

OPINION

Associated professor Alexandre Ivanov Chikalanov ULSIT
member of the Scientific Jury appointed by Order of the Director of
IICT BAS
№ 65/8.03.24 y.

REGARDING: Dissertation work of **Yasen Rumenov Mitev** on the subject of „Models and methods of decision-making for process management in the Information Technology Infrastructure Library“, submitted for the acquisition of the educational and scientific degree "doctor", doctoral program: " Informatics", Professional direction: 4.6. Informatics and computer sciences, Department 4. Natural sciences, mathematics and informatics, supervisor: **Assoc. Dr. Leonid Kirilov**.

1. General description

At the first meeting of the Scientific Jury, I was chosen to prepare an opinion and I received the following documents:

- dissertation,
- abstract in Bulgarian and abstract in English,
- publications on the topic of the dissertation in full text,
- other documents accompanying the procedure.

2. Relevance, purpose and tasks

The topic of the dissertation is in the field of application of information technologies in order to improve and optimize the business processes of organizations. Process optimization will allow organizations to more quickly develop and improve over time. The changing conditions of life, as well as the rapid technological progress in all areas of human activity, require change and development of new approaches, methods and means for the digitalization of the management systems of companies, increasingly being reformulated so that they are directly part of the success of the organization's core product. This emphasizes the undoubted relevance of the presented dissertation work.

The purpose of this dissertation is to develop and apply formal models and methods to support decision-making in the implementation of the ITIL structural library (Information Technologies Infrastructure Library), at its various stages in large organizations - initial implementation, specifics when implementing specific services, docking with other infrastructure frameworks.

To achieve the goal of the dissertation, the following **research tasks have been formulated**:

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

2. Creation of decision-making models and methods to assess implementation, quality and performance and related key performance indicators (KPIs) in IT service management processes in 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 goal is to join the logically related elements of the frameworks (processes, operations and roles), as well as to merge the overlapping elements (processes, operations and roles).

3. General characteristics of the dissertation work

The dissertation consists of 139 pages, structured in an introduction, four chapters, conclusion, contributions, directions for future research, list of publications on the dissertation, list of noted citations, list of projects with the author's participation, approbation of results, declaration of originality of results, bibliography and List of abbreviations, symbols and terms used. Contains 17 figures, 10 tables and 124 literary sources.

In the first chapter, an analysis of the infrastructure IT library ITIL, as well as the existing methods of ITIL integration, is made. The processes that ITIL offers are reviewed. On this basis and on the studied company documentation of ITIL, conclusions were drawn showing the importance of this library for the optimization of IT processes in organizations.

In the second chapter, a model and two decision-making methods are proposed for evaluating and implementing the ITIL structural framework in large organizations. The model is in matrix form. The method used to decide is based on the median score. The second method is a structural process-oriented method of ITIL integration. It requires no knowledge or experience in implementing management frameworks.

In the third chapter, a model and method for group decision-making are proposed for the selection of key performance indicators (KPI) in the evaluation of a selected IT service - <e-mail-service>. A comprehensive set of key performance indicators for e-mail service is proposed. The interrelationships between the services required for e-mail to work are presented. The overall process of formulating KPI indicators, drawing up formulas for their calculation, defining intervals and threshold values for their assessment with the aim of optimizing the implemented service is presented. The model and method are demonstrated on a real example of a large educational organization.

In the fourth chapter, the task of stitching together the two most commonly used frameworks for managing information environments is considered. These are ITIL which supports IT service management and TOGAF which supports architecture management. An operational model and method of integration of the two frameworks are proposed .

4. Contributions

I accept and positively evaluate the scientific and scientific-applied contributions formulated in the dissertation. In summary, they can be stated as:

Scientific contributions:

1. Analysis of the structural IT library ITIL and related tasks, its significance and implementation in organizations.
2. A structural process-oriented method for integrating ITIL is proposed.
3. A model and method for group decision-making during the initial implementation of the ITIL structure library/framework in large organizations is proposed.
4. A comprehensive set of 18 criteria (Key Performance Indicators – KPI) is proposed, grouped into 5 groups for evaluating the implementation, quality and performance of the e-mail service. A group decision-making model for implementing the e-mail service in organizations is also proposed.
5. An operational model and a method for the integration of the two frameworks ITIL and TOGAF in their joint use in organizations are proposed.

Scientific and applied contributions:

1. The group decision-making model for the implementation of the e-mail service in organizations is solved using a user-friendly statistical method developed by Don(ald) Krapohl, 2010, USA.
2. The communication method for the docking of the ITIL-TOGAF libraries for the first touch point of the first level - Preliminary phase (TOGAF) - Service strategy (ITIL) is demonstrated.
3. The proposed model and method for the initial implementation of ITIL in an organization is demonstrated on a real example of modernizing IT services in a large pharmaceutical distribution company from Great Britain (Case study), in which the PhD student took part in their commissioned project by of Hewlett-Packard (Service Center), Bulgaria.
4. The proposed model and set of criteria for implementation and management of the e-mail service are demonstrated on a real example of a large educational organization (Case study) with a set of requirements set in the framework of a project implemented by Hewlett-Packard, Bulgaria (Center for services) in which the doctoral student took part.

5. Abstract

The presented two versions of the abstract in Bulgarian and English accurately reflect the content of the dissertation and comply with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the relevant Regulations for its implementation.

6. Assessment of compliance with minimum national requirements

Doctoral student Yasen Rumenov Mitev has 10 published publications in journals and reports at international conferences. Three of them are attached to the dissertation work. One has an impact factor $IF=0.378$. A total of 13 citations to these publications have been found so far. The dissertation was also approved in 4 industrial and scientific projects. According to the minimum national requirements for obtaining the Educational and scientific degree "Doctor" in professional direction 4.6 Informatics and computer sciences, defined in PPZRASRB, the presence of at least 30 points in Group G indicators is required. The same number of points is also required by the Regulations for the

conditions and procedure for acquiring scientific degrees and for occupying academic positions at BAS and the Regulations on the specific conditions for acquiring scientific degrees and for occupying academic positions at IICT-BAS. The presented dissertation publications form a total sum of points for Group G indicators equal to 48 points, which exceeds the required minimum of 30 points.

The query in the scientometric databases WoS and Scopus shows that of the 3 publications attached, one is in WoS with an impact factor, one is in Scopus with an impact rank, and one is published in ACM. This and the attached thirteen independent citations convincingly demonstrate the doctoral student's research abilities.

7. Notes and recommendations

The dissertation makes a good impression with its interdisciplinary scope. The results achieved are original and correspond to the set topic. I have no objections to the substance of the dissertation. The subject is very vast and any aspect of its consideration is of benefit to the scientific community.

8. Final comprehensive assessment

I believe that the submitted dissertation meets the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the relevant Regulations for its implementation. The achieved results give me reason to give a positive assessment with complete conviction and I recommend to the honorable Scientific Jury to award the educational and scientific degree "**Doctor**" to **Yasen Rumenov Mitev** in professional direction 4.6 Informatics and computer sciences, doctoral program "**Informatics**".

02.05.2024 г.
Sofia

Member of the jury

/assoc. prof.

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