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IT Service Management Revisited – Insights from Seven Years of Action Research

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Abstract

A reliable IT infrastructure and smoothly running IT applications are nowadays essential to every organization. Hence, the field of IT Operations Management (ITOM) has drawn much attention in practice. However, this field has hardly been subjected to academic research in the past. Therefore, organizations that are willing to professionalise their IT operations have to rely on industry standards rather than well-reasoned recommendations from academia. The predominant approach taken to ITOM in these standards is that of IT service management (ITSM). But the ideas and concepts associated with ITSM have hardly been evaluated by research so far. We have addressed this shortfall in five action research projects. This paper reports on three of these projects which had the objective in common to introduce ITSM to the organisation and that all build on four ITSM core concepts: the IT service, the IT service portfolio, the IT service catalogue, and IT service cost accounting and pricing. We found that these concepts were difficult to implement in the organisations we studied. While some of the difficulties might be due to organisational peculiarities, we found strong indications for problems being inherent to these concepts. These lead us to call for more academic attention to be paid to ITOM in general and the ITSM approach in particular. We also put forward desiderata for future research.

Keywords

IT Operations Management (ITOM), IT Service Management (ITSM), IT Infrastructure Library (ITIL), IT service, IT service portfolio, IT service catalogue, IT cost accounting, IT service pricing.

1. Introduction

1.1 The Criticality of IT Operations in Modern Business

With the rapid pace of Information Technology (IT) development and the advent of the so called “Information Age”, doing business becomes increasingly dependent on IT. In fact, the survival of many modern organisations depends on a smoothly running infrastructure that supports corporate information and communication. Such an Information Infrastructure (IIS) includes networks, computers, and software applications as well as information resources giving the

organisation access to all relevant information needed to run the business effectively. It is uncontested that modern organisations in the Information Age strongly rely on a well-functioning IIS (e. g. Bhatt et al., 2010; Fink & Neumann, 2009; Overby et al., 2006). This can also be substantiated by empirical research (IT Governance Institute, 2011, pp. 12-14). In addition, we can draw a more detailed picture of the detriments caused by a breakdown of the IIS from research on IT management at the turn of the century (IT21 – IT management in the 21st century (Teubner, 2005)). The data show that most senior executives we queried believed that their organisations would suffer from substantial customer defection within a very short time after a complete breakdown of the IIS. Moreover, they thought that suppliers would be irritated and the corporate image would be severely damaged.

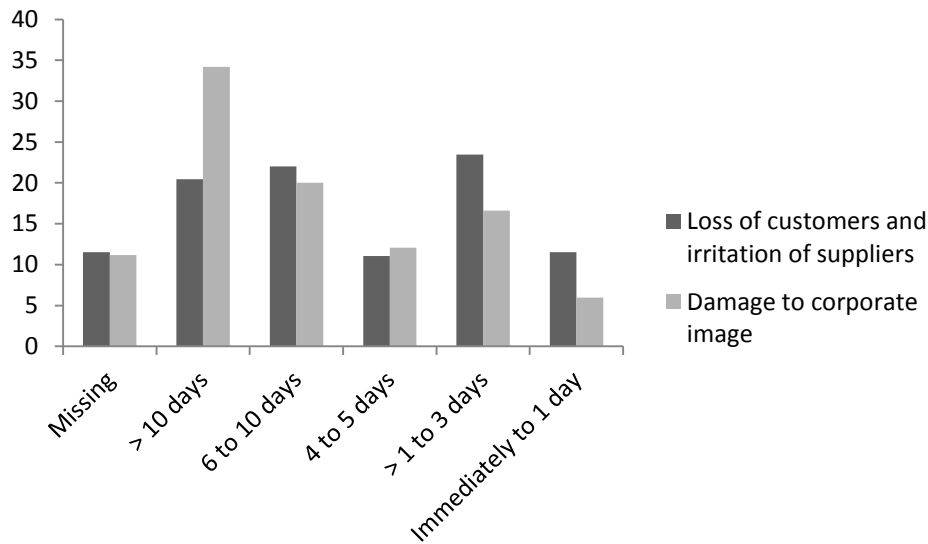


Figure 1: Impacts of IT infrastructure breakdown (in per cent)

The significance of IT operations is also indicated by the fact that approximately 50% of IT personnel are concerned with running the IIS and providing reliable IT services to the business. However, the relevance of IT operations and the resources devoted to it in practice is not reflected in the academic discussion so far. While there is significant work and debate in fields such as Systems Analysis, Software Engineering, IT Project Management, strategic IT management, or the roles of IT executives (e. g. that of the Chief Information Officer), the field of managing IT operations has been largely ignored until now.

1.2 IT Operations in the Light of the Academic Debate

Academia, so far, has not devoted much interest to IT Operations Management (ITOM). This is for example indicated by leading textbooks on Information Management (or on IT management, with the term being more common in practice). If these textbooks do not fully ignore the topic of ITOM at all, they spend only few pages on IT operations. The few textbooks that include ITOM as a field of concern report on industry standards and their adoption in practice rather than building on insights from academic research (for important German textbooks that deal with

ITSM see Heinrich & Stelzer, 2011; Krcmar, 2011; for English textbooks see Luftman & Bullen, 2004, and Frenzel & Frenzel, 2004).

We have also conducted a literature search which further substantiated our perception of a dearth of academic research on ITOM. We searched for the terms “information technology”, “information systems”, “operations management” and “service management” in the EBSCO academic literature databases. A manual review of the results provided by this database review showed that less than 25 relevant research papers were related to the field. We could verify these findings with a separate keyword search in the archives of the “Senior Scholars' Basket of Journals” of the AIS top IS journals (Members of the Senior Scholars Consortium)) and a manual lookup of German IS Journals including *Wirtschaftsinformatik* and *HMD*, which are more practice-oriented outlets for academics and practitioners alike.

To sum up our findings, we found that there is hardly any original research on ITOM. There are a few publications on the paradigm of IT Service Management, which promotes a specific, service-centred management approach to ITOM. Yet these publications strongly build on, and further elaborate, concepts from industry standards rather than documenting independent academic research. It is perhaps for this reason that academic textbooks on Information Management (IM), if they address ITOM concerns at all, refer to industry standards and best practices rather than that they report on findings from academic research. However, this is not necessarily a problem as long as best practice concepts and industry standards are substantial in that they really help to solve ITOM problems in practice. Unfortunately, research by now has not critically studied the ITOM industry standards nor has research evaluated the propositions made by these. We perceive this as a significant shortcoming that we feel needs to be addressed urgently.

2. Evaluating IT Service Management

2.1 The Role of Standards

Given the relevance of ITOM both in terms of the associated IT management challenges and the amount of personnel devoted to ITOM tasks, it is no surprise that organisations have heavily invested in improving IT operations. In the absence of academic recommendations, organisations have to rely on industry standards and best practices, when doing this. As a result, a lot of projects to introduce standards and tools for ITOM have been conducted in practice and a considerable number of projects have been reported on in the trade press in the last years.

The most important industry standard for managing IT operations is the Information Technology Infrastructure Library (ITIL). The ITIL is not only a de facto standard, but also a standard de jure, since it is the basis for internationally recognised accreditations. The ITIL standard was first codified in the British Norm BS 15000. In 2005 it has been accepted by the International Standardisation Organisation as the international standard ISO 20000, which was updated only lately to ISO/IEC 20000-1:2011. Today, the ITIL is available in its third edition and has been adopted as a reference norm for most proprietary norms such as the Microsoft Operations Framework or the IT Service Maturity Model defined by Hewlett Packard. In addition, standards such as the Business Information Services Library (BISL) or the Application Systems Library (ASL) extend the ITIL with respect to application management and information management (van Pols et al., op. 2007; van Pols et al., 2007).

All of the industry standards mentioned above use a service-based approach for organizing IT operations, which is usually called “IT Service Management” (ITSM) (e. g. Zarnekow et al., 2005). The ideas of ITSM have first been outlined in the ITIL. Since its outset in 1980s the ITIL has gained prominence and dominance in defining best industry practices. Hence, we decided to build on the ITIL for our evaluation of current ITSM concepts and best practices.

2.2 A Framework for Evaluating IT Service Management

The ITIL has been defined under the oversight of the Office of Government Commerce in the late 1980s by different people from practice, chiefly representatives from public administration, industry and consulting. The objective was to create a library – nowadays also called “framework” – out of the best and most successful IT management practices for supporting the business users efficiently. This library grew to more than 40 books in the first version and was developed to version two in 2004. This version was more condensed and focused product containing just nine books. In 2007 the current third version of ITIL was published in five books (plus one introducing the ITIL). This version condensed the existing content even more and added new content on technology architecture, virtualization, and outsourcing (OGC, 2007, p. 3). Nowadays, the ITIL is the most accepted and most widely used framework for IT Service Management in the world (OGC, 2007, p. 3; IT Governance Institute, 2011, pp. 29-30). In the next section, we carve out the core ideas and concepts put forward by the ITIL.

2.2.1 The IT service concept

At the heart of the ITIL is the concept of an IT service. The ITIL V1 gives the following definition of an operational IT service as opposed to a project or planning service: “Operational IT services generally involve providing, operating and maintaining an IT infrastructure, and enabling access to information systems, applications and data” (McDonnell, 1993, Appendix A3). In ITIL V2 the concept is redefined as follows: “A Service provided to one or more Customers by an IT Service Provider. An IT Service is based on the use of Information Technology and supports the Customer's Business Processes. An IT Service is made up from a combination of people, Processes and technology and should be defined in a Service Level Agreement” (OGC, 2006, p. 21). The current third version of the ITIL puts special emphasis on the business value provided. An IT service is defined as “a service provided by an IT service provider. An IT service is made up of a combination of information technology, people and processes. A customer-facing IT service directly supports the business processes of one or more customers and its service level targets should be defined in a service level agreement. Other IT services, called supporting services, are not directly used by the business but are required by the service provider to deliver customer-facing services.” (OGC, 2011b, p. 42).

The essence of the definitions given by the OGC is that thinking in services hides the technical assets, processes and operations involved in favour of the benefits that these provide to the business. The ITIL also uses the term “customer-facing service” to distinguish services that generate business value (e. g. process a customer request) from technical service contributions (e. g. provide computer processing power, host and run application) which are also termed “supporting services”. We propose to use the term “business service” as opposed to “technical service” with the technical services providing only technical foundations for the fulfilment of a

business service. It is for this reason that the technical services are sometimes called “service contributions” (Huppertz, 2006, p. 18).

When it comes to defining a business service, it is important to specify the functions and values to be provided and the quality level on which the service shall be delivered. This is done in a so called Service Level Agreement (SLA), which is the contractual basis for the use and delivery of a service. It defines the scope (expected contributions, functions) and quality (availability, reliability, response to service breaches) of an IT service (Teubner, 2008, pp. 54-56).

2.2.2 The IT service portfolio

Business services according to the ITIL build on lower level technical services. Hence, it is necessary for the definition of a SLA to have detailed knowledge about the technical services contributing to the fulfilment of the overarching business service. For example, a “Desktop service” is a combination of different technical services like Desktop Hardware and Software Service, User Access Service and so on. In addition, technical services can be a combination of other, lower-level technical services.

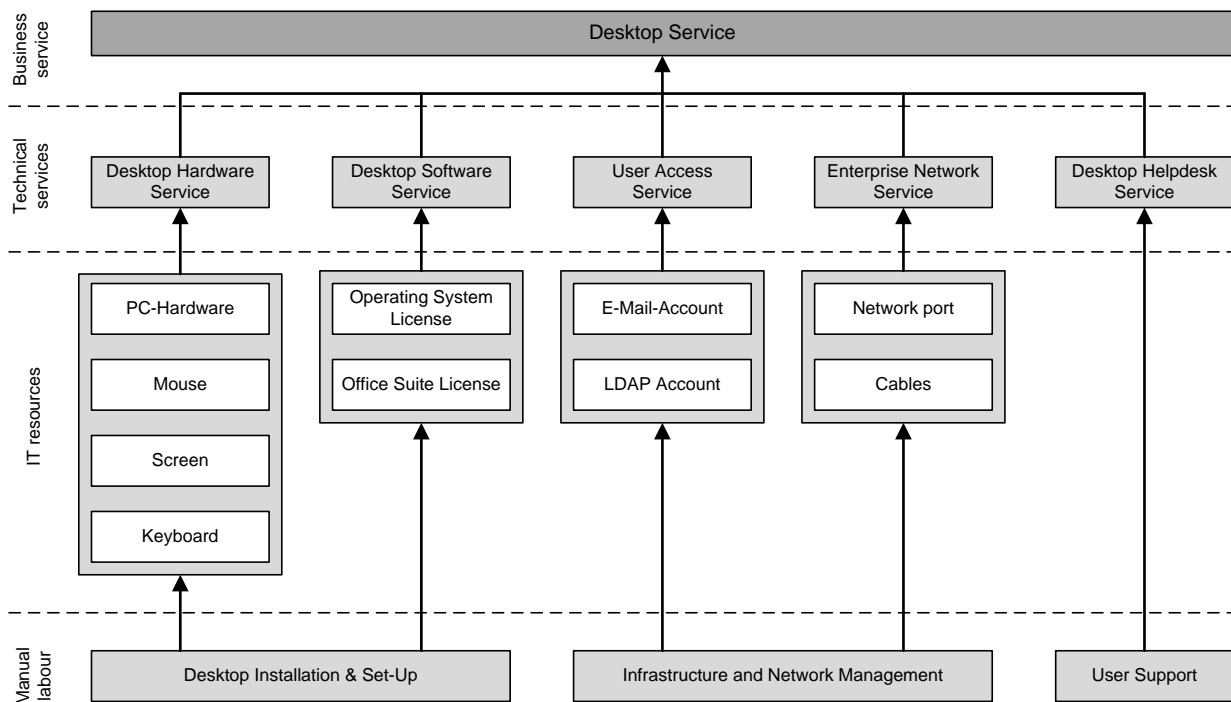


Figure 2: Example Desktop Service

As a result, services in the sense of the ITIL build on a modular architecture with lower level technical services contributing to higher level, more business-oriented services (OGC, 2010, p. 62). The technical integration of services is done via standard interfaces that allow for orchestrating one or more subordinate services can feed one or more different superordinate services. The conceptual integration is done by means of Operational Level Agreement (OLA).

OLAs define the relations between different teams or groups that provide technical services, as opposed to SLAs which are contracted between an IT service provider and a business customer. The person or group in charge of providing a service is called the service owner. The owner of a business service contracts the required technical services with the owners of the respective technical services. This allows the owner of a business service to contract and back up against the failure of required technical services (OGC, 2010, pp. 65-79).

An “IT service portfolio” is defined as a “complete set of services that is managed by a service provider” (OGC, 2011b, p. 72). Accordingly, the IT service portfolio includes all services, business as well as technical services. In addition, the portfolio does not only include active services, but also retired and planned services: “The service portfolio is used to manage the entire lifecycle of all services, and includes three categories: service pipeline (proposed or in development), service catalogue (live or available for deployment), and retired services” (OGC, 2011b, p. 72). The service portfolio provides the organisation with an overview of all the services that have to be produced and managed properly in order to provide the business services to customers as well as all planned and retired services.

2.2.3 The IT service catalogue

Inherent to the IT service management is the idea that an IT organisation – no matter whether internal department, shared service centre or independent firm – is a service provider to the business. And vice versa, the business is looked upon the customer of an IT organisation. Accordingly, an IT organisation has to plan its service offerings in order to meet the demands of the business customer(s). The ITIL promotes this idea with the concept of an IT service catalogue which is defined as a “database or structured document with information about all live IT services, including those available for deployment. The service catalogue is part of the service portfolio and contains information about two types of IT service: customer-facing services that are visible to the business; and supporting services required by the service provider to deliver customer-facing services” (OGC, 2011b, p. 67).

In essence, an IT Service Catalogue can be defined as that subset IT service portfolio which includes the services that are offered to the customers may they be internal ones or external ones. This requires that the services listed in the IT service catalogue are standardised in a way that they can be offered to different customers groups. Standardisation is also a prerequisite for achieving economies of scale (OGC, 2010, pp. 60-65).

2.2.4 IT Service Pricing and Cost Accounting

The intention behind the idea of defining IT services in SLAs and setting up catalogues of IT services on offer is to “sell” services to customers. But before selling them, the prices for the services have to be determined. Prices may be transfer prices for the use in chargeback mechanisms to internal customers or as market prices for offering services on an external market (OGC, 2011a, pp. 168). Pricing IT services in turn calls for an effective cost accounting system with the cost unit being either the IT service itself or related parameters which represent service consumption (OGC, 2011a, pp. 157). Such an accounting system must at least allow for calculating the costs of IT services for different usage intensities and quality levels that are offered and contracted in SLAs. Moreover, such a system should help in establishing cost baselines, detailed analysis of cost structures, and evaluation of alternative funding models (OGC, 2011a, pp. 168). This makes strong demands on the underlying cost model.

Unfortunately, the ITIL provides little support in building such the cost model. Rather, it renders very general definitions from cost accounting (e. g. in-/direct costs, fix/variable cost, cost categories) and on occasion illustrates them with examples from the IT domain.

Besides the demands on the cost model, an IT service accounting systems as demanded by the ITIL requires high transparency in IT service production. The best accounting model is of no use if there are no adequate real world data to populate it.

2.3 Cases

We believe that the idea of looking upon the IT organisation as a service provider which offers a catalogue of well-defined and properly calculated IT Services to business customer(s) are at the heart of IT service management. Consequently, the validity of ITSM and its contribution to address ITOM problems depends on these concepts. But are those concepts practicable and effective? And does the ITIL provide substantial support in implementing them? This was the research question we tried to answer in a couple of industry research projects with organisations that embarked on introducing ITSM based on the ITIL. Our projects were designed as action research projects because action research aims at finding solutions to real world problems in a socio-technical environment and to improve current practice (Frank et al., 1998, pp. 2-5). This allows for not simply assessing the introduction of the ITIL indirectly via interviews or questionnaires but being an active part of the project and of the problem solving processes. Moreover, action research is particularly appropriate in fields where no or little research has been done as is the case in the field of IT Operations Managements.

In total, we conducted industry research projects in five organisations in the years between 2004 and 2011. Three of the organisations researched were IT service providers, one was a consulting company and one was a publishing company. One of the organisations was an international IT service provider while the other four projects were done in medium-sized organisations. Our focus in this paper will be on three of the medium-sized organisations because the projects we conducted were very similar in terms of project setting and objectives. Besides being mid-size, each of the three organisations embarked on professionalising ITOM by introducing ITSM. In addition, all three organisations took the ITIL standard as a reference for introducing ITSM. Table 1 outlines our research sample with respect to the settings and the problems addressed.

In the remainder of this chapter, we will introduce the reader to the findings concerning the practicability and effectiveness of the ITSM concepts that we introduced in Section 2 and related ITIL recommendations.

2.4 Findings

2.4.1 Case “CityMag” (2010-2011)

The CityMag is a medium-sized publishing company with focus on special interest magazines, which also offers a very successful general interest magazine. This company has about 500 employees with about 30 employees working in the internal IT department. Though being a firm with a tradition and experience of more than 50 years in the publishing business, decreasing sales had put CityMag under some cost pressure during the last years. These pressures have drawn increasing management attention to the IT costs which had risen constantly over the years due to an increased use of IT in the publishing and printing business. At the same time, the heads of the business units called for more cost transparency since their business units (i.e. the different

magazines published by CityMag) were charged with IT costs lump-sum and in proportion to their turnover. In addition, the IT department did not show a strong user orientation (in ITIL terms “customer orientation”) not did it have clearly defined responsibilities and processes in place. However, a user help desk (UHD) had been introduced as a first step towards improving user orientation. Next, CityMag decided to embark on IT service management which was perceived as a logical follow up to the introduction of a UHD. This was the birth of a project which aimed at defining IT services and setting up an IT service catalogue at CityMag.

Organisation	Setting and problems	Project Objective
CityMag	<ul style="list-style-type: none"> • Publishing company offering several magazines of special interest magazines and one very successful general interest magazine • Internal IT department with 30 employees • IT provided technical assets in the past • IT costs charged pro-rata to magazines' revenue 	<ul style="list-style-type: none"> • Provide clear service definitions (business and technical) • Charge IT costs based on service and usage rather than pro rata • Increase transparency of IT costs • Define IT service catalogue • Definition of SLAs and OLAs
DoIT	<ul style="list-style-type: none"> • Facility management organisation to an association of health care organisations • Operates a central data center as well as a central hospital information system • Also supports decentralised infrastructures on demand 	<ul style="list-style-type: none"> • Define a standardised IT service catalogue to be offered to the health care organisations • Develop clear service specifications (business and technical) • Calculate service prices • Increase cost transparency
C-Con	<ul style="list-style-type: none"> • Formerly internal IT unit of an IT consultancy and solutions provider group • Outsourced as a shared service centre in 2003 • Merged with an external data centre of a retailing company • IT costs are charged en bloc and incurred by the parent company 	<ul style="list-style-type: none"> • Identify the services that are presently delivered to the group • Price these services • Define standardised service catalogue • Provide foundations for service pricing • On the long run, prepare for offering services to the external market

Table 1: Research Sample

We started the project by conducting interviews with the team leaders of the internal IT department (Client Services, Infrastructure, Application Support and Online Development) and asked them for the IT services that had been delivered in the past. We obtained a list of rather technical service definitions that we further decomposed onto an atomic level. This provided us with a first idea of the service portfolio in place. We then orchestrated the technical services of the preliminary service portfolio towards the business values delivered thus receiving a first draft of business IT service definitions. These were used as a basis for defining a service catalogue. On our way from past technical service definitions to a business service catalogue, we faced severe challenges and problems. From early on, CityMag’s managers had problems in understanding the concept of an IT service according to ITSM. On the one hand, the participating managers were thinking in technical assets rather than in terms of business value. On the other hand, the managers felt being left alone when it came to setting up service definitions. This included the definition of the scope of the services (what is in and what is out?) as well as the level of detail of a service description. In the absence of any concrete guidance by the ITIL we decided to build on the propositions made by Huppertz (Huppertz, 2006). These propositions enabled us to build IT service templates which were at least concrete enough to develop 20 SLA drafts. These drafts are already in use but still under evaluation.

However, when it came to calculating prices it turned out that CityMag's cost accounting system did not provide the cost information needed. The system in place simply collected the IT costs on four different accounts and charged them to the business units. It did not provide cost information on single IT assets nor does it record the "man power" involved in delivering IT services. As a response to these problems, we collected data on the time that IT employees spent on different tasks for a period of 6 months. In addition, we analysed the invoices that the IT department received over more than 1 year to estimate both IT asset costs and costs for external providers. We then roughly assigned these costs to the 20 services included in the preliminary catalogue. However, the resulting service catalogue could only be implemented with strong top management intervention. CityMag is still struggling with good service definitions and a cost model and accounting system that allows for proper calculations and service pricing.

2.4.2 Case "DoIT" (2005-2007)

DoIT is the IT service provider of a facility management organisation, which has been outsourced from an association of institutions in the health care sector in 2000. DoIT in turn had been outsourced as an independent subsidiary of the facility management organisation in 2006. DoIT's core activities at that time were the operation of a data centre and the maintenance of a central hospital information system. In addition, it supported the operation of decentralised local IT infrastructures in the parent health care organisation on demand. The primary motivation for outsourcing DoIT was to facilitate the settlement with the client health care institutions. In addition, DoIT was expected to offer its services to the larger, external health care market on the long run. Besides these intentions, DoIT was still invoicing on the basis of user accounts and systems operated. So its management decided to set up an IT service catalogue according to the ITIL. But defining business-oriented IT services turned out to be more than challenging for the DoIT, since thinking in business benefits rather than in technical assets was completely new ground for the organisation. The research project conducted was intended to explore this new ground for DoIT.

We started the project by analysing the current contracts between DoIT and its customers. In a second step, we conducted interviews with DoIT's employees to better understand their job, role perceptions and daily tasks. We also interviewed managers and the controller to understand the cost accounting practice and capabilities. In a third step, we turned to the (internal) market and interviewed DoIT's customers to solicit information on demanded services and expectations towards DoIT as an IT service provider. We finally conducted workshops with managers and selected professionals to discuss our findings and evaluate propositions for building a service catalogue.

In essence, we found that DoIT current contracts were far from any kind of service catalogue. Rather, the contracts were all-round packages, 1-3 for each customer. Rather than specifying business services, these contracts included lists of technical assets to be deployed and some additional support services such as user help desk and regular maintenance. Accordingly, the workshops we conducted to define business oriented services were more than troublesome. Not only that DoIT's professionals had problems in taking the perspective of a service provider to business, but they were also sceptical about the economic feasibility of defining services on a granular level. First of all, the cost accounting system in place did not provide for the transparency needed to calculate single services. Moreover, a system capable of doing this was expected to consume enormous additional personnel capacity which was expected to outweigh the expected benefits by far. In the eyes of DoIT's managers customers were hardly willing to

pay higher prices to compensate for these overhead costs. Another argument against extending cost accounting was that there was simply not enough capacity of IT Operations personnel to participate in setting up such a cost accounting system.

Despite all misgivings from the side of DoIT's professionals we were able to specify a set of core services as demanded by top management. However, when confronted with the additional resources required for setting up and maintaining a complete service catalogue and calculating the services therein, top management did not make the introduction of these services mandatory. Rather, they decided to invest in a Service Desk in a first step. Additionally, the initial service catalogue was looked upon as a pilot to understand in more detail the requirements imposed onto the organisation by ITSM.

2.4.3 Case "C-Con" (2004-2005)

C-Con is an IT consultancy group incorporating several independent consulting divisions located in Germany and the Netherlands. The consulting group's IT unit was traditionally part of the core business division which accounted for approximately 80% of total turnover. However, the central IT unit also served the needs of the smaller divisions without any billing. As a consequence, the central division strongly demanded a fair allocation of costs. In addition, C-Con planned to acquire a data centre from a retail company which then needed to be integrated with the groups IT unit. This led C-Con's top management to make the internal IT unit an independent shared service centre in the legal form of private limited liability company which we will call "On-Supply" in the following.

Our project started with the spin-off of On-Supply. At the heart of project was the definition of an initial IT service catalogue. This catalogue was intended to be offered to C-Con's subsidiaries in a first step, though it was intended to also provide services to external customers in the long run. We started the project by analysing On-Supply's productive organisation. We studied job descriptions as far as available and interviewed employees to better understand their jobs and the tasks performed. We then analysed the services used by and the needs of the different customer groups in order to contrast them with the purposes and outcomes of the tasks reported by On-Supply's personnel. Unfortunately, we found that employees had severe problems to explain to which ends they performed specific tasks and that they were hardly aware of the potential values that their work generated on the business side. They had a very technical view on their jobs which turned out to be a severe obstacle to service thinking.

In addition, we found that the IT services demanded by C-Con's subsidiaries were heterogeneous and difficult to standardise across the group. As a consequence, it was also difficult to find support for a common IT service catalogue.

On-Supply also had big problems developing up a meaningful and detailed cost accounting system. The major obstacle to setting up a meaningful cost model was a lack of transparency of the IT processes and of the usage of IT assets. Apart from the problem of developing a cost accounting system, operating it also turned out to put a heavy burden on the employees, at least in the eyes of On-Supply's management. So the IT services on offer were calculated on the bases of rough cost estimates, intuition, and market experience. However, this approach led the C-Con subsidiaries that had not been charged with IT costs before contest the prices and ultimately refuse to pay for the so newly defined IT services.

3. Summary and Outlook on Future Research

Across the cases we repeatedly evaluated several concepts central to as well as fundamental assumptions of IT service management as promoted by the ITIL and related standards. The core concept is that of an IT service with concepts such as the service portfolio and catalogue and service pricing and cost accounting associated with it.

Table 2 summarises the concepts that we identified and discussed in more detail in Section 2.2 as well as our findings from the cases regarding these concepts.

Concept	Findings
IT service	<ul style="list-style-type: none"> All organisations had problems in defining their <i>IT services</i>: <ul style="list-style-type: none"> How to define the content of the service? What is in, what is out? (scoping) How to distinguish between service and technical assets as means of production? How to identify the business value provided by an IT service? Based on these difficulties, our organisations also faced severe problems in writing appropriate <i>Service Level Agreements</i>. They perceived recommendations made by the ITIL as vague and not immediately practicable. Hence they urgently requested for more guidance on writing of SLAs including the definition of service contents, quality levels and parameters (e.g. availability, recovery times, and support times). In particular, our organisations had problems to standardise IT services across different user and customer groups in an IT service catalogue.
IT service portfolio	<ul style="list-style-type: none"> The problems such as scoping and standardisation of IT services were passed on to the definition of the IT services portfolio. A key challenge here was the modularisation of IT services which raised standardisation concerns on a technical level, too. It turned out to be difficult to define subordinate technical services with interfaces to different superordinate, more business-oriented services. An additional standardisation problem arose from the heterogeneous technologies used. For example, is "virtual server" a common technical service or are there different virtual server services based on the specific operating system used which might also result in different functions provided?
IT service catalogue	<ul style="list-style-type: none"> Our organisations were used to thinking in technical assets rather than in business benefits. Hence, it was difficult for them to define a customer oriented service catalogue. All organisations we studied had difficulties to respond to the specific needs of different customers in the form of a standardised service catalogue since customer groups often had specific technical requirements (e.g. request for specific laptop computers or smartphone devices) The prevailing approach to alleviate standardisation problems was to define a general class of business services (e.g. Desktop Service) which was then instantiated with different functional specifications (e. g. Engineering Desktop Service) and technical specifications (Acer Desktop Service).
IT Service pricing and cost accounting	<ul style="list-style-type: none"> None of the observed organizations had an organisational structure in place that provided detailed transparency over IT costs. IT was managed as an overhead cost centre. IT costs were accounted for as indirect costs and directly charged to business units in lump-sum and in proportion to turnover. All the cost accounting systems in place were far from able to measure costs on the level of the different services included in the IT service portfolio. Moreover, all organisations put into question the economic feasibility of setting up such a detailed service cost accounting system – even if it were possible at all. Neither the ITIL nor related literature provided good advice on how to build such a meaningful cost accounting system. The problems in cost accounting hardly allowed for calculating proper prices for the services included in the IT service catalogue. As a result, our organisations were at risk of both the prices not covering the costs and the customers not willing to pay the prices asked for.

Table 2: Findings with respect to core ITSM concepts

To sum up our findings we can say that we couldn't verify the core ITSM concepts as put forward by the ITIL. Ideas such as service orientation and the concept of a service catalogue to be offered to customers are very appealing at first sight. As a result, they are not only heavily promoted by consultants and interest groups such as the IT Service Management forum (itSMF) but are also adopted by academics. However, our critical investigation of – as we believe – core concepts of ITSM, puts into question whether these concepts are really applicable and proven in practice. But how to explain the many success stories published in the trade press, then? We do not deny that companies are often successful in introducing some ITIL functions and processes. But functions such as the service desk or processes such as incident, problem or change management can be implemented without a sound service orientation in IT management and without well-defined and calculated IT services. In other words, it is not necessary to really implement the philosophy of IT service management to have a service desk installed or a problem management process in place, for example.

Our findings strongly encourage future research in IT Operations Management as there is no at the moment. Compared to its practical relevance, we hold that the topic has been unduly ignored in the past. In fact, there has hardly been any research into this subject so far. The scarcity of academic insights into ITOM has been partly substituted with recommendations from the ITIL and related industry standards. But it is important to note that these standards emerged in practice and from the experiences of consultants and providers. As such, they may provide valuable input to the academic discussion but they cannot substitute for academic research and theory. Accordingly, we see a great practical need for more original research in ITOM. Such research should first of all provide a sound understanding of the scope, problems, and concerns in ITOM. Concepts and recommendations from the ITIL and other industry standards can then be evaluated against this background. In a second step, research will then be able to analyse in more detail the recommendations put forward by industry standards and the situations where they apply or not. However, ITOM research should not be restricted to the evaluation of the industry practices currently under discussion. It should also consider modifications, extensions and put forward academically well separate and new recommendations where indicated.

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