

# Talent Management: Assessment And Prediction Of The Efficiency Of Work Of The Personnel

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## Abstract

Today, talent management is one of the promising areas of work with personnel. Popular Talent Management Systems, which are used both as independent solutions and as subsystems of Enterprise Performance Management. The performance management system used as a basic tool, for example, a balanced scorecard, makes it possible to form key performance indicators for employees based on the strategic goals of the company. Thanks to information systems, HR-managers track the achievement of relevant KPIs, manage the training of employees, conduct their assessment, including professional skills and personal qualities. However, the functionality of the TMS-class information systems on the market does not yet cover all aspects of talent management from a practical point of view.

The article presents the functionality of typical Talent Management Systems. The types and tools of talent assessment as important components of talent management are considered. The necessity and practical importance of predicting the effectiveness of key employees of the enterprise made and justified the choice of the most appropriate methods and models of forecasting. The conclusion is made about the possibility and direction of further development of Talent Management Systems.

The considered aspects of talent management can be used as a basis for the development of functional requirements for the improvement of TMS software.

**Keywords:** talents, talent management, balanced scorecard (BSC), key performance indicator (KPI), personnel evaluation, forecasting, the efficiency of work of the personnel, TMS, CPM, (BPM, EPM) software

## INTRODUCTION

In the context of globalization and increasing competition in the work of enterprises, balanced planning of activities and a thrifty attitude to resources are becoming increasingly important. Achieving strategic advantages with limited funds, including financial ones, is a difficult and important task dictated by modern economic conditions. At the same time, in companies aimed at stable functioning and dynamic growth, strategic management is of particular importance. One of the most successfully proven strategic management tools is the Balanced Scorecard (BSC), developed by R. Kaplan and D. Norton [1]. It should be noted that today this tool is used as the basis for a whole class of information systems that automate the management of the efficiency of organizations (CPM — Corporate Performance

Management; BPM — Business Performance Management; EPM — Enterprise Performance) [2,3]. Information systems for managing the effectiveness of organizations provide full support for the entire life cycle of management, automating all its functions at the strategic, tactical and operational levels: the goals set at the highest management level are detailed down to specific values of indicators that must be achieved by employees of enterprises in their daily work. Information systems help to track the achievement of the set goals, detecting deviations in a timely manner, which allows the company's management to make informed management decisions in a timely manner. Thanks to the emergence of BPM systems, management practice for the first time received the most complete support from automated information systems. In the Russian market, solutions are known from companies such as «Intalev», «IC», Intersoft Lab, Oracle, SAP, IBM and Adaptive Insights [4].

Dynamically developing, in the aspect of personnel management, such systems allow automating and managing talent [5-7] - key employees of the enterprise who are strategically important in its work [6-8]. It is talented employees who are able to generate and implement innovative ideas, thanks to which the company can acquire competitive advantages.

## Information systems supporting talent management

Despite the difference in approaches to the definition of "talent management" [9], today most often this term is understood as a set of personnel management tools that allow you to attract, effectively use and retain personnel capable of making a significant contribution to the development of the organization [10].

Typically, talent management systems include [11]:

- determining the needs of the organization for talented employees in accordance with the goals and objectives of the enterprise;
- planning of work with key employees;
- attracting talent, identifying and assessing trends in the labor market;
- selection, assessment of internal and external talents, succession management;
- training and development of talents;
- motivation, retention and promotion of talented employees;
- monitoring and evaluating the effectiveness of the talent management system.

We emphasize that the goals and objectives that are set for the personnel, and, accordingly, the performance indicators, according to which employees are evaluated, are based on the strategic goals of the company. Therefore, for the successful implementation of a talent management system in a company, a performance management system must already be implemented and used [12], for example, BSC.

Considering the aspects of talent management automation, we note that there is a class of information systems for talent management (Talent Management System, TMS) on the market. TMS are designed to achieve long-term goals of companies through human capital [13] and provide automated tools for solving problems in four key areas: recruitment, performance management, learning and development, and compensation generation [13]. The world leaders in the TMS market are systems such as SAP Success Factors Talent Solution, Oraclend and Cornerstone OnDemand [14,15]. Talent Management Systems (TMS) are primarily for the HR department to hire and save resources. In addition, systems of this class allow HR managers to track all important information in the life cycle of each employee and to carry out management, taking into account the individual characteristics of key employees. Such systems can be independent (autonomous) solutions, but the most promising is their use as modules (subsystems) that support the process under consideration as part of business performance management information systems [5]. And thanks to the use of a balanced scorecard as a tool for managing the performance of an organization, the greatest positive effect is achieved: in the blocks of management of key business processes, work with clients, financial and personnel management, interrelated goals are set, which are further detailed to certain indicators that must be achieved by the company's employees.

As for the functionality, usually the modules of TMS systems include:

- personnel performance management;
- managing the achievement of goals;
- compensation management;
- talent acquisition / recruiting;
- learning management;
- career management;
- planning for success [13].

At the same time, the modules that automate management must support all the functions of this process, namely: planning, accounting, control, analysis, regulation. For example, personnel performance management involves planning (setting goals, objectives, developing estimated indicators), accounting (assessing, registering achieved indicators), control (correlating achieved indicators with planned ones), analysis (identifying the reasons for the discrepancy between the achieved values and the planned ones, comparing with the values for past periods, etc.), regulation (development of corrective measures).

## Personnel assessment as one of the key tasks of talent management

Among the considered tasks included in the talent management system and automated information systems of the TMS class, let us dwell in more detail on the assessment of talents, as one of the key. It is the personnel assessment that makes it possible to identify promising employees, assess their current capabilities and potential, as well as the fulfillment of the assigned tasks. Personnel assessment seems to be one of the most important, since it is it that provides information that can be used when attracting new employees, planning the development of those already employed in the company, succession and managing

career growth and personnel risks [16].

Experts note [17] that today there is confusion with the use of terms denoting the assessment of talents. In the specialized literature, these aspects are covered in the framework of a more general concept - personnel assessment. The purpose of personnel assessment is to ensure the effective use of the professional and personal potential of employees through the timely identification of their talents and providing recommendations for their development [18].

HR objectives in talent management are:

development of a unified ideology for assessing and training talented employees, based on a system of corporately significant competencies;

formation of a multi-level assessment system for various categories of employees;

use of personnel assessment as a mechanism for regulating the level of remuneration [19].

Among the types of assessment are known:

knowledge assessment (testing) of candidates and employees;

assessment of the personal qualities of the employee;

assessment of employee performance;

assessment of individual competencies, feedback from the manager and colleagues;

assessment of an employee for compliance with a specific competency model;

job position assessment [17].

The assessment tools are:

professional testing (provides information about the professional readiness of employees);

psychological testing (provides information on psychological qualities and personal characteristics of personnel);

performance appraisal, rating — performance assessment, rating - assessment of the organization's employees through indicators such as sales volume, revenue, etc. determination of the degree of achievement of the assigned tasks;

360-degree methodology - a comprehensive assessment of employees, including professional and personal qualities, identification of opportunities for development;

assessment center, people review - an assessment center, a comprehensive assessment of employees in work situations or when they perform special exercises;

grading - the distribution of positions in the organization in accordance with their value, is used to determine the amount of remuneration [17].

As you can see, in assessing talents, a variety of approaches and tools are used, aimed at assessing professional knowledge and skills, achieved indicators in the work performed and personal qualities. And such an assessment will be in demand both by the company's management to plan further work, and directly by the employees themselves to understand their position and further development.

Modern software products provide convenient tools for measuring employee performance. For example, software products "1C: Management by goals and KPI" and "TopFactor: Talent management" allow you to link the strategic goals of the company and the current (operational) activities of employees. Based on performance matrices (MBO-matrices) for each position and department, the responsibility of employees is distributed for achieving certain business indicators and the degree of efficiency and effectiveness of the employee or manager in this position is tracked [19]. Based on the use of key performance indicators (KPI), the company's management has the opportunity to set target values for each indicator and track the degree to which employees achieve them, while simultaneously monitoring and evaluating staff performance. It is also possible to set the weight of the indicator, and enter additional criteria. In addition to using such objective indicators for assessing personnel as: sales volume, the number of successfully completed transactions, the percentage of new customers, etc., the system also allows evaluating subjective indicators, such as: friendliness, adherence to the corporate style of clothing and others based on opinion internal experts.

### **Forecasting the performance of talented employees based on TMS systems**

Today the theorists and practitioners of HR management speak of the need to predict the effectiveness of personnel work [20, 21], emphasizing the importance and priority of this task as a precursor to planning work with personnel. At the same time, you can see situations when HR specialists independently select methods and tools for solving such problems, using tables and

analytics provided by MS Excel.

TMS-systems, assessing the performance of personnel, record the achieved results at a predetermined frequency, storing them in the data warehouse in chronological order. This makes it possible to carry out data analysis, identifying causal relationships, and track the dynamics of changes in indicators. It seems expedient to use the accumulated data not only to analyze the activities of employees for past periods, but also to predict their future achievements. In this case, the enterprise would receive a more informative basis for the development of training plans, personnel management and development of the entire enterprise.

For example, the task of identifying the relationship between the amount of funds spent on training employees and their level of professional competencies and / or the values of key performance indicators seems to be quite interesting and relevant. Such dependence will allow not only to make a forecast for future periods of time, but also to simulate various options with changing amounts of investment in employee training and reasonably choose the best. Such tasks are of rather great practical importance, since we are talking not only about assessing and predicting the performance of ordinary employees, but primarily about assessing and forecasting the performance of talents, which, due to their specificity and special importance for the development of the company, often require an individual approach.

Thus, the task of automating the forecasting of the performance of personnel, and especially talented employees, seems to be relevant and of practical importance, and improving the functionality of TMS systems in this direction is one of the most promising.

### **Justification of the choice of the method and model for forecasting the performance of talented employees**

Considering the issues of forecasting, it is necessary to focus on the choice of the method and model of forecasting. Forecasting methods are traditionally divided into two large groups: intuitive and formalized [22]. Among the intuitive ones there are: individual (analytical method, script writing method, “interview” method, analogy method) and collective (questionnaire method, Delphi method, commission method, heuristic forecasting method). Formalized methods include:

method of trend extrapolation;

methods of correlation and regression analyzes;

methods of mathematical modeling.

Sometimes in the specialized literature, forecasting methods are not considered separately, but the corresponding models are given:

domain models;

statistical models (regression, autoregressive, exponential smoothing models);

structural models (models on Markov chains, models on classification-regression trees, models on neural networks) [22].

In view of the possibility of using the statistical data accumulated in the warehouse and automating the forecasting procedure by the corresponding information systems, let us dwell in more detail on formalized forecasting models.

Domain models are highly specialized and reflect the rules, dependencies and laws of a specific domain.

Statistical forecasting models describe the relationship between the value of a time series and external factors in the form of a mathematical formula. With the help of such models, regularities are revealed and applied to predict the future values of the studied indicators. Statistical models include:

regression models represent a wide class of models that allow you to determine the relationship between the value of the time series and the values of external factors. Regression models include linear, multiple and nonlinear regression;

autoregressive models are widely used to describe stationary random processes. Time series model, in which its current value is linearly dependent on the previous (retrospective) values of the same series. These include: AR (autoregression) - standard autoregressive model, AM (moving average) - moving average model, ARIMA (autoregression integrated moving average) - autoregression integrated moving average, etc.;

exponential smoothing models. Exponential smoothing is one of the common techniques for aligning a series, based on calculating exponential moving averages of a smoothed series. This class of models includes: ES (exponential smoothing) - standard exponential smoothing model, DES (double exponential smoothing) - double exponential smoothing or Holt model, TES (triple exponential smoothing) - triple exponential smoothing or Holt-Winters model;

Theil-Wage model - a rarely used model based on the Holt model.

Structural models define the relationship between the predicted value of the time series and external factors in the form of some structure, for example, a graph, table, Markov chain, etc. Among the models belonging to this class, there are:

models based on Markov chains. When building the model, it is assumed that further changes depend only on the current state, but not on the previous ones. The probabilities of the system transition from a given state to others are considered;

models based on classification regression trees. This model predicts the future value of the time series, taking into account several previous values, as well as external factors;

models based on neural networks are a rather complex forecasting method; when applied, specialized software is used that simulates the work of the brain and requires preliminary settings and training procedures [22].

Among the models considered for predicting the performance of personnel, in particular key employees of the enterprise, the most appropriate is the use of statistical models, namely regression models. With their help, it is possible to identify patterns between the costs of training employees and their professional skills and knowledge, between the planned and achieved KPI values, between the amount of bonuses paid and the achieved performance indicators of personnel, etc. The choice of models of this class is due to the specifics of the data stored in automated information systems (quantitative data recorded in chronological order), the versatility and relative simplicity of the models. Having identified the presence of a relationship between the indicators under consideration for each specific case, it is possible to build a polynomial curve (model) and thus obtain an explanation for the existing relationship and make a forecast of further changes in the considered values. The question of choosing the degree of the polynomial should be attributed to the functional capabilities of information systems that automate the solution of this problem. The use of linear regression models may not always be justified, due to the significant "averaging" when building a trend. On the basis of nonlinear regression models, it is possible to identify patterns between the studied data and to make a forecast for future periods, which will serve as a good information base when making management decisions.

The second suitable option for automating the task of predicting the performance of key employees is the use of neural networks. Neural networks, due to their wide capabilities, are able to reliably reproduce fairly complex patterns. Among the main advantages of neural networks, it should be noted:

the ability to solve the problem with an unknown pattern of development and the relationship between input and output data;

the ability to work in the presence of uninformative, noise signals at the input;

scalability;

fault tolerance;

adaptability. Hardware and software systems built on the basis of neural networks have the ability to adapt to new environmental conditions, as well as work in an environment with constantly changing conditions.

These modeling features have led to the popularity of neural networks in forecasting and control. However, neural network-based automation is time consuming and costly. However, taking into account the specifics of talent management tasks, long-term orientation and the total cost of TMS systems, especially in conjunction with CPM systems, the use of neural networks to automate the forecasting of the performance of talent can be fully justified.

## CONCLUSION

So, one of the most important aspects of talent management seems to be their assessment. It is important to note that personnel assessment should be an ongoing activity in the company and its results should be recorded and stored in chronological order. Modern information systems of the TMS class, as well as in conjunction with CPM- (BPM-, EPM-) systems allow assessing the professional competencies and achieved results of employees' activities, including talents. The results stored in chronological order provide a basis for analysis (identification of cause-effect relationships) and further forecasting. Further development of TMS systems in the direction of improving the functionality that supports the assessment and forecasting of the performance of talented employees seems to be promising and in demand. It seems appropriate to automate this process on the basis of nonlinear regression models or neural networks.

Working with talents requires an individual approach, which justifies the need and importance of such tasks. The results of predicting the effectiveness of the work of talents will be an important informative base for the development of plans for personnel management and enterprise development.

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