

Life Cycle of Designing a System for Assessing of Performance

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ABSTRACT

Nowadays the design and implementation of an effective system for assessment of personnel is important for the competitiveness of the organization. This article is dedicated to the models of Systems Development Life Cycle and the stages through which its design is passing.

The system for evaluation of the personnel is considered in the context of information system. The stages in the design of a system for evaluation of personnel are adapted to The Systems Development Life Cycle.

Keywords

Evaluation system, personnel, Systems Development Life Cycle

1. INTRODUCTION

The evaluation of the human resources performs many important functions in the organization:

- Assists the management in decision making for material and moral incentives of staff;
- Contributes to the improvement of training and the employee development;
- Allows collection of valuable information about the degree of implementation of tasks assigned to the personnel and to the organization
- Motivates the personnel to achieve high results in the work;
- Contributes to the increase of the work efficiency and competitiveness of the organization as a whole.

The design of a system for fair and accurate evaluation of performance is crucial for improving the management of human resources within the organization. Although the various projects are unique in the different organizations, there are widely accepted models and rules for their development that can help the management of the organization.

2. THE SYSTEMS DEVELOPMENT LIFE CYCLE

The effective operation of the modern organizations is determined by the quality of the management solutions. Dealing with topics related to the creation, the implementation and the operation of the projects in the organization is an indicator of effective management and strategic development. The life cycle of the project is an essential element from the process of realization of

the project, and the fate of the project depends on how effectively the process of the management is organized.

The term Systems Development Life Cycle (SDLC) is used in the information systems, the software engineering and others, to describe the process of planning, development, testing and implementation of an information system [1].

According to C. Parag and Pendharkara, James A. Rodger and others [2] the lifecycle of development of information systems includes a combination of hardware and software components, and the system may consist of: only hardware; only software; or a combination of both.

The model of the life cycle determines the sequence, the relationship of processes and tasks that must be performed. Important factors that affect the model of life cycle are: the specifics, the scale and complexity of the project and the conditions in which the organization operates. Regardless of the type of the model the following main elements are distinguished:

- Stages;
- Results of the work completion at each stage;
- Key events - points for completion of the work and decision making.

The Systems Development Life Cycle involves the stages: Planning; Analysis; Design; Implementation and Maintenance. These stages are important and necessary for the development of any project.

In the design organizations and the practical activities are established and applied different models for managing the lifecycle of projects: cascade model, the spiral model, iterative model, The Agile System Development Life Cycle and others.

The Waterfall-Model consists of successive stages in which the output of each stage is the input for the next. The transition to each following step is performed after the completion of the work at the previous stage. The cascading model has the following advantages:

- The implementation of steps is in a logical sequence and allows to plan the deadlines for completion of the various works and costs;
- A complete documentation is formed at each stage;
- The cascade model is suitable for implementation of projects with complete and precise scope and system requirements [3].

The disadvantage of this model is that the mistakes at the early stages of designing can lead to an increase of the project cost and risk of failure.

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In the iterative model the execution of the tasks is accompanied by a parallel and continuous analysis of the results received, and the errors from previous stages are corrected if is necessary. The iterative approach includes: Planning - Implementation - Verification - Evaluation. Advantages of the iterative approach are: efficient use of experience, assessment of the current status of the project and an opportunity to correct mistakes at an early stage of the project.

The spiral models of the life cycle of the project were developed by Barry Boehm [4]. In the model the relationship between the effectiveness of the project and costs for the design over time is important.

At every stage of the implementation the specific requirements for the project are specified, the quality is determined, and the works for the next stage are planned. A special feature of this model is that it focuses on the risks of the project. B. Boehm formulates the "top-10" of the most common risks.

The Agile System Development Life Cycle is a flexible methodology which arose from the need for the teams to adapt quickly to changes in the organization or in the environment in the development process of the projects. Typical for The Agile System Development Life Cycle is that the results of the execution of the works are presented each week (or more often) by the project participants. In this way, it is possible to take quick corrective actions not after the completion of various stages, but even at the time of their execution.

3. LIFE CYCLE OF THE DESIGN OF A SYSTEM FOR ASSESSING THE PERFORMANCE

The design of a system for assessment of the personnel is a complex set of activities, a large number of stages in their implementation and high costs of financial, material and labor resources. Implementation of tasks that are related to the design of the system requires large volumes of information - quantitative and qualitative indicators, numerical estimates from surveys and tests, results from statistical processing and analysis.

Many of the methods and the evaluation procedures are automated and are incorporated into a larger integrated systems for managing the entire business of the organizations, or are offered and implemented as independent IT-solutions.

Therefore, the design of a system for assessment of performance can be adapted to the process of development and implementation of an information system.

In the EFSOL Company [5] when developing a system for evaluation of the personnel 3 basic stages in the life cycle are defined:

1-st stage - Implementation of the system. The purpose of evaluation is determined, programs for staff development and motivation are created.

2-nd stage - Operation of the system. The rules of evaluation are defined; the project is analyzed, further the tasks for efficient operation of the system are specified;

3-rd stage - Correction of assessment methods to attract external evaluators, monitoring of the process.

In this article, the design of a system for assessment is related to the perception of the process as an information system, which operates to collect, store, process, analyze and archive information from various sources - established in the organization job descriptions, personal files of staff, survey cards, evaluation cards, opinions from colleagues and clients, data from past assessments and more.

The information system for assessment of the staff is a basis for making reasonable management decisions in subsystems as remuneration, material and moral incentives to employees and others. (Fig. 1).

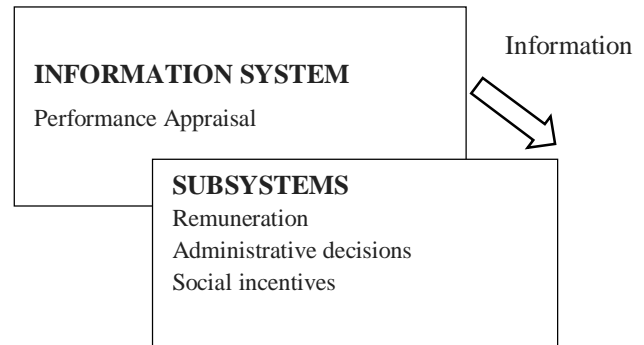


Figure 1. Information system for performance appraisal

The stages through which flows the evaluation procedure of the staff are similar to the stages of the cascade model at project management. On Table 1 in parallel with the stages of development of a system for evaluation of the personnel are presented the stages of the life cycle in the design.

Table 1 : Stages of life cycle and stages in the design of evaluation system

Stages of life cycle	Stages in the design of evaluation system
Planning	Decision for design and development of a system for evaluation of job performance. Creating a working team. Planning the key performance indicators for assessment of the effectiveness of the organization.
Analysis	Analysis of the activities of the Organization - basic business processes, management system, environmental factors and more. Analysis of the existing system of assessment of the staff, Job descriptions and jobs, relationships between them, levels of responsibility for each position.
Design	Determination of the principles, criteria, standards and the methods for evaluation of staff. Development of the procedure and documentation for evaluation.
Implementation	Evaluation.
Maintenance	Monitoring of the evaluation system. Correction if necessary.

The stages of design of the evaluation system can be adapted to those of the cascade models when designing, but the positive elements can also be adapted from other lifecycle models (iterative models, The Agile System Development Life Cycle, etc.). The aim is to review the work on the design and the

development of the system during each stage in order to make timely adjustments.

4. CONCLUSION

The life cycle of each project includes the time from the beginning of its development to the finalization of the work on it. The states through which the project passes are the lifecycle stages. It is difficult to propose an universal approach to identify the specific stages of design and implementation of a system for assessment of the personnel.

Solving this task depends on the specific conditions in the organization, the type of the work performed, the experience and knowledge of the managers and professionals in the organization. Therefore, the differentiation of the project into separate stages may vary in the different organizations.

The determination of the key stages in the design can support the process of creating an evaluation system by speeding up the implementation and reducing the material and labor costs. In parallel, to achieve efficiency in every life cycle of the project, a frequent adjustment of the various stages is necessary, and the work them in accordance with the changes in the objectives and tasks of the organization.

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