

OPERATION MANAGEMENT USING ITIL AND COBIT FRAMEWORK

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Abstract: *Information and Communication Technologies management is now increasingly challenging in a highly digital and connected world, with different services emerging for different clients with heterogeneous infrastructures, software, assets, different service requirements, security risks increasing, organizational structures not flexible to adjust. These are some of the variables to manage in Information and Communication Technologies departments. This paper aims to present a literature review to support the design of an approach for service operation management in a medium-sized organization, to improve operational efficiency, cost optimization and stakeholder satisfaction, relevant topics in any organization strategy. The applied methodology includes a literature study related with the frameworks Control Objectives for Information and Related Technology (COBIT) and Information Technology Infrastructure Library (ITIL). The main results underlying the literature review were based on the use of keywords in the subject domain.*

Keywords: *ITIL, COBIT, Service operation, Business process, ITSM.*

1 INTRODUCTION

Information and Communication Technologies (ICT) Management in an organizational context can enhance or limit business development. In this context, the alignment between the organization's management and governance and the ICT department is considered essential. Medium-large size organizations are faced with difficulties underlying greater complexity in the daily service operation management and related processes. Towards improvement, it's important to implement universally accepted ICT management frameworks such as IT Infrastructure Library (ITIL) and/or Control Objectives for Information and Related Technology (COBIT). ITIL is highly used in organizations worldwide to align ICT with business needs through the management of service lifecycle (OGC, 2007).

The stages of the service life cycle are: Service Strategy, Service Design, Service Transition, Service Operation and Continual Service Improvement. COBIT is used to align the management and the governance of IT departments with the company goals. To be competitive, companies must implement information technology that is oriented to customers and stakeholders (Raharjana, Susmiandri & Justitia, 2018). Service operation is the ITIL stage in which the service quality is perceived by customers and stakeholders. This stage focuses on providing effective and efficient operational services to deliver the required business outcomes and value to the customer (OGC, 2007). ITIL bundle established best practices to support the

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tasks of Information Technology (IT) service operating (Kubiak & Rass, 2018). Real-life IT support organizations usually implement very complex organizational, structural, and behavioral processes according to strategic objectives defined at the business management level (Bartolini, Stefanelli & Tortonesi, 2013).

Business processes are more and more dependent on ICT. A process consists of a coordinated set of activities using resources and capabilities to produce an outcome, which, directly or indirectly, creates value for an external customer or stakeholders (OGC, 2007). This paper aims to present a literature review to support the design of an approach for service operation management in a medium-sized organization. The structure of this paper has four sections. The first section is the introduction to the research theme. The second section presents the Research Methodology. In the third section, the results are discussed and in the last one, the fourth, conclusions are presented and recommendations are explained.

2 RESEARCH METHODOLOGY

The research approach used is a literature review, began by planning review, identifying the needs and formulating questions and objectives. Next phase allows to define parameters and criteria, generate and refine keywords. The following step on this phase is conduct research and obtain studies, evaluate and record. In a loop process, these two steps will be applied until the achieve the desired results. The last phase is the report review.

2.1 RESEARCH SCOPE

The definition of the research process scope is based on the literature found in conference abstracts and journals articles (IEEEExplore), conference abstracts and research articles (ScienceDirect), from 2010-2020. The focus is the evaluation of case studies implemented with COBIT and ITIL.

ITIL bundle established best practices to support the task of IT service operation (Kubiak & Rass, 2018), is the best practices guidance for IT Service Management (ITSM) and has been well accepted by organizations world-wide. ITILv3 presents five stages in the service lifecycle management: Service Strategy, Service Design, Service Transition, Service Operation and Continual Service Improvement (OGC, 2007).

Control Objectives for Information and Related Technology (COBIT) is an IT governance framework; it shows a clear distinction between IT management and IT governance. COBIT19 refers the possibility to define factors and components that should be considered by organizations to build and maintain a governance system: processes, organizational structures, politics, procedures, information flows, culture, ethic and behavior, skills, services, applications and infrastructure of an organization, not only in the ICT domain (ISACA, 2019).

Based on several studies and research it is considered that COBIT and ITIL frameworks are relevant references to support the design of an approach for service operation management in a medium-sized organization, to improve operational efficiency, cost optimization and stakeholder satisfaction.

2.2 RESEARCH QUESTIONS

The formulations of the research objectives are:

Could ITIL and COBIT bring benefit to a medium-sized organization?

Could ITIL and COBIT support implementation of service operation and related business processes?

2.3 RESEARCH PROCESS

The process of literature identification used the following resources:

- . IEEExplore Digital Library;
- . Science Direct;

Based on these two sources, several keywords were used in the search with Boolean operators in the abstract area. The keywords or group of keywords used to find the right literature are: “Implement”; “Case”; “Process”; “Framework”; “Approach”; “Model”; “ITIL”; COBIT; Operation. During the first execution, some similar expressions were detected, it was decided to use all. The search strings were the following:

- In IEEExplore: (“Implement” OR “Case” OR “Process” OR “Framework” OR “Approach” OR “Model”) AND “ITIL”. It was found 194 studies. Adding AND “COBIT”- to the previous selection, the number of studies decrease to 29. Applying addition again to the previous selection with - AND “Operation” - (related to ITILv3 service Operation) it results in 2 studies. Adding “medium-size”, it resulted in an empty set. It was decided to use the 2 studies previously selected.
- In Science Direct, the article types selected was research articles and conference abstracts; the terms selected were: (“Implement” OR “Case” OR “Process” OR “Framework” OR “Approach” OR “Model”) AND “ITIL”. It was found 307 studies. Adding - AND “COBIT”- to the previous selection, the number of studies decrease to 100, showing that is more usual ITIL implementation. Applying another addition to the previous selection with - AND “Operation” (related to ITILv3 service Operation) it results in 82 studies. Adding “medium-size” (related to the organization size) it results in 26 studies.

The complete string is: (((((((("Abstract":Implement) OR "Abstract":Case) OR "Abstract":Process) OR "Abstract":Framework) OR "Abstract":Approach) OR "Abstract":Model) AND "Abstract":ITIL) AND "Abstract":COBIT) AND "Abstract":Operation) AND "Abstract":medium-size).

2.4 DATA EXTRACTION

The inclusion and exclusion criteria applied to the studies were:

Rejected repeated studies and Rejected studies whose abstracts could not answer the research questions or Scope.

Table 1 presents the results of the research in theme based on the defined criteria.

Table 1. Results of the previous stage

Source	Studies Found	Candidate	Selected
IEE EXplore	194	29	2
Science Direct	307	100	9
Total	501	129	11

Table 1 shows the result of the interactions in online BD to select the studies considered relevant to the development of the framework.

2.5 RESULT ANALYSIS

The result of the studies identification was based on the analysis of the following criteria: Publishing Outlets (Conference/Journal); Most productive institutions and Author' academic backgrounds. It is considered that these results can contribute to enrich the framework in development.

3 RESULTS AND DISCUSSIONS

Section three presents the result and discussions of publishing outlets, most productive institutions and author' Academic Background.

3.1 TRENDS CHARACTERISTICS

Table 2 shows the publishing outlets from selected studies.

Table 2. Publishing Outlets

	Conference/Journal Name	#
Conference	2019 IST-Africa Week Conference (IST-Africa)	1
Conference	2018 5th International Conference on Behavioral, Economic, and Socio-Cultural Computing (BESC)	1
Journal	Computer Networks	1
Journal	International Journal of Accounting Information Systems	1
Journal	Procedia Technology	1
Journal	Computer Standards & Interfaces	1
Journal	Procedia - Social and Behavioral Sciences	1
Journal	Computers & Security	1
Journal	International Journal of Information Management	1
	Total	9

Table 2 identifies conferences and journals where selected studies were presented, it was considered that can add value to the framework in development.

3.2 AUTHORS' ACADEMIC BACKGROUNDS

From 32 researchers, they were categorized into 6 department/ knowledge groups. The results show most researchers are from Computer Science groups/departments.

Table 3 shows the author' Academic Backgrounds.

Table 3. Author' Academic Backgrounds

Department	#
Accounting	1
Computer Science	16
Software Engineering	3
Information Systems	6
Management	6
Total	32

Table 3 presents the different knowledge areas relevant to the theme. It shows the pertinence of the work proposed in the framework that is under development and its multidisciplinary character.

3.3 MOST PRODUCTIVE INSTITUTIONS

Table 4 presents, in an alphabetic order, the institutions considered in the studies selected with the criteria applied.

Table 4. Most Productive Institutions

Institutions	#
Beykent Üniversitesi, Istanbul, Turkey	1
Federal University of Rio Grande do Sul, Brazil	1
National Technological University of South Lima, Peru	1
NHH Norwegian School of Economics, Bergen, Norway	1
Oregon State University, EUA	1
Universidad Politécnica de Madrid, Spain	1
Universitetet i Agder, Kristiansand, Norway	1
University of Alcalá, Madrid, Spain	1
University of Economics, Prague, Czech Republic	1
University of Ferrara, Italy	1
University of Innsbruck, Austria	1
University of Johannesburg, South Africa	1
University of Manchester, UK	1
University of Southern Queensland, Australia	1
University of Tulsa, Oklahoma, EUA	1
Total	15

Table 4 shows the relevance of the theme; different institutions around the world are working and producing studies on that subject.

4 FUTURE RESEARCH DIRECTIONS

Further research needs to be conducted to align the framework objectives. Literature reviews should be conducted on other sources as well, because this paper only used two sources database (IEEEExplore Digital Library and Science Direct). More different sources will enrich the research and knowledge of the implementation of service operation based on ITIL and COBIT.

CONCLUSION

Due to the need for optimization processes in a medium organization, a framework is being designed, for which a review of the literature is being carried out. The paper presents a literature review from two digital databases (IEEEExplore and Science Direct). These publications discuss different aspects of ITIL and COBIT frameworks.

To answer the research questions based on the literature found could be said that ITIL is the most implemented ITSM framework all over the world, the use of IT Services Management

(ITSM) has provided many positive business impacts; although, there are several issues related to ITSM, such as data quality, process automation, IT as a service broker, etc. (Dharmawan, Sukmana, Wardhani, Ichسانی & Subchi, 2018) and with ITIL processes in place, it becomes considerably easier to resolve and fix the incidents reported (Mahalle, Yong & Tao, 2018). Besides the benefits, implementing ITIL and COBIT through an organization is challenging and complex, due a lack of alignment between both framework and the fact that literature provides only general guidance (Yamami, Mansouri, Qbadou & Illousamen, 2016).

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