

REVIEW

from Prof. Stefka Fidanova – IIKT-BAS
to
PhD thesis
for obtaining an educational and scientific degree
"Doctor"
in professional field 4.6 "Informatics and Computer Science"
doctoral program "Informatics"
on the topic: "Models and Methods for Decision Making and Process
Management within ITIL"
by Yassen Rumenov Mitev

By Order No. 65 dated 08.03.2024 of the Director of Institute of Information and Communication Technologies at Bulgarian Academy of Sciences, corresponding member S. margenov, pursuant to Art. 4, para. 2 of the Law on the Development of Academic Staff in the Republic of Bulgaria (LDASRB) and decision of the Scientific Council of IICT-BAS (Minutes No. 2 of 28.02.2024) I have been appointed a member of the scientific jury under the procedure for obtaining the educational and scientific degree "doctor" in professional field 4.6 "Informatics and Computer Science", doctoral program "Informatics" by Yassen Rumenov Mitev with PhD thesis on the topic "Models and Methods for Decision Making and Process Management within ITIL".

1. According to Law on the Development of Academic Staff in the Republic of Bulgaria, the rules for its implementation and the specific requirements introduced in the regulations of IICT-BAS, applicants must meet the following requirements:
2. The PhD thesis must contain scientific or scientific-applied results that represent an original contribution to science. The thesis must show that the candidate has in-depth theoretical knowledge in the relevant specialty and abilities for independent research.
3. The PhD thesis must be presented in a form and volume corresponding to the specific requirements of the primary unit. The thesis must contain: title page; content; introduction; exposition; conclusion - summary of the results obtained with a declaration of originality; bibliography.

According to Law and rules for its implementation and the specific requirements introduced in the regulations of IICT-BAS, applicants must meet the following requirements:

Group of indicators	Contents	Number of points
A	Indicator1	50
Г	Sum of indicators from 5 to 10	30

The PhD student is supervised by Assoc. Prof. Leonid Kirilov.

Actuality

Information technologies are increasingly entering the management of various organizations in order to support and optimize their activities. Increasingly, computer-aided decision-making or full process automation is being applied. With the help of information technology, organizations can work more efficiently and improve their output. More and more organizations are investing in the implementation of quality management systems, optimization of work processes and workforce. Electronic technologies are being implemented to increase the productivity and reliability of production. The implementation of such a system is specific to individual organizations. Many criteria need to be met and analysis done. This leads to the need to apply formal decision-making methods.

The object of research of my submitted thesis is the service management processes related to the implementation, use and improvement of information technologies in organizations.

The subject of the study is the formal methods for supporting decision-making in the use of the ITIL structure library.

Improving the management of an organization or production process with the use of information technology is an important necessity for the development of a competitive economy. This shows the relevance of the problem and the need to create applications to support decision making.

The object and subject of the research determine the objectives set before the dissertation.

Goals of the thesis

The goals of the thesis is stated on page 14 of the dissertation, namely the development and application of formal models and methods to support decision-making when implementing the ITIL structure library.

To achieve these goals, the author sets himself the following tasks:

1. To create models and methods that support decision-making during the initial implementation of the structural framework ITIL in large organizations.
2. To create models and decision support methods for evaluating implementation, quality and performance and the related Key Performance Indicators (KPIs) in the process of managing IT-related services in organizations.
3. Creation of an operational model and method of integration of the most widely used frameworks for managing services and architectures related to IT: 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).

Thesis structures

The thesis is 139 pages long and contains 124 cited sources. It includes Introduction, 4 chapters and conclusion.

In the Introduction, the relevance of the problem is emphasized, the methodological parameters of the dissertation work, its structure, object, goals and tasks for their achievement are presented. An overview of the main results in the field was made. Emphasis is placed on the need to develop new modern methods to support decision-making.

In the second chapter, a model and two decision-making methods are proposed for evaluating and implementing the ITIL structural framework. The proposed model is in matrix form. One of the proposed methods is based on the median assessment, and the second is process-oriented. A model for group decision making is proposed. The model and the method for solving it are demonstrated on a real example of an international company from the healthcare sector.

Chapter three is devoted to a model and method for group decision-making for the selection of key performance indicators for a selected IT service, in the specific case applied to e-mail. The model and method are demonstrated on a real example of a large educational organization. The model allows the selection of appropriate key indicators to measure the business objectives of an organization.

Chapter four examines the joint use of ITIL and TOGAF systems. A model for integration and stitching of the two frameworks is proposed. An operational model is proposed on the basis of which the contact and overlapping points of the two frames are defined. The proposed method prevents the risk of overlapping and obligations from insufficient communication when two individuals do the same thing without knowing about each other. The proposed method is demonstrated for the first touch point of the first level.

Knowing the state of the problem

There is no doubt that the dissertation student has entered the scientific issues very well. The list of cited scientific sources is up-to-date – publications from the last 10 years are 39% of the total number, with 12% from the last 5 years. On the other hand, it also contains older but important sources for the area. The dissertation's knowledge of the field is very well illustrated by Chapter 1, which provides an overview of existing decision support systems.

Research methodology

The methodology for conducting the research, chosen by the dissertation student, derives from the set goals and corresponds to the tasks arising from these goals. The author uses a model and method supporting group decision-making, as well as a methodology for the joint use of the ITIL and TOGAF systems. The proposed models and methods are tested on real examples.

Contributions

The main scientific contributions are:

1. An analysis has been made of the ITIL structural IT library and related tasks, its significance and implementation in organizations and the place of decision-making methods in this whole process.
2. A structural process-oriented method for ITIL integration is proposed. The method does not require knowledge or experience in implementing management frameworks.
3. A model and method for group decision-making in the initial implementation of the structure library/ITIL framework in large organizations is proposed. The model is in the form of a two-dimensional matrix. In it, the individual components of ITIL are represented as a string of binary variables. The panel of experts presents individual ratings on a selected scale for each component of the library. The method is based on the median evaluation of the evaluations of the individual experts.
4. Following the principles of ITIL, a comprehensive set of 18 criteria (Key Performance Indicators - KPI) has been proposed, united in 5 groups to evaluate the implementation, quality and productivity of the e-mail service. A group decision-making model for implementing the e-mail service in organizations is proposed.
5. An operational model and a method for integrating the are proposed two frameworks ITIL and TOGAF in their joint use in organizations. ITIL version v.3 and TOGAF version v.9.1 are used in the model. The method is two-step. At the first stage, the points of contact of the two frameworks at

the process level are identified. In the second stage, the communication is done at the touch points at the role level.

The main applied contributions are:

6. It is proposed to solve the group decision-making model for the implementation of the e-mail service in organizations using a user-friendly statistical method developed by Don(ald) Krapohl, 2010, USA.

7. The ITIL-TOGAF library coupling communication method has been implemented/demonstrated for the first level 1 touch point – Preliminary phase (TOGAF) – Service strategy (ITIL) for 6 ITIL roles (level 2 touch points) and 9 roles (level 2 touch points) by TOGAF. The duties of the individual roles are allocated for implementation through ITIL or TOGAF through a table of responsibilities RACI (Responsible, Accountable, Consulted, Informed).

8. The proposed model and method for the initial implementation of ITIL in an organization is demonstrated on a real-life example of IT service modernization in a large UK drug distribution company (Case study) in which the PhD student participated as part of their commissioned project by Hewlett -Packard (Service Center), Bulgaria.

9. The proposed model and set of implementation criteria and management of the e-mail service are demonstrated on a real example of a large educational organization (Case study) with a given set of requirements within the framework of a project implemented by Hewlett-Packard, Bulgaria (Service Center), in which the doctoral student took part.

Evaluation of the dissertation's publications

The dissertation student has published 3 articles related to the subject of the dissertation. Two of the articles are indexed in ACM Digital Librery and IEEE Xplorer, respectively, and one is in a journal with an impact factor of Q4. Thus, according to the indicators of group D, the dissertation student has 48 points out of the required 30, which significantly exceeds the minimum requirements of the IIKT-BAS for obtaining the PhD degree.

The main results obtained by the dissertation were reported at 10 specialized conferences and 3 seminars.

Resume

In general, the abstract correctly reflects the content of the dissertation. In general, the abstract correctly reflects the content of the dissertation.

Critical notes

I have no significant critical remarks about the dissertation. I noticed spelling mistakes in places. All these are notes of a technical nature and do not diminish the significance of the results achieved. I did not find the contributions of the dissertation in the abstract.

Significance of development for science and practice

The work done by the dissertation is sufficient in volume and depth of the study. Undoubtedly, the practical orientation of the developed developments and the obtained results, as well as the need to work in this direction. In this sense, I find the work significant both scientifically and practically.

Personal opinion

I vaguely know the dissertation student, but I know some of his scientific work, as he participated in scientific forums in which I was the organizer. Overall, the dissertation is well written and structured. The goals and tasks for their achievement are clearly set. Contributions are given briefly and concisely and to the point. The dissertation student has a total of 10 publications and 13 citations. Some of his publications are independent, which is a guarantee that his personal contribution to achieving the results in the dissertation is substantial. It also shows that he can work independently and is built like a scientist.

Conclusion

As a consequence of the above, it can be stated that all the requirements of the Law on the Development of Academic Staff, the Regulations for its implementation and the Regulations on the terms and conditions for obtaining scientific degrees and occupying academic positions at IICT-BAS. I can say that the level of this dissertation and the publications related to it significantly exceeds the minimum requirements.

The critical remarks I have given do not diminish the significance of the results obtained and the scientific value of the work provided to me.

All this gives me grounds for a positive assessment and I propose to the esteemed Scientific Jury to award the educational and scientific degree "Doctor" in professional field 4.6 "Informatics and Computer Science" to Yassen Rumenov Mitev.

10.04.2024
София

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