Improving the quality of the Email service by evaluating the KPI Efficiency

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Abstract. The e-mail service takes significant part at the corporate communications due to its natural benefits like: unification, traceability and the ease of use. For that purpose the organizations need to ensure that proper methods for measuring its efficiency and reliability are in place. In this paper we propose method that allows the IT Management staff to choose proper asset of key performance indicators for measuring the operational performance of the service.

Keywords: Information Technology Infrastructure Library (ITIL); Decision making; IT processes; Information Technology Service Management (ITSM); Multiple Attribute Decision Making (MADM)

1. Introduction

The Service Level Agreement is one of the key subjects in the Service Design volume of ITIL [6]. It is an asset of processes that aims to describe the deliverables that should be achieved in order to have the service available on the expected level. The Key Performance Indicators are parameters that quantitatively describe the SLA.

For the scope of this research we are going to cover the KPIs that fall under the Service Operations [7] volume of ITIL. Our scenario include the cases where the e-mail service is already integrated and running in normal operations mode. Key performance indicators can be also used in case of measuring the efficiency of integration of the service or from financial perspective in order to assess the financial efficiency.

The SLA parameters can be monitored on a periodic intervals (daily, weekly, monthly), but during the last years there is a big demand for monitoring this data live and comparing it to historical data. [1]

2. Problem formulation

The usage of ITIL framework for improving and optimizing the level of the email service have been proved as successful approach. This frameworks does not give the exact rules itself, it also does not specify which exactly should be the measurable for success. In [2] it has been shown how the service is being recognized before and after the ITIL framework implementation based on a simple KPIs defined.

In [4] Xiaozhong et al. describe how the customer satisfaction is being evaluated. They constructs IT service level evaluation system, based on ITIL.

The proper choosing of the proper KPIs meet the following 2 challenges:

- Usage of the proper asset of KPIs – as there are very big asset of KPIs that can describe the properties of the service, it is responsible task to choose the ones that can represent the customer's expectations and priorities
- Setting up the right values over the chosen KPIs – the most often problem here is that after choosing the KPIs that are going to be monitored, they are not assigned with proper values.

3. Other approaches

Below are described the basic approaches that are currently being used by the companies in order to solve the above formulated problems:

- Usage of the proper asset of KPIs – most of the companies rely on a standard asset of KPIs included in their offering plans. These assets are different for the different companies and correspond to their strengths and maturity
- Setting up the right values over the chosen KPIs – here we are talking about thresholds for the different KPI that correspond to the both sides understanding for acceptable quality of service.

4. KPI Classification

Talking about email service there are a couple of groups with KPIs that can be defined. We propose a list of KPIs that can be used for the measurement of the e-mail service – see Table 1. Depending of the business needs only a couple of the KPI can be chosen and also specific ones can be added.

It is important to be noticed that there are also different groups of KPIs for the different chapters of ITIL [3]. While the service operations is focused on the smooth functioning of the IT environment it measures indicators representing that function.

There are different approaches how we can collect an asset with KPIs that can be significant for a wide range of companies. In [5] it is describe how KPI for ISO9001:2008 can be collected by searching large amount of scientific literature.

Another approach that we have reviewed is from "Metrics to support IT Service maturity modes – A systematic mapping study" [8]. This approach would help us to collect larger list with KPIs described in the scientific literature.

5. Proposed approach

The proposed approach supports the decision makers to evaluate their deci

sions. It will help the process integrators to compare a number of alternatives and then determine the sufficient KPIs and their values for the concrete case.

Service availability KPI	**Service request management KPI**
Uptime percentage of the service; .	Average time for completing the service requests;
Count of complete unplanned service;	Percentage of service requests completed within the agreed SLA;
Count of service degradation outages ;	Percentage of service requests completed within one shot;
Incident management KPIs	Percentage of complaints;
Average time for starting work on the problem;	**Change management KPIs**
Average time for resolution;	Percentage of successful changes;
Percentage of incidents resolved within the SLA timeframes;	Number of failed changes;
Percentage of incidents completed within one shot;	Number of unauthorized changes;
Percentage of incidents with proper initial assessment of the impact by the first line support engineer;	**Capacity SLA**
Percentage of complaints;	Consumed disc storage per user;
	Supported users per FTE – the number of users which is successfully supported by one full time equivalent engineer;

Table 1List with e-mail KPIs

In order to solve the above mentioned problems we are going to use multi criteria decision analysis (MCDA) approach. The process how this should be achieved is described in the steps below:

I. The group of experts create a list with all the key performance indicators that may be included in the SLA for the particular customer.

II. The group of experts now have to evaluate the feasibility of the collected KPIs one by one.

III. On the base of MCDA method we chose asset of preferred KPIs.

The above method is applied on real life example. The group of 5 experts evaluates the above mentioned KPIs with the agreement that they are going to be used for the purposes of large national university with ~24 000 students. They have following roles according to ITIL: IT Director; SLA Manager; Incident Manager; Problem Manager; Change Manager. The ranking is done by scoring between 1 and 10 as 1 is the lowest and 10 is highest. Each KPI should be evaluated from 3 aspects – if it is going to support the service uptime, the user satisfaction and the user productivity.

For the calculation of the solution we used a group decision support method by the authors of [9]. The paper also include Excel tool that supports the calculation. While inserting the data in the tool we used weight coefficients that represents the depth of knowledge for the expert about the area of particular KPI.

	Service availability KPI			Service request management KPI				Incident management KPIs				
	• Uptime percentage of the service	• Count of complete unplanned service outages	• Count of service degradation events	• Average time for completing the service requests	• Percentage of service requests completed within the agreed SLA	• Percentage of service requests completed within one shot	• Percentage of complaints	• Average time for starting work on case	• Average time for resolution	• Percentage of incidents resolved within the SLA timeframes	• Percentage of incidents completed within one shot	• Percentage of incidents with proper initial assessment
	Will support the service uptime											
IT Director	10	10	7	3	4	4	6	4	7	9	8	6
SLA Manager	7	9	9	5	4	4	3	7	4	6	4	4
Incident Manager	9	6	7	4	5	5	6	6	3	10	6	8
Problem Manager	10	6	7	2	3	1	3	7	8	9	8	8
Change manager	9	9	6	2	3	2	4	8	4	8	6	7

Table 1 Consolidated view of the experts feedback

The results of the calculation are represented in Table 2:

		Will support the service uptime	Will support the end user satisfaction	Will support the end user productivity		Will support the service uptime	Will support the end user satisfaction	Will support the end user productivity		Will support the service uptime	Will support the end user satisfaction	Will support the end user productivity
	Weight	Score	Score	Score	Weight	Score	Score	Score	Score	Score	Score	
• Uptime percentage of the service					0.6	0.7	0.6	0.6		394	351	360
• Count of complete unplanned service outages					0.5	0.4	0.5	0.5		314	292	324
• Count of service degradation events					0.5	0.5	0.4	0.5		287	257	263
• Average time for completing the service requests					0.6	0.5	0.6	0.4		107	258	170
• Percentage of service requests completed within the agree					0.6	0.6	0.5	0.5		126	199	150
• Percentage of service requests completed within one shot					0.6	0.4	0.4	0.7		108	253	78
• Percentage of complaints					0.6	0.4	0.6	0.4		147	286	109
• Average time for starting work on case					0.5	0.4	0.4	0.4		261	183	225
• Average time for resolution					0.5	0.3	0.4	0.5		210	250	300
• Percentage of incidents resolved within the SLA timeframes					0.5	0.4	0.6	0.4		350	241	283
• Percentage of incidents completed within one shot					0.5	0.4	0.4	0.4		264	305	137
• Percentage of incidents with proper initial assessment					0.5	0.4	0.4	0.4		276	174	126
• Percentage of complaints					0.5	0.4	0.5	0.4		248	340	208
• Percentage of successful changes					0.4	0.4	0.5	0.4		296	220	177
• Number of failed changes					0.4	0.6	0.5	0.4		294	221	161
• Number of unauthorized changes					0.4	0.5	0.5	0.4		315	89	121
• Consumed disc storage per user					0.4	0.3	0.5	0.3		202	102	114
• Supported users per FTE					0.4	0.3	0.5	0.5		236	69	118

Table 3 Top 5 scored KPI; Level of agreement and disagreement

On Table 3 it can be seen the top 5 scored KPI indicators for each of the 3 aspects of the feedback session. We can also see the levels of agreement and disagreement between the experts about the relevancy of particular KPI.

From the results it can be seen that the service availability KPI have major importance for the 3 measured aspects. This is also aligned with high level of agreement between the experts. It can be also seen that the level of disagreement between the experts is relatively high for the top 5 chosen KPIs for measuring the end user productivity and satisfaction. That can be explained with the different point of view on the IT service that the different roles have. Another result that our research shows that the experts are confident and have high level of agreement for the KPIs that are scored low. That means that we can confidently confirm which KPIs are not relevant.

8. Conclusion

In this paper we propose a methodology for evaluating KPI relevance based on MCDA approach and group decision making. This methodology allows the management department in large organizations to have structured approach for choosing proper KPIs for measuring the business goals. The efficiency of the proposed methodology is shown on a real life example considering the quality of e-mail service.

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