APPLICATION OF INFORMATION TECHNOLOGY SERVICE MANAGEMENT WITHIN SELECTED LOGISTICS AND TRANSPORT SERVICES

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This article deals with information technology service management, with its processes defined by ITIL framework, which is the information technology infrastructure library. The results of research are based on the proposal of information technology service model focused on the selected logistics and transport service (tracking and tracing service). Article characterizes background of the tracking and tracing service and its lifecycle (service strategy, service design, service transition, service operation and continual service improvement). The article describes relationships between functions and processes of the tracking and tracing service. The proposal of the model is consistent with standardized processes. Accuracy of the model is verified, namely by comparing its compliance with standard ISO/IEC20000.

Keywords: Logistics service, Tracking and Tracing, ITSM, ITIL

1. Introduction

The growing importance of information and communication technologies (ICT) in business requires a new approach to their operation, and to exploit their potential. The traditional view of ICT operations – operating at the technological components (functional database, server, communication line, etc.) is nowadays only a necessary but not sufficient condition for effective business operation.

It has become increasingly recognized that information is the most important strategic resource that any organization has to manage. Key to the collection, analysis, production and distribution of information within an organization is the quality of the IT Services provided to the business. It is essential that we recognize that IT Services are crucial, strategic, organizational assets and therefore organizations must invest appropriate levels of resource into the support, delivery and management of these critical IT Services and the IT systems that underpin them. However, these aspects of IT are often overlooked or only superficially addressed within many organizations.

The challenges for IT managers are to co-ordinate and work in partnership with the business to deliver high quality IT services. This has to be achieved while adopting a more business and customer oriented approach to delivering services and cost optimisation.

2. IT Service Management and ITIL Framework

The primary objective of Service Management is to ensure that the IT services are aligned to the business needs and actively support them. It is imperative that the IT services underpin the business processes, but it is also increasingly important that IT acts as an agent for change to facilitate business transformation.

All organizations that use IT depend on IT to be successful. If IT processes and IT services are implemented, managed and supported in the appropriate way, the business will be more successful, suffer less disruption and loss of productive hours, reduce costs, increase revenue, improve public relations and achieve its business objectives.

To understand what service management is, we need to understand what services are, and how service management can help service providers to deliver and manage these services. Service is a means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risks.

Service management is what enables a service provider to understand the services they are providing, to ensure that the services really do facilitate the outcomes their customers want to achieve, to
understand the value of the services to their customers, and to understand and manage all of the costs and risks associated with those services. Service Management is a set of specialized organizational capabilities for providing value to customers in the form of services [7].

2.1 IT Service Management literature review

Service management is concerned with more than just delivering services. Each service, process or infrastructure component has a lifecycle, and service management considers the entire lifecycle from strategy through design and transition to operation and continual improvement.

The inputs to service management are the resources and capabilities that represent the assets of the service provider. The outputs are the services that provide value to the customers.

Effective service management is itself a strategic asset of the service provider, providing them with the ability to carry out their core business of providing services that deliver value to customers by facilitating the outcomes customers want to achieve.

Adopting good practice can help a service provider to create an effective service management system. Good practice is simply doing things that have been shown to work and to be effective. Good practice can come from many different sources, including public frameworks (such as ITIL, COBIT and CMMI), standards (such as ISO/IEC 20000 and ISO 9000), and proprietary knowledge of people and organizations. [7]

There are many definitions for discipline of IT Service Management; some are mentioned in the following text.

- Margaret Rouse, 2006: IT Service Management is a process-based practice intended to align the delivery of information technology services with needs of the enterprise, emphasizing benefits to customers. ITSM involves a paradigm shift from managing IT as stacks of individual components to focusing on the delivery of end-to-end services using best practice process models [17].
- Cory Janssen, 2012: IT service management is the process of aligning enterprise IT services with business and a primary focus on the delivery of best services to end user. IT service management is built around processes and practices that gauges the end-to-end delivery of IT solutions rather than their development [8].
- Propoint Solutions, Inc., 2005: The objectives of IT Service Management are to align IT services to the current and future needs of the business and its clients, to improve the quality of the IT services delivered, and to reduce the long-term cost of service provision [15].
- Barclay Rae, 2007: IT Service management being the term we use to describe the business of managing organization to deliver professional, accountable, consistent levels of service. Is a planned and conscious means of building and managing support structure to meet business and service objectives – moving from chaos to control, from fire-fighting to fusion [16].

2.2 Information Technology Infrastructure Library - ITIL

ITIL is a public framework that describes Best Practice in IT service management. It provides a framework for the governance of IT, the ‘service wrap’, and focuses on the continual measurement and improvement of the quality of IT service delivered, from both a business and a customer perspective. This focus is a major factor in ITIL’s worldwide success and has contributed to its prolific usage and to the key benefits obtained by those organizations deploying the techniques and processes throughout their organizations.

Some of these benefits include:

- increased user and customer satisfaction with IT services,
- improved service availability, directly leading to increased business profits and revenue,
- financial savings from reduced rework, lost time, improved resource management and usage,
- improved time to market for new products and services,
- improved decision making and optimised risk.

The initial version of ITIL (subsumed within the Office of Government Commerce, UK) consisted of a library of 31 associated books covering all aspects of IT service provision. This initial version was then revised and replaced by seven, more closely connected and consistent books (ITIL V2) consolidated within an overall framework. This second version became universally accepted and is now used in many countries by thousands of organizations as the basis for effective IT service provision. In 2007, ITIL V2 was superseded by an enhanced and consolidated third version of ITIL, consisting of five core books. [7]
Service Strategy provides guidance on how to design, develop, and implement service management not only as an organizational capability but also as a strategic asset. Topics covered in Service Strategy include the development of markets, internal and external, service assets, Service Catalogue, and implementation of strategy through the Service Lifecycle. Financial Management, Service Portfolio Management, Organizational Development, and Strategic Risks are among other major topics.

Service Design provides guidance for the design and development of services and service management processes. It covers design principles and methods to convert strategic objectives into portfolios of services and service assets. The scope of Service Design is not limited to new services. It includes the changes and improvements necessary to increase or maintain value to customers over the life cycle of services, the continuity of services, achievement of service levels, and conformance to standards and regulations. It guides organizations on how to develop design capabilities for service management.

Service Transition provides guidance for the development and improvement of capabilities to transition new and changed services into operations. It provides guidance on how the requirements of Service Strategies encoded in Service Design are realized effectively in Service Operation while controlling the risks of failure and disruption. It provides guidance on managing the complexity related to changes in services and service management processes, preventing undesired consequences while allowing for innovation.

Service Operation provides guidance on achieving effectiveness and efficiency in the delivery and support of services so as to ensure value for the customer and the service provider. Guidance is provided on ways to maintain stability in Service Operations, allowing for changes in design, scale, scope, and service levels. Managers and practitioners are provided with knowledge that allows them to make better decisions in areas such as managing the availability of services, controlling demand, optimising capacity utilization, scheduling operations, and fixing problems. Guidance is provided on supporting operations through new models and architectures such as shared services, utility computing, Web services, and mobile commerce.

This provides instrumental guidance in creating and maintaining value for customers through better design, introduction, and operation of services. It combines principles, practices, and methods from Quality Management, Change Management, and Capability Improvement. Organizations learn to realize incremental and large scale improvements in service quality, operational efficiency, and business continuity. Guidance is provided to link improvement efforts and outcomes with service strategy, design, and transition [13].
3. Research Problem Description

The need for tracking and tracing items along the supply chain has been long since recognised and logistic companies have therefore set out to offer tracking and data gathering services to solve the problem. The standards developed mainly concern identification of items and as such, do not directly define any connection to product tracking systems. The complexity of the supply chains in global industry has meant an increasing interest in improving their manageability.

The question was whether it is possible to use ITIL framework processes for logistics services, namely service Tracking and Tracing.

To design an IT service management model for Tracking and Tracing, we have studied chosen models as COBIT (Control objectives for information and related technology), MOF (Microsoft operations framework) and eTOM (Enhanced telecom operations map).

Comparing them we found that they are all based on process management. Each approach describes the various procedures that should be implemented for the purpose of proper management of IT services. Each approach uses its own terminology, which is problematic for their comparing. All approaches have, however, some common elements with the ITIL framework. ITIL is a framework that is globally widespread and that was the reason for the use of ITIL processes to design an IT model for Tracking and Tracing service.

4. Proposal of IT Service Management Model for Tracking and Tracing

The proposed process model of IT service management in the logistic enterprise is based on various stages of the IT service lifecycle, and for each of these stages are defined various processes that we recommend for logistical enterprise to implement.

The model based on the stage of the lifecycle, while most attention is concentrated to level of IT service operation.

The design phase of IT service, transition of service and operation of service subject to strategy phase, where is an assumption of defining objectives and requirements of the logistical company for information technology services. In phase strategy takes into account the needs of the organization as well as customer requirements for new or changed IT services.

![Figure 2. Process model of managing IT services bases on ITIL framework](image-url)
The six main processes, which are included in proposed model of IT service management forms the Service Desk function, which is a support for direct contact with IT service customers.

Continual service improvement is based on PDCA cycle of W. Edwards Deming, which consists of four steps P-D-C-A (Plan-Do-Check-Act) in quality management. This cycle is also known as the Deming wheel. PDCA cycle is repeated constantly to achieve continuous improvement. In the case of IT services, the quality can be measured by selected parameters. Parameters of IT service quality is the availability of IT service, the availability of support, response time of support, time resolved or time of replacement solution. These quality parameters should be complemented by quantitative indicators, namely as the number of error messages (incidents), the number of changes made with negative impact and any other parameters.

Figure 3 shows an example of management of Tracking & Tracing service in cooperation with the IT Service Management processes.

Any incident, which declares user of service in connection with the Tracking & Tracing operation, solves Service Desk operator at under a Service Level Agreement (SLA). Service Level Agreement concluded the CIO (for the IT department of the company) and customer of the service (other departments of company). Alternatively, this may be the external service provider.

Service Desk operator at first verifies whether the reported incident is repeated recently or it is a new incident. If the incident is reported as a new incident, Service Desk operator solves below potential demand for the service or escalates the problem to a higher level of support. Service requests can be for example, providing information about the shipment for the user who does not have connection to the Internet. Service requests can also be reported to malfunction of Tracking & Tracing ID code, respectively by its system unrecognized. If this is a repeat incident, that is, if the same incident is reported by several users of Tracking & Tracing service, incident becomes a problem. Problem management is looking for the root cause of incidents and focus on solving them.

The problem is diagnosed and details of individual incidents are recorded. Overview of the provided Tracking & Tracing service is obtained from the configuration database CMDB. Bug reports and solutions are recorded and stored in the knowledge database (the database of known errors). If in the future there may be a similar problem, is it possible in a knowledge database to find existing solutions. In case of a dysfunctional ID code, Service Desk operator based on entries in the knowledge database detects the occurrence of the problem in the past. Based on the record establishes that the problem requires a change.
If the problem solution requires a change, the process will involve Change management, which is responsible for planning and implementing change. Change requests are filtered according to whether they are in practice feasible or not. Requirement for change may be for example multiple user access to information on the logistic item by its ID code at the same time. If this change allows software settings, hardware configuration (CMDB), the change is immediately implemented. After the implementation of changes is necessary to test its functionality and the change will be closed.

If the change affects the new software versions release or hardware for Tracking & Tracing service support (eg. software allows access setting for up to 3 users, and we need to allow access for 5 or more users, which brings the need for increased network bandwidth), there is involved a process called Release Management, which is responsible for planning, testing and implementation of new versions of hardware, software environment in the company. After a successful implementation, there must be updated configuration data in the CMDB database of new versions of software and hardware.

5. Conclusions

This article introduces the IT Infrastructure Library (ITIL) Service Management lifecycle as a guide for developing model for logistic service – tracking and tracing. The article also discusses how a service-oriented approach to software maintenance helps improve IT service. ITIL has an integrated approach as required by the ISO/IEC 20000 standard, with the following components that are: service strategy, service design, service operation, service transition and continual service improvement. The proposed model for Tracking and Tracing service based on ITIL principles, therefore it can be concluded that it is in accordance with standard ISO / IEC 20000.

There was a time when information technology functioned as a set of discrete tools supporting discrete business processes. That is no longer the case. For corporations today, critical business processes are highly dependent on and integrated with IT; the two are essentially inseparable. The demands on corporate IT executives have therefore become both broader and more exacting. While raw system performance, reliability, and cost effectiveness is still crucial, it is no longer enough: the corporate IT service delivery organization must also support highly adaptable, measurable, scalable, consistent and controllable IT processes that are tightly coupled with the business processes that rely on them. IT Service Management is a proven and effective framework for accomplishing this. But the reason IT Service Management is so effective is that it drives fundamental change within the IT organization, from how it manages its processes, technology assets, and vendors to how it deploys personnel.

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