Continual Service Improvement Using Balanced Scorecard

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Abstract: - This paper studied perspectives of Balanced Scorecard and how they can be used to align Service Operation as the part of IT Service Lifecycle with business strategy in a service provider company. An organization framework based on Balanced Scorecard is presented. Objectives and indicators that are linked to the Service Operation processes and functions are identified and they are mapped to the particular performance key indicators and performance management process. The final result is identification of quantitative approach for identification of possible loss caused by poor performance of service management and understanding of complex interdependency between IT services and business processes.

Key-Words: - service management lifecycle, service operation, balanced scorecard, strategic objectives

1 Introduction
IT Infrastructure Library (ITIL) is the most widely accepted approach to IT service management in the world today. It provides platform that can be used to leverage complementary effects between IT and business resources thereby enhancing the value of IT for business purposes. The main goal of ITIL framework is to align IT services to business needs and to business processes. Business process can be defined as a set of logically related tasks performed to achieve business outcome. On the other end according to ITIL process is defined as a connected series of actions, activities, changes etc, performed by agents with the intent of satisfying a purpose or achieving goal.

Current ITIL version is based on the Service Lifecycle stages that rely on processes to execute each element of the practice in a consistent, measurable, repeatable way. It contains five elements: Service Strategy, Service Design, Service Transition, Service Operation and Continual Service Improvement.

To identify the process it is not enough to know only that interruption of telecommunication services has been occurred; incident or problem has been registered to system and escalate to proper group; request for service with low-risk nature has been raised by user; or particular type of access has been requested. It is also important to better understand all process inside element of Service Lifecycle and according to that identify are all actors performing in accordance to their particular role using adequate authority, is the process performed in expected phases and is it finished in expected time, is the legitimate procedure taken into consideration, etc. The criterions of the quality in the performing of the activities are efficiency of the realization (finishing activity as soon as possible), effectiveness of the realization (achieving the aim under existing constraints) and regularity of the action performance (according to regulated norms) [15]. If these elements are carefully evaluate it is possible to gain real metrics and degree of successfulness of operations. We want to establish linkage between information technology (IT) and business processes (BP) to use right metrics and evaluation criteria. To do this we will borrow concept of business process from the four Balanced Scorecard perspectives: a) financial, b) customer, c) internal operation and d) innovation and growth. The Balanced Scorecard is complementary to ITIL.

In this paper we will present how Balanced Scorecard can be used to measure the effectiveness and efficiency of the Service Operation as the part of the ITIL Service Lifecycle. The Balanced Scorecard approach focuses on including customer-defined quality, continual improvement, employee empowerment, and measurement-based management and feedback. Metrics must be developed based on the priorities of the strategic plan, which provides the key business drivers and criteria for metrics. We will define these metrics and relevant information relevant and present how degradation in the information technology service level can effects violation of service level agreement (SLA) and causes losses to the business. The next section gives review of related work. Next, the Service Operation
as the set of IT process is described, and the Balanced Scorecard concept is presented to tie these processes with business and organization strategy. At the end the impact of processes on ITIL performance is estimated using quantitative techniques from management science. The result is a quantitative approach for allocating IT resources to reduce potential loss.

2 Related Work

There is research effort on more general planning aspects for IT that are not limited to IT service management focused on alignment of IT and business. One example [8] propose framework that includes the planning of and setting goals for IT, and the evaluation of results, integrated with the business context. By investigating the benefits and limitations of the framework, and comparing them with other common frameworks, it concludes that the Balanced Scorecard can be a valuable contributor to implementation of an integrated business and IT planning and evaluation process.

The way of developing autonomous IT management decision and get the best value for business from IT service is discussed in [11]. By embedding operator and user level policies in resource models, specifications of composite resources may be automatically generated to meet multiple and varied requirements. It describes a model for automated policy based construction of complex environments and poses the policy problem as a goal satisfaction problem that can be addressed using a constraint satisfaction formulation.

The paper [12] introduces a new paradigm, which focuses on self-optimization according to high-level business objectives such as maximizing revenues. It replaces the more traditional optimizations that are based upon IT measures such as resource availability. A general, autonomous process is defined to enable such optimizations, and a set of technologies and methodologies is introduced to support the implementation of such a process.

IT investments are discussed by many authors. One of these approaches [13] analyzes unsuccessful efforts to implement ERP tools that have resulted in massive financial failures and corporate process disarray for many organizations. Various financial techniques a presented that can help organizations to select the right projects and better manage the implementation of enterprise systems with key practices in the fields of financial management and quantitative analysis.

The approach in [14] is very similar to the one here. It proposes usage of financial loss functions to estimate the impact that IT Service Level Agreements (SLAs) have on business process performance. The obtained result is a quantitative approach for SLA objective setting and investment allocation in order to improve business results. This approach can be served as decision support for investment policies within an ITIL Financial Management for IT Services context.

3 Service Operation

ITIL provides a comprehensive and consistent set of best practices for IT service management, promoting a quality approach to achieving business effectiveness and efficiency in the use of information systems. ITIL V 3.0 was published in 2007 recombining the best practice in IT service management according to the life cycle theory. It changed service management from linear and static implementation to a multidimensional and dynamic system which emphasizes feedback.

In this article we will focus on the Service Operation and will map it into Balanced Scorecard elements. That will facilitate process of identifying performance using each of the four elements of Balanced Scorecard and identifying possible losses.

Service Operation is the phase in ITIL Service Management Lifecycle that is responsible for business-as-usual activities. Processes and tools supporting this element of Lifecycle should enable an overall view of delivery rather than just the separate component such as hardware, software, applications and networks that make up end-to-end service from business perspective.

There are five processes inside the Service Operation that must link together to provide an effective overall IT support structure. These processes are [6]:

- **Event Management** - monitors all events that occur through the IT infrastructure, to monitor normal operation and to detect and escalate exception conditions.
- **Incident Management** - focuses on restoring the service to the users as quickly as possible in order to minimize business impact.
- **Problem Management** – involves root-cause analysis to determine and resolve the cause of events and incidents, proactive activities to detect and prevent future problems/incidents and a Known Error sub-process to allow quicker diagnosis and resolution if further incident occurs.
- **Request Fulfilment** – deals with the Service Requests from the users.
**Access Management** – this process grants authorized users the right to use a service, while preventing access to non-authorized users.

Processes alone are not enough for effective Service Operation. There is a need for specific groups that fall into four main functions:

**Service Desk** – primary point of contact for users in the case of service disruption.

**Technical Management** – provides technical skills and resources that are necessary for supporting ongoing operation of the IT infrastructure.

**IT Operation Management** – executes the daily operational activities that are needed to manage IT infrastructure.

**Application Management** – managing different application throughout their lifecycle.

It is of paramount importance to monitor and control services. The measurement and control of service is based on a continual cycle of monitoring, reporting and subsequent action. Regarding control the most common model is the Monitoring Control Loop. Figure 1 shows how different norms, that can be also from class of normatively regulated activities [16] position towards control and monitor of particular activity inside the process.

It was observed that limitations exist in the case of relying only on financial measures, particularly in short-term financial goals. Lagging indicators conveyed past performance but did not provide a good indicator of future performance. The Balanced Scorecards is a common method of tracking metrics and performing trend analysis. It helps to focus not only on financial targets but also on the internal processes, customers and learning and growth issues. Four perspective with general and ITIL key questions are as follows:

a) **Perspective: Financial**
   General Key Question: To succeed financially, how should we appear to our stakeholders?
   ITIL Key Question: What is the cost of IT?

b) **Perspective: Customer**
   General Key Question: To achieve our vision, how should we appear to our customers?
   ITIL Key Question: What do customers expect of IT provision?

c) **Perspective: Internal processes**
   General Key Question: To satisfy our customers and shareholders, what must IT excel at?
   ITIL Key Question: How must IT guarantee that the business will keep generated added value in the future?

d) **Perspective: Learning and growth**
   General Key Question: To achieve our vision, how will we sustain our ability to change and improve?
   ITIL Key Question: How does IT guarantee that the business will keep generated added value in the future?

The answers to the key question become a perspective’s objectives. We can then measure performance against the objectives. Metrics measures objectives or desired outcomes. They are quantifiable performance statements that indicate how an imitative is performing relative to its objectives. Metrics have to be:

- Relevant to the strategy
- Stated in the context of a goal to achieve in a defined time
- Capable of being tracked and owned by a person or group with the power to influence the outcome.

The four perspectives are interdependent and the relationship among them is called the Balanced Scorecard theory of business. Organizations that continuously improving their capabilities for learning and innovation achieve better performance in their internal business processes which in turn leads to more effective execution of their customer value proposition and results in competitive advantage and improve financial performance.

Organizing business processes into four classes that matches four perspectives makes easier effort to determine the impact of service incidents and

![Fig.1. The Monitor Control loop](image)
violations of agreed level of Service Operation to the business processes. This framework consists of three levels presented on figure 2. It is important to emphasize that information about IT services that support business processes can be found in the configuration management database (CMDB) and can be used for development of intelligent software system.

5 Performance estimation
To have process efficient we have to analyze performance of each action in our process during Service Operation. We have to use key performance indicators (KPI) to establish measurement and baselines. With formal model we can simulate and test any of possible scenarios, and discover eventual bottlenecks.

Coordination of the process is always determined by starting the activity, assigning the tasks, remanding of the deadlines, alarming using applications or e-mail.

Control is determined by control of the process flow, process deadline, process duration, and established protocol of the behavior. We have to know:

- Service desk response time
- Effectiveness in usage of Incident Knowledge Database (IKDB)
- Accuracy of IKDB and frequency of updates in order improve service support efficiency
- Determine assignment of the right actors to the roles
- Creation of the classification of incident for the actors
- Enable selection from the classification list
- Determine optimal number of the actors
- Efficiency of the actors
- Priority for each case
- Proper complexity of the case

### Table1. Service Operation Balanced Scorecard

We’ll need set of extended indicators to develop enough information estimation of each of factors that will belong to one of four perspectives inside Balanced Scorecard for Service Operation. Part of these indicators is presented in table 1.

We can see from customer perspective that from all the functions inside Service Operation Service Desk and SLA are the major indicators. They are
two entry points how customer see the service provider, channels of communications and answer to “How do we appear to our customer”. All other function and processes inside Service Operation are not directly visible to the users.

Figure 3 present one of the performance indicators for service provider we used for our case study. Reference is made during initial establishment of Service Operation during the first year of operation and implementing processes. Total number of incident stays around the same number. Our indicator is number of SLA violations that can be caused by delay in servicing call, availability of service below agreed percentage etc. Graph shows positive trend in the Service Operation. It brings provider to faster resolution time and increase of customer satisfaction.

6 Conclusion
In this paper the concept of the Balanced Scorecard applied to Service Operation is described as one example for continuous service improvement. The most difficult part in implementation of Balanced Scorecard is not implementation, it is consolidation. We propose implementation of Balanced Scorecard on Service Operations level that consolidates all function facilitating process itself. Described framework captures relationship between business and IT service and identify quantitative technique in identifying possible losses. For each of objectives it is important to identify adequate indicators and the most propitiate weight factors. Further analysis can lead into more depth identification of all indicators and better accuracy of weight factors. We find approach useful for service provider to identify service measurement information and to set quantified objectives that have to be attained.

References:


