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Cost Driver Based Internal IT Cost Allocation: A Case of a Medium-Sized Austrian Financial Service Provider

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Abstract. IT has a high share of the total cost at information processing companies. However, not simply minimization of IT costs is relevant, but also effective use of IT in a long term business perspective. Decisions on IT investments are made based on information about costs and benefits in general provided by controlling instruments. To identify direct and indirect costs of IT services, internal IT cost allocation is being used by the vast majority of companies, especially in IT-related industries. The allocation of shared IT infrastructure and overhead costs to IT services, as well as that of IT services to service recipients, is based on simplified allocation keys. Allocation keys are commonly built use-based, per employee or sometimes per revenue share. For internally provided IT services, those are often not relevant cost drivers anymore. As a consequence service recipients lack the means and incentive to control the actual costs and to optimize the benefit-cost ratio. Furthermore, allocated costs, especially for shared IT services, do not represent the real cost situation and product pricing and business cases, based on those costs, are not accurate. A major constraint in defining adequate allocation keys, is the effort to acquire data for building them. The question is, how to build allocation keys as accurate as possible in order to assign actual IT costs with reasonable effort. The paper at hand describes the internal IT cost allocation and its allocation keys based on main actual cost drivers by means of a case study at a typical medium-sized Austrian financial service provider. This approach yields a more accurate allocation of actual IT costs.

Keywords: controlling, IT cost management, internal IT cost allocation, allocation keys

1 Introduction

Information technology (IT) is one of the most important production factors and also an important cost factor in a sector based on intangible information services¹. To make IT costs transparent and controllable in general the controlling instrument of an internal cost allocation is being used [3]. A fair and equitable redistribution of expenditures to

¹ For financial service providers total spend on IT is estimated to be about 15-20% of operating expense [1] and about 4-11% of revenue [2].

the units that gave rise to them, enables the calculation of the actual profitability of products or services [4, 5]. Depending on how much of the total cost of an IT service is identified and allocated, the basis for decisions is variable and product cost accounting and business cases yield biased results [6]. Directly or indirectly organizational objectives and decision-making can be affected. Cost identification and allocation have to be implemented in the right degree of detail to assign indirect IT costs to IT services as correctly as possible within reasonable time and effort. An important aspect to take into account are the allocation keys used to allocate indirect IT costs to IT services and service recipients. It is expedient to integrate relevant cost drivers [7, 8]. In this way, the cost recipient is able to control not only his offset, but also the real IT costs incurred and thereby to optimize the benefit-cost ratio [9].

Understanding cost drivers in IT is not always evident. Commonly, allocation keys for shared infrastructure are built based on the resource consumption or usage intensity, such as transaction volume, line items or database sizes. Nowadays, however, those are rarely cost drivers, except for extreme increases in usage intensity or extent, which raise jump-fixed costs to a higher level. Also allocation of overhead rates per employee is used frequently [7], which is not a cost driver oriented approach.

Thus, this paper focuses on the identification of main actual cost drivers and how allocation keys for shared IT services can be built alongside them.

2 Research Design

First, a review of current scientific literature on allocation keys in use at internal IT cost allocation systems is performed. In the following, to gain new insight exploratory research is conducted by means of a case study. This research methodology is appropriate because the area of interest is not readily distinguishable from its context, and this method covers contextual and complex multivariate conditions and not just isolated variables [10]. The specific case to be studied is a typical medium-sized Austrian financial service provider. This case is suitable for the research question, because it gives a positive example of the phenomenon of interest. Relevant data is well structured and accessible for the researcher. Documents, including IT controlling and internal IT cost allocation guidelines and IT service catalogues as well as KPIs and cost accounting data from 2006 to 2016 were analyzed. The author of this paper also actively engaged in the design and management of the internal cost allocation system by means of participant observation. This gives access to information about the real situation, which would not be accessible via other research methods. Available information from different sources over a period of 10 years facilitates data source triangulation and improves validity [11]. First, the organizational structure and the objectives for establishing internal IT cost allocation, set in 2006, are defined. This creates an initial position that is as close to practice as possible and covers contextual parameters, problematic domains and requirements. Thereafter, the structure of internal IT cost allocation, main actual cost drivers and allocation keys at use in 2016 are described.

3 Literature Review

IT cost accounting includes IT cost identification and IT cost allocation. Direct costs are identified and assigned to cost objects, such as IT services, projects or activities. Through internal cost allocation direct costs and overhead costs are allocated to cost objects and cost centers of business units or business processes.[5, 6] Allocation of IT costs to operating business units can be performed via overhead rates, without taking individual resource consumption into account (i.e., per employee, per revenue share) or via cause-based cost allocation, based on products, processes or activities [5]. To allocate IT costs, actual or budgeted rates and actual or budgeted quantities can be used [5, 6]. Prices can be set cost-based, market-based, based on strategic pricing or based on negotiation between IT department and business units [5]. Commonly full costs are allocated with prices based on actual costs and less frequent based on budgeted cost [3]. For allocation between support and operating departments there are direct allocation method, step-down method or reciprocal method utilized [6].

A cause-based internal cost allocation uses allocation keys derived from allocation bases to distribute costs to receiving cost objects or cost centers. Cost allocation bases reflecting cost drivers should be preferred [7, 8], because a change in the level of a cost driver causes a change in the total cost of the related cost object [6]. Current scientific literature mentions allocation keys based on estimated or actual resource consumption, like volume or capacity (i.e., transaction volumes, number of data records, stored GB, processor time, network ports) and based on access (i.e., number of workplace devices, number of accounts for an IT service, number of dedicated servers, (tiered) flat rates) [5, 7, 9, 12].

A literature research at google scholar, IEEE and SpringerLink with the keywords 'IT chargeback', 'internal IT cost allocation' and 'IT-Leistungsverrechnung' for papers published within the past 10 years, shows only a few reference models [9, 13-17] and case studies [5, 12, 18] with reasonable level of detail. None of the found examples in current scientific literature gives a comprehensive description of allocation keys and cost drivers. Also Banker et al. [19] demonstrates the need for more empirical research regarding cost drivers.

4 Case study on Internal Cost Allocation

4.1 Organizational Structure

The case study company is a medium-sized Austrian financial service provider. The in-house IT department is organized as service center. It provides the management, development, procurement and operations of all IT services for business units and subsidiaries, including IT clients, IT infrastructure and applications. The IT department is accountable for the budget of IT services and IT projects. Cost control is carried out by the IT department on detailed level and by the controlling department on cost center level. Every two years the IT department, the executive board and main business units collaboratively update the IT strategy. IT objectives, IT architecture policy, process

guidelines and operational policies are derived from the IT strategy. Those guidelines form the basis for the setup of the internal IT cost allocation.

4.2 Objectives and Structure of Internal IT Cost Allocation

The objectives for establishing an internal IT cost allocation were as follows:

- Facilitate IT department to be able to control entire IT costs and business units to be able to control IT costs of their used IT services
- Accurate input for product pricing, product line decisions and business cases
- Facilitate service recipients to control service components and service levels
- Set expectations for service providers and service recipients
- Monitoring and improvement of economic efficiency of IT expenses

The following constraints were set:

- Reasonable benefit-cost ratio concerning the effort for cost collection and allocation
- Consistent and coherent accounting guidelines
- Ad-hoc reporting on direct and indirect costs including capex, opex and internal effort of IT projects, IT clients, IT services and IT infrastructure

Given these objectives, an IT service catalogue and internal IT cost allocation were set up. Full cost accounting is carried out in the dimensions of cost types, cost centers and cost objects. Material costs, labour costs and capital expenditures (capex) are assigned to cost objects. Time reporting is used to identify employee cost on cost object level. Employees book every hour spent on a certain cost object and hours are multiplied with an hourly rate, which is calculated based on production costs. There are three different hourly rates according to different positions of employees. Hourly rates are recalculated annually.

Allocation is implemented based on full costs, using reciprocal method with simultaneous equations. Direct IT costs are posted to cost objects, which are allocated based on allocation keys in several cycles to downstream cost objects and finally cost centers of business units and subsidiaries. In this process the sender cost object is credited and the receiver cost object or cost center is debited. The internal allocation is executed monthly, utilizing actual cost and yearly planned quantities.

There are cost objects on three levels:

- Level 1 IT services are directly visible for business units and, in case of a software, handled by end users. Those are business IT services, workplace IT services, consulting and IT projects. Business IT services are, for example, the core banking system, personnel management system and financial accounting system. Workplace IT services are, for example, end-user devices and mail accounts.
- Level 2 IT services are commonly not visible for business units and are not operated by end users. These upstream IT services are required for and used by level 1 IT

services. Level 2 IT services consist of infrastructure IT services (i.e., identity management system, message transfer, file transfer) and IT infrastructure (i.e., server, storage, network, databases, data center).

- Level 3 IT services are overheads for IT management and organization (i.e., IT management, IT governance, IT controlling, IT risk management, further training, time reporting).

Level 3 overhead is allocated to level 2 infrastructure, which is allocated to level 2 infrastructure services and level 1 business IT services. Level 2 infrastructure services are allocated to level 1 business services and workplace IT services. Finally, level 1 business IT services, consulting services and IT projects are allocated to cost centers of the utilizing business units and subsidiaries (see Fig. 1). As a result, both directly posted primary and allocated secondary costs are visible on every cost object and cost center.

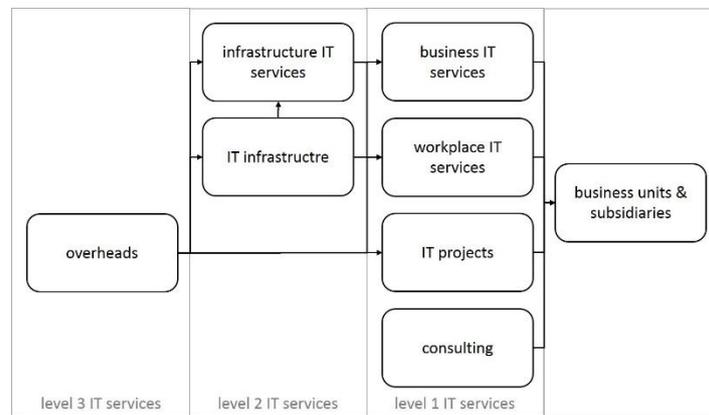


Fig. 1. Allocation scheme

4.3 Allocation keys

Allocation keys are built on allocation bases, which are derived from significant cost drivers. In order to identify these cost drivers, the actual costs of the previous three years are analyzed in depth. Allocation keys are updated annually. So far as resource consumption or quantities are used to build allocation keys, they are measured once a year. Changes during the year are disregarded, because the effort of measuring and changing is incommensurate with the benefit of a more accurate allocation. Allocation keys for level 1 IT services are recommended by the IT department and coordinated with the receiving business units. Allocation keys for upstream level 2 IT services, as well as overhead level 3 IT services are set by the IT department and are not coordinated with the receiving business units. The following Table 1 gives a summary of the main cost drivers per cost object and the derived allocation keys.

Table 1. Allocation keys and cost drivers of cost objects

Cost object	Main cost drivers	Allocation keys
Business & infrastructure IT services	License costs, costs for changes	Along licensing model; major changes via projects to beneficiaries
Workplace IT services	Maintenance costs, capex	Capacity-based tiers for devices; access-based for IT services
Virtual server	Maintenance costs, capex	Capacity-based tiers
SAN storage	Capex, maintenance effort	Volume-based tiers
Network	Capex, maintenance costs per network component	Flat rate per server & IT client
Overheads	Number of IT employee, strived risk & quality levels, number & extent of IT services	Extent-based tiers for IT services

Business IT Services and Infrastructure IT Services. Cost drivers are license costs and costs for changes. Therefore allocation bases are chosen alongside the particular licensing models, such as per used module of the business IT service or per number of users per user type. Major changes are implemented via projects, which are allocated to the beneficiaries.

Workplace IT Services. Cost drivers are maintenance costs and capex for devices and accounts. Allocation is performed via capacity-based tiers per device category and access-based for IT services. For personal computing devices, for example, two categories exist alongside performance parameters – standard and power user devices. Mail accounts are set up according to a defined standard and are allocated access-based.

Virtual Server. Server capacity, like CPU and RAM is a minor cost driver by now, compared to maintenance effort (i.e. for maintenance costs and management effort of virtual infrastructure, patching, monitoring, asset management). This would suggest to establish easily measurable flat rates per virtual server. Still, server capacity costs are step-fixed. Taking this into account, allocation keys are built on capacity-based tiers. There are three different server capacity categories alongside CPU and RAM at a 1-to-1.5-to-2 ratio. If a server is in use by several IT services, it is allocated in equal proportions to the using IT services.

SAN Storage. Main cost drivers are overall capex and maintenance effort. Maintenance effort remains almost stable even if disk space is enlarged. This would lead to an equal distribution of costs to central storage using IT services. Disk size is a minor cost driver, except for extremely large volumes. Taking this into account allocation keys are built on capacity-based tiers. There are three tiers for small, medium and large allocated disk space. As non-standard requirements on connectivity or performance of individual IT

services also cause relevant additional maintenance effort, the additional implementation of performance-based tiers is considered. However, it has not been put into practice yet.

Network. The main cost driver of the network is capex and maintenance costs per network component and related software. Network is used by workplace IT services and servers, therefore it is allocated to them. The allocation key reflects the ratio of capex and maintenance costs for network components in office buildings versus these costs for network components in data centers. The used network capacity is not a cost driver anymore, except for extremely extensive usage, which induces step-fixed costs to jump to a higher level. Amongst IT clients, network is allocated as flat rate. The proportion of network costs for data center is allocated as flat rate equally to each server.

Overheads. Cost drivers for overheads are the number of IT employee, strived risk and quality levels as well as number and extent of IT services. Overheads conduces to IT services as well as infrastructure, therefore it is allocated to business IT services, IT workplaces, IT projects, IT infrastructure services and IT infrastructure. One of the estimators for caused overheads is the extent of IT services. The extent of an IT service is mostly directly related to the direct costs, including material costs, labour costs and capex. As a consequence, allocation keys are built on four categories derived from direct cost levels of the receiving IT services. The overhead costs are allocated to IT services according to the assigned categories small, medium, large and extra-large at a 1:5:10:20 ratio.

5 Conclusio

There is no overly precise method for allocating a cost object to a recipient, so an approximate method has to be used to set up allocation keys. Cost allocation bases reflecting significant cost drivers should be preferred. In this way, the service recipient can influence the real costs of the upstream IT services through the way of utilization. This approach also yields a more accurate allocation of actual IT costs. Commonly, allocation keys for shared IT infrastructure are built capacity-based or volume-based, such as per transaction volume, line items or database size. These allocation keys do not in any case reflect the causation principle nowadays. A case study at a medium-sized Austrian financial service provider brought allocation keys into light, which are oriented to the significant cost drivers and take jump-fixed costs into account. These are for example: flat rates for network access, capacity-based tiers for virtual servers or volume-based tiers for SAN storage. The findings can assist IT cost allocation designers to fine-tune their applications in practice. A potential limitation is that the results rely on a single case. As an opportunity for future research this study could be replicated with different companies in different sectors. Furthermore, the insights can be leveraged by researchers to develop a reference model for cost driver based internal IT cost allocation.

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