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METHODICAL BASES OF IMPROVEMENT OF BONUS SYSTEMS OF IT-SPECIALISTS IN THE INDUSTRY

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Abstract

The article covers the bonus system for employees of the IT division of an industrial enterprise, based on the results of labor in the form of completed incidents in the information system “1C: ITIL. Management of information technology enterprise. Standard”. An incident is an individual task for an employee aimed at solving a problem in a quality and timely manner. All tasks in 1C: ITIL are initiated as incidents assigned to specific employees. Evaluation of the outcome of the execution of the incident in terms is determined by the accuracy and timeliness of its closure. Evaluation of the result in terms of the quality of the labor – in the absence of complaints from users, management of the IT department, as well as repeated incidents due to the contractor’s fault. To quantify the outcome (incidents), direct and inverse performance indicators (KPIs) are used. Direct indicators are aimed at ensuring the implementation of incidents executed by each employee and the unit as a whole. Reverse indicators are corrective for the achieved result of each employee. As a direct indicator used by the development of the incident officer. As inverse (corrective) – indicators of the quality of labor, labor and executive discipline. As a result, the program generates a report on the distribution of bonuses for employee performance indicators, taking into account their labor contribution to the results of the unit.

Keywords: Information technology economics, key performance indicators, motivation.

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1. Introduction

The influence of labor informatization and computer technologies on management processes has a double effect: first, informatization allows solving the problems of planning, preparation, organization of production, etc.; secondly, the introduction of information technologies in the sphere of management directly affects the content of the work of managers and specialists. As a result, the use of information technology has led to the emergence of three new groups of workers: specialists engaged in the development and maintenance of software (programmers, testers, etc.), specialists in the field of repair and technical support of software (server and user equipment) and workers involved in the preparation of information systems and the maintenance of their configuration (system administrators, system technology, etc.).

This ultimately determined the modern development paradigm: management informatization processes inevitably led to the reorganization of the entire information processing system. As a result, the labor organization of some managers and specialists is becoming increasingly rigid and standardized, which, in turn, is accompanied by more advanced labor structuring. At the same time, the content of labor of workers either changes completely or leads to an increase in productivity by switching to full automation of their processes. Already now, such areas of activity as accounting, salary organization, personnel management are almost completely automated.

One of these areas of development is the automation of a company's performance measurement systems based on key indicators. This direction, both in theory and in practice, is currently under development: all new software products are created, new concepts, new points of view having a debatable character are emerging. Nevertheless, the question of the effective motivation of workers in various fields of activity, including in the field of information technology, remains unresolved and little studied, both from a theoretical and methodological point of view. Existing software products based on various information systems also do not allow to fully organize an effective motivational system of programmers, testers and system administrators, since they are based on calculating the percentage of tasks completed, and not on the basis of determining the employee's labor contribution to the final results of the IT division of the company.

2. Problem Statement

The problem of creating automated systems for measuring the effectiveness of managerial labor is currently a strategic task for the development of modern industrial enterprises. This is confirmed by the fact that over the past quarter of a century there has been an undoubted growth in popularity and an ever wider use of such systems in various sectors of the national economy. Many organizations, both in Russia and abroad, have adopted a system for measuring performance, guided by the tasks of ensuring control, first of all, of those areas of activity that cannot be controlled using traditional accounting methods. The opportunity for many enterprises to have such a management tool allows them to more specifically and objectively implement specific activities in a variety of ways: from organizing lean production to creating an effective system of staff motivation.

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The transition of enterprises to automated performance measurement systems was largely due to the fact that many traditional performance measurement systems based on financial indicators were in practice unable to identify and take into account the whole complex of numerous factors that are especially important for the optimal functioning of a company (Fisher, 1992). In turn, this required the creation of new conceptual models of performance management. Among these are the results of work on the creation of PMS models (Broadbent & Laughlin, 2009), models and methods for substantiating indicators related to business metrics, including cases where the specifications of indicators are incomplete (BIM concept) (Horkoff et al.,2014), models of an integrated enterprise management system that combines the results of sustainable development with an internal system of key performance indicators (Cyplik, Adamczak, Malinowska, & Piontek, 2018).

Among the methods that have found the widest application in practice in the implementation of performance measurement systems, such as a balanced scorecard (Kaplan & Norton, 1992), efficiency prism, efficiency measurement matrix (Keegan, Eiler, & Jones, 1989) and the SMART pyramid (Lynch & Cross, 1991). The purpose of these methods is to assist the organization in determining the set of financial and non-financial indicators reflecting an adequate assessment of its effectiveness. Within the framework of this direction, a number of researchers proposed various criteria for designing systems for measuring indicators (Morris, 2002; El Mola & Parsaei, 2010). All these achievements allowed, in the end, to create a modern method of developing key indicators in various sectors of the economy. Studies have emerged related to the development of incentive models for staff based on the unity of the balanced scorecard, competitive strategy and firm performance (Olson & Slater, 2002; Carlucci, 2010), as well as conducting intrafirm monitoring of the company's business processes to assess the performance of performance indicators (Pérez-Álvarez, Maté, Gómez-López, & Trujillo, 2018; Smith & Van Der Heijden, 2017). A number of theoretical and methodological aspects of building a system of key performance indicators were also considered by the authors in relevant publications (Davydovskii & Velichko, 2016; Davydovskii & Velichko, 2017).

Practically all studies, one way or another connected with the creation of automated performance measurement systems based on the key performance indicators of a company's staff, agree on the need to create software that allows determining the result of each employee’s work as accurately and objectively as possible. First, the widespread use of information technologies in the management process makes it possible to significantly overcome the difficulties that arise and make the process of objectifying the results of labor easier because of its structuring, right down to specific labor operations and labor actions. Secondly, a number of information systems now allows you to establish a clear algorithm for specifying the results for each employee. To do this, it is necessary to combine various databases into a single accounting system for labor input with the establishment of compliance of labor expended and its payment. Thirdly, it is necessary that the results reflected in the automated accounting system are identified with a specific employee for a number of established indicators. The unity of these three components makes it possible to create an automated model for measuring performance according to key indicators of the result of labor in various sectors of the economy, not excluding its areas such as the field of information technology and programming of business processes of a company.

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3. Research Questions

3.1. How does the system of automated accounting of the labor results of employees of the IT – unit function?

3.2. What is the method of calculating the labor contribution of the IT staff?

3.3. What is the purpose of "direct" and "reverse" indicators in the system of key performance indicators of employees of the IT – unit?

4. Purpose of the Study

The purpose of this work is to consider the methodological foundations of the organization of the bonus system of IT staff on the basis of an automated model for accounting and evaluating labor input in terms of key performance indicators.

5. Research Methods

In the work, empirical research methods were used (observation, comparison); theoretical research methods (abstraction, analysis and synthesis, idealization, induction and deduction); methods of classification and generalization of information and analytical material, point-factor method for calculating remuneration for the achieved results of labor.

6. Findings

The basis of the motivational system of employees of IT departments is the acquisition of objective monitoring data on the individual results of the implementation of specific tasks of varying degrees of complexity for a certain reporting period of activity. One of the most common software products that support the activities of industrial enterprises is the 1C information system, which allows using data from the ITIL electronic library (IT Infrastructure Library). This library describes the best practices used in the practice of organizing the work of departments or companies engaged in the provision of information technology services. The seven existing volumes of the library describe the complete set of processes necessary to ensure high quality IT services. At the same time, the structure of the library fully meets current international quality standards and is based on a process approach to the description of fields of activity.

Among the basic processes that provide user support and the provision of IT services, such as problem management, configuration management, change management, finance, etc. It is necessary to highlight the incident management process, which is the basis for building an effective system of motivation for IT workers. For the functioning of this process in the IT - divisions there is a separate universal Service Desk system “1C: ITIL. Management of information technology enterprise. Standard". The system was developed on the basis of and taking into account the experience of the ITIL library, which makes it functional and flexible for the work of IT specialists.

“1C: ITIL. Management of information technology enterprise. Standard "includes the following modules:

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- incident management
- asset Management,
- management of regulatory information,
- service level management.

To organize the accounting of the results of the labor of employees of IT departments, you must use the incident management module. An incident is an individual task for an employee aimed at solving a problem in a quality and timely manner. The employee of the IT department creating the incident is obliged to bring it into “1C: ITIL. Management of information technology enterprise. Standard". To determine the content of a particular incident (individual task), all incidents are classified into the following groups:

- development of technical and software;
- work with information databases of the enterprise;
- consulting services for users in terms of providing technical support and software support;
- identification and solving of technical problems during the operation of office equipment;
- servicing of office equipment;
- software update;
- installation and configuration of office equipment;
- purchase of new office equipment and new software;
- measures to ensure the economy of material consumption.

Thus, the result of the labor of employees of IT departments comes in the form of closed (solved) incidents. The content of the incident is determined by the formulation of a specific task assigned to a particular employee. The deadlines for closure of the incident are set by its performer, and the categories of complexity - by the heads of departments. In addition, each incident can be created by IT staff in the following ways:

- by the call of the user by the staff of IT departments;
- heads of IT departments;
- automated unloading of a task (memos, documents for approval, etc.) from 1C: Document flow.

The initiators of the incident may be:

- personal computer users;
- heads of IT departments;
- engineers and specialists of IT-divisions.

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When creating an incident, the following fields in an electronic form called "Incident" are mandatory:

- title (short reason);
- initiator;
- performer;
- the “service” field, the category of the intended work;
- period of execution;
- a brief description of the incident (if necessary).

The employee responsible for incident solving after the execution of work is required to start the procedure for closing the incident. The initiator of the incident is obliged to confirm the fact of its execution, and the head of the IT department to completely close the incident. If during the execution of an incident it becomes necessary to involve other specialists in the work, a subordinate incident is created. It indicates the performer and that part of the work that is assigned to him. The incident is closed only after all the work has been completed, the elapsed time for its execution is indicated and, if necessary, information is entered on how to solve the problem in the knowledge base.

Analysis of executed incidents shows the varying degree of complexity of their execution, both in terms of professional skills and abilities, and in terms of time spent. There is a need to classify the complexity of the work, directly affecting the efficiency of employees, taking into account the influence of this factor on the final results. In addition to complexity, it is also necessary to assess the performance of employees in terms of the accuracy and timeliness of closing incidents, in the absence of complaints from users, management, and the presence or absence of repeated incidents due to the contractor.

Employee incidents are characterized by varying degrees of difficulty:

- simple;
- ordinary;
- complex;
- increased complexity.

The degree of complexity of work performed is assigned to each incident by the head of the department by an expert method and is reflected in “1C: ITIL” when it is created and until it is closed.

Thus, the level of the achieved result of an employee depends on:

- the number of closed incidents;
- the complexity of closed incidents;
- position held;
- skill level and professional skills;
- accuracy and timeliness of incidents;
- no cases of violations of labor and executive discipline.

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To quantify the result, direct and inverse performance indicators (KPI) are used. Direct indicators are aimed at providing material incentives for employees who perform specified incidents according to their number and complexity. Inverse indicators are corrective for the achieved results of each employee and depend on the quality of the tasks performed, accuracy and timeliness, attitude to work, discipline. As a direct indicator, use is made of the incident officer's output. As the inverse (correcting the achieved result) - indicators of the quality of labor, labor discipline, performing discipline.

The level of fulfillment (non-fulfillment) of the employee's output index (labor contribution) is determined by the sum of his points. To calculate the labor contribution, the following algorithm is used:

- according to the results of the reporting month, in "1C: ITIL", a report on employees regarding incidents closed by them with an indication of time spent and categories of the complexity of execution is formed. Closed incidents appear in the form of a list, the time spent by employees on the execution of incidents is summarized, forming a common monthly statistic of the results.
- to calculate the employee output indicator in points, the system of coefficients of the level of complexity of the incidents performed is used, presented in Table 01.
- employee score (B) is calculated using the following formula:

$$B = \sum Rm * Qn$$

where:

Rm - the value of the complexity of the incident for the M-th position;

Qn - the number of closed incidents of the N-th category of complexity.

- for all other employees, the obtained scores are summed up and the overall result of the unit's activity is obtained, expressed in points (Bn);
- then the amount of the labor contribution of each employee to the final results of the unit's work is determined. For this, the scores of the employee correlate with the total score of the unit:

$$T_n = \frac{B}{B_n}$$

where: T_n – the value of the labor contribution of the N-th employee.

Each employee in the unit has a labor contribution to the final results of the work. The sum of all indicators of the labor contribution of employees is equal to 1.

In addition to direct performance indicators, the bonus system includes employee evaluation on the basis of reverse indicators, which is expressed in determining the size of the employee's bonus on the results of the activity for the reporting period. The following indicators are established as inverse:

- The indicator "Quality of Labor" is determined by the attitude of the employee to his work activity, as well as by the absence of errors in the performance of the tasks and motivated claims from users.

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Table 01. The value of the complexity factor for specialists (R)

Complexity categories	Work complexity categories	Leading engineer	Head system administrator	System administrator	Engineer 1st cat.	Engineer 2nd cat.	Engineer 3rd cat.	Engineer without category	Specialist	Technician
I	Simple	0.3	0.3	0.4	0.4	0.5	0.6	0.4	0.4	1.0
II	Ordinary	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.0	1.0
III	Complex	1.0	1.0	1.0	1.0	1.2	1.2	1.2	1.4	1.4
IV	Increased complexity	1.1	1.1	1.1	1.2	1.3	1.4	1.6	0.0	0.0

- The indicator “Performing discipline” is aimed at accurate and timely implementation of the tasks.
- The “Labor Discipline” indicator is aimed at encouraging workers who do not have claims of a disciplinary nature that exactly comply with the requirements of the Internal Labor Regulations.

The redistribution of the award can be carried out according to the indicators “Performing discipline” and “Quality of work”, but within the control figures of the bonus fund. The award may be accrued at a lower rate or not fully accrued if there are complaints against a specific employee for the implementation of these indicators. The redistribution of premiums on inverse indicators may occur due to non-fulfillment of employee assessment criteria (Table 02).

Table 02. The system of inverse KPI indicators of labor contribution assessment

Inverse (correction indicator)	Correction criteria	Employee bonus amount according to the indicator
Quality of work	The presence of repeated incidents due to the executive employee The presence of invalid errors in the process of executable incidents The ability of an employee to replace another employee of the same or lower qualifications	0 – 15%
Labor discipline	Systematic tardiness and early departure from the workplace without good reason Absenteeism, being at work drunk	0 – 5 %
Performing discipline	No cases of refusal to execute orders and orders of the head Failure of the employee to perform the assigned incidents on time for subjective reasons	0 – 10 %

Thus, the bonus system proposed by the authors ensures the implementation of the basic principle of material incentives - “payment according to work”. Employees with the skills to perform complex incidents should make a more significant contribution to the final results of the unit. On the contrary,

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employees who commit significant errors in the execution of incidents, leading to numerous errors and complaints from users, significantly reduce their labor contribution to the results of the unit.

7. Conclusion

In this article, the authors obtained the results and made the following conclusions:

7.1. As a way of organizing automated accounting of the labor results of IT department employees, the authors proposed to use the incident management module existing within the universal Service Desk of the “1C: ITIL. Management of information technology enterprise. Standard".

7.2. It is proposed to use the statistical data of the incident report generated by the results of the reporting period to determine the final result of each employee. To this end, the authors proposed to group all possible incidents by categories of the complexity of work performed.

7.3. In order to evaluate the labor contribution of each employee, the authors of the article proposed to establish four categories of complexity of the incidents performed: simple, ordinary, complex, and increased complexity. The assignment of incidents to a particular group of complexity was obtained by the authors in an expert way. As a result, incidents occurring in “1C: ITIL” were immediately assigned to the category of the complexity of execution.

7.4. In order to systematize the incident management process, the authors proposed an appropriate procedure for recording the implementation of an incident in the system, with the possibility of transferring the incident between employees. As a result, any incident can be counted as a result only if it is completely closed by the head of the unit.

7.5. The result of an employee’s work is the sum of closed incidents of various categories of complexity. To calculate the magnitude of the result, the authors proposed to use points, and as a method of calculation - the scoring method. Accordingly, the final result of the employee is obtained by summing up the points obtained for each group of incident complexity, corrected by the correction factor.

7.6. The value of the correction factor for different groups of complexity and for different positions within the IT-division will be different. The authors have proposed a corresponding table of correction factors for the complexity group of the incidents being executed.

7.7. The calculated value of the result obtained in this way is an indicator of the employee’s output, which the authors propose to use in the evaluation system as a key indicator of labor efficiency. The impact of this indicator on the final result is directly proportional to the number and complexity of closed incidents, therefore, it is proposed to attribute it to the group of “direct” (gross) indicators.

7.8. As the "reverse" indicators, the authors propose to use such indicators as "Quality of Labor", "Performing Discipline", "Labor Discipline". For their use, appropriate criteria for evaluation and scales of adjustments of the "gross" result for each employee have been developed. The level of fulfillment (non-fulfillment) on the sum of all types of indicators determines the amount of labor contribution and the size of the monthly bonus of each employee.

7.9. The created calculation program can be considered as an additional module of the universal Service Desk system “1C: ITIL. Management of information technology enterprise. Standard".

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