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МОДЕРНІЗАЦІЯ АДМІНІСТРУВАННЯ УПРАВЛІНСЬКИХ РІШЕНЬ ІННОВАЦІЙНОГО РОЗВИТКУ ПІДПРИЄМСТВ ПРОМИСЛОВОСТІ

Трансформаційний період в економіці України, постійний процес структурної перебудови економіки, умови динамічного та турбулентного характеру генезису конкурентного ринкового середовища – це компоненти складного і цілеспрямованого процесу, який диктує за необхідне опанування інноваційного шляху відтворення вітчизняних підприємств, сприятиме економічному і соціальному розвитку країни. Сучасна економіка України потребує радикальних структурних змін за рахунок формування та запровадження інноваційної моделі розвитку вітчизняних підприємств.

Предметом дослідження виступають базові процедури і процеси адміністративного супроводження функціонування організації, теоретико-методологічні підходи до прийняття обґрунтованих управлінських рішень інноваційного розвитку підприємств.

Мета даної роботи полягає у систематизації основних процедур і процесів адміністрування організації, подальший розвиток теоретико-методологічних підходів управління бізнес-процесами організації, класифікація методів вдосконалення адміністративного супроводу функціонування організації, проведення комплексного економіко-статистичного дослідження інноваційної діяльності підприємств Одеського регіону з метою виявлення проблемного поля і перспектив його розвитку.

Загальна методологія проблематики дослідження формується на основі методів адміністративного супроводження функціонування організації (організаційних, соціальних, економічних). Практична сторона роботи виконана за допомогою комплексу економіко-статистичних методів дослідження.

Дослідження показують, що модернізація і розвиток адміністрування висловлюють широкий спектр адаптованих рішень оптимізації функціонування організації. Кількість і різноманітність їх настільки великі, що цілеспрямоване та ефективне використання об'єктивно потребує тієї чи іншої системи упорядкованого представлення.

Визначення сучасного представлення різноманітності форм і методів вдосконалення адміністративного супроводження функціонування організації дозволяє зробити низку загальних для адміністративного менеджменту висновків. Перш за все, його зміст переконливо показав, що адміністрування є не тільки затребуваною, а й необхідною організаційно-методичною основою супроводження формування, функціонування та розвитку всього комплексу процесів сучасної організації. Це ще раз підкреслює самостійну, не альтернативно використовувану, а й конструктивно необхідну роль адміністративного супроводження функціонування кожної організації у процесі прийняття управлінських рішень.

Результати дослідження можуть використовуватися для прийняття обґрунтованих управлінських рішень інноваційного розвитку підприємств, адміністративного супроводження функціонування організації.

Ключові слова: адміністрування організації, базові процедури, адміністративне супроводження, функціонування організації, форми, методи, інноваційний розвиток.

Рис.1, Табл.3, Літ.12

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МОДЕРНИЗАЦИЯ АДМИНИСТРИРОВАНИЯ УПРАВЛЕНЧЕСКИХ РЕШЕНИЙ ИННОВАЦИОННОГО РАЗВИТИЯ ПРЕДПРИЯТИЙ ПРОМЫШЛЕННОСТИ

Трансформационный период в экономике Украины, постоянный процесс структурной перестройки экономики, условия динамического и турбулентного характера генезиса конкурентной рыночной среды – это компоненты сложного и целенаправленного процесса, который диктует необходимость инновационного пути возрождения отечественных предприятий, способствует экономическому и социальному развитию страны. Современная экономика Украины требует радикальных структурных изменений за счет формирования и внедрения инновационной модели развития предприятий.

Предметом исследования выступают базовые процедуры и процессы административного сопровождения функционирования организации, теоретико-методологические подходы для принятия обоснованных управленческих решений инновационного развития предприятий.

Цель данной работы заключается в систематизации основных процедур и процессов в администрировании организации, дальнейшее развитие теоретико-методологических подходов в управлении бизнес-процессами организации, классификация методов совершенствования административного сопровождения функционирования организации, проведения комплексного экономико-статистического исследования инновационной деятельности предприятий Одесского региона с целью выявления проблемного поля и перспектив его развития.

Общая методология проблематики исследования формируется на основе методов административного сопровождения функционирования организации (организационных, социальных, экономических). Практическая сторона работы выполнена с помощью комплекса экономико-статистических методов исследования.

Исследования показывают, что модернизация и развитие администрирования выражают исключительно широкий спектр адаптированных решений оптимизации функционирования организации. Число и разнообразие их настолько велико, что целенаправленное и эффективное использование объективно нуждается в той или иной системе упорядоченного представления.

Определение современного представления всего возможного разнообразия форм и методов совершенствования административного сопровождения функционирования организации позволяет сделать ряд общих для административного менеджмента выводов. Прежде всего, его содержание убедительно показало, что администрирование является не только востребованной, но и необходимой организационно-методической основой сопровождения формирования, функционирования и развития всего комплекса процессов современной организации. Это еще раз подчеркивает самостоятельную, не альтернативно используемую, но конструктивно необходимую роль административного сопровождения функционирования каждой организации в процессе принятия управленческих решений.

Результаты исследования могут использоваться для принятия обоснованных управленческих решений инновационного развития предприятий, административного сопровождения функционирования организации.

Ключевые слова: администрирование организации, базовые процедуры, административное сопровождение, функционирование организации, формы, методы, инновационное развитие.

L.M. Karpenko

MODERNISATION OF THE ADMINISTRATION MANAGEMENT DECISIONS OF ENTERPRISES INNOVATIVE DEVELOPMENT

There are many different components of difficult and purposeful process, such as transformational period in Ukraine economy, constant process of structural reconstruction of

economy, the condition of dynamic and turbulent nature of genesis of competitive market sphere. These process dictate necessity of innovative way of domestic enterprises regeneration, promotes an economical and social development of the country. Modern Ukraine economy requires radical structural changes at the expense of formation and implementation of innovative model of enterprises development.

The object of research is the base procedures and processes of administrative control of functioning of the organisation, theorist-methodological approaches for acceptance of justified managerial decisions of enterprises innovative development.

The purpose of the work is to systematize of the main procedures and processes in administration of the organisation, further development of theorist-methodological approaches of control of business-processes of the organisation, classification of methods of perfecting the administrative control of functioning of the organisation, conducting complex economic-statistical research of innovative activity of enterprises in Odessa region with the aim of identification the problem area and the perspectives of its development.

General methodology of the problem of research is formed on the basis of methods of administrative control of functioning of the organisation (organisational, social, and economical). Practical work party is performed with the aid of the complex of economic-statistical methods of research. Researches show that update and development of authoritarianism express exclusively extensive coverage of adapted decisions of optimization of functioning of the organisation. Number and diversity of them so great that purposeful and effective utilization objectively needs one or another system of ordered representation.

Definition of modern representation of all possible diversity of the forms and methods of perfecting of administrative control of functioning of the organisation allows making a series of conclusions common for administrative management. First of all, its content showed convincingly that administration is not only required, but also necessary organisationally-methodical base of formation controlling, functioning and development of the whole complex of modern organisation processes. It once again emphasizes independent, not alternatively used, but constructively necessary role of administrative control of functioning of each organisation during acceptance of managerial decisions.

Results of research can be used for acceptance of justified managerial decisions of innovative development of enterprises, administrative control of functioning of the organisation.

Key words: authoritarianism of the organisation, base procedures, administrative tracking, functioning of the organisation, form, methods, innovative development.

Problem setting. Principal conditions of economic development are accumulated research and technology, industrial, investment potential, institutional impact on technological progress and state support of innovative transformations. Economic deformations prove expediency for activating and increasing of innovation investment processes efficiency in the industry and minimization of impact of factors slowing them down. Considerable impact on innovation investment activity, market dominance, compositeness in the industry has capacity of innovation potential. Under these conditions, the study of theoretical principles and practical measures concerning the development of domestic production by means of implementation of its innovative potential assumes significance.

The development of domestic enterprises in the modern realities of time requires systematic approach to building a strategy-based administration, operation and furthers the genesis of the enterprises, which focuses on economic results, to strengthen their own competitive position in the market. The success of the enterprise requires a careful study of the market environment, logistics, innovation and investment policy, changes in product range, carrying out a flexible pricing policy, the restructuring of the organisational management structure, the formation of a new philosophy of relations with contractors.

Economical efficiency of the activity of enterprises, ensuring high rate of their development is determined by their investment activity level and range. Investment activity of enterprises is one of the most difficult and risky kind of business. Therefore, regulation and management of investment activity and economic processes, connected with it, takes the main place in solving problems of structural alteration of the economy of Ukraine [1, p. 87].

Recent publications analysis. Research of innovation potential production, its structure and methods for evaluation, innovation investment into enterprises development was conducted in the studies by foreign and domestic scientists: I.Blank [1], E.Edvin [9], N.Ilysheva [3], F.Fabozy [7], S.Filypova [4], N.Hrusch [5], S.Krylov [3], D.Pierce [8], A.Raychenko [10], A.Yakovlyev [6] and others.

Authors unanimously state that innovations integration stimulates qualitative reformations in the manufacturing that in turn represent stimulus for further changes in attainment of excellence. Analysis of the recent scientific materials indicates the results of comprehensive research on the development and implementation of the elements of innovation and investment mechanism, improvement of the investment climate, some economic and statistic calculations.

The goal of this work. The purpose of the work is to systematize of the basic procedures and processes in administration of the organisation, further development of theorist-methodological approaches of control of business-processes of the organisation, classification of methods of perfecting the administrative control of functioning of the organisation, conducting complex economic-statistical research of innovative activity of enterprises in Odessa region with the aim of identification the problem area and the perspectives of its development.

Key research findings. Organisation of innovation activity strategic management on the basis of well-balanced indicators system (WIS) and results of applied strategic analysis consist in formation of innovative component of WIS and analysis of indicators constituting it. Formation of innovative component of WIS by analogy with elaboration of well-balanced system of indicators as whole includes the following stages:

- determination of strategic goals for innovation process;
- formation (construction) of strategic chart of innovation process;
- selection of indicators of innovation process;
- determination of target values of innovation process indicators;
- elaboration of strategic innovation measures [2, p.228].

Administration was originally intended to be used as universally and widely applied mobilized resources for formalization, deterministic and regulations necessary procedure on demand as the main tool setting and attainment purposes of management and control. But these same areas special knowledge and spheres of professional activity is largely based upon objectively investigated and extremely varied resources used and the content of such fundamental concept like structure. This predetermines constructing a model matching ratio and, most importantly, joint and well-coordinated use of the nature and content of resources structure and procedures of the organisation [3, p.87].

The administrative management of the organisation stands and is considered as a whole objective, consistent and successive interconnected process, and administration. It is this aspect of causal relationship that forms the two main forms of manifestation of the administration which determines the bases of formation and development of administrative management, as it primordial moment. If this conceptual approach laid the foundation, the primacy of administration as the process is absolutely natural because any administration system is the result of it, but not just in the administration process but the finished formation system.

Practical adaptation and applications of sound and provided basic concept of correlation processes and structures in the administrative management of the most convincing performances disclosed by the example and resolve a particular problem. Even the actual fact

of the submission procedure of administration formation and approval of the structure and the organisation undeniably confirms and illustrates an informed position above conceptual administrative management of the priority of the procedure over the structure.

It should be emphasized that the creation of a unified information-analytical control system, its implementation and functioning of the coordination and optimization of information flows as the basis of the controlling concept based on the integration of management functions to achieve the objectives of the enterprise.

Information and analytical support system of controlling business processes of enterprises is developed in accordance with the management principles. The methodical supply determines the effectiveness and feasibility of the investment project in the context of the functional blocks of the management and is based on the following instruments:

programmatic and methodological issues of integrated analysis of innovation and investment activity;

well-balanced indicators system and results of applied strategic analysis;

strategic map of the innovation process;

multifunctional analytical support investment decision-making and automated method of its practical implementation;

calendar investment obstacles and the corresponding method for predicting the behaviour of the investor;

complex mathematical economic analysis methods;

budgeting system with the implementation of compliance monitoring function;

method of sales management as a tool to make investment decisions on the operational phase of the project;

control system for investment projects in stages of its life cycle [4; 5].

This allows to finally create, test and adopt procedural approach to the understanding and application of the criteria defined-division components of the administrative procedure in the following form (Table 1).

Table 1

Criteria for determining components of administrative procedures

Components	Criteria for determining
Action	Primary, elementary, uniqueness, completeness
Operation	Professional orientation, socialization, adaptation
Stage	Functional uniformity, commonality, consistency
Period	Intermediate extractability, effectiveness, controllability
Phase	Clearly defined
Cycle	Periodically repeating sequence composition

Table 1 allows defining the criteria for clearly identifying the components, as well as largely determines the purpose and content of a possible application of each of the elements of administrative procedures. For example, the selection phase is used to identify the specific conditions of the process cycle development external observations. This is extremely important for the timing of the organizers reactions of users and observers of the process, take-action and analysis of the results and assessment of a particular part of the outwardly released. It is clear that such an identification process phases of the cycle becomes necessary administrative basis at-binding and orientation of all subsequent actions [6, p.589-562].

Practice has shown the effectiveness of administrative management tools can be used as a procedural approach to the presentation and use of the basic models of the development and implementation of the process of setting and achieving goals of the organisation. It allows logically reasoned, phased transition to the administration of a particular sequence of distribution

and consolidation of functional responsibilities in the organisation, building innovative organisational structures, programs of modernization on the basis of basic waste solutions.

Typology of administrative procedures is composed not only of the implementation of certain sets of homogeneous forms, methods of application of diversity or distinctive and specific kinds of practical manifestations, but also positions the specific mechanisms for possible use in a variety of processes and systems. Thus, on this basis, it is formed, and upgraded functions:

algorithm business planning process;

program information software package;

methodology for evaluating the performance;

assessment tools and payment of staff;

mechanism for document organisation;

monitoring system performance;

and many private and administrative procedures to ensure operational activities of the organisation.

Analysis of the case shows that the modernization and development of the administration expressed exclusively big range of tailored solutions to optimize functioning organisation. There are large number and variety of them so that the targeted and effective using of objective needs of a particular system of orderly presentation [7, p.212].

The whole palette of current methods of modernization and development of the administrative support of the functioning of the organisation brings together a wide enough variety of specific manifestations of the three main areas: organisational, social and economic.

By that diversity and construction and application of base classification of the content of practically used methods (Table 2).

Table 2

Classification of methods of perfecting of administrative tracking of functioning of the organisation, developed by author

Methods	Combined complexes of authoritarianism procedures	
	Update	Innovations
Organisational	Operational approach to formation of configurations and the divisions of the structures	Registration and optimization of distribution and confirming of the composition of functions on rating base
Social	Execution object professional diagnostics, practical approval of preparation, adaptation, arrangement of the personnel in the organisation	Administrative programming of functional interaction in statement and the decision of innovative tasks
Economical	Application of oriented procedure of the evaluation and salary flexible functionally on appropriate results	Stimulation of development and application of the systems of innovative labor co-operation on rating base

Palette presented on the drawing, apart from customary organisational, social and economical directions, allocates two levels of positioning of methods, updates and innovations respectively. It allows not only to designate possible independent directions of perfecting, but also to separate their content on the basis of application of the criterion of basic innovations. Such approach is particularly important for becoming and development of independent direction of development purely of administrative innovations in construction of functioning of the organisation [8; 9].

Definition of modern representation of all possible diversity of the forms and methods of perfecting of administrative tracking of functioning of the organisation allows to make and a series of the conclusions common for administrative management. First of all, his content showed convincingly that authoritarianism is not only required, but also necessary organisationally-methodical base of tracking of formation, functioning and development of the whole complex of processes of modern organisation. It once again emphasizes independent, not alternatively used, but structurally necessary role of administrative tracking of functioning of each organisation.

Entirely specific value acquires an administrative tracking of reorganisation and reforming of the whole complex of processes of functioning of modern organisation. Their allocation, representation, positioning, let alone correspondence and cooperation, basically, are not possible without fundamental delivered and everywhere used administrative tracking. Only it is capable determined, stage by stage, consistently and to follow in parallel statement and permission of the most difficult, exclusively multi-factorial and probability developing task.

In definition, representation and development of the content not only of innovative, but also in general overwhelming majority of complicated problems of functioning modern organisation should features of construction and application of his administrative tracking are used. Naturally that for effective application of administrative tracking it is necessary to generate enough comprehensive idea of composition, content and opportunities of use of these resources [10, p.348].

Practical aspects of this work are concerned with study of innovation sector of enterprises in Odessa region. In this regard, statistical data concerning innovation potential and enterprise activity on the market are examined below.

Studies show that the innovative development of domestic enterprises depends on the reasonable management decisions. Administration function directs to study and inculcate innovations.

In 2014 more than 69 industrial enterprises were engaged in innovation activity comparing with 83 enterprises in 2014. Its part in the general number of industrial enterprises has constituted 17,6%. Its part in the general number of industrial enterprises has constituted 17,6%. Products technologically new and substantially improved as well as processes were elaborated and introduced by food industry enterprises (30,4% of enterprises engaged in innovation activity), in particular, bread producers and bakery products manufacturers as well as beverages producers (each producer constituting 8,7%), processing and preserving of fruit and vegetables (2,9%); machine builders (26,1%), especially manufacturers of machines and equipment as well as manufacturers of electric and electronic equipment (each manufacturer constituting 10,1%), manufacturers of vehicles and respective equipment (5,8%); chemical and petrochemical industry (17,4%), mostly chemical industry enterprises, and manufacturers of rubber goods and plastics articles (each enterprises constituting 8,7%); enterprises of consumer goods industry (5,8%); cellulose and paper enterprises, iron and steel enterprises, energy producers, gas enterprises, and water manufacturers (each manufacturer constituting 4,3%); manufacturers of other non-metallic mineral products (2,9%). The largest investments into innovation industry were made by enterprises of chemical and petrochemical industry (54,9% of expenses on innovations were made by this type of enterprises), enterprises on production and distribution of electric energy, gas, water (23,1%), machinery manufacturing enterprises (11,0%), food industry enterprises, beverages and tobacco manufacturers (6,1%).

From total number of industrial enterprise engaged in innovation activity, 44 enterprises (63,8%) directly introduced innovation in manufacturing including 23 enterprises adopting new types of products and 18 enterprises adopting new technological processes.

In 2014 innovatively active enterprises adopted 87 types of innovative products including 9 new types of equipment. Machinery manufacturing enterprises adopted 33 new types of products (including 14 types of products – by manufacturers of electric and electronic equipment, 13 types of

products – by manufacturers of machines and equipment, 6 types of products – by manufacturers of transport means and equipment), 26 types of products – by food industry enterprises (including per 9 types of products - by producers of milk, cheese manufacturers, bread & bakery products manufacturers, 3 types of products – by producers of tea and coffee, per 2 types of products – by enterprises on preserving vegetables and fruit and production of cacao, chocolate and sugary confectioneries, 21 types of products were adopted by enterprises of chemical and petrochemical industry (including enterprises operating in the field of rubber goods and plastics articles production – 17 types of products were adopted by these enterprises), and 4 types of products were adopted by manufacturers of soap and household chemicals).

During 2014, 24 new technological processes were introduced, 83,3% of them were low-waste technologies and resource saving technologies. Within machinery manufacturing industry, 14 new processes were introduced, 4 new processes were introduced within chemical and petrochemical industry and in the field of manufacturing and distribution of electric energy, gas and water.

35 enterprises sold innovative products in 2014. Revenue earned as a result of selling innovation products being novelty for consumer's market and novelty for enterprises has amounted 916,8 mln. UAH. That was 3,6% of total volume of sold industrial products (73,3% of this amount accrued to enterprises in Odessa region). The most considerable volumes of sold innovation products were attained by machinery manufacturing enterprises (43,4%), chemical and petrochemical industry (42,3%), food industry enterprises, producers of tea and coffee (14,3%).

Out of Ukrainian borders, enterprises of region sold innovation products amounting 201,2 mln UAH. (21,9% of total volume of sold innovation products), including products sold in the countries of CIS– 85,0 mln. UAH (42,3% of volume of sold innovation products outside Ukraine) (Statistical Bulletin of General Department of Statistics in Odessa Region 2014, p.p. 4-5) [11, p.92-95].

In Figure 1 we would like to provide structural diagram showing allocation of Odessa enterprises in terms of their quantity engaged in innovation activity in 2014 under the main types of industrial activity [11, p.114].

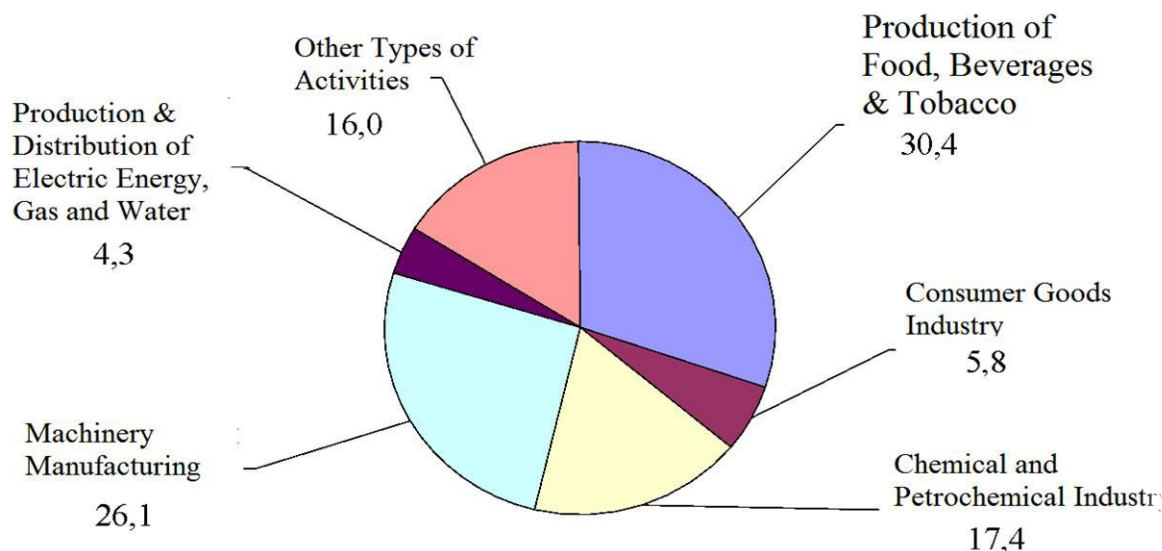


Figure 1. Allocation of Odessa Enterprises Engaged in Innovation Activity under the Main Types of Industrial Activity in Terms of Their Quantity in 2014
(as percentage of total quantity of innovatively active enterprises)

There are some problems with financing. Financing of innovation projects remain issue of current concern. In Table 3, indicators on investment funding allocations in 2015 are presented under the basic types of industrial activity.

Table 3

**Allocation of Funds fo Innovations under the Basic Types of Industrial Activity
in 2015 (UAH thousand)**

Indicator	Total Amount of Expenses on Innovations	Under Financing Sources		
		Internal funds	Municipal Funds	Credits
Industry	91028,7 (100%)	88310,1 (97,0%)	1504,9 (1,7%)	1213,7 (1,3%)

From total number of industrial enterprise engaged in innovation activity, 44 enterprises (63,8%) directly introduced innovation in manufacturing including 23 enterprises adopting new types of products and 18 enterprises adopting new technological processes [12].

Conclusion. To sum up, new technologies and processes have to ensure increase of productivity of labour and improvement of products quality, reduction in expenditures on their production, complex use of primary products, materials, fuel, energy, etc. Conducted economic and statistic analysis of enterprises innovation activity in Odessa region shows that number of industrial enterprises implementing innovations and volume of sales within period 2011-2013 are marked by positive development. There is a bit decrease of innovative activity of enterprises in 2014-2015.

The practical importance of the implementation of tools developed necessitates evaluating the effectiveness of their implementation, as effective tools affect their recumbent, and applicability of the enterprises.

This is especially important today, as domestic and foreign experience emphasizes the need to substantially improve the efficiency of skilled resources to ensure the effectiveness of targeting phase of radical organisational changes. Statement and solution of this problem can only be based on a comprehensive classification of administrative procedures that will be the subject of research findings and ideas further research of the authors.

At the end, this study provides the analytical basis of the integrated management analysis of investment activities of domestic enterprises in a competitive environment, to determine the innovation potential of the industry by means of using predictive validity.

Results of research can be used for acceptance of justified managerial decisions of innovative development of enterprises, administrative tracking of functioning of the organisation.

LITERATURE

1. Бланк И.А. Инвестиционный менеджмент / И.А. Бланк. – К.: Эльга-Н, Ника-центр, 2006. – 552 с.

2. Ильшева Н.Н., Крылов С.И. Учёт, анализ и стратегическое управление инновационной деятельностью / Н.Н.Ильшева. – М.: Финансы и статистика, 2014. – 216с.

3. Карпенко Л.М. Розробка системи аналітичних показників інтегрованого управлінського аналізу інноваційно-інвестиційної діяльності підприємства / Л.М. Карпенко / Mechanism of Sustainable Development of Economic Systems Formation [Collective monograph] – Vol. 2. Verlag SWG imex GmbH, Nürnberg, Deutschland, 2014. – P.222-234

4. Філіппова С.В. Інформаційно-аналітичне забезпечення прийняття інвестиційних рішень в формуванні конкурентоспроможності регіону / С.В. Філіппова,

О.С. Балан // Формування конкурентоспроможності економіки регіону Українського Причорномор'я: [моногр.]. – Одеса: Інститут проблем ринку та економіко-екологічних досліджень НАН України, 2012. – Розд. 8. – С. 199-233.

5. Хрущ Н.А. Корпоративне управління в Україні: процеси формування та розвитку: [моногр.] / Н.А.Хрущ // К.:Кафедра, 2012.– 309 с.

6. Яковлев А.І. Оцінка ефективності нововведень при сучасному характері економічних процесів / А. І. Яковлев // Фінанси України. – 2007. – № 7. С. 10–22.

7. Fabozzi, F.J. (1998). CFA. Investment management. – 2nd ed. – USA, New Jersey 07458, – 837 pages.

8. Pearce, J.A Robinson R.B. (2003). Strategic Management: formulation, implementation and control. – 8-th ed. – McGraw-Hill / Irwin, New York, - 1087 pages.

9.Edvin J. Elton, Martin J. Gruber. Modern Portfolio Theory and Investment Analysis. – 7-th Edition. - USA: New York University, 2014.-728 pages.

10. Raichenko A.V. Administrative management: Textbook. – М.: INFRA - М, 2015. – 416 pages.

11. Наукова та інноваційна діяльність в Одеській області у 2014 р. // Статистичний бюлетень Головного управління статистики в Одеській області. Відпов. за випуск Т.І. Єрмоменко. - 2015 р. – 131 с.

12. Наука, технології та інновації // Офіційний сайт Головного управління статистики в Одеській області [Елект. ресурс]. – Режим доступу: <http://www.od.ukrstat.gov.ua/>