Aligning IT-service propositions to changing business requirements in ongoing service-systems

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ABSTRACT

In order to form value-oriented service-systems with their customer organizations, IT-providers are increasingly required to orientate their service offerings towards the ongoing support of their customers' business processes with IT. Nevertheless, predominantly resource-focused and transactional IT-service propositions are offered that lack transparency in both value added and expenses per service for the customer's business. As a first step in our research in progress that aims for a conceptual basis for the design of IT-service propositions in value-oriented service-systems, we apply service-dominant logic to IT-service propositions. Simultaneously, however, the bit for standardized and automated IT-operations processes has to be taken into account when designing such service propositions. Based on current service-system research, we propose (1) to predefine service propositions in consideration of both commitments and operational processes and (2) to introduce additional 'shaping propositions' to customize and allow for the continuous adaption of the IT-service to functionality and performance changes. In order to maintain transparency in and control of the current service agreement and its expenses, these propositions orientate themselves toward business objects in the customer's field of responsibility.

Keywords

IT-Service Management, SSME, Service-Systems, S-D logic, Service-Agreements, Business-Orientation, Customization

INTRODUCTION

Confronted with the acceleration toward a service-based economy, providers of information technology (IT) are confronted with an increasing demand for integrated IT solutions that support the business of customer organizations rather than technical IT resources. The suggestion of systematically aligning IT-service offers with the customer's business - i.e. the support of business processes with IT - is consistently reiterated in research literature (Nieminen and Auer, 1998; Peppard, 2003; Zarnekow, Brenner and Pilgram, 2006), consortia (ISO/IEC, 2005; OGC, 2007a) and practice (Keel et al., 2007). This is especially true for research within IT-Service Management (ITSM) that focuses on the management, operations and delivery of customer-centric, i.e. business-oriented IT-services (Van Bon, 2007) – enriched by its relative interdisciplinary academic initiative, Services Sciences, Management and Engineering (SSME) (Galup, Dattero, Quan and Conger, 2009; Maglio, Srinivasan, Kreulen and Spohrer, 2006).

Though the idea of customer-centric service offers has been receiving increasing academic recognition, the service portfolios of today's IT-providers are dominated by offers of technical resources and personnel service provision and charged on the basis of technical measures such as SAPS and Byte. The technological focus on service engagements facilitates standardization of IT-operational processes and capability management. The insufficient business alignment of such services, however, leads to discrepancies in the perception of committed service extent (Rands, 1992; Zeithaml, 1988) and quality (Pietsch, 2005; Trienekens, Bouman and van der Zwan, 2004). Moreover, expense of the business for information technology is generally perceived as not able to be influenced while at the same time its value and contribution to the customer's business is often not traceable (Appel, Arora and Zenkich, 2005; Karten, 2004; Zarnekow et al., 2006). To make it worse, initial agreements have to be individually adapted as environmental events unfold (Ivens, 2005). In order to achieve transparency in the value added by IT as well as to have possibilities to continuously influence the service extent and the corresponding expenses (Drury, 2000) customers increasingly demand business process oriented, integrated value propositions (Ernest and Nisavic, 2007) and the stipulation of customer and value oriented commitments in service agreements (Wittgreffe, Dames, Clark and McDonald, 2006).

While the management of resource oriented IT-services and the arrangement of corresponding SLAs has been extensively discussed in information management, the outlined challenges lack specific concepts for purposing standardized, adaptable business-oriented IT-service engagements. To date, service models that offer insights into the structuring and specification of customer oriented, customizable and on demand adjustable, but simultaneously standardized IT services seem not to exist.

The purpose of our research in progress is to close this gap of informational-technical concepts and models for the design of IT services through the development of reference models and supplementing guidelines. As a first step in our research project, in this paper we apply the paradigm of service-dominant logic to IT-service engagements in order to transfer propositions on the design of IT-services. Therefore, this paper is structured as follows: we first derive basic propositions for IT-service design from service-dominant logic. Subsequently, we additionally take the bit for standardization of IT-operational processes into account and introduce three detailed propositions on the design of not only business-oriented but also standardized and continuously adaptable IT-service engagements. An example illustrates their application. The paper concludes with a summary of the propositions as well as a discussion of the next steps of our research project.

APPLYING SERVICE-DOMINANT LOGIC TO IT SERVICES

In order to enable the provider as well as the customer organization to manage the required support of processes with IT from a service-oriented perspective, we apply the paradigm of service-dominant logic (S-D logic) (Vargo and Lusch, 2004) as a new worldview to the IT-sector. This mindset represents a shift from thinking about value in terms of technical-oriented, tangible operand resources to processes and competences as operant resources that are capable of creating value (Constantin and Lusch, 1994). Based on Vargos and Luschs (2004) foundation premises – especially the one of a service-centered view - two derivations of principles will be detailed in the sub-sections below: the provider-customer relationship shifts from a transactional to a relational approach while the service-focus shifts from a resource to a business orientation. To collaterally illustrate such a service transformation in these two dimensions, Figure 1 lists examples of IT-service offers in a matrix.

From transaction- to relationship-orientation

Commonly, 'IT-services' are 'offered' by the IT-provider and represent - inferior to goods - the units of output. One-time 'services' such as migrations, resets or tests are commonly offered to let the customer assign one-time activities of IT-operations according to his needs. The adoption of well-established concepts and methods from the industrial by the service sector (Johnston, 1994; Levitt, 1972; Mills and Moberg, 1982) and specifically by IT-management (Kaitovaara, 2001; Zarnekow et al., 2006) concentrates the traditional transactional economics worldview of goods-dominant logic (G-D logic): assuming that differences between goods and services may be adjustable, principles developed to manage goods production are adopted to manage services 'production' and 'delivery' (Spohrer, Vargo, Caswell and Maglio, 2008).

By contrast, S-D logic stresses the application of competences for the benefit of another party and shifts the value creation from the producer to a collaborative cocreation process of the service outcome (Bitner, Faranda, Hubbert and Zeithaml, 1997; Vargo and Lusch, 2006; Wikström, 1996). Applying the service-centered view on the IT sector, IT-services would not be seen as units of output but as processes of value cocreation for and with another party with a relational focus. Instead of 'delivering' services, the IT-provider may propose its expertise to effectively co-create IT-service – i.e. the support of business processes with IT. This characteristic implies a shift from transactional to relational service that entails an ongoing series of interactions to co-create value over a period of time. As an example, consider a permanent release change service dependent on the customer's functional needs or the self-directed management of license-amounts. Figure 1 shows further examples of shifts from one-time to relational service propositions on the horizontal axis.

Applying S-D logic's foundation premises and the relational service shift to IT-services, we will use the terms of value propositions or *IT-service propositions* as the IT-provider's offers and commitment proposals to support the customer's business with IT (which we label *IT-support* in short). Agreed-upon propositions make up an *IT-service agreement* that is fulfilled by cocreation in an ongoing *IT-service* as long as the value is realized (cf. Maglio, Vargo, Caswell and Spohrer, 2009).

From resource- to business-orientation

Spohrer, Maglio, Bailey and Gruhl (2007) define a service-system as "a value-coproduction configuration of people, technology, other internal and external service-systems, and shared information". Such a "dynamic configuration of resources [that] create[s] value" (Maglio et al., 2009) is especially necessary to support a customer's organization with IT: its real need is a complex value bundle (Becker, Beverungen and Knackstedt, 2010; Hamilton and Koukova, 2008) that covers the overall IT-support of its business processes. As an example, a relational but resource-oriented service proposition like the monitoring capability does not add value to the user per se: it is only when the capability is transferred into a higher overall availability of the service that the customer is able to quantify the value of the proposition for his business (Oliva and Kallenberg, 2003).

		Relationship Orientation	
		One-time service (transaction-based)	Ongoing service (relationship-based)
Service Orientation	Business-oriented	▪ Setup a workplace ▪ Register / Unlock user ▪ User password reset ▪ Setup a process-oriented service provision ▪ Recover the workableness ▪ Move ▪ Allocate roles ▪ Generate a report ▪ Send an e-mail ▪ Business-oriented Consulting/Training	▪ Basic hosting support for accounting ▪ IT-support for merchants /accountants /… ▪ Provision of IT-service access for a location / workplace / user ▪ Support / Service desk ▪ Service access control ▪ Provide customer self-service portal ▪ Personal data backup management ▪ Managed mail ▪ Managed instant messaging
	Resource-oriented	▪ Provision /Setup / Launch / Distribution ▪ Abandon / Shutdown / Removal /Deletion ▪ Migration/Configurationchange/Transport ▪ Update / Downgrade / Fixes / Patches ▪ Restore / Recovery / Repair / Reset ▪ Resource based tests / stress tests ▪ Exchange / Replacement of resources ▪ Inspection / Diagnose of resources ▪ Technical fault clearance ▪ Traffic analysis ▪ One-time tuning / Export	▪ Resource-/Software-support /On-call duty ▪ Monitoring ▪ Tuning ▪ Load balancing ▪ IP-management / License management ▪ Preventive Maintenance ▪ Network-/Server-/SAP instance-Operation ▪ Print queue management ▪ Managed file space storage ▪ Managed server memory ▪ Server / Application hosting

Figure 1: Examples of common IT-service offers in regard to relation-/business-orientation

Aware of this, the well-established IT Infrastructure Library (ITIL) also argues for value in terms of the customer's business outcomes, distinguishing 'utility' as functional requirements and 'warranty' as performance requirements for value creation (OGC, 2007b, p.17). However, it is not ITIL's objective to define how this value is to be proposed according to customer requirements (Lichtenstein, Nguyen and Hunter, 2005; Wegmann, Regev, Garret and Maréchal, 2008). As a result, high adaption-rates of ITIL in the IT-sector (Conger, Winniford and Erickson-Harris, 2008) have certainly reduced but not dissolved the predominant lack of orientation towards business objectives in service specifications (Trienekens et al., 2004). For historical reasons, a typical IT-service portfolio distinguishes IT-services by organizational departments and discrete technology silos (silo-oriented), based on resource-types such as servers, applications, networks etc. (Winniford, Conger and Erickson-Harris, 2009). The configuration, provision and deployment of these resources represent the 'service'. Commonly, several SLAs are agreed on based on this technical-oriented distinction (Wittgreffe et al., 2006). If only one of these required resources fails, no value is created for the customer's processes. Nevertheless, the customer has to pay for all the remaining 'services' and SLAs as their contractual stipulations are fulfilled. Lack of a collective objective of value creation causes mismatches in the service perceptions in service-systems (Rands, 1992). Furthermore, the resource-driven specification of SLAs considerably restricts the IT-provider in his mode of providing the value-creation. In the long run, this results in constraints to the utilization and optimization of resources to optimize IT-operations.

Our proposition to the IT-providers therefore is to abstract from details on resources and implementation (Garschhammer et al., 2001) and offer bundled service propositions as integrated solutions (Davies, 2004) that fit the scope of the required IT-support according to the customer's business model and position within the value chain. For this purpose we adopt the end-to-end design principle, which has its roots in the design of distributed computer systems (Saltzer, Reed and Clark, 1984). It suggests that the definition of requirements for a communication system necessitates an understanding of the system's end-points. Transferred to business-oriented IT-support, all IT-provider's resources and components involved in creating value are to be bundled to ensure the required functionality and the right performance. As a result, for example, the end-to-end value proposition to support an accountant with IT does not limit the provision of storage and application hosting but also includes the provision of networks, workplace-clients etc. If one of the components fails to deliver, there is a breach of the end-to-end-commitment, since the aimed value has not been created. Examples for shifts from resource- to business-oriented service propositions are listed in Figure 1 on the vertical axis.

TOWARDS PREDEFINED, ADAPTABLE VALUE-PROPOSITIONS

Relational and business-oriented service propositions may enhance transparency in value added and expenses incurred by IT for the customer's business. However, due to highly customer-individual requirements, bids for standardized offers, charging models and efficiency in IT-operations seem to be impeded rather than supported by these principles of the previous chapter.

To enable standardization and automation in operational processes, we introduce three propositions: we propose (1) to predefine service propositions as well as (2) customization and adaption possibilities of the service-system's current service agreement. We then explain how to enable the customer to manage the agreed-upon service in functionality, performance and its expenses by (3) focusing on business objects in the customer's field of responsibility.

From individual value proposition types to predefined instances

To establish a value-cocreating interaction between service-systems, Maglio et al. (2009) distinguish two special kinds of proposals: the cocreation of new *types* of a service-system versus the cocreation of corresponding new service-system *instances*. Aiming for optimization of IT-operations, we understand the creation of new instances as the agreement on the same propositions – i.e. the same type of proposal – as already agreed-on in another context. Doing so, the participating service-systems could optimize their contribution activities by standardizing repeatable processes and automating activities. The resulting several instances of the same type of value proposition would provide the possibility for optimization, especially within the processes of IT-operations (Ebert, Uebernickel, Hochstein and Brenner, 2007).

However, in general IT-providers commit to very customer-specific service agreements due to highly individualized customer-demands. In the context of service-system abstraction, this means that lots of new types with only one instance are made up. This requires not only a lot of time for negotiation but also precludes IT-providers from standardizing processes of IT-operations, in which today "informal work [is] prevalent" (cf. Barrett et al., 2004; Maglio et al., 2006). Our proposition therefore is to explicitly predefine all value-propositions in terms of both external attributes such as committed functionality, performance and obligations of co-operation to create value, as well as internal attributes regarding the processes and activities of IT-operations. This would allow for repeatable operational processes and prevent articulated experience propositions of salesmen from pushing the boundary of the back-stage (Glushko and Lindsay, 2009). Once the IT-provider has formularized these specifications, instances of service-systems creating the agreed-upon value may be established on demand. The service models of predefined value-propositions can therefore be characterized as build-time models (Remme, 1995) or potential models (Thomas and v. Brocke, 2010), since all service propositions available are represented to the customer in advance. An example for such a predefined service model is illustrated in Figure 2: its left side shows a portfolio of predefined proposition types for configuring the IT-service co-creation of the business' accounting process. The propositions are priced and listed in a service-catalog and may be requested by request-numbers. On the right side of the figure, the actual status of a specific service-system is illustrated in its extent of service: requested propositions are instantiated and parameterized. Several instances (e.g. Service Access at London and Dublin) of the same proposition type (e.g. "Provide Basic Service Access at a Location") may exist but differ in parameters (e.g. address).

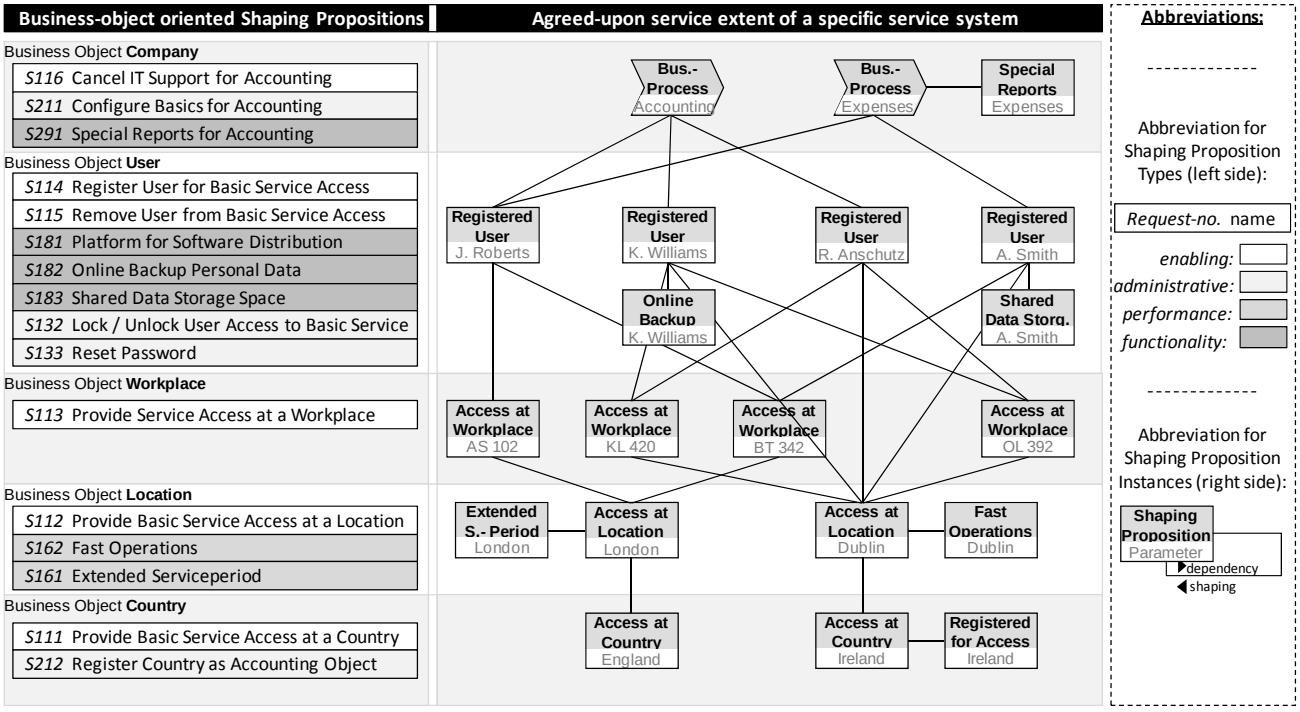

Figure 2: Example of shaping propositions and according instances of a service system's current service extent

From static to adaptable service agreements

Relational service-systems, as introduced in section 2, persist over a long period of time. Accordingly, the conditions, usage and requirements of a given service-system may vary significantly over time (Kannan and Proenca, 2010). This is especially true for service interactions supporting a company's business processes with IT (Alter, 2006). Therefore, a service-system should be adaptable and robust in two dimensions: firstly, technology-driven variability on the IT-provider's side and secondly business-driven change requirements of the customer. Concerning technology-driven variability, the IT-provider solely is in charge of managing it as we follow the principle of business-orientation discussed in section 2.2. Thus, the agreed-upon value-proposition does not define how the provision has to be implemented technologically. This supports the service-system's robustness with regard to fast moving technology: in contrast to nowadays, service agreements and commitments would not have to be changed for technical reasons. However, the second aspect of business-driven change requirements frequently accrue due to the customer's evolving processes and conditions (Johnson, Lee, Saini and Grohmann, 2003). Hence, the agreed-upon value propositions within a service-system have to be continuously adaptable to customer-driven change requirements.

The management of changes is one of the prevalent topics in well-known IT-management frameworks such as CobiT (ITGI, 2007) and ITIL (OGC, 2007c) as well as derived standards (ISO/IEC, 2005) and vendor frameworks (Finden-Brown and Long, 2005; Pultorak and Quadliariello, 2004). However, the main focus of attention lies on fixing and improving the technical IT environment and assessing the impact of a change before approving it (Ward et al., 2007). Life cycle approaches to handle requests for changes (OGC, 2007c) or to handle evolving service-systems (Alter, 2008) address the integration of change requirements but predominantly execute changes via development projects. This procedure is accompanied by individual agreements per change request as well as charging per personnel and resource efforts. Thus, it contradicts our objective of both a transparent and manageable service agreement and its expenses.

In order to cover this aspect, we enhance the introduced paradigm of predefined value-propositions of the previous subsection by predefined, optional '*shaping propositions'*. This approach implements the explicit representation of optionality in potential models following Thomas and vom Brocke (2010): the agreement on an ongoing value-cocreation of a service – like the basic support of a certain business process with IT – may optionally be enhanced and individually shaped by agreeing on further commitments. The range of potential additional commitments is predefined in tributary shaping propositions for which the customer may indent within the period of ongoing service cocreation. The currently valid service agreement varies in its '*extent*' of commitments depending on the shaping propositions the customer additionally agrees-on.

As an example, the customer may adjust the service-period for a business process support at a specific location. A tributary shaping proposition offers an upgrade of the agreed-upon basic service period per instantiated shaping proposition of "Basic Service Access at a Location". It is explicitly predefined in regard to both the customer as an additional, priced proposition, and to the IT-provider's internal activities in IT-operations like capacity fitment. Hence, this approach reduces negotiation time and efforts while enabling standardized and optimized processes of IT-operations. Further examples of shaping propositions are listed in our example of a service model in Figure 2.

From resource-driven to business-driven units of service extent

The predefinition of common change requests to allow standardized indents for and processes of service-adjustments has already been applied to some service-catalogues (*citation removed for review*). However, infrastructural service offers that have to be executed on a one-off basis, such as a migration, installation, or release change etc. dominate. ITIL labels such technical activities *Standard Changes*, which are defined as "change[s] to the infrastructure that follow an established path, [are] relatively common, and [are] the accepted solution to a specific requirement or set of requirements." (OGC, 2007c, p.48). In practice, they are generally labeled as *IMAC/R/D*-services (Install, Move, Add, Change, Remove, Dispose) and are common in the area of client and desktop provision (Ebel, 2008, p.479). Although such predefined standard requests allow for a standardized shaping of infrastructural IT-services, orientation at and direct reference to the created value in the customer's business is missing. The decision to tune a database, change resource-oriented components or adjust jitter-parameters of a network is not considered a core competence of the customer (Zarnekow et al., 2006). As a result, he cannot control the amounts or directly allocate IT-expenses on the basis of resource orientated units: just imagine a cost cutting decision of the customer's management to reduce used data storage amounts, the number of SAP-transactions or a decrease of monitoring activities. These amounts are not directly manageable.

This is why we propose a fundamental shift in focus towards business objects as driver units to customize and shape the service extent within a service-system. In this context, a *business object* represents entities in the customer's business domain with direct influence on the overall business-support with IT and on its expenses. Along with the actual business entities, the number of business objects – for example the amount of workplaces - varies depending on the customer and his business

situation. It is furthermore controllable through the management decisions of the customer. By having these characteristics, business objects, whose support with IT directly incurs costs, shall serve as a bridge between real objects in the customer's business and the efforts of the IT-provider. Agreeing on predefined shaping propositions to add, change or delete IT-support for a specific business object would lead to the installation and operation of IT-infrastructure. In addition, deciding on functionality and performance commitments per business object enables the customer to manage the service extent according to business-oriented units and their requirements. Since the customer has a direct competence in and influence on his business objects, expenses for IT-support become traceable, relatable and manageable.

Considering this, our example of a service model in Figure 2 emphasizes the organizational structure as a proper measure for the extent of the customer's demand for IT-support and relates such business objects with each shaping-proposition. Among the set of entity types used by Scheer (2000) to model an organizational structure, the relevant business objects were the *customer organization* itself, the *countries* and the *locations* it operates in, the *workplaces* and employees as *end-users* who rely on the value-creation of the IT-support as well as their *roles*.

A change in organizational structure - the introduction of further users to an ongoing service for example – is explicitly initiated by the customer's management and induces both initial efforts like the setup of user-accounts and continuous efforts over all IT-infrastructural silos. Instead of charging the individual resource efforts, the IT-provider now proposes the service cocreation as an ongoing process of supporting the customer with IT that is charged per additional business object.

Figure 2 marks shaping propositions that allow the introduction of further business object instances as white-colored 'enabling' shaping propositions (e.g. "Register User for Basic Service Access"). Their request results in business object parameterized instances (such as "Registered User K.Williams"). Additional shaping propositions may shape the service for the instantiated business object in performance or functionality (as for example "Online Backup for K.Williams"). Administrative shaping-propositions allow for continuous administration (such as "Reset Password" or "Lock User Access"). All shaping propositions are predefined in commitments, price and IT-operational processes and thus enhance efficiency in both negotiation efforts and provision lead time.

SUMMARY

Due to customer-specific and evolving conditions, the ongoing support of business processes with IT requires service-systems to customize and continuously adapt agreed-on service engagements. However, customer-individually negotiated service engagements and change requests impede efficient processing of value-cocreation while their infrastructural focus results in mismatches of expectations and lacking influence on IT-expenses. To resolve this dilemma and to allow for a standardization of IT-operations, we applied S-D logic to the IT-sector and derived relationship- and business-orientation as principles to design IT-service propositions. We further proposed to predefine service propositions in both commitments and operational processes. To balance standardization and customer-individual requirements of customization and continuous adaption, shaping propositions shall cover the customer's requirements to customize the service agreements in regard to functionality and performance. Thereby, evolving service-systems are adaptable by requesting and parameterizing predefined shaping propositions. The alignment of shaping propositions to the customer's business objects allows the customer to manage the service extent according to business driven amounts: agreed-upon commitments are individually tailored to business object needs and incurred expenses become traceable per object.

The adopted principles for designing IT-service propositions represent only the first step of our research in progress that aims for a conceptual model for IT-service design in ongoing, value-oriented service-systems.

First approaches to implement them in real service agreements at cooperating IT-service providers resulted in high acceptance by and satisfaction of their customer organizations. Their representatives attested a significant impact on the service-system's agreement traceability and changeability and envisaged effects in diversification and customer-loyalty. Moreover, IT-operations experts testified increasing standardization capabilities.

Nevertheless, our study is still in progress and aims to evolve to a reference service model concept. First implementation results are still very limited in generalization due to the small sample size. An extension of this research would be a voluminous look at IT-providers to further evaluate both the problems and the application of our propositions for managing the customization and continuous adaption of IT-service propositions and engagements. Later on, the analysis of longitudinal effects on several IT-providers when applying this concept would advance the research.

Considering these research tasks, we believe that the adoption of S-D logic together with the application of predefined service propositions to shape and adjust evolving service-systems enable the IT-provider to increase both customer satisfaction and efficiency in IT-operations.

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