

# DEVELOPMENT OF ASSESSMENT METHODS OF EFFECTIVENESS OF INNOVATIVE STAFF ACTIVITY MOTIVATIONAL MECHANISM

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**Abstract.** *The aim* of the science work is to develop methods to assess the innovative activity of the personnel that will provide motivation for employees to be active in the direction of research and introduction of internal reserves for its improvement. *Methods.* In the study were used: system method and methods of logical analysis – to justify theoretical and practical recommendations on the development of conceptual bases of the formation of the motivational mechanism of personnel management, economic-mathematical modelling and forecasting methods – to assess the influence of motivation factors on the level of labour activity of the personnel. *Results.* In the work the notion “motivation”, considering the innovative changes of the modern economy, is clarified. In order to foster innovative activity in the enterprise it is proposed to improve organizational structure by controlling the center of innovation activity management, which includes economic, technical and social division. Proposed an establishment of the project teams under the terms of accounting costs, which contributes to more active workers’ involvement in the formation of innovative development plans. The main points that determine their effectiveness are: growth of volumes of output, diminution of expenses of materials and energy resources, timeliness and relevance to the product market, improvement of the quality of work performed. A profit, derived by project teams, is recommended to distribute on: increment of the payroll, innovative development, stimulation and motivation fund. The research of the activity of the enterprises showed that one of the effective methods to stimulate staff is a motivational system based on the use of KPI. Bonuses for the implemented project, which are adjusted to the output of the basic stage, or KPI project as a whole, fixed bonuses as a percentage of the profits, and bonuses in stages of the project are the forms of motivation of project teams. *Practical significance.* Key performance indicators of innovation activity are distributed into levels and groups of staff that is responsible for carrying KPIs out, which makes it possible to ensure control over the current and long-term performance indicators, to evaluate the personal performance of each employee, to orient staff to achieve the necessary results, and to provide collective and individual responsibility for the results of enterprise activity. *Value/originality.* The proposed incentive system will be characterized by an address attachment in relation to each individual employee, clarity for executors, measuring simplicity, the interconnectedness of indicators, as well as by individual motivation of each employee. Thus, such system will contribute to the certainty of labour functions and will improve the quality of personnel management organization.

**Key words:** innovation and invention: processes and incentives, business objectives of the firm, personnel management

**JEL Classification:** O32, L21, M12

## 1. Introduction

In crisis conditions that are happening in the global economy with increased competition on market goods and services, all enterprises, regardless of the type of ownership (public, private), large or small, are increasingly facing the problem of the rise of production efficiency. Many enterprises, along with the implementation of the new equipment and technology, try to solve the problem

of increase in production efficiency by reducing the number of workers, either by fluctuating amount of wage. This path leads to the exacerbation of conflicts, negative consequences, which will result in lower production quality, increased accidents, worsening relations between workers and so on. Expenses for repayment of such conflict can be greater than the effect of reducing the number of workers or reduced wages. One of the most effective ways

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to improve efficiency is to increase level of innovation in all areas of such activity: implementation of modern machinery and technology, improvement of organizational forms and salary distribution, enhancement of quality of goods (services), more rational use of material, energetic, financial and other resources. It is necessary to provide incentives for workers for active work towards a search and implementation internal reserves for its improvement in production in order to achieve the desired effects of innovation activity. Motivation should be of diverse nature: both material and spiritual.

## 2. Development of motivation system

Improvement the forms of organization and wages is one of the ways to increase production efficiency. By this time the basic principle, which was based on provisions on the regulations of payment, was an increased interest to the volume of production with fewer workers. In the current circumstances, when, on the one hand, the increase of production is mostly impossible because of the orders restrictions, and on the other hand reducing the number of employees contradicts the labour safety rules, such principle of work organization becomes ineffective. Under current conditions, the effect can be achieved when there is a direct interest in the company not only to reduce labour costs, but above all, the costs of materials and energy.

Analysis of existing practices of domestic enterprises has shown that employees who receive a fixed salary as payment – do only the formal part of their duties and are not motivated to develop and improve the quality and efficiency of their work and to increase the quantity of operations. At the same time growth, improvement of products the quality and services, increasing of efficiency, and all that is expected of its employees according to the development strategy of modern enterprise. It is logical in this case to develop a system of motivation in which it is possible to link wages to employee's results.

The system of motivation is one of the most important issues. So development and implementation of such a system in practice is a very complex project. It is also necessary to pinpoint key terms. Synthesizing different interpretation of the "motivation" definition and clarifying its content on the basis of innovative changes in the modern economy allowed formulating the following definition of motivation of innovation activity as a set of needs and motivations that encourages staff and management to active creative activity in order to create innovative products, services and forms of their usage of production new technologies in order to increase the quality and competitiveness of the labour force work.

Based on the analysis and taking into account the definition given in the context of this study, can reach the following conclusions:

Motivation is a process or set of related administrative decisions necessary to form the motives and actions of employees.

Stimulation is meaningful impact on the individual, creating an environment that encourages working in the given way.

Stimulation of labour or management of the enterprise motivation is tactic problem of increasing labour efficiency, which encourages employees to work to meet their needs.

Motivation system of company means installation at the plant workers compensation procedures for effective work and the types and amount of remuneration depending on the personal contribution of each employee in achieving the objectives of the company, its skills and competencies.

Financial incentive is a motivational HR management with additional (over the salary) payments for the work specific performance achievements within the certain period of time (month, quarter, and year).

Intangible incentive is motivation of HR management by increasing staff loyalty to the company by improving the quality of work conditions and the formation of corporate culture.

Staff assessment is the process of determination the effectiveness of the staff to achieve the objectives set by the company by specific indicators that provides information for making future management decisions in the area of motivation.

Assignment of any system of motivation is to: encourage employees to work for the result; implement the growth strategy of the company; enable more effective employees earn more; increase production efficiency through performance of staff; a clear objective system for evaluating each employee (Kibanov, 2013).

To increase the level of innovation the creation of two innovation management centers, economic-technical center and social center, is proposed. In the normal course of business, these centers should interact and supplement each other. Economic-Technical Center analyzes the weaknesses of the company and provides a proposal for the problems solution, taking into account their own and those companies' experiences, including foreign ones. As well, the development of new types of goods (services), or increase in the volume of goods (services) production, which are in demand in domestic and foreign markets. At the same time a social center, through the organization of a "social boxes: and poll workers, reveals their vision of existing weaknesses and collects offers concerns about their elimination.

Current organizational needs transformation to the department structure, which tends to encourage innovations development. For the more active involvement of the workers before the formation of the enterprise innovation development plan and its implementation into practice is possible to organize. With the creation of "best practices" schools it is proposed to involve workers to the formation of the enterprise innovation development plan and its implementation into practice.

Modern organizational structures need to be developed in the direction of creating units that are directly involved in the implementation of innovative measures in the

practical activities of the company. There was a proposition of creation project groups to work out the conditions of economic calculation. For their effective work the following items should be:

1. Ability to separate accounting for produced products (services) of separate project teams.
2. Being able to separate accounting for used materials, energy, services related to the project teams worked out the products (services provided) by particular project team. To do this, it is needed to assess the availability of real accounting system (weight tools and gadgets excluding energy costs, accounting documents of transfer and acceptance of services provided by the adjacent portions).
3. Introduction of a part of a separate off-balance sheet accounting calculation of income and expenses of project teams that work under the conditions of economic calculation.

Formation of income and expenditure of project teams, which work under the self-supporting conditions, is calculated on the basis of the calculation and includes:

- cost of materials costs per unit of product ( $P_m$ );
- cost of energy costs per unit of production ( $R_e$ );
- costs of related departments for services provided for economic calculation by the design team to develop products ( $P_n$ );
- cost of repairs and maintenance of equipment ( $R_{pr}$ );
- labour costs ( $S_n$ ). Expenses are taken without regard to social contribution.

Thus the sum of net income earned by the project team, which works on the terms of economic calculation, will be equal to:

$$Q_i = D - P_m - R_e - P_n - R_{pr} \quad (1)$$

where  $Q_i$  – the amount of net income received by a project team from the production (services);

$D$  – total income.

If there is the fault of the team, which works on economic calculation conditions, the company has suffered losses (fines, penalties, etc.), the amount of net income should be correlated to the amount of such losses. In this case, the sum of net income will be equal to:

$$Q_i = D - P_m - R_e - P_n - R_{pr} - Z, \quad (2)$$

where  $Z$  – the amount of losses caused by the fault of the enterprise project team, which works under the conditions of economic calculation.

The main items that should be considered during the assessment of the project groups proposed innovation effectiveness should be:

Additional volumes of produced products (services). Revenues and expenses are displayed on a separate off-balance account in the financial report. Generated income is based on the volume of specific types of products (services), confirmed by the production planning department (or a separate department of the enterprise authorized by this control). If some type of the product (service), or an additional amount of the products (services) are not taken into account in the production plan, which has been proven to note “brigade” (the

project team) on the passing month, and has no marketing opportunities to be sold, it is not counted in the amount income determination. Thus, the company stimulates the activity of the project team to the production of goods (services) within the planned scope and range in order to prevent the resumption of working capital;

Costs of materials, energy, accounted for on the basis of accounting data gadgets. The costs can be displayed on the reception of transmission overhead. For example, wood materials which are used as a lining (or packing) materials during the metal loading on the vessel;

The amount of products (services) is not accepted as income because their quality was not approved by technical control department (or other structural subdivision of the enterprise authorized by the quality control of production (services)). Defective products (services) could be considered as a part of income in case of corrections if it is not the ultimate lack. The correction should be provided by the brigade (the project team) at no extra charges.

Project teams that work under the conditions of economic calculation must conclude a relationship agreement with related entities with respect to the order of relationship (supply of materials, energy, services, etc.), the order of mutual payments and responsibility for the failure (improper fulfilment) provisions of the agreements.

If the company operates a general provision on the procedure of interrelations of structural units in the process of production (services) and relatively economically self supporting responsibility for failure (improper fulfilment) of existing provisions, such an order is the basis for the conclusion of contracts. If such an order does not exist in the enterprise, the draft agreement is being developed separately, with links to the process authorized control units in the enterprise. In any case, a relationship agreement between economically self supporting projects team and other departments is approved by the company management.

If the sum of the net income determined in accordance with the formula for the calculation 2 exceeds the amount planned for the reporting period, wages, then the excess is proposed to distribute the articles for which are given in Table 1:

Table 1

**Distribution item profits from innovation**

Item	Share, %
1. On the increase of sum of labour payment fund	40
2. On innovative development of project group (purchase of technique, on financing of the experienced works and others like that)	20
3. In the fund of innovative activity stimulation on an enterprise	10
4. In the reserved fund of project group	30
On the whole	100

This calculation system has to orient employees to innovation in business. It should ensure the

implementation of the growth strategy and pay only for what really makes a contribution to the achievement of strategic objectives, without unduly increasing labour costs – in fact, as a rule, the strategy provides for more reducing unit costs.

### 3. Principle of the formation of motivation on the basis of KPI

The results of the analysis of the scientific views of domestic and foreign experts provide an opportunity to highlight the main principles of the motivation system:

Objectivity – the size of employee compensation should be based on an objective assessment of the results of his labour;

Predictability – the employees must know what reward they will receive depending on the results of their labour;

Value – should be adequately rewarded labour contribution of each employee in the performance of the entire team, his experience and skill level;

Timeliness – the reward should be followed for achieving results as quickly as possible (in the current period);

Importance – the reward should be significant for the employee;

Fairness and transparency – determination of the remuneration rules should be clear to everyone in the organization and to be fair, including from his point of view (Grineva, 2007).

Compliance with these principles in motivating activities of project teams that work under the conditions of economic calculation will enhance innovation processes in the enterprise.

All the changes in the system of incentives – newly introduced internal regulations and ones aimed at increasing the value of each employee at his workplace. All the mechanisms and tools should provide effective motivation of employees; purposefully influence the quality and productivity. Basing on the experience of enterprises it can be argued that one of the effective methods to stimulate the motivation of staff have a system based on the use of KPI (Key performance indicators). This incentive scheme can be applied to any company, provided its competent development and maximizes compliance within all the principles of the above construction of the motivational system.

The motivation of the project teams can be in the following forms:

1. The system consists of motivation ahead of time specified bonuses for the implemented project, which adjusted for the result of the main KPI stage or the whole project.
2. Defined fixed bonuses as a percentage of the project and the costs for implemented project. The bonuses are paid for the results of the KPI stage or the whole project and distributed within the group (project manager and the working group).
3. Motivation based on in fixed increments to the basic salary for participation in the project.

4. It is used mainly in development, which sets the value of each operation that is performed by an employee within a project. The convenience of this embodiment is that if you change the project participants, the distribution and the premium payment does not cause difficulties. This option is suitable if the company carries out the same type of projects with clear detail and the ability to work out undisputed distribution of their cost, that is, this method is an analogue of "piece-work" principle.

Performance indicators of innovation that can be used at the enterprise for the evaluation of personnel in this field and the implementation of the incentive system are provided in Table 2:

Table 2

#### Key performance indicators for the levels and groups

Level of index	Group of staff	Index
Efficiency of enterprise	Administrative and managerial staff	General production volume, sale volume, net income, profitability
Efficiency of basic productive processes	Productive areas Laboratories Technical subdivisions Commercial subdivision	Production volume, sale volume, quality of products, volume of charges, terms of production
Efficiency of the basic ancillary proceeding	Book-keeping Service of personnel Security service Service of repair	Amount of the realized offerings that is related to the innovative activity, salary, studies of employees

Key performance indicators and methods of calculation are specified for certain categories of workers.

In today's practice, the domestic enterprises is often used the direct method of wages formation, which takes into account the total amount of time worked by workers in passing month and the average tariff (rate) per hour according to the approved labour curriculum. Such distribution of net income between workers is not effective because it does not take into account the specific contribution of the individual worker in the overall results of the work unit. It is therefore proposed to allocate the net income between workers based on the coefficient of innovation contribution (CIC) each worker in overall performance. These factors could be:

The work of related professions. The employee performs work rigger, but has experience and produces electric welder his work in the absence of electric welder;

The provision of proposals for innovative methods of work organization, the introduction of which provided opportunities to improve the efficiency of the whole.

Among reducing factors can be:

- low-quality execution of work;
- failure to perform activities;
- action working that encourage the creation of unhealthy conflict with the accompanying negative effects, and more.

In terms of, for whom it is difficult to transport calculations (for example, the introduction of self-realization and proposals for innovation) has a value:

1 – Proposals for the staff optimization have been received;

1.05 – received proposals for optimization, which would have significantly increased the performance and convenience of improved information processing, but decided not to implement them;

1.1 – received proposals for optimization, implementation of which slightly increased performance and made easier the process of the information;

1.3 – received proposals for optimization, implementation of which has significantly increased productivity.

Accounting for this indicator should encourage employees to optimize business processes in the enterprise.

Thus, the proposed innovation incentives will be targeted affiliation with respect to each individual indicator, as well as the individual motivation of each employee, which generally lead to the certainty of labour functions and improvement of innovation.

#### 4. Findings

The motivation system that is based on KPI enables management of the enterprise: to provide control over the current and long-term performance of the organization; to evaluate the personal performance of each employee,

departments and enterprises as a whole; encourage staff to achieve the necessary results; to manage the budget for salary fund and reduce the time for its payment; provide collective and individual responsibility for business results. Implementation of KPI system will help to optimize the activity achieving "high" purposes, would increase the portfolio by accelerating their implementation and quality improvement, as well as significantly increase in the level of motivation, accountability and efficiency of your employees.

#### 5. Conclusions

There is determined the theoretical and methodological background of development of the system of motivation of personnel innovative activity. In order to foster innovation in the enterprise there is proposed the improvement of the organizational structure at the expense of the center of innovation management, which includes the economic and social maintenance unit. Establishment of the project groups under the conditions of economic calculations is proposed. There are developed indexes, which conducted the formation of income and costs of their activities. There was a proposition of income distribution items aimed at stimulating innovation. There is focusing to the need to development and implementation of the economic activity motivation systems practice using KPI. The forms of project teams' motivation are recommended. Performance indicators of innovation that can be used in the enterprise for the evaluation of personnel in this area are formulated.

#### References

- Grineva, V.M, & Gruzina, I.A. (2007). Problems motivation of personnel. Kharkiv: INZEK: monograph, 184 p.
- Kibanov, A.J., & Durackova, I.B. (2011). The Management staff of the organization: strategy, marketing, internationalization. Moscow: INFRA-M, 301 p.
- Klochkov, A. K. (2010). KPI and motivation. The complete collection of practical tools. Moscow: Eksmo, 103 p.

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#### РАЗРАБОТКА МЕТОДОВ ОЦЕНКИ ЭФФЕКТИВНОСТИ МОТИВАЦИОННОГО МЕХАНИЗМА ИННОВАЦИОННОЙ ДЕЯТЕЛЬНОСТИ ПЕРСОНАЛА

**Аннотация.** *Целью работы* является разработка методов оценки инновационной деятельности персонала, что обеспечит мотивацию работников к активной деятельности в направлении поиска и внедрения в производство внутренних резервов по ее повышению. *Методика.* В ходе исследования использовались методы логического анализа и системный – для обоснования теоретических и практических рекомендаций по разработке концептуальных основ формирования мотивационного механизма управления персоналом; экономико-математического моделирования и прогнозирования – для оценки влияния факторов мотивации на уровень трудовой активности персонала. *Результаты.* Уточнено понятие «мотивация» с учетом инновационных изменений современной экономики. Для активизации инновационной деятельности на предприятии предлагается усовершенствование организационной структуры за счет центра управления инновационной деятельностью, который включает в себя экономико-техническое и социальное подразделения. Предложено создание проектных групп на условиях хозяйственных расчетов, что способствует более активному привлечению работников к формированию планов инновационного развития. Основными статьями, которые определяют их результативность являются: рост объемов произведенной продукции, снижение затрат материалов и энергоносителей, своевременность и востребованность на рынке продукции, повышение качества выполненных работ. Прибыль, полученная проектными группами, рекомендовано распределять на: увеличение фонда оплаты труда, инновационное развитие, фонд

стимулирования и мотивации. Исследование деятельности предприятий показало, что одним из эффективных методов стимулирования персонала является система мотивации, основанная на применении KPI. Формами мотивации проектных групп являются: бонусы за реализованный проект, которые корректируются на результат выполнения основных KPI этапа или проекта в целом; фиксированные бонусы в виде процентов от прибыли; бонусы по этапам реализации проекта. *Практическое значение.* Ключевые показатели эффективности инновационной деятельности распределены на уровни и группы персонала, ответственные за их выполнение, что дает возможность обеспечить контроль за текущими и долгосрочными показателями деятельности; оценить личную эффективность каждого сотрудника, ориентировать персонал на достижение необходимых результатов; обеспечить коллективную и индивидуальную ответственность за результаты деятельности предприятия. *Значение/оригинальность.* Несмотря на наличие существующих исследований в области мотивационного механизма на сегодняшний день существует потребность в его усовершенствовании за счет более детальной проработки показателей оценки эффективности инновационной деятельности персонала в зависимости от стадии ЖЦО. Предложенная система мотивации будет характеризоваться адресной принадлежностью по отношению к каждому отдельному сотруднику, ясностью для исполнителей, простотой измерения, взаимосвязанностью показателей, а также индивидуальной мотивацией каждого сотрудника, что в целом приведет к определенности в трудовых функциях и улучшению качества работы персонала управляющей организации.