Use of Frameworks, Norms and Standards in Information Technology Service Management

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Abstract. Information Technology Service Management (ITSM) can be defined as the implementation, management and provision of quality information technology services that meet the needs of the enterprise to support business goals and customer needs in the area of IT operations. ITSM is an important factor in the success of many organizations and for this reason a large number of norms, standards, frameworks and models have been created (ITIL, COBIT, ISO/IEC 20000, ETOM, TOGAF, MOF and others) through which the company can use best practices and management practices information technology services. The most widely used standard is ITIL, which in its current version is aligned with the digital technologies of the digital era, so that together with consumers they create value, support business strategy and embrace digital transformation. The aim of the scientific article is to map the use of conceptual frameworks, norms and standards in the field of information technology service management. Business entities should use frameworks, standards and norms to be competitive, efficient and more profitable.

Keywords: IT Service Management, ITSM, ITIL

JEL classification: *M15*

1 Introduction

Information Technology is an important aspect of the business of business entities, their implementation and use is growing due to digitalization, the use of digital technologies and digital transformation. Business entities are forced to use IT for the purpose of carrying out business activities, the transition to electronic business, it is also necessary to use them when communicating with public administration institutions. Information technology has great benefits in business entities, but for the efficiency and execution of business activity, it needs to be managed and managed, which will be an approach to design, deliver, manage and improve the way in which businesses use IT success is not accidental, but it is considered and deliberate implementation of IT service delivery

excellence. IT administration and management is mostly a long-term process with a series of coordinated transitional steps to achieve the desired improvement. With proper planning, communication and implementation, ITSM can elevate small and medium-sized companies in terms of growth and profitability. IT service management is not going away, but rather will evolve to meet the needs of businesses. New digital technologies (Artificial Intelligence, Cloud Computing, Internet of Things, Automation and other) can help streamline processes or automate changes, but the need to manage services according to business expectations will remain.

2 Literature review

Management and managerial work represent a special kind of interaction between a person and the environment through information (Szabo, 2016). Today, information, knowledge and processing capacity are constant and ubiquitous, and the growing connections between people, objects, devices and systems are changing the conditions under which individuals, businesses and societies live and function (Brunetti et al., 2020). An essential part of modern tools are economic information forming elements of the information subsystem of the economic system, and links in the information system express information flows (Kokles & Romanová, 2014). Yandri et al. (2019) state that information along with information technology (IT) and information systems (IS) are extremely important guidelines for achieving corporate governance success.

Information technology includes any technology or equipment (computing, telecommunications, consumer electronics and broadcasting) used by a company, institution or any other organization that works with information. (Grauer, 2001). ISACA, international professional association focused on IT Governance (2022) defines information technology as hardware, software, communication and other facilities used to input, store, process, transmit and output data in whatever form. Information and communication technology (ICT) is an umbrella term encompassing any communication device or application (e.g. mobile phones, computer or network hardware, software, internet and satellite systems) and also refers to the various services associated with them (Schiliro & Choo, 2017). For most companies, IT is one of the most important assets in the infrastructure of organizations (Serrano et al., 2021) and the main tool for business changes in private and public sector organizations (Juiz & Tomme, 2015). Harguem (2021) states that information technology is revolutionizing the world of business, in addition to providing support for daily operations, IT is an integral part of business processes within and outside the organization.

In many organizations, information technology has become crucial in the support, sustainability and growth of business, and the pervasive use of technology in organizations has created a critical dependence on IT that requires a specific focus on IT Governance (De Haes & Van Grembergen, 2009; Almeida, Pereira & Silva , 2013). Organizations are increasingly dependent on information technology for competitive advantage through extensive use of information, effective operational control, rapid innovation, speed to market and increased customer satisfaction (Hiekkanen et al., 2013). Dependence on information technology in business is growing, as is its

complexity, forcing organizations to manage IT more effectively (Serrano et al., 2021). One of the consequences of the growing dependence on technology is that IT management is becoming a key factor in organizations, especially during the current period of the COVID-19 pandemic (Rubio Sánchez, 2021). According to Al-ashmoery et al., the use of information technology in enterprises. (2021) increased because organizations focus on implementing their services and processes using IT concepts to guarantee the quality of business processes and services and accordingly it is important for every organization to use ITSM concepts - Information Technology Service Management to develop their activities.

2.1 Information Technology Service Management

The key to success in using technology is not the technology itself, but the ability to manage it well (Lucas, 2005). Brenner (2006) states that providing information technology to customers with better and guaranteed quality has been the goal of many diverse efforts that are carried out under the common denominator of "IT Service Management". The term "IT Service Management" or "Information Technology Management" under the abbreviation "ITSM" was introduced in the 1980s, when it was primarily used in the management of data centers. During those years, the role of IT changed its focus from software development to IT service management with responsibility throughout the IT service life cycle (Kubiak & Rass, 2018).

ITSM is a part of service science that focuses on IT operations such as: service delivery and service support (Galup et al., 2009). IT services (ITS) are services provided through IT, processes and people (Mora et al., 2020). ITS have a great impact on competitive advantage because they are important for effective and efficient management (Serrano et al., 2021). ITSM services are means of providing value to customers by facilitating the results that customers want to achieve without owning specific costs and risks (Mora et al., 2020).

ITSM according to Young (2000) can be defined as a set of processes that work together to ensure the quality of active IT services according to service levels agreed by the customer. ITSM is defined as an approach to IT operations characterized by an emphasis on IT services, customers, service level agreements, and managing day-to-day IT activities through processes (Conger, Winniford, & Erickson-Harris, 2008). Conger, Winniford & Erickson-Harris (2008) also state that ITSM focuses on defining, managing and delivering IT services to support business goals and customer needs, usually in the area of IT Operations. ITSM is a process-oriented discipline that combines process management and environmental best practices into a standard approach to optimizing IT services (Mesquida, Mas et al., 2012). IT service management is the implementation and management of quality IT services that meet business needs (Binders & Romanovs, 2014; Mora et al., 2020) and is performed by IT service providers through an appropriate mix of people, processes and information management (Binders & Romanovs, 2014). ITSM refers to the principle that uses generally accepted "good practices" to organize processes and people around customer-oriented services, rather than around tasks related to the management of systems and physical infrastructures (Winkler & Wulf, 2019). Axelos (2021) states that ITSM is a

concept that enables organizations to maximize business value from the use of information technology and positions ITS as a key means of delivering and capturing value when an internal or external provider collaborates with business customers while taking responsibility for associated costs and risks. . Atlassian (2021) states that ITSM is the way IT teams manage the end-to-end delivery of IT services to customers and this includes the processes and activities aimed at designing, creating, delivering and supporting IT services. Information Technology Service Management, according to Serrano et al. (2021) considers it as a set of frameworks that support service management organizations - helping IT service providers to improve their service management practices and further according to the authors, ITSM focuses on IT operations and especially on service delivery and support - supports organizations in adding value to their services by improving their quality. IT Service Management is an IT management process framework designed to align IT service delivery with customer needs (UC Berkley, 2022).

The goal of ITSM is to optimize IT services to meet business requirements and manage IT infrastructure while better aligning IT with organizational goals (Galup et al. 2009). Unlike more technology-oriented approaches to the operation of information technology, ITSM considers its primary goal to design and provide IT services that meet customer requirements (Wulf, Winkler & Brenner, 2015). The main task of IT service management is the stable operation of the IT infrastructure (Kubiak & Rass, 2018).

2.2 Norms, frameworks and standards of IT Service Management

ITSM is becoming an important success factor for many organizations and a large number of ITSM standards and models have been created to provide guidance on how services can be managed throughout their lifecycle (Calvo-Manzano, 2015). Various process frameworks can be used to improve IT service management processes (Lahtela & Jäntti, 2016). In order to achieve effective and efficient IT service management, many organizations invest in IT service management frameworks (Shrestha et al., 2020; Serrano et al., 2021). Due to the popularity of ITSM frameworks, an increasing number of companies are implementing reference models to improve their ITSM processes (Trinidad, Orta & Ruiz, 2021). Kubiak & Rass (2018) state that ITSM frameworks and processes bring together a set of best practices for the ITS lifecycle, and a best practice is defined as a method or technique that consistently performs better than its alternatives. According to Sturm, Pollard & Craig (2017), ITSM practices are well defined across the industry and provide a common language and framework that enables cross-functional IT professionals to collaborate more effectively.

The most used ITSM conceptual frameworks include:

1. **Information Technology Infrastructure Library (ITIL)** – an adaptable ITSM framework providing comprehensive, practical and proven guidance that supports traditional service management activities. The latest version of ITIL 4 updates ITIL by reworking most of the common ITSM practices in the broader context of customer experience, value streams and digital transformation, as well as by adopting new ways of working such as: Lean,

Agile and DevOps. ITIL 4 provides the guidance that organizations need to address new challenges in service management and exploit the potential of modern technologies and is designed to provide a flexible, coordinated and integrated system for effective management and control of IT-enabled services. Within the digital era, ITIL 4 is aligned with transformational technologies (Cloud, Automation, Artificial Intelligence) so that digital technologies together with consumers create value, support business strategy and embrace digital transformation. In ITIL 4, management practice is a set of organizational resources designed to perform work or achieve a goal. The ITIL SVS (Service Value System) includes a total of 34 management practices and they are: 14 general management practices, 17 service management practices and 3 technical management practices, all of which are subject to the four dimensions of service management - organizations and people, information and technology, partners and suppliers, and value streams and processes. (Axelos, 2019)

2. **Control Objectives for Information and Related Technologies (COBIT)** - a framework for Governance and Management of corporate I & T (information and technologies) focused on the entire enterprise and not only on the IT department of the enterprise. The latest iteration of COBIT 2019 includes 40 governance objectives grouped into two areas - Governance and Management and 5 domains that express the key purpose and areas of activity of the objective contained in them. (ISACA, 2018)

3. **ISO/IEC 20000** – international standard for IT service management describing an integrated set of management processes that form a service management system for the efficient provision of services to the company and its customers (APMG International, 2022).

4. **Microsoft Operations Framework (MOF)** – an alternative framework to ITIL that contains guidelines for the entire IT service life cycle and is a series of 23 documents guiding IT professionals through the processes of creating, implementing and managing efficient and cost-effective services (TechTarget, 2022).

5. **FitSM** – free and lightweight standards aimed at facilitating service management in the provision of IT services, including federated scenarios (European Commission, 2022).

6. **The Open Group Architecture Framework (TOGAF)** – standard, proven methodology and enterprise architecture framework for improving business efficiency (Open Group, 2022).

7. **Business Process Framework (eTOM)** – a reference process framework with a hierarchical classification scheme with descriptions of the key business processes needed to operate a service-oriented business (TM Forum, 2022).

8. **ISO/IEC 38500** – an international standard providing principles, definitions for management bodies to use in the evaluation, guidance of management bodies in managing the use of IT in their organizations. (ISO, 2022).

9. **Six Sigma** – a business quality improvement methodology that measures how many defects there are in the current process and tries to systematically remove them (TechTarget, 2022).

3   Research objectives and methodology

The aim of the scientific article is to map the use of conceptual frameworks, norms and standards in the field of information technology service management.

Methods of evaluation and interpretation of results were used in the scientific article, such as: algorithmization, analysis, deduction, description, comparison, selection and synthesis.

The starting point for the development of a scientific article was the study, analysis, synthesis and comparison of domestic and foreign literature in the form of: professional articles primarily from scientific databases Web of Science, Scopus, Elsevier and others, books, studies, reports of technology companies, standards, etc.

4   Results and discussion

Several studies focus on the adoption of ITSM frameworks as well as specific IT frameworks measured on IT services. The most popular and used information technology service management framework is ITIL, followed by ISO/IEC 20000 and COBIT.

Marrone and Kolbe (2011) report that Winniford et al. (2009) claim that approximately 45% of US companies use an ITSM framework and 15% plan to use it. The IT Governance Institute estimated in 2008 that the operational IT framework with the highest adoption rate is ITIL (IT Infrastructure Library) with 24%, followed by COBIT (Control Objectives for Information and related Technology) with an adoption rate of 41%.

Kubiak & Rass (2018) state the most popular frameworks based on a survey of 261 workers from around the world as follows: ITIL (47%), eTOM (36%), COBIT (36%), MOF (34%), ISO/IEC (29%), Knowledge Controlled Service (28%), Lean (22%), SIAM/MSI (21%), Six Sigma (21%), FitSM (18%), Kaizen (17%), DevOps (14%) .

Research in the field of IT management at the world level was carried out by Invesis Learning in 2021, which synthesized and compared results from companies such as: Gartner, HDI, itSMF USA, Axelos and PayScale, which carried out research in 380 global companies. According to the survey, ITSM frameworks are most implemented in business areas (Fig. 1.) such as: customer service and support, facilities management, human resources, training, financial services and others.
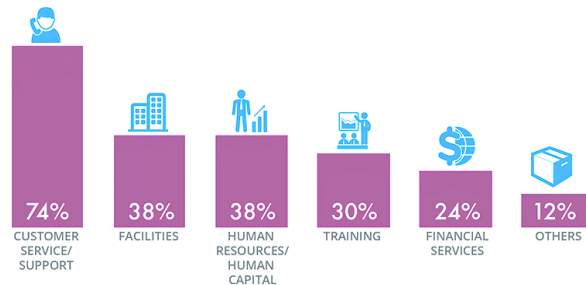
Fig. 1. Use of ITSM in business processes (Invesis Learning, 2021)

The research found that the most used ITSM frameworks are: Itil with a 64% share, Six Sigma with a 26% share and Leans with a 24% share (Fig. 2).
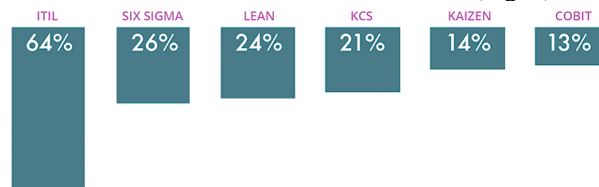

Fig. 2. Use of ITSM frameworks (Invesis Learning, 2021)

According to the company Axelos and their research from the 3rd quarter of 2014, almost 213 thousand professionals passed the ITIL certification exams, and the largest 37% share was from Europe, where there were 77,555 professionals (Fig. 3).
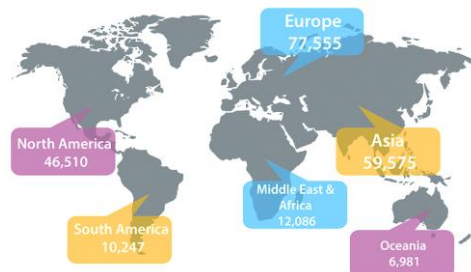

Fig. 3. Share of ITIL experts for 2014 in the world (Invesis Learning, 2021)

In the Slovak Republic, the ITSM survey in 2016 was carried out by IBM in cooperation with Tempest on 70 Slovak companies. It was found that 94% of the surveyed companies have identified IT services in the corporate environment and 6% of the surveyed companies do not use IT service management and, if necessary, the company calls in an expert. IBM further states that among the companies that have an ITSM solution in place and from a survey of selected companies, it follows that: 36% use ITIL, through which they map their IT services; 33% use approaches based on their own corporate standards (usually a combination of ITIL in cooperation with other frameworks) and 25% do not use ITIL, but use other frameworks such as: Six Sigma,

COBIT and others. In the companies that used the ITSM framework of ITIL, it was investigated what business areas they plan to cover with the conceptual framework of ITIL and it follows that: 20% of the company said that they want to cover Service Desk together with Incident Management; 16% of the company said that they do not plan to cover, or cannot cover; 15% of companies apply the Change Management framework; 13% of companies use ITIL for Configuration Management, 13% for Service Level Management, 12% for Problem Management and 11% of companies for Service Catalog.

The survey by Computer Economics (2019) shows that a significant number of organizations do not show interest in ITIL, namely 33% of organizations surveyed do not report any activity, 20% of organizations implement ITIL, 21% of organizations practicing informally, 18% of organizations practicing formally but inconsistently and 8% of organizations practicing formally and consistently. IT Governance (2022) states that the most used framework in IT Service Management is ITIL 4 .

5   Conclussion

Business processes currently need IS and IT support for their meaningful functioning. The complexity of the business informatics environment, enhanced by the use of diverse information technologies, a wide range of external suppliers, combined with various used methods, procedures, taking into account both technical and economic aspects, requires the search for adequate methods and approaches that will help solve these complex tasks. Information technology is a necessity for the functioning of business entities, and the importance of IT has fueled the era of digitization. In the world of information technology, entrepreneurs and especially small and medium-sized enterprises need an adequate mechanism to ensure the provision of quality IT services. For businesses that ignore or have not adopted the principles of IT service management, it will be increasingly difficult to be efficient and competitive with other market participants.

IT Service Management - IT Service Management (ITSM) includes a set of policies, processes and procedures to manage the implementation, improvement and support of customer-oriented IT services. Unlike other IT management practices that focus on hardware, network or systems, ITSM is focused on continuously improving IT customer service in line with business objectives. ITSM includes several IT management frameworks, norms and standards, and these can be applied to centralized and decentralized systems either individually or synergistically.

From a survey of the use of norms, frameworks and standards in practice, the most used framework is ITIL, which is focused purely on IT service management, followed by ISO/IEC 20000, which represents a standard for IT service management with an integrated set of management processes and the third most used the framework is COBIT, which in its current version combines Governance and Management of corporate information and technologies.

The future of the use of frameworks, standards and norms is significant due to the growing digitization and the use of digital technologies, which are already pointed out

by the current versions of standards, norms and frameworks. Businesses should clearly use norms, standards and frameworks in order to have a more efficient management of business processes, to be more profitable and more competitive, because without properly set IT and IS business could not function.

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