPM) and OAO Vyksunsky Metallurgical Plant (OAO VMZ) are leading plants in the branch. The main financial criteria characterize their stable statement. The structure of real assets is relatively stable during the whole analyzing period that is pertinent to developmental manufacturing industries with the static technology when the business is satisfied with its position. The life-cycle imitates production life-cycles and applied technologies life-cycles that are characterized for the correlated industrial branches. According to the experience the length of the organisation life-cycle for different types of economic activities may vary but the character of the trajectory will be the same (Shirokova 2006).

According to the data from the financial statements of OAO "SinPM" and OAO "VMZ" on 01.01.2014 we can calculate the quantitative estimate C_{LC}. The calculation results are introduced in the table 9.

Table 9. Results of estimate C_{LC} OAO "SinPM", OAO "VMZ" on 01.01.2014.

#	The criterion	The company OAO "SinPM"		The company OAO "VMZ"	
		The virtual meaning	Estimate on Kharrington scale	The virtual meaning	Estimate on Kharrington scale
1	Index of increments of assets	1.10	0.64	1.05	0.64
2	Number of people (thous. of people)	10 000	0.80	12 000	0.80
3	Total Assets (RUB bn)	21 000	0.80	120 000	0.80
4	Sales (RUB bn)	23 000	0.64	85 000	0.80
5	Enterprise age (years)	more than 50	1.00	more than 50	1.00
	Total		3,88		4,04

Integrated criterion is derivative reflecting the correlation of all estimate criteria LCS. Expert estimate LCS composed 3,88 for OAO "SinPM" and 4,04 for OAO "VMZ" that are corresponded to LCS stagnation. At the stagnation the basic tendency is demand decrease, reduction of competitors and narrowing of product proposal.

At the second stage the criterion calculation of investment activity is carried out using formula 7. The calculation results are introduced in the table 10. Graphical reflection of Cia of the company OAO "SinPM" and OAO "VMZ" are introduced in the fig. 5.

Table 10. Cia dynamics of investment activity.

The company	Period						Average value Cia
	2008	2009	2010	2011	2012	2013	
"SinPM"	0.64	−5.91	−0.08	−0.11	−0.23	0.85	0.31
"VMZ"	0.36	1.00	2.02	0.14	0.79	0.14	0.16

In the period from 2006 to 2014 the Cia vector is placed in the area of the natural level of investment activity characterizing its stability and moderation of investment policy in the frame of natural development strategy (see fig. 5).

At the third stage the analysis and estimate of investment policy according to the Cia vector are conducted. In the period from 2006 to 2014 the Cia vector of the company OAO "SinPM" is placed lower that the natural level of investment activity C_{NAT}, that corresponds to the passive investment policy (see fig. 5, table 10).

In the frame of realizing cost saving the company OAO "SinPM" needs actions on decrease of expanses to the income amounts and restructuring indebtedness. These actions will balance the structure of real assets and their sources. The realization of investment policy may lead the Cia to its natural rate C_{NAT} and come over the position 16 "stagnation"(fig. 2).
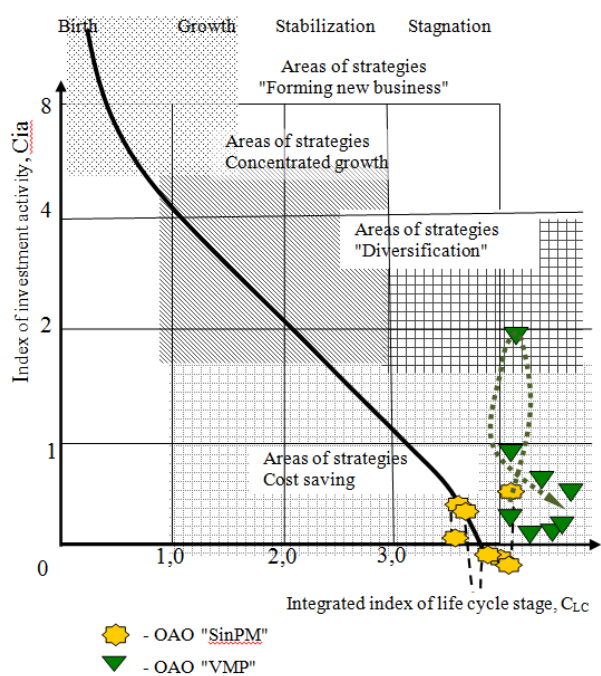
In the period from 2008 to 2013 the Cia vector of the company OAO "VMZ" is placed higher than the natural level of investment activity C_{NAT}. According to the rate it corresponds to moderate investment

policy (see fig. 5, table 10) in the frame of diversification strategy.

To protect the position at the stagnation stage in the frame of natural development realizing cost saving strategy will lead to the recovery of business activity.

8 Discussion

Comparison of estimate results of the investment policy based on the analyzing Cia vector (analytical model) of the industrial companies introduced on the fig. 5. and financial analysts' opinions introduced in the table 11 may prove the authenticity of the given method.

Fig. 5. The Cia vector of the companies OAO "SinPM" and OAO "VMZ" from 2008 to 2013.

Table 11. Comparison of estimate results of investment policy.

The company	External estimate on financial analysts data	Estimate base on the analytical model (Cia – C_{LC})
"SinPM"	**passive** investment policy	**passive** investment policy
"VMZ"	**moderate** investment policy	**moderate** investment policy

The conclusions are proved by analysts financial review introduced on financial web-sites of the company OAO "VMZ" (Fundamental analytics, OAO Vyksunsky Metallurgic Plant) http://www.omk.ru/vmz/smi/5688/?back_url_list=/vmz) and financial analysts opinions OAO "SinPM" (Finanalytics, OAO "Synarsky Pipe Manufacturer" https://sintz.tmk-group.ru).

9 Conclusion

While the research and approbation of the graphical-analytic model to form investment policy in accordance with the stated strategy and its development we can conclude that
• graphical-analytic model may diagnose on the Cia vector the type of realizing investment policy and its correlation to the stated development strategy;
• graphical-analytic model to form investment policy may realize control, adjustment and diagnostics of intensity of investment activity;
• quantitative estimate of the model position may forecast the results of realizing investment policy and expect either entrepreneurial or financial risks.

Calculation of Cia and LCS is conducted in accordance with the financial statement that complicates the research of impact on Cia realizing investment policy in separate business processes.

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