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ABSTRACT

Service oriented architectures (SOA) herald a new generation of application systems. Whereas current systems were to be chosen and operated as self-contained systems of individual vendors, service oriented architectures allow for integrating application functionality from different sources internal or external to a company according to individual needs within a specific context. Vendors of ERP systems are developing service oriented product variants and intermediaries for trading services over the internet have established already. Therefore, companies are increasingly confronted with the question, to what extend the adoption of SOA turns out to be a profitable venture. As out-payments can be well estimated, the question is: "What is the actual economic value to be gained by utilizing SOA-enabled systems and what monetary consequences are associated with a SOA adoption?" With this contribution we present an approach to measure the financial impact of SOA based on conceptual process models.

Keywords

Service oriented architecture, economic efficiency, financial impact, business process management.

INTRODUCTION

Since the number of service oriented product variants for operational standard software increases, SOA becomes a relevant subject for companies to decide upon. Examples for SOA product variants are »eBusiness on demand« by IBM, »Sonic ESB« as well as »Oracle SOA Suite«. SAP® currently strives to replace the product »R/3« with their »Enterprise SOA« solution. However, previous work on SOA predominantly concentrates on technical aspects. Elaborations centre on issues concerning dynamic composition of application systems by means of loosely coupled system services via web service standards (Leymann, 2003).

From an economical perspective, SOA offers great potentials for adopting business processes in a flexible manner (vom Brocke, 2007). On the basis of SOA, processes of an information system can be extracted and "out-tasked" to service providers. According to KEEN/MCDONALD "Out-tasking […] breaks a company into a portfolio of process-centred operations rather than interlocking departments or functions" (Keen and McDonald, 2000). Therefore, the economic impact of SOA can be reflected by the concept of service-oriented business processes, which integrate a certain set of services that have to be combined with internal functions according to the companies needs (Limthanmaphon and Zhang, 2003; Orriëns, Yang, and Papazoglou, 2003). Hence, SOA puts companies in a position to concentrate on their core competencies by sourcing out parts of a process to service providers and thereby being able to flexibly adopting to changes.

Up to now, little substantial evidence for the profitability of a SOA adoption is available. FORRESTER predicts possible cost savings amounting to "at least 30 %". IDC studies on SOA projects report a ROI of 308 % at GOODYEAR and 453 % at SASOL. NUCLEUS RESEARCH investigates an „Annual ROI" and evaluates SOA projects at VECTREN CORPORATION with 141 % p. a. and at MILTON KEYNES GENERAL HODPITAL with 61 % p. a.. However, these results can hardly be transferred from the individual case to a general context.

A survey of services available through the internet raises scepticism, to what extend profitability expectations can be achieved by means of services procurement in order to compile an appropriate application system within a specific context of a company. Results indicate that available services on the internet are of rather little importance for the design of operational application systems. In fact, assuming a perfect technology for a market-based service provision over the internet, this approach might be recommendable only for few tasks. Those tasks are characterized by a low specificity, a low strategic relevance and a low risk and therefore are considered to have a minor value contribution potential for a company.

From the perspective of many companies, a considerable gap between the advertised potential of SOA and the realization of economic value through the provision of appropriate services can be perceived. With this contribution it is argued, that this gap basically emerged because it has not been investigated yet, how SOA can contribute to a positive financial performance within the specific context of a company. The predominant task seems to be finding out what drives the efficiency of service-oriented business processes from a financial perspective. This task is focused on in this paper.

RELATED WORK

The evaluation of the profitability of investments in information technology is a field controversially discussed within information systems research for some time now (Brynjolfsson, 1993; Hitt and Brynjolfsson, 1996; Im, Dow and Grover, 2001; Mukhopadhyay, Kekre and Kalathur, 1995; Porter and Millar, 1985; Tam, Moinzadeh and Berke, 1998). The general problems in evaluating investments in IT are tightening in the context of SOA.

The multitude of research work dealing with evaluating the profitability of investments in information systems can be classified as ex ante or ex post with regard to the time of the evaluation, whereby the ex ante evaluation of investments is especially focused upon by research (for an overview, cf., e.g. Walter and Spitta, 2004). Up to now, an adaptation of existing concepts for evaluating the profitability of SOA does not exist. Current research primarily concentrates on discussing generic benefits of SOA qualitatively (Woods, 2003; Erl, 2005; Krafzig, Banke and Slama, 2006; Woods and Mattern, 2006), without addressing the special SOA requirements regarding a quantitative profitability analysis. Up to now, a few isolated ROI calculations on the basis of selected practical examples exist (Barnes, 2005a; Barnes, 2005b).

As suggested above business process should be the starting point of any SOA impact analysis. Referring to the concept of service-oriented business processes, related studies in the fields of managing activities, IT-infrastructure, and services have to be considered in order to derive appropriate means for evaluating the profitability of SOA.

- *Activities*: There is a respective amount of studies carried out in the field of process management, taking into account the organization of business activities within business processes. Most of these contributions focus on matters of designing processes with respect to both organizational structure (Becker, Rosemann and Kugeler, 2006) and execution by workflow management engines (Jablonski and Bussler, 1996). At present, the development of standardized exchange formats of processes is one of the major concerns (van der Aalst and Kumar, 2003). Research on the assessment of processes is predominantly covered by management literature and focuses on qualitative aspects (Davenport, 1993; Hammer and Champy, 1993; Smith, 1996). Some approaches in accounting science take a more quantitative look on processes, like activity based costing (Cooper and Kaplan, 1991). However, these approaches abstract to a large extend from process models.
- *Infrastructure*: Designing information system infrastructures is an essential task in IS. Studies focusing on the assessment of alternative infrastructure solutions can be found with either a qualitative (Farbey, Land and Targett, 1995) or quantitative orientation. Profound research on quantitative assessment is particularly carried out in the field of total cost of ownership-analysis (TCO) aiming at calculating all relevant costs chargeable to an information system throughout its life cycle (Ferrin and Plank, 2002). Apart from methodological contributions (Daniels, 1993; Tam, 1992), special analysis has been carried out evaluating specific aspects in systems design (Faye Borthick and Roth, 1994; Smith David, Schuff and St. Louis, 2002).
- *Services*: In recent years, special research on service engineering is increasingly arising (Shostack, 1982; Stiglitz, 2000). Within the IT-sector, studies in the field of standards, like ITIL, serves as an example for service engineering (OGC, 2001). Special studies on the assessment of services are carried out with respect to sourcing strategies. Most assessments are based on argumentations, partly structured by means of pros and cons lists (Knolmayer, 1997), checklists (Buck-Lew, 1992; Kador, 1990; Kascus and Hale, 1995), analytical hierarchy process models (Putrus, 1992), and flowcharts (Knolmayer, 1997). Quantitative approaches focus on cost analyses, such as special task comparisons (Espinosa and Carmel, 2004), multi-task cost comparisons and holistic cost-risk comparisons (Aubert, Patry and Rivard, 2002; Bahli and Rivard, 2003; Jurison, 2002).

These studies offer valuable insights in the management of service-oriented business processes. One essential shortcoming, however, is to be seen in the fact that each particular field focuses on separate aspects of service-oriented business processes. Thus, an integrated picture is lacking, which would be necessary for configuring a company's service portfolio. Contributions towards such a methodical integration, which jointly considers activities, infrastructure, and services can be found in the field of orchestration and choreography of web-services (Aoyama, Weerawarana and Maruyama, 2002; Cardoso, Sheth, Miller, Arnold and Kochut, 2004; Wang, Chen, Wang, Fung and Uczekaj, 2004). However, this work focuses on technical aspects of service coordination within service-oriented processes, so far. As for a profitability analysis, on the contrary, insights about the value-contribution potential of particular process designs are needed, comprising the long-term economic consequences coming along with decisions about the configuration of particular service portfolios.

A first approach to apply capital budgeting in service-oriented computing has been presented by VOM BROCKE and LINDNER (2004). In this work, the monetary consequences of a service-oriented architecture are evaluated and opposed to those of conventional architectures. This work sets a basis for the development of a methodological framework for the assessment of the financial performance of service-oriented information systems (vom Brocke, 2006). From a conceptual perspective, however, these works are still limited to the assessment of services and infrastructure.

With the concept of service-oriented business processes, such assessments are consecutively put in relation to the company's business activities aiming at an integrated frame for evaluating activities, infrastructures, and services. In the next section, a method for controlling service-oriented processes will be introduced. As will be shown, this method serves as a good tool to evaluate the profitability of SOA adoption initiatives.

METHOD FOR A SERVICE ORIENTED PROCESS CONTROLLING (SOPC)

Methods of service-oriented process controlling (SOPC) are based on a service-oriented process design. This allows for the design of processes by means of »service portfolios«. That way, processes can be adapted situational. This requires that processes are first designed regarding their abstract structure and then alternative modes of institutionalization are chosen for individual activities. A »service portfolio« refers to the set of services, which are to be used for the execution of activities within a process at a particular point in time using a specific infrastructure. The constituents of SOPC are to be substantiated as follows:

- **Activity:** Segment of a process, describing a transformation of the process state. Activities can be combined or may be refined into sub-processes.
- **Service:** Alternative for the execution of an activity, which could exhibit different modes of institutionalization. Services can be categorized as internal and external services as well as automated and manual services. Internal Services usually employ functionalities of a firm's enterprise application systems.
- **Infrastructure:** All institutional prerequisites for integrating services within a particular process. These include both technical artefacts like an enterprise service bus as well as non-technical prerequisites like organizational aspects of service integration.

Following a service-oriented principle, a specific process design can be derived by »configuring a service portfolio«. Hence, the process design is predominantly driven by selection decisions (van der Aalst, Dreiling, Gottschalk, Rosemann, Jansen-Vullers; 2005). In particular, a configuration is characterized as a situational combination of »activities« for the realization of an organizational task and as the assortment of »services« and »infrastructure« elements for their execution. In order to find profitable service portfolios, information about the economic consequences of individual design decisions within the specific context of an organization is required. A service-oriented process controlling (SOPC) provides proper means of decision support for the configuration of service portfolios.

The basic idea of a methodical decision support for SOPC is to employ process models as a basis for the economic evaluation. The process models are prepared in a way that individual design decisions can directly be mapped to economic measures. As a prerequisite the process models have to be augmented to capture both SOA-enabled design options as well as to specify related economic consequences on a quantitative basis. The economic consequences can be consolidated to financial measures by applying a process performance measurement system. Because of the long-term nature of the economic consequences, methods of capital budgeting have to be integrated within the calculation system, in order to properly evaluate the financial performance of a particular service portfolio. The »Net Present Value (NPV)«, the »Total Cost of Ownership (TCO)« or the »Return on Investment (ROI)« are exemplary measures for the financial performance. Moreover, means should be provided allowing for experimental re-configurations of service portfolios as well as for transparent evaluations of their economic consequences within a specific decision situation. A conceptual framework for SOPC-methods is presented in Figure 1.

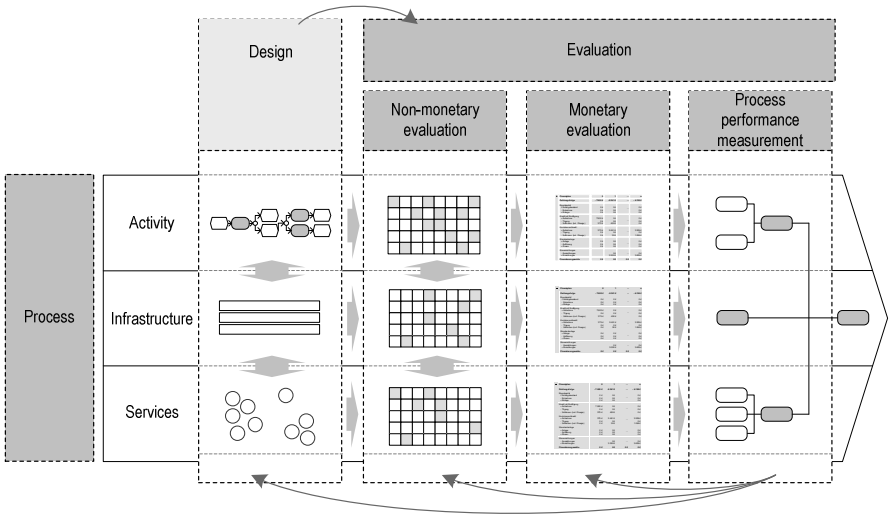


Figure 1. Conceptual Framework for SOPC Methods

The framework differentiates between the controlling object and the system of objectives. As the pivotal controlling object, processes have to be analysed and selectively designed with respect to relevant activities, services and infrastructures. A SOPC method builds upon existing process models, which can be specified with different modelling languages. Process models will then be evaluated with regard to specific controlling objectives. The following areas of evaluation can be distinguished:

- Non-monetary assessment: The non-monetary assessment serves for considering environmental conditions relevant for a particular process design. These include both quantitative and qualitative facets. As for the quantitative aspects frequencies of activity execution have to be determined, which provide the quantity structure for the monetary assessment. Qualitative aspects capture functional requirements for the process design. On the basis of a functional specification of activities and services, a service selection can be carried out in compliance with specific aspiration levels.
- Monetary assessment: The monetary assessment captures payments caused by a particular process design. Therefore, a monetary assessment of individual design options on the service, the infrastructure and the activity level is conducted. The payments have to be aggregated for the overall process. Payments for external services will be calculated on the basis of specific terms of service provision, whereas internal services may be calculated according to individual resource utilizations within the organization. Because of the long-term nature of the economic impact of design decisions the calculation reflects multiple periods.
- Economic measures: The captured payments are to be consolidated to meaningful target measures. On the basis of a process performance measurement both original and derivative payments are analysed. The analysis of original payments reveals relevant drivers of payments of a service-oriented design and demonstrates their impact on the overall series of payments of a particular process design. As for derivative payments specific conditions of funding and taxation have to be considered. As a result financial performance measures like the TCO and the ROI can be reported, which represent top key figures of the process performance measurement system.
- Process comparison: On the basis of financial performance measures, process variants of alternative service portfolio configurations can be compared with each other. By means of comparisons the value of individual service portfolio configurations can be quantified from the perspective of a decision-maker. For analysis purposes both optimization runs as well as experimental process comparisons can be employed. The latter allows for modification of functional aspiration levels and the analysis of the modification impact on original and derivative payments.

As for the economic measurement well-established methods already exist (Grob, 1993; Seitz and Ellison, 2004; Shapiro, 2004). Hence, the framework for SOPC is designed in a way that these methods can be reused and integrated for the purpose of measuring the financial implications of the design of SOA-enabled business processes. In doing so the challenge is to specify relevant in- and out-payments on the activity, infrastructure and service level.

APPLICATION OF A METHOD FOR SERVICE ORIENTED PROCESS CONTROLLING

The applicability of the SOPC method is to be illustrated by means of a demo case. The company considered throughout the case is called DECIS and operates in the tourism industry. The core competency of DECIS is the specific configuration and compilation of travels according to individual customer needs. Given the example of DECIS, calculations to evaluate the economic efficiency of a SOA adoption have already been applied and documented for »outsourcing«, »integration« and »networking« scenarios (cf. vom Brocke, 2007). Below, selected calculations of the »outsourcing« scenario will be presented to illustrate the basic principles of the SOPC method.

Options for SOA-based outsourcings at DECIS arise within the process »Customer Service«. Figure 2 renders the process by means of an Event-driven Process Chain (EPC, cf. Scheer, 1999), which is augmented with SOA-specific artefacts.

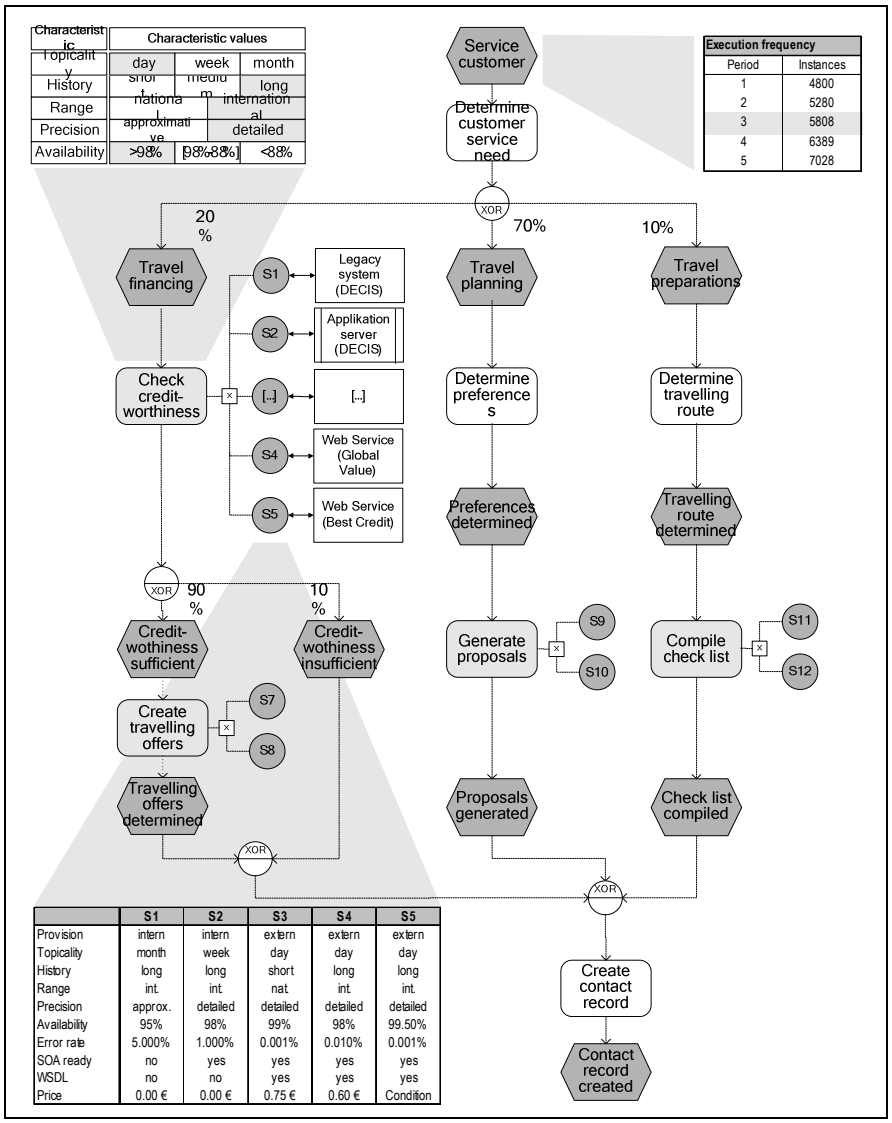


Figure 2. Process Model »Customer Service« at DECIS

To capture alternative options regarding the execution of activities (called functions in the context of EPCs), the »service« construct is introduced. Services encapsulate the utilization of one or more resources and are assigned to functions by means of an exclusive disjunction (XOR). Referring to the activity »Check credit-worthiness« in Figure 2, a set of multiple alternative services is available for executing this activity. This set of services comprises both market-based web services as well as internal services (utilizing internal resources). In order to determine a profitable configuration of the overall service

portfolio for the given process, both non-monetary as well as monetary assessments have to be employed. Finally, the results of the assessment have to be gradually aggregated and reported by means of financial performance measures.

Non-monetary Assessment

For an initial selection of a valid set of services, requirements for the execution of individual activities have to be specified. Therefore, relevant characteristics and characteristic values have been identified and are documented within the process model of Figure 2 by means of morphological boxes. As for the execution of activity »Check credit-worthiness« an »international« range is required as well as an availability of more than »98 %«. The matching between requirements (characteristics) and the services available yields only three valid services, »Service 2«, »Service 4« and »Service 5«. These services comply with all requirements. In addition to qualitative aspects also specifications relevant for the calculation of monetary consequences are presented in Figure 2. For the monetary assessment additional period specific process execution frequencies have to be specified as well as probabilities of entering particular branches of the process.

Monetary Assessment

The results of the non-monetary assessment provide the frame for the calculation of monetary consequences associated with a particular service portfolio. Therefore, a calculation schema is employed, which integrates both structural aspects as well as qualitative and quantitative specifications of the process model. This allows for a period specific assessment of individual line items. Figure 3 renders an exemplary section of a calculation schema for the »Customer Service« process.

	Process »Customer Service«	0	1	2	3	4	5
100%	+ Determine customer service need						
20%	− Check credit-worthiness	-2.200 €	-2.133 €	-2.264 €	-2.344 €	-2.432 €	-2.102 €
	○ − Service 2	-37.000 €	-515 €	-538 €	-564 €	-592 €	-1.123 €
	+ Activity level	- €	-192 €	-211 €	-232 €	-256 €	-281 €
	+ Infrastructure level	-37.000 €	-280 €	-280 €	-280 €	-280 €	-780 €
	+ Service level	- €	-43 €	-47 €	-51 €	-57 €	-62 €
	◉ + Service 4	-2.200 €	-2.133 €	-2.264 €	-2.344 €	-2.432 €	-2.102 €
	○ + Service 5 [flat pricing]	-4.100 €	-2.400 €	-2.484 €	-2.577 €	-2.678 €	-3.190 €
	○ − Service 5 [flex pricing]	-4.100 €	-2.444 €	-2.543 €	-2.430 €	-2.527 €	-2.923 €
	− Activity level		-72 €	-79 €	-87 €	-96 €	-106 €
	cost charge for errors		-10 €	-10 €	-10 €	-10 €	-10 €
	* activity frequency, absolute		960	1056	1162	1278	1406
	* risk of errors in per cent		0,001%	0,001%	0,001%	0,001%	0,001%
	= payments		0 €	0 €	0 €	0 €	0 €
	cost charge for down time		-5 €	-5 €	-5 €	-5 €	-5 €
	* activity frequency, absolute		960	1056	1162	1278	1406
	* risk of down time in per cent		1,5%	1,5%	1,5%	1,5%	1,5%
	= payments		-72 €	-79 €	-87 €	-96 €	-105 €
	− Infrastructure level	-4.100 €	-1.460 €	-1.460 €	-1.460 €	-1.460 €	-1.960 €
	- contracting with service provider	-1.200 €					
	- implementation of service interface	-1.100 €					
	- provision of software components	-1.800 €					
	- coordination cost		-1.400 €	-1.400 €	-1.400 €	-1.400 €	-1.400 €
	- payments for adaptations		-60 €	-60 €	-60 €	-60 €	-60 €
	- payments for replacement						- 500 €
	− Service level		-912 €	-1.003 €	-883 €	-971 €	-857 €
	activity frequency, absolut		960	1056	1162	1278	1406
	* preis per transaction		-0,95 €	-0,95 €	-0,76 €	-0,76 €	-0,61 €
	= payments		-912 €	-1.003 €	-883 €	-971 €	-857 €
70%	+ Determine preferences						
10%	+ Determine travelling route						
18%	+ Create travelling offers	- 2.600 €	-560 €	-633 €	-678 €	-711 €	-1.251 €
70%	+ Generate proposals	- €	-2.028 €	-2.213 €	-2.416 €	-2.640 €	-3.886 €
10%	+ Compile check lists	- 2.700 €	-640 €	-676 €	-716 €	-759 €	-1.307 €
100%	+ Save contact records						
	Total	-7.500 €	-5.361 €	-5.785 €	-6.154 €	-6.542 €	-8.546 €

Figure 3. Monetary Assessment of the »Customer Service« process at DECIS

In this example, calculations of payments caused by particular service alternatives are shown on the service level, the infrastructure level and the activity level. Payments for »Service 5« are determined on the basis of market prices, since this service is provided externally. A market-based provision can be regulated by means of two pricing models (price based on transactions or on the length of provision period). Additional payments relevant for the calculation accrue on the infrastructure level. Besides payments for the overall the process infrastructure, specific payments have to be considered which are required to integrate individual services. On the activity level, out-payments can be determined, which result from individual service qualities. Figure 3 shows an exemplary assessment of the frequency of error occurrences and down time risks on the activity level.

Calculating Economic Performance Measures

The payments captured on the service, the infrastructure and the activity level are to be aggregated for alternative configurations of service portfolios. Therefore, different services for the execution of individual activities have to be interactively selected and assessed with regard to their monetary consequences. To consider the individual process context, payments are weighted with the execution probabilities of particular activities. That way, a series of original payments for a service portfolio configuration can be determined. Given the series of payments, derivative payments can be calculated by means of capital budgeting, taking into account specific conditions of financing and taxation. For aggregating payments, financial plans are employed according to the VOFI method (*Visualization of Financial Implications*, Grob, 2006). The VOFI balance of the last period reports the terminal value of the investment in a particular service portfolio. In the present case, a negative terminal value amounting to -26.686 € is calculated for an exemplary service portfolio configuration (cf. Figure 4).

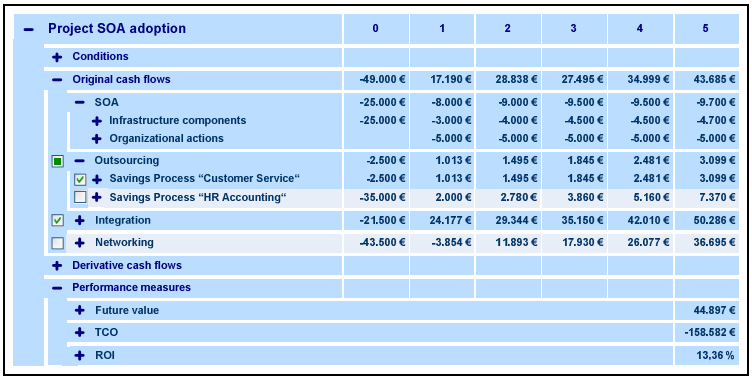
Finance plan (VOFI)	0	1	2	3	4	5
Series of payments	**- 7.500 €**	**-5.361 €**	**-5.785 €**	**- 6.154 €**	**-6.542 €**	**-8.546 €**
Internal Funds						
+ initial balance	0 €	0 €	0 €	0 €	0 €	0 €
- withdrawal	0 €	0 €	0 €	0 €	0 €	0 €
+ deposit	0 €	0 €	0 €	0 €	0 €	0 €
Bullet Loan						
+ credit intake	7.500 €	0 €	7.500 €	0 €	0 €	0 €
- redemption	0 €	0 €	0 €	0 €	0 €	0 €
- debtor interest (incl. disagio)	375 €	450 €	450 €	0 €	0 €	0 €
Loan in Current Account						
+ credit intake	375 €	2.491 €	10.439 €	3.309 €	4.145 €	5.627 €
- redemption	0 €	0 €	0 €	0 €	0 €	0 €
- debtor interest (incl. disagio)	0 €	30 €	229 €	1.064 €	1.353 €	1.685 €
Financial Investment						
+ reinvestment	0 €	0 €	0 €	0 €	0 €	0 €
- disinvestment	0 €	0 €	0 €	0 €	0 €	0 €
+ creditor interst	0 €	0 €	0 €	0 €	0 €	0 €
Taxes						
- payment		0 €	0 €	0 €	0 €	0 €
+ refund		3.350 €	3.525 €	3.609 €	3.750 €	4.604 €
Net Funding	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**	**0 €**
Balance						
on loans	7.500 €	7.500 €	0 €	0 €	0 €	0 €
on financial investments	375 €	2.866 €	13.305 €	16.914 €	21.060 €	26.686 €
Net Balance	**- 7.875 €**	**- 10.366 €**	**- 13.305 €**	**- 16.914 €**	**- 21.060 €**	**- 26.686 €**

Figure 4. Terminal Value Calculation for a Service Portfolio of the »Customer Service« Process at DECIS

Process Comparison

To determine the economic value of a particular service portfolio, comparisons of portfolio alternatives have to be employed. Therefore, all combinatory possible portfolio configurations have been generated here and evaluated by means of total cost of ownership (TCO). The difference between the financial performance of the optimal portfolio and the financial performance at continuation of the status quo reports the utility of the SOA adoption for applying outsourcing in the »Customer Service« process at DECIS. The status quo can be understood as a default service portfolio configuration which simply mirrors the resource utilization of the status quo. In our case, the optimal service portfolio can be complied by applying »Service 4« for the activity »Check credit-worthiness«, »Service 11« for compiling the check lists, »Service 9« for generating proposals and »Service 7« for determining actual travel offers. This specific portfolio yields the calculated terminal value of -26.686 €. However, on continuation of the status quo the terminal value amounts to -68.287 € (which is to be calculated separately). Thus, savings can be realized by adopting SOA. From a financial perspective, the SOA adoption is regarded to be a profitable venture in this example.

Out-payments for implementing SOA in case of outsourcing can be complemented with additional in- and out-payments associated with other application scenarios (cf. integration and networking opportunities for SOA-enabled processes). Figure 5 list relevant payments at DECIS.



Project SOA adoption	0	1	2	3	4	5
+ Conditions						
− Original cash flows	-49.000 €	17.190 €	28.838 €	27.495 €	34.999 €	43.685 €
− SOA	-25.000 €	-8.000 €	-9.000 €	-9.500 €	-9.500 €	-9.700 €
+ Infrastructure components	-25.000 €	-3.000 €	-4.000 €	-4.500 €	-4.500 €	-4.700 €
+ Organizational actions		-5.000 €	-5.000 €	-5.000 €	-5.000 €	-5.000 €
− Outsourcing	-2.500 €	1.013 €	1.495 €	1.845 €	2.481 €	3.099 €
+ Savings Process "Customer Service"	-2.500 €	1.013 €	1.495 €	1.845 €	2.481 €	3.099 €
+ Savings Process "HR Accounting"	-35.000 €	2.000 €	2.780 €	3.860 €	5.160 €	7.370 €
+ Integration	-21.500 €	24.177 €	29.344 €	35.150 €	42.010 €	50.286 €
+ Networking	-43.500 €	-3.854 €	11.893 €	17.930 €	26.077 €	36.695 €
+ Derivative cash flows						
− Performance measures						
+ Future value						44.897 €
+ TCO						-158.582 €
+ ROI						13,36 %

Figure 5. Profitability of SOA adoption at DECIS

In addition to outsourcing opportunities, potential savings can be realized by integration initiatives at DECIS. Although networking possibilities offer additional sources of revenues, this option turns out to be unprofitable due to associated cost effects at DECIS. If DECIS chooses to adopt SOA and to fully utilize the potential of outsourcing and integration initiatives, the calculations report an expected ROI of SOA adoption of 13,36 %.

CONCLUSION

Creating sustainable value by means of SOA adoption requires a service oriented management of a company's processes, for which adequate controlling methods are to be developed. These methods have to consider both existing enterprise applications as well as organizational aspects. A SOA adoption enables the re-design of business processes and functional re-integration of enterprise application systems. In order to exploit the economic potential of SOA-enabled design options (either of technical or of organizational nature) we suggest to analyse the impact on business processes as business processes are a vital source of value creation for any stakeholder of a company. We further suggest designing business processes by means of service portfolios, therefore allowing for flexible process adaptations through (re-)configurations of service portfolios according to individual needs. When setting up SOA-enabled business processes, possibilities for »outsourcing«, »integration« and »networking« arise. To benefit from these design options, the value contribution of alternative service portfolio configurations has to be evaluated. Therefore, the development of dedicated controlling methods constitutes a central challenge in IS research and in particular in the field of enterprise application systems research.

An approach for a methodological support for the controlling of SOA-enabled processes (SOPC) was presented in this contribution. SOPC allows for the evaluation of the economic profitability of SOA by considering specific options for a service-oriented process design. The presented part of the approach is based upon conceptual process models. However, the presented approach may be limited in that complex service compositions can hardly be mapped to the illustrated calculation schema in a transparent manner. Furthermore, limitation exists with regard to the design of conceptual interfaces, allowing the methodological integration of evaluation procedures with existing business process management systems and SOA-enabled enterprise applications. These limitations are subject to future research in the field of SOPC methods. The presented approach marks a first step in that direction.

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