REVIEW

of a PhD thesis for acquiring educational and scientific degree "PhD"
Topic: "Models and Methods for Decision Making for Process Management in the Information Technology Infrastructure Library."
In Scientific Area **4. Natural sciences, mathematics, and informatics**
By Professional Field **4.6 Informatics and computer sciences**
Doctoral program of BAS 01.01.12 "Informatics"
On the topic of: " **Models and Methods for Decision Making and Process Management within ITIL (Information Technology Infrastructure Library)**"

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The PhD thesis in a volume of 139 pages has the following structure: Introduction, four chapters, conclusion, basic scientific, scientific-applied, and applied contributions, list of publications on the topic of the dissertation work, list of the author's publications, cited publications of the author, list of projects with the author's participation, bibliography. The list of literary sources includes 124 titles.

1. Relevance of the problem and purpose of research

As part of information technology (IT), in the life cycle of telecommunications products, the operation phase accounts for 70 to 80% of the time and costs. It follows that effective and efficient IT service management processes are essential to IT success. This applies to any type of organization – large or small, public, or private, with centralized or distributed services, with in-house or outsourced IT services. In all cases, the service must be resilient, of high quality and at an acceptable price. IT service management is the management of all processes that work together to ensure the quality of services, according to service levels agreed with the customer.

ITIL offers advice, prescriptions and guidance on the implementation, operation, and continuous delivery of service management. The library contains descriptions of practices that cover the construction of case studies for system implementation of service management, overcoming problem situations, planning their implementation, and resolving typical problems that are likely to arise during the implementation process.

Bearing in mind the topicality of the problem of efficient and quality provision of IT services, the dissertation student has defined the following goal of the dissertation work: **to develop and apply formal models and methods to support decision-making in the application of the ITIL structure library (Information Technologies Infrastructure Library) at its various stages in large organizations - initial implementation, specifics while implementing specific services, docking with other infrastructure frameworks.**

To achieve this goal, the following tasks are defined:

1) Creation of decision-making models and methods for evaluation and implementation of the ITIL structural framework in large organizations.

2) Creation of models and decision-making methods to evaluate the implementation, quality and performance and the related key performance indicators (KPIs) in the management processes of the IT-related services in the organizations.

3) Creation of an operational model and method of integration of the established most widely used frameworks for managing services related to IT in organizations and frameworks for managing the information architecture environment: ITIL (Information Technologies Infrastructure Library) and TOGAF (The Open Group Architecture Framework).

The tasks thus set, determine both the methodology for conducting research and the structure of the dissertation work.

2. General characteristics of the dissertation work

Chapter 1 presents an overview of the development, structure and implementation methods of the infrastructure library in service quality management for IT users.

The benefits of implementing ITIL are discussed, with an assessment of business organizations regarding the need to introduce the principles of the methods, means and tools embedded in the concept of the infrastructure library.

Chapter 2 presents models and decision-making methods for evaluating, implementing, aand applying the ITIL structural framework in large IT organizations. An in-depth analysis of the existing approaches to the implementation of the ITIL framework has been made, the weaknesses in these approaches have been assessed, and a new structural process-oriented method for integrating the infrastructure library has been proposed. The main task of the proposed method is the implementation of a decision-making model for the effective selection of an ITIL implementation process in organizations.

Chapter 3 presents the models and methods for group decision-making developed by the author for the selection of key performance indicators for evaluating IT services. The selection of key indicators is based on the processes defined in ITIL and are mainly oriented to the influence of these indicators on the maximum effective implementation and application of these processes in organizations. The functionality of the developed models has been validated by use of a study for a specific service - e-mail. Results of the models application have been obtained and analyzed.

Chapter 4 presents a modern concept of joint application of fundamentally different process approaches and good practices. The author's goal is to maximize the positive aspects of ITIL and TOGAF and to propose an operational model and method for the integration of the two structural frameworks. An interface is proposed to identify the processes and parameters that are common to both frameworks, and a Service Strategy integration model is proposed by joint operation of both frameworks.

3. Characteristics and evaluation of the contributions of the dissertation work.

The building the structure of processes for offering and maintaining services to users in the IT environment has become necessary as an invariable part of the activity of IT organizations according to their quest to attract more and more users and to improve the quality of services. Decision-making on the choice and use of structural process frameworks is an important aspect of service management. Each one of many similar frameworks has its

own characteristics, orientation to certain IT segments, and applicability to different types of organizations.

The right choice should be a result of thorough research, proactive creation of models and methods of integration in organizations. According to that the main contributions of the dissertation are defined.

Scientific contributions:

- A structural process-oriented method for integrating ITIL is proposed.

- A model and method for group decision-making during the initial implementation of the structure library/ITIL framework in large organizations are proposed.

- A set of 18 criteria (Key Performance Indicators – KPI), for evaluating the implementation, quality, and productivity of the e-mail service, divided in 5 groups, is substantiated.

- An operational model and method for integration of two frameworks - ITIL and TOGAF, in their joint use in organizations is proposed.

Scientific-applied contributions

I fully accept the scientific-applied contributions stated by the author. They prove the correctness and applicability of the created models, methods, and interface.

4. Publications of the author in the subject of the thesis

Regarding the subject of the dissertation work, 3 publications of the dissertation student have been submitted.

One publication is indexed in IEEE, one in WebOfScience, and one in ACM Electronic Library.

The doctor student is the lead author of two of the publications.

These publications do not exhaust the publication activity of the dissertation student. Another 10 of his papers have been published in journals and conference proceedings. All works are related to the topic of the dissertation.

All publications used in the dissertation have been cited more than 10 times in the last 3 years, which confirms both: the relevance of the work and the validity of the scientific and scientific-applied contributions claimed by the dissertation.

The dissertation was checked for plagiarism with the StrikePlagiarism system (available to the Higher Schools in the Republic of Bulgaria) and no plagiarism was found.

5. Assessment of the correspondence of the abstract and the dissertation

The abstract is 55 pages long, and the essential part covers 38 of them. In the abstract, the main goals, tasks, results, and contributions of the dissertation work are fully, accurately, and at the same time understandable for a wide range of readers.

6. Future application of the dissertation's results

The results obtained in the dissertation work can serve as a solid basis for the implementation of structured systems for making business-important decisions in large and medium-sized organizations regarding the provision of quality of IT services, achieving a high level of satisfaction of users of these services and for the business management generally.

7.   Critical notes and recommendations

The dissertation work is properly structured, the logical relations between the individual parts are built. All tasks are completed, each of them is presented in a separate chapter. For each of the tasks a separate publication is realized.

Critical Notes:

- Minor remarks on the layout can be made.

- Work would gain if there was a separate of the interrelationships between the selected indicators, in order to estimate the aggregated impact measure of each of them;

Recommendations

- To continue the work in the direction followed in the dissertation work.

- To apply methods for evaluating the impact of each indicator, the relationship of each indicator - so, evaluations which will not be dependent on the subjective evaluation of experts will be obtained in the proposed model.

The notes and recommendations made in no way detract from the dissertation student's contributions realized in the development of the dissertation work.

8. Conclusion

The dissertation work of Yasen Rumenov Mitev meets the requirements and norms of ZRASRB and the Regulations for its implementation and the Regulations for the specific conditions for acquiring scientific degrees and for occupying academic positions at IIKT-BAS.

The dissertation contains innovative scientific and scientific-applied contributions, well disseminated through the author's publications, and highly appreciated by the citations made, many of them in leading scientific publications.

The dissertation student has, in addition to the necessary knowledge, serious experience in the field of decision-making within various structures as well, which is beneficial for the formulation of the goal, tasks and proposed solutions in the dissertation work.

The dissertation student has demonstrated an ability to conduct independent research.

I strongly recommend to the Honorable Scientific Jury that Yasen Rumenov Mitev to be awarded with the educational and scientific degree "PhD" In Scientific Area 4. Natural sciences, mathematics, and informatics by Professional Field 4.6 Informatics and computer sciences.

На основание

ЗЗЛД

Sofia, 22.04.2024 г   Member of the Jury:
                                        /Assoc. Prof. Eng. Aleksandar Tsenov, PhD
                                        UTP - Sofia/