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I ECONOMICS

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Socio-Economic Growth Model Agglomerations: Practice and Prospects for Development

Abstract. The new millennium has been proclaimed one of the cities. Issues of urbanization have become relevant in connection with tasks of entering of Kazakhstan among the 30 years of highly developed countries of the world. In The President of Kazakhstan, Nursultan Nazarbayev the people speak on the need to ensure the development of an infrastructure of the triad-centres, transport, energy. Agglomeration is the skeleton of the knowledge economy. Research methodology is based on a combination of methods: mathematical modeling, statistical groupings of sociological research methods.

Key words: agglomerations, mathematical modeling, socio-economic growth model, infrastructure.

Introduction

In a historic settlement evolution replacing the traditional types of localities isel skim urban settlements, developing relatively autonomously, is increasingly prihodâtnovye «group» the highly concentrated form of settlement, forming and shaping and prisbližennom settlements in between intense relationships. There are the urban agglomeration is a rapidly developing worldwide gatherings of inhabited places, often consisting of dozens, sometimes hundreds of naselennyhpunktov, including rural settlements are closely related to each other. Urban agglomerations of people, become the basis of their material and spiritual culture, highly developed forms of life. Urban agglomerations in the world economy is one of the main forms of modernization and rapid development and increasing the competitiveness of territorial entities, and Therefore, national economies.

As world experience shows consolidation settlements in the metropolitan territory of the area makes sustainable and dynamic growth with significant social and economic impact. Development of virtuous cities contributes to the well-being of society, the development of culture, the diversity of social life. Development centres aims to expedite the modernization of the economy, its transformation into an innovative and knowledge-based. The Office is the main aspect in any economy, regardless of its magnitude. Of course, the new challenges fac-

ing nthe agglomerations, requires a new approach and new management.

Methods

1) Description of the scientific methods used in the draft as justification of the ways to achieve the objectives, the rationale for the chosen approach.

To achieve this goal will apply methods from graph theory and cluster analysis, including methods for k-means, hierarchical clustering and dvuhvhdovogo join.

To take account of the factors and risks that affect the development of agglomerations will apply methods for evaluating the effectiveness of the project, based on the discounted estimates because they a much more accurate, as are various types of inflation, interest rate, etc.

To develop a strategy for the development of urban agglomerations are used the methods of mathematical and econometric modelling. Forecasting models includes its development, experimental analysis, comparison of the results of the preliminary forecast calculations with the actual State data object, or process refinement and adjustment model.

For the development of the quality, management system will be used by expert prediction methods.

Software-target method will be used to develop a methodology for rating analysis of agglomerations and involves the development of a prediction, since the final assessment needs to under develop-

in further defining and finding effective ways means to achieve them, as well as resources.

Towards the standardization of urban agglomerations will be used as a normative method of technological justification of predictions using methods and norms.

In order to improve the management of urban agglomerations will use methods of sociological research (survey, observation and content analysis experiment). For the calculation of economic indicators would apply mathematical models, taking into account the population size threshold; temporal availability threshold; the threshold level of the indicators, and to assess the applicability of statistics to compare them on a global scale is a method of data analysis.

Critical point, alternative ways of realization of the project.

In this project, there are risks-industrial-technical risk, business risk, risks of volatility of demand, the risk of unpredictable actions of participants, natural damages, etc. An alternative way of realization of the project is to build a business management model based on disjunctive analysis and the prediction by kointegration.

Observance of the principles of scientific

This project will comply with all principles of scientific ethics. In particular: integrity, teamwork, professionalism, selflessness.

Conditions of registration and the separation of intellectual property rights to the research results. For the successful implementation of the project is necessary to protect the project, through the registration of intellectual property rights (copy-

Main body

The five leading largest agglomerations of the world include Tokyo, New-Jork, Mexico City, Sao Paulo, Shanghai. Among the CIS countries in terms of level of urbanization is leading Russia, Armenia, Kazakhstan, etc.

The Republic of Kazakhstan highly specific transition to oil and rare metals countries. There are 10 cities in Kazakhstan, including 2 cities of regional subordination-Almaty and Astana, 40 cities of regional subordination, 45 cities of Raion subordination. Kashagan field firing at full power Kazakhstan will enter the five major oil exporters. The modern urbanisticheski centres of Kazakhstan include the largest cities of Astana and Almaty, Shymkent and Aktobe then.

Urbanization also brings a lot of environmental, social, economic and other problems, which implies an integrated approach to the study.

Without analyzing the patterns of urbanization and without taking into account the particularities of their manifestation in different socio-economic systems cannot be accurately model further the development of society.

Questions of formation of spatial and settlement structure of cities and urban agglomerations were worked out by representatives of the various economic schools in the 19th and early 20th centuries.

The term «metropolitan area» in relation to the resettlement was the French scientist M. Rouget, according to which agglomeration occurs when the concentration of urban activities beyond the administrative borders of the neighbouring rural settlements [1].

The problem of economic growth have explored such scientists as Minh Dao, María Jesús Freire-Serén, Judith Panadés i Martí [2-3].

His contribution to the study of problems have made Henderson J.V., Rossi-Hansberg (E). to address urbanization and economic Government standards [4-5].

Contribution to this topic introduced Taylor P. who proposed the model of urban agglomeration based on minimizing the cost of moving [6-7].

At the end of the twentieth century in the West, a new interdisciplinary course-new urban economy (NUE) provided by Black D., Matthew e. [8-9].

Urban infrastructure and development of the resources discussed in the writings of Chinese scholars: Van Lina, Iuan Blue, Sunian Hu, Zeng Czenguan, du Cànžen, Li J nin, Nor Penfy, Zhu Bin, Zhang Sanuj, Wang Sujfen [10-19].

Urban environmental management issues at the regional level, considered in his works, Russian scientists: Ravens y. p., Zausaev s. a., Emelyanova n., Nešadin A., Kudryavtseva on.To., Lappo g.m., Luzhkov Y.m., Maksimov S. N., Mikhailov, Muza-levskij m.a., K.l., Percik, e. n., Pivavara j. l. Poly-an Tm, Ponosov a.n., Smirnov S. A., Yanickiy o.n., Ugryumova A.a. [20].

Among the scientists of Kazakhstan, dealing with the problem include: Aubakirov Z.g., Iskakova U.m. Djumabaeva, s.k., Dulambaevu g. Mutanov r.t., M, Sedenova W.c. Sedenovu, N.u. [35-41].

In the Republic of Kazakhstan, the issue is considered at the governmental level, in particular in the message of the President of the Republic of Kazakhstan. Nazarbayev, Kazakhstan's way: 2050: One goal, common interests, common future [42].

Covers this topic in the programme of development of the regions of the Republic of Kazakhstan [43]. The problem of the development of agglomerations is reflected in the law of the Republic of Kazakhstan «on administrative-territorial unit the Republic Kazakhstan» (with amendments and additions as at 03.07.2013). The Government of the Republic of Kazakhstan approved the programme for the development of single-industry towns in the 2012-2020 period, where the goal is to achieve sustainable socio-economic development in single-industry towns in the medium and long term.

Paying tribute to our scientific expertise in this area, it should be noted that, having published on these subjects affect only selected issues related to the management agglomerations. Along with this, the analysis of the literature shows that many of the management issues of socio-economic processes of major cities given the urbanization is studied. Despite the initial contribution of the scientists involved in this issue, are not investigated the factors that influence the development of urban agglomerations. Analysis of the studied literature also shows that there is still no clear and appropriate recommendations on strategy development and planning of urban agglomerations, methods quality management and control of the new urban economy. In General, not a regional system of rating analysis of the management of urban agglomerations. Almost no regulatory mechanism of virtuous urban agglomerations. Hence, there is a need to address the research approaches for developing management models and socio-economic growth of urban agglomerations, in particular, Almaty, as the virtuous town.

The lack of research into sustainable development of agglomerations is the relevance and the need to examine this issue, as from a scientific perspective, and practical point of view.

The scientific novelty of this work consists in the fact that for the first time, a mechanism for regulating the virtuous urban agglomerations and propose effective management and economic growth model Of agglomerations of Kazakhstan, in particular the city of Almaty.

2) Significance of the project in national and international scale.

Study on ranking countries according to the level of urbanization is the United Nations Department of economic and Social Affairs, which studies and publishes the results of comparative analysis of statistical data on the proportion of the urban population in the total population of the countries and territories of the world. Our research is aimed at developing a methodology for rating analysis of

sustainable management of agglomerations and includes indicators of the effectiveness of social and environmental policy, socio-economic analysis of urbanization, investment analysis and production processes. In addition, for the first time, we will identify economic, technological, social and organizational factors affecting urban agglomerations (for example, Almaty). An absolute novelty is the optimal strategy development and planning of urban agglomerations in the complex industry, agriculture, construction, transport, Almaty, for the next 15 years. Us first-time quality management system will be developed a new virtuous, urban-based economic, social and cultural conditions modernization and diversification. In addition, for the first time will be offered standards of agglomerations and their regulation mechanism has been improved.

The distinctive feature of our study is that we will develop structural models of growth urban agglomerations with high scientific and educational capacity, by increasing the efficiency of public management based on strengthening innovation capacities, integration of the country in the development of the industry.

This project will enable Kazakhstan to 2050 year become one of the world's 30 most developed, which implies the need to achieve a certain target indicators-GDP per 60 per thousand \$., an increase in non-oil exports up to 70% of the total exports, productivity growth in the 5 times from the current level, bringing the share of SMES in GDP up to 50%. Urbanized areas contribute to the growth of non-oil GDP, and will contribute to a further GDP growth at 2-3%.

A new model of efficient management of agglomerations Of Kazakhstan proposed in the project will contribute to increasing productivity, development of small and medium-sized businesses and allows you to measure the regional effects, to determine the direction of movement of the factors of production, goods and services, to identify the extent to which production and spatial factors on the rate of growth of the economy of the regions.

This may be the case, the system policy on territorial concentration of people, knowledge and capital in long-term growing points, and levelling negative effects of spontaneous agglomeration development and fostering agglomerations with the given properties. This in turn determines the significance of the project in national and international scale.

Internationally, contained provisions, recommendations and findings contribute to the development and management of urban growth of world

lation, as well as a higher level of interaction with other countries.

Agglomeration in international practice, can be used as a tool of crisis:

- smoothing of imbalances in the agglomeration-territory development and strengthening interterritories through the creation of new industries in the territories creates more comfortable environment for business development, will improve the quality of life;

- limited territorial resources and the possible tensions in the outer zone of the metropolitan area. In cities have no reserves of land for further development without restructuring the industrial enterprises. The closure of the industrial enterprises will be an opportunity for restructuring under the new market opportunities (related to the reconfiguration of the world economy);

- restructuring and modernization of the city-territory base of the city, the development of its «science» functions and industries that define the scientific and technological progress;

- improvement of the quality of the environment in the city by reducing the concentration of industrial production, transformation of the economy towards a post-industrial eco safe production;

- development of the agricultural zone of agriculture-»import substitution» product line;

- housing solutions, Inc. modernization old-rise residential development zones, old/dilapidated housing, the establishment of a new type of construction;

- infrastructure: transportation, engineering-factors in the employment of the population in times of crisis.

3) social demand and (or) economic and industrial interest in the project and its results.

The results of the project can be used:

- The Ministry of investment of the Republic of Kazakhstan, the line ministries, the Office of the President, the Cabinet of the Prime Minister, Government Office programming industrial and innovation development of Kazakhstan for the future,

- public authorities at various levels, the Agency of statistics of the Republic of Kazakhstan, the World Bank, the Government of the Republic of Kazakhstan, Association of appraisers, the National standards, the labour code, the methodology for assessing the cost and others,

- various agencies in devising programmes of development, quality management practices, evaluation of investment projects, implementation effectiveness of the management system,

- higher education institutions in the preparation of teaching materials and lecturing in the classroom, in the design and teaching of courses in the training system and and retraining of specialists in the field of quality management of public institutions, in particular (the Kazakh National University, Al-Farabi Kazakh National University, the Institute of Economics of the MINISTRY of EDUCATION and SCIENCE of RK, Kazakh economic University. T. Ryskulov, Eurasian National University. Gumilev, Kazakhstan Institute of management, economics and forecasting),

- researchers in conducting further research.

4) influence the results obtained on the development of science and technology and the expected social and economic benefits.

This study provides significant economic and social benefit and contribute to the system policy on territorial concentration of people, knowledge and capital in long-term points of growth, as well as the quality of service to the public. The effect will be the growth of per capita GDP up to 60 thousand. \$., an increase in non-oil exports up to 70% of the total exports, productivity growth in the 5 times from the current level, bringing the share of SMES in GDP up to 50%.

Most models of effective urban growth: integrating real regional factors, particularly the factors of production; use innovation and their distribution as a key factor in growth areas, especially distribution channels; possession of certain opportunities and align the interregional levels economic development through the diffusion of innovation and diversification.

Practical and scientific findings contribute to the strengthening and development of the cities, out of Kazakhstan on an equal footing with developed countries on the world market. Specific provisions and recommendations may be used by the Government of the Republic of Kazakhstan, Ministry of, Committees to create a practical, methodical and socio-economic floor for the development of effective management of large and small urban agglomerations.

Socio-economic impact of the development of agglomerations is the same in terms of their development contributes to:

- the strengthening and growth of small and medium-sized cities, the transformation of rural areas;

- the feasibility of more major infrastructure projects-energy, transport systems and the associated service, information communications, education and innovation infrastructure;

- growth of well-being of the population, increasing education opportunities and professional

self-realization of the population

- increase in the economy and economic development

- more efficient use of resources and businesses and

- more modern and medical

- more modern and preventive

on infrastructure centre through

«peripheral» Agglomeration

development providing a

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Conclusions

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self-realization to reduce migration outflow of the population;

- increasing the competitiveness of the economy and ensuring a stable flow of resources for development;

- modernization and integration of community resources to create a United territory of new businesses and homes;

- management of internal migration of small and medium-sized cities in the regional capital,

- monitoring the development of the city-core and prevent oversaturation and excessive pressure on infrastructure; stable development of the city centre through the shift in emphasis to development «periphery»;

Agglomerirovanie is becoming a key tool for the development of the country and its territories, providing a high quality of life, creating a comfortable environment for development business and raising the competitiveness of the Republic of Kazakhstan as a whole.

Conclusion

The expected results will be:

1. The economic, technological, social and organizational factors affecting urban agglomerations (for example Almaty).

2. Proposed optimal strategy development and planning of urban agglomerations in the complex industry, agriculture, construction, transport, Almaty, for the next 15 years.

3. The quality management system is a new virtuous city economy.

4. A method for rating analysis of sustainable management of the centres, including the performance indicators of the social and environmental policies States, socio-economic analysis of urbanization.

5. Improved management of urban agglomerations, based on economic and social development indicators of the country's economy.

6. Proposed new standards for urban agglomerations, which will examine the economic and social factors, showing endogenous models economic growth.

7. Developed structural models of growth of urban agglomerations with high scientific and educational potential in enhancing competitiveness, investment attractiveness and socio-economic security, by increasing the efficiency of government regulation and based on building innovation capacity, integration in the development of the industry.

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Quality Analysis of the Product

Abstract. In this article, the analysis of the quality of the product is presented and new approaches based on the indices methods for the product quality are considered. Quality includes various components. The main of them are technical and economic indicators of the product quality as well as quality of production technology and capacities. Furthermore, indicators of reliability, durability, labor, capital and research intensity are also in this list.

Key words: quality, key indicators of the product and service quality.

Introduction

When market relations occur, the strategic priority of any enterprise is provision of necessary product quality level. Furthermore, the key concept related to market items (product, service) is its competitiveness. Quality is complex concept reflecting various factors (beginning from dynamics of development of national economy to the process of organization and management of the product quality in any economic unit). In addition, international experience shows that in the open market, where competition is intense, there are some factors that make quality essential for survival of manufacturers, and determine the results of their economic activity.

The quality is multidimensional concept. Its provision requires consolidation of creativity and professional life experience of various specialists. The problems related to quality provision might only be solved in cooperation of government, managers and enterprise's labor unions. Consumers dictating their preferences play a very important role in the solution of this problem.

Product quality is all the features of goods that make it suitable to satisfy particular needs. Quality is determined only for particular period and might be replaced by more developed technology.

Nowadays, product quality is the main component of effectiveness, profitability of the enterprise and therefore, this area shall be prioritized.

The issues of competitiveness and quality are considered in scientific works of domestic sci-

entists such as Dimidenko D.C Derevyanko V. I., Bogomolov L.A. Dzhuran D., Dreiper and others.

Methods

It might be stated that economic science accumulated many theoretical and empirical materials reflecting quality as an important factor of competitiveness in contemporary conditions.

However, some aspects of this problem require further research because transformations in market economy, forms of ownership and methods of economic management changes industrial relations and determine new quality criteria. It might be asserted that theoretical and methodological aspects of competitiveness in relation to the quality are not considered sufficiently in most of scientific works. Not all of the problems related to evaluation methodologies of product competitiveness have been solved. Furthermore, only few scientific works consider model of sustaining competitive position of a company through increase in the level of product quality.

Main body

One of the important indicators in the activities of industrial companies is product quality. Constant improvement in quality is one of the tools for competing in the market and defending positions. High product quality increases the level of demand and profit not only through higher turnovers, but also through high prices (figure 1)

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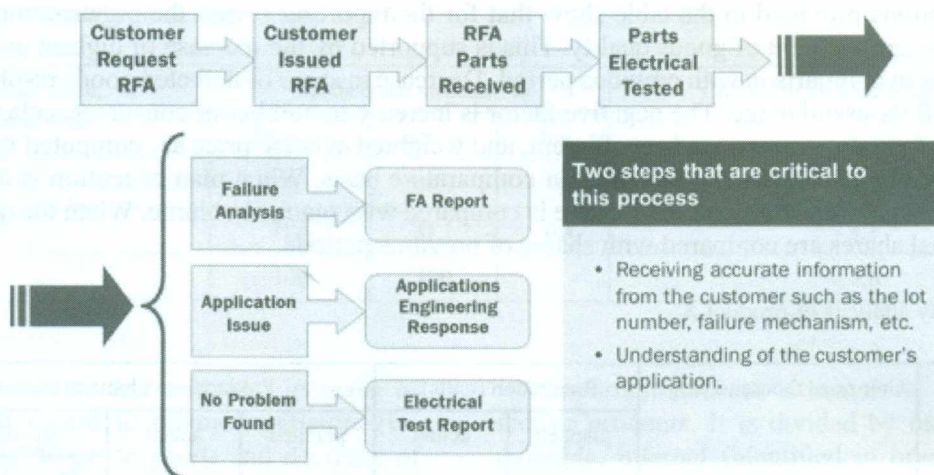


Figure 1 – The product quality

The product quality shall guaranty the customer satisfaction, product reliability and low costs. All these properties are produced in manufacturing activities, stages and sections of the enterprise. The value of the product is also created with these properties. The value creation starts with product development and finishes with its realization and post sale support.

Because a manager is responsible for each stage, division or production activity it is clear why he is also responsible for the product quality. It is assumed that guaranties are technological, ecological, ergonomic, economic and other quality indicators satisfying consumers demand. Quality costs are related not only with product production, but also with production management.

Result 1. The purposes of the analysis and evaluation of quality cost are:

- Determination and evaluation of level of investments necessary to increase and provide quality;
- Provision of required product quality with minimization of overall production and exploitation costs

- Determine the relation of quality provision costs with enterprise's economic performance;
- Determine critical areas of production activity requiring measures for improvement production administration.

The costs related to technological quality control are usually classified in the following categories: labor costs of workers involved in the control process, material costs, and goods in process used in the control process, depreciation of control equipment; other expenses related to overall support services.

Analysis of quality provision costs is usually made to determine the most important objectives for quality improvement. Depending on aims, objectives of the analysis, availability of information there might be different cost management methods. Competently administered analysis of quality provision costs might be the potential for significant cost reduction and improvement of the enterprise's image. Analysis of the product quality shall be presented as a table (Table 1)

Table 1 – Analysis of overall goods quality indicators

Indicator	Previous period	Reporting period	
		Plan	Fact
Weighted average goods quality grade.	0,65	0,81	0,75
Proportion of, %			
a) Highest quality goods	70	80	80
b) Exported goods	0,5	1,5	1,0
c) Defective goods	0,8	0,4	0,3
d) goods reclamation.	0,4	0,7	0,6
Defect losses, thousand tenge.	520	450	400

The evaluations provided in the table show that for the reporting period the organization has performed some work for improvement of goods quality. This is supported by the increase of highest quality goods proportion by 10 % in comparison with previous period. Decrease in share of defected goods result in the decrease of losses by 120 thousand tenge. The negative factor is increase in number of consumer reclamations.

The share of goods, average grade coefficient, and weighted average price are computed for the goods that are characterized by categories or standards on comparative basis. When plan execution is evaluated, actual share of each category in overall goods volume is compared with planned volume. When the quality dynamics is studied, actual shares are compared with shares of previous periods.

Table 2 – Quality analysis of product X

Product grade	Unit price thousand tenge.	Production (units).		Production volume in thousand tenge			
		planned	actual	planned	actual	for first grade price	
						Planned	Actual
I	1,2	10450	11200	12540	13440	1 2540	13440
II	0,8	4800	5050	3840	4040	5760	6060
Total:		15250	16250	16380	17480	18300	19500

From table 2, it might be conclude that if all goods were sold at first grade prices, the full production volume would comprise 18300 thousand tenge which is bigger than actual volume for 3050 thousand tenge and volume of production would increase up to 18300 thousand tenge exceeding actual amount by 3250 thousand tenge. The amount of 3250 is enterprise's lost benefit. If all the goods were the first grade, the planned volume of goods production would comprise 18 300 thousand tenge. Actual – 19500 thousand tenge. The panned and actual grade coefficients

Planned grade coefficient = $16830 / 18300 = 0,895$,

Actual grade coefficient = $17480 / 19500 = 0,896$.

Increase or decrease in the goods production based on their grades in reporting period in comparison with plan is determined by the following formula:

$$\Delta \text{Grade coefficient} = \frac{\text{Actual grade coefficient}}{\text{Planned grade coefficient}} \quad (1)$$

The reserve of increase in quality of goods is equal to the difference between value of actually produced goods and the production volume of first

grade goods For planned indicators this comprises: $18300 - 16380 = 1920$ thousand tenge and for actual ones $19500 - 17480 = 2020$ thousand tenge.

Goods quality is criteria influencing such indicators as revenue, profit or goods production.

Since changes in goods quality firstly influence on price and cost of goods, the following formula might be derived

Change in the volume of produced goods

$$\Delta V_p = (P_1 - P_0) * Q_p, \quad (2)$$

change in revenue of sold goods

$$\Delta B = (P_1 - P_0) * Q_{\text{IIK}}, \quad (3)$$

Change of profit:

$$\Delta P = [(P_1 - P_0) * Q_p] - [(C_1 - C_0) * Q_{\text{hq}}], \quad (4)$$

where P_0, P_1 – is the price of the item before and after change in quality;

C_0, C_1 – cost of item before and after change in quality

Q_p – Quantity of highest quality goods produced;

Q_{hq} – The quantity of sold goods of highest quality.

It might be also useful to consider analysis of influence of goods grade structure on production volume (in monetary terms) of each item (table 3).

Table 3 – I

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Table 3 – Influence of goods grade structure on its price

Grade	Wholesale price, Thousand tenge.	Goods grade structure %			Change of average price, tenge.
		Planned	actual	+, -	
I	1,2	68,5	68,9	+ 0,4	+ 4,8
II	0,8	31,5	31,1	- 0,4	- 3,2
Total:		100	100	-	+ 1,6

The table 3 shows that with the increase of goods quality in regard to planned indicators (increase in share of 1st grade goods and decrease of 2nd grade goods), the average price increase for 1,6 tenge, while the overall actual value of production by 26 thousand tenge (16250*1,6 tenge).

Similar calculations are performed for all types of goods for which grades are determined, after that the results are totaled.

Important indirect indicator of quality is defective products. It is divided by removable, irremovable, internal (identified in organization) and external (identified by consumer). In the analysis process, the deficiency dynamics is analyzed based on total amount and share in overall goods production. Losses from defective products are determined (Table 4).

Table 4 – Analysis of losses from defective goods

Indicators	Thousand tenge.
Cost of defective goods	620
Expenses related to defects removal	90
The amount of defective products	210
The amount withholder from chargeable workers	100
Losses from defective products	400

The main causes of decrease in goods quality might be:

- Bad quality of raw materials
- Low level of technologies and production administration
- Incompetent workers
- Production arrhythmy and others.

After studying the causes of decreases in quality and defective products, the responsible centers are established and measures for defective product prevention are developed. Economic effectiveness of such measures is evaluated based on the level of goods quality, increase of profitability and decrease of costs.

Result 2. The indicators of standardization and unification – are indicators showing if product comprise of standardized, unified and original components as well as the level of unification in comparison with other items.

All the details of the product are divided into standard, unified and original ones. The higher is the percentage of standardized and unified details, the better it is for manufacturers as well as for customers. The indicators of standardization and unification include the following:

- a) object standardization coefficient;
- b) the coefficient of inter-project unification of construction objects sets;
- c) coefficient of repetition of object components.

The control of the quality of bread products is performed to avoid defective finished goods. There are many defects types but we will consider most common of them. We also consider the ways to remove the defects when it is possible. The most common defects of the bread are bubbles and spots at the crust, lack of luster at crust, bleak or very dark crust colors, bent or convex crust and others.

Result 3. The contemporary approach for the entrepreneurship strategy is notion that the quality is the most effective way to satisfy consumer demands and reduce the production costs.

Overall indicators characterizing the quality of produced product (any type or purpose)

- a) Share of new product in total production value;
- b) Share of the highest quality products;
- c) weighted average product grade ;
- d) average grade coefficient;
- e) share of approved and unapproved products;
- f) share of certified products;
- g) share of products complying with international standards;
- h) share of exportable products, including products exported to developed industrial countries.

Individual indicators of the production quality, characterizing one of its features:

- a) usefulness (milk fatness, ash content, iron content in ore, protein concentration in food).
- b) Reliability (durability, operational safety)
- c) Technological effectiveness, construction and technological effectiveness (energy capacity, labor intensity)
- d) Product aesthetics

Indirect indicators are penalties for low-quality products, volume and share of defective products, share of deficiency products (complained), loss from defective goods etc.

First purpose of the research– to study the dynamics of mentioned indicators, in comparison with planned ones, the reason for their changes.

For production which quality is characterized by grade or standard, the share of production of each grade (standard) in total production, average grade coefficient, the average price of a product are calculated. For evaluation of plan implementation based on the first indicator, the actual share of each grade in the total amount of production is compared with planned shares and for studying the dynamics actual share of each grade is compared with past periods data.

If a company produces products in accordance with grades and grade contents are changed, it is necessary to calculate the change in weighted average prices and cost of the production unit and then used on the algorithms above determine the effect of grade content on revenue, income from sale and production of goods.

The calculation of effect of the grade content of the product on production volume in monetary terms might be performed by all four approaches those used in analysis of product production structure) described in the previous paragraph.

The level of correlation between particular quality characteristics reflected in monetary terms and their costs or overall product price might be determined by *correlation coefficient*. It might be calculated by the following formula:

The value of r is +0,758, indicates high positive correlation between package of goods (one of its quality indicators) and the price that includes all the cost of goods. This is also supported by scattered diagram.

Result 4. One of the methods used in the analysis of quality cost changes is index method.

The index of cost might be calculated with consideration of quality and influence of such factors as consumption of new raw material and their costs on this index might be analyzed.

For the evaluation of quality and competitiveness of the product, the score method and unit price method are used. According to the score method, each quality parameter is assigned a score based on different scales (from 5-10, or 100). After, the average score characterizing the quality of the product is identified. For the calculation of price of a new product, the following formula might be used:

$$P_n = P_b / T_s * T_n \quad (5)$$

Where P_n –is the price of new product (monetary unit), P_b – the price of basic product (monetary unit) T_s – total scores characterizing quality parameters of basic product, T_n – total score, characterizing quality parameters of new product

The method of unit price is determined based on main quality parameters: capacity, productivity etc. the following formula is used:

$$P_n = P_{arB} / P_{arB} * P_b \quad (6)$$

Where – P_{arN} the value of new product quality parameters (score); where – P_{arB} the value of basic product quality parameters (score).

Both of these methods shall be used in making decision regarding the production start-up and analysis of effectiveness of quality improvements. However, to select raw material for goods production all the types of project analysis shall be conducted (commercial, technical, organizational, social, ecological and economic). In addition, all available methods shall be used in accordance with particular conditions. Only such analysis will provide comprehensive and reliable information for the decision- making.

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Conclusion

The level of quality of the product is determined based on qualitative and quantitative characteristics. If they meet standards, the production shall be certified.

The ultimate purpose of certification is not only increasing the product quality, but also provision of safety and healthy environment for the future generations.

Low-level (noncompetitive) quality of goods is not abstract concept, but real reason for business failure. Therefore, the quality problem is recognized as the strategic problem. The entities ability to achieve its objectives is determined by its system of administration and management - the quality management system.

Quality management system – includes organizational structure, methods, processes and resources necessary for overall quality management.

Therefore, it is necessary to create and improve the quality management system. Since external as well as internal factors are substantially influence on the produced goods quality, the quality indicators shall meet the following requirements:

- shall result in the increase of the production effectiveness;
- shall take into account new technologies and achievements of the industries;
- shall be stable;
- shall include all the properties of goods that satisfy the needs in accordance with these goods designations.

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