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# ADAPTING IT SERVICE MANAGEMENT FOR SUCCESSFUL MULTI-SOURCING SERVICE INTEGRATION

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# ADAPTING IT SERVICE MANAGEMENT FOR SUCCESSFUL MULTI-SOURCING SERVICE INTEGRATION

*Research*

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## **Abstract**

*Over the last years, IT outsourcing customers have shifted their focus to multi-sourcing. To cope with the ever-increasing complexity of their multi-provider portfolios, companies aim to develop and hone their service integration capabilities. They adapt their IT organizations to enable more efficient and effective service management for their broad service landscapes.*

*Nowadays, most IT service management implementations build on best practice of the IT Infrastructure Library (ITIL). ITIL, however, does neither reflect multi-tenant sourcing models nor end-to-end service integration. IT service management needs to evolve to meet the new requirements of service integration. So far, however, there is a lack of guidance on how to adequately adapt IT service management for integration of multiple sourcing arrangements.*

*Our research contributes to both theory and practice by developing a ranking of IT service management processes according to their importance for service integration success. For three important processes, we then reveal adequate implementations and process designs derived from real-life scenarios.*

*Our results are developed during an multi-stage research study, incorporating insights from expert interviews, a quantitative questionnaire study, and case study research. The insights gained should enable multi-sourcing customers to build more successful service integration solutions, as well as academics to shape future research in this area.*

*Keywords: IT Outsourcing, Multi-Sourcing, Service Integration, IT Service Management.*

## 1 Introduction

In recent years, IT outsourcing customers have increasingly been adopting multi-sourcing approaches, continuously enlarging their supplier base. With this shift, the customers' service and provider landscapes are becoming more complex (Wiener and Saunders, 2014; Goldberg et al., 2014). Many customers, however, struggle with challenges in managing and integrating their multi-sourcing portfolios (Bapna et al., 2010). Most companies are not well positioned to succeed with service integration due to organizational shortcomings (Longwood and Heiden, 2012). In this paper, we investigate the importance of IT service management processes for service integration success. We then reveal and discuss adequate implementations for three important processes.

Research reveals that IT service management is an important success factor for service integration (Schermann et al., 2006; Goldberg et al. 2015). One of the most commonly applied IT service management frameworks is the IT Infrastructure Library (ITIL). Current IT service management implementations based on the ITIL best practice, however, do not sufficiently capture the requirements of multi-sourcing settings and service integration (Holland, 2015; Goldberg et al., 2015). Consequently, recent research concludes that IT service management needs to be further developed to enable successful end-to-end service integration (Goldberg et al., 2015) and to dynamically manage service portfolios (Rödter, 2015).

Despite its importance, academic research remains surprisingly sparse in the area of IT service management for multi-sourcing environments and service integration. Existing research does not provide enough guidance on how to further develop IT service management for enabling integrated end-to-end management of services (Bapna et al. 2010; Holland, 2015; Goldberg et al. 2015). The question at hand is how IT service management needs to evolve to achieve integrated services and which processes are most important. A better understanding of the critical processes including the changes required would enable more focused research and more successful multi-sourcing solutions in practice.

To contribute to this ongoing discussion, we investigate IT service management in the light of service integration by addressing the following research questions:

1. Which IT service management processes are most important for successful service integration in a multi-sourcing context?
2. How can selected IT service management processes be designed and implemented for effective service integration in a multi-sourcing context?

The contribution of our paper is three-fold: First, we identify IT service management processes relevant for service integration in a qualitative expert study. Secondly, we develop a ranking of these processes according to their importance for successful service integration. This ranking is based on quantitative questionnaire data collected from service integration experts. Thirdly, we reveal adequate implementations and lessons learned for three important IT service management processes. These results are derived in an in-depth analysis of a service integration case at a large customer IT organization – in the following called “Alpha”. Alpha recently implemented an internal “Service Management and Integration” function and revised their IT service management processes accordingly.

The findings of our work should enable customers to critically review and improve their IT service management implementation. At the same time, they offer various options for future research.

The paper is structured as follows: After a discussion of related research in the following section, we introduce our research method in section 3. Section 4 discusses the importance of IT service management processes, before section 5 presents the findings of our case study research, analyzing the implementations of selected service management processes. In section 6, we discuss our findings and outline options for future research. Finally, we conclude the paper by summarizing our key findings and discussing limitations, in section 7.

## 2 Research Foundations and Related Work

The increasing trend to apply multi-sourcing strategies leads to more complex service and service provider portfolios with highly interdependent services (Bapna et al., 2010). Service integration refers to the management and end-to-end integration of various internal and external service providers and their interdependent services (Anderson and Parker, 2013; Davy, 2014; Goldberg and Satzger 2015).

As basis for our study and to determine the state of the art of research, we analyzed recent literature. Based on Webster and Watson (2002), we identified and selected relevant papers in a full-text search<sup>1</sup> using Google Scholar. To enhance our literature base, we performed a forward and backward search originating from these papers. According to our selection criteria, we selected 32 peer-reviewed journal and conference papers dealing with IT service management in a multi-sourcing context with interdependent services. The papers most relevant to our research questions are outlined in the following.

Research identifies IT service management as a necessity for service integration in multi-sourcing (Schermann et al., 2006; Goldberg et al. 2015). IT service management covers the planning and controlling of provided IT services in terms of quality and quantity in alignment with requirements of business process, business customers, and cost (Heininger, 2012; Bernard, 2014). The Information Technology Infrastructure Library (ITIL) provides a best practice framework for the management of IT services that is considered as a de-facto-standard (Krcmar, 2010). 26 IT service management processes organized in five phases of the IT service lifecycle form the core of ITIL (Bernard, 2014).

Recent research, however, indicates that existing IT service management frameworks and implementations do not sufficiently capture the requirements of service integration. They argue that adaptations are required to develop an end-to-end IT service management (Goldberg et al., 2015; Holland, 2015). A review of previous publications shows that a significant amount of literature regarding IT service management and ITIL is available. Iden and Eikebrokk (2013) provide a systematic review of previous ITIL research. Service integration research, on the other hand, is still in a nascent state. Research combining both ITIL and service integration is virtually non-existent. Particularly, ITIL processes for service integration are – to our best knowledge – not yet specifically covered in academic research.

So far, only few research papers address the service integration. Recent research studies mainly focus on governance and organizational aspects. Schermann et al. (2006) provide an initial framework for capturing requirements and elements required for service integration. Plugge and Janssen (2014) outline governance requirements for service integration. On a strategic level, the authors discuss the coordination of multi-sourcing resources and interactions between organizations. Rajamäki and Vuorinen (2013) provide an alternative governance model for multi-sourcing. While all three papers highlight the importance of service management, none of them is studying its aspects in more detail. From an organizational perspective, two additional papers are noteworthy. Goldberg et al. (2015) provide a high level overview of service integration capabilities. The research of Goldberg and Satzger (2015) is more specific. In their work, the authors analyze various organizational models for service integration. They identify three models as most important: the customer can choose to perform service integration itself, hand over the responsibility to a *Guardian Vendor* (one of the main providers), or to an *independent service integrator*. The authors indicate the importance of service management within these models but do not provide more detailed analyses with regards to service management. Although they reference service management frequently, both papers focus mostly on organizational aspects.

Hence, further research bringing together service integration and IT service management is required. With our paper, we try to build the basis for more systematic research in this area.

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<sup>1</sup> The search used combinations and variations of the following keywords: multi-sourcing, service integration, service management, IT service management, ITIL, management and interdependence.

### 3 Research Method

In the following, we introduce our three-stage study design (see Figure 1). It consists of a qualitative expert study, a quantitative study using a questionnaire, and a case study approach.

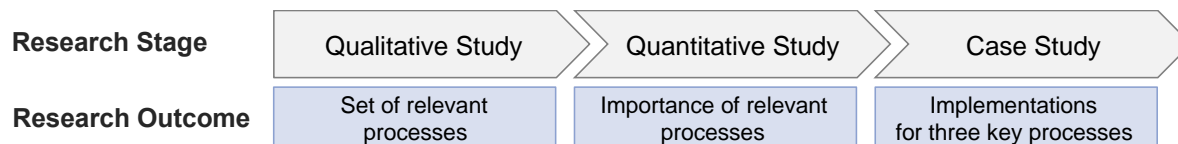


Figure 1 Representation of the research approach

#### 3.1 Qualitative study based on expert interviews

Our qualitative study analyzes data from expert interviews. In total, we perform twelve expert interviews with multi-sourcing IT organizations, consultants, and service providers (see Table 1). We select interviewees based on a profile that requires them to have three years of experience with multi-sourcing or service integration, and that they are either working in a service integration or multi-sourcing function, or are advising customers on this topic. Following the method outlined by Gläser and Laudel (2010), the interviews are based on an interview guide with mostly open-ended questions lasting between 45 and 90 minutes. The interviewees describe their experiences with service integration and multi-sourcing including challenges, IT service management, and success factors. All interviews are digitally recorded and transcribed to allow for a subsequent analysis.

No.	Job role of interviewee	Company of interviewee
1	IT Management Consultant	Global IT Management Consultancy
2	IT Management Consultant	Global Management and IT Consultancy
3	IT Service Management Consultant	Global Management and IT Consultancy
4	IT Sourcing Manager	Service Integration Provider
5	Sourcing Architect	Service Integration Provider
6	CIO	International Insurance Company
7	Sourcing Manager	International Insurance Company
8	Project Manager, Global SIAM Project	Global Pharmaceutical Company
9	Service Engineer	Global Outsourcing Provider
10	IT Service Management Consultant	Global Outsourcing Provider
11	Lead Client Sourcing Architect	Global Outsourcing Provider
12	Project Executive (SIAM Project)	Global Outsourcing Provider

Table 1 Overview of interviewees of the qualitative study.

To derive new insights, we analyze the interview transcripts in a qualitative content analysis. This method outlined by Mayring (2008) is widely adopted to derive inter-subjectively verifiable findings from qualitative data. Iteratively analyzing each paper or interview transcript, we extract paraphrases that indicate the necessity of IT service management processes into a coding table. We continuously summarize and combine the paraphrases, and link them to processes. Two researchers independently perform the analysis in parallel to increase verifiability, validity, and consistency of our findings.

As we are interested in processes typically relevant for service integration, we quantify the paraphrases as proposed by Mayring (2008). That is, we use the number of interview transcripts mentioning a process as an indicator. Processes that are mentioned as relevant in at least 50% of our interviews are further assessed as part of a questionnaire.

### 3.2 Quantitative study based on a questionnaire

To develop a ranking of the IT service management processes, we perform a quantitative study. It is based on data collected via our questionnaire from service integration experts. Study participants include IT representatives from different companies, from service integrators or service providers, and IT consultants. Of the 18 returned questionnaires, 16 are usable for evaluation (see Table 2). We have to exclude two questionnaires because of significant missing values with regards to the investigated processes. The 16 questionnaires represent 27% of the sample population of 59 approached experts.

Participants	Number	Job roles
Customer-side representatives	3 (19%)	1 CIO, 1 Sourcing Manager, 1 Service Integration Project Manager
Consultants	7 (44%)	2 Management Consultants, 4 IT Management Consultants, 1 IT Service Management Consultant
Provider-side representatives	4 (25%)	2 Project Executives, 2 Sourcing Architects
Service integrator representatives	2 (13%)	1 IT Sourcing Managers, 1 Sourcing Architect

Table 2 Overview of participants of the quantitative study.

In the questionnaire, the participants are asked to rate the importance of various topics for successful service integration including the service management processes identified as relevant in our qualitative study. Data is collected with closed, prompted, and pre-coded questions. We use a 10-point Likert scale to assess each item ranging from *not important* (1) to *highly important* (10) (Oppenheim 1992). To determine a ranking of the processes, we calculate the average importance treating the Likert scales as equidistant and, thus, quasi-metric (Bortz, 1999).

### 3.3 Case study research

To determine adequate process designs, we apply a case study approach based on a single in-depth case. Despite of its lack of generalizability, case study research is widely used in IS research (Dubé and Paré, 2003). This type of research is particularly suitable for both developing a deep understanding of emerging or complex research phenomena (Benbasat, 1987; Yin, 2003), and for building theories by identifying 'local causalities' (Miles and Huberman, 1994, p. 15; Eisenhardt and Graebner, 2007). Single case studies in particular are often applied to investigate emerging or under-researched topics in an exploratory, descriptive, or explanatory nature (Yin, 2003).

Data for our case study research is collected on multiple occasions at Alpha in form of interviews and document reviews. The observation period lasts from January 2014 to June 2015. Interviews are both structured and semi-structured with varying durations between 30 and 180 minutes. They are based on interview guides. The interviews cover diverse topics ranging from process maturity (at the beginning and end of the program), issues with service integration or processes, implementation activities and solutions, and lessons learned. The interviews are documented in interview protocols that are shared with and reviewed by the interviewees for correctness. Most interviewees are IT managers and key personnel working for Alpha. In addition, we questioned external consultants and provider representatives advising Alpha. Several key persons are interviewed on multiple occasions over the program duration. This allows us to better observe changes over time in a quasi-longitudinal fashion. An overview of the interviewees is presented in Table 3.

In addition to the interviews, our main sources of data are strategic documents outlining the service management and integration approach, project plans, minutes from board and project meetings, (process) design documents, and other project documentations.

We analyze the collected data following the method outlined by Miles and Huberman (1994). Having selected and reduced the available data (e.g. by summarizing it), we create various data displays of both qualitative and quantitative data to continuously structure the theoretical concepts. The data displays mainly consist of various structured tables, charts, and – with regards to process designs – RACI matrices. This way, we derive issues and lessons learned that we link to process design decisions. To increase validity and consistency of our case study research, we triangulate various data sources. We also discuss findings with interviewees of the case study to confirm their correctness.

Job Role	Company	Interviews / Discussions
VP Global CIO	Alpha	On multiple occasions
Director Global IT Strategy	Alpha	On multiple occasions
Director Global IT Business Relationship	Alpha	On multiple occasions
Director IT Service Management and Integration	Alpha	On multiple occasions
Director Global IT Applications	Alpha	Once
Director Global IT Infrastructure	Alpha	Once
2 Service Managers	Alpha	Once
IT Supplier Manager	Alpha	On multiple occasions
2 IT Service Desk Managers	Alpha	Once
3 IT Management Consultants	Global IT consultancy	On multiple occasions
Project Executive	Global service provider A	Once
Service Manager	Global service provider A	On multiple occasions
Customer Account Manager	Global service provider B	Once
Service Manager	Global service provider B	Once

Table 3 Overview of interviewees of the case study research.

RACI matrices are tools in ITIL used to define process roles and responsibilities. RACI is an acronym of the potential roles of process entities: **R**esponsible (role responsible for performing a process step), **A**ccountable (the only accountable role for a process step), **C**onsulted (role advising with regards to a process step) and **I**nformed (role informed about process progress or outcomes) (Bernard, 2014). We will use RACI matrices to present process designs and their mapping to roles and responsibilities.

## 4 The Importance of IT Service Management Processes for Service Integration

IT service management is an important aspect for the integration of multi-sourcing landscapes (Schermann et al., 2006). This view is supported by most of our interviews. For example, one interviewee argues that “service management is the core of service integration” (IT Sourcing Manager, service integration provider). Many interviewees, however, argue that “IT service management needs to go through a transformation towards an end-to-end management” (IT Management Consultant, global IT management consultancy), which is not covered by ITIL today. In the following, we determine the importance of relevant IT service management processes for service integration.

Table 4 provides an overview of all ITIL Service Management processes. For each process, we provide the number of interview paraphrases referencing it, its average importance based on ratings from our questionnaire, and the implementation status in our case study. The processes are ranked according to their importance. Our findings imply that 17 ITIL processes can be considered as typically relevant for service integration – as for these, we had identified interview paraphrases in at least 50% of our interviews. The importance of these processes measured by mean of Likert scales assessed in our quantitative study varies between 6.38 and 8.69.

IT Service Management Process	Interview paraphrases	Mean Questionnaire Importance	Implementation at Alpha
Service Level Management*	12 (100%)	<b>8.69</b>	<b>Adapted for service integration</b>
Demand Management	8 (67%)	<b>8.63</b>	Not implemented
Business Relationship Management	12 (100%)	<b>8.31</b>	Implemented (not adapted)
Change Management*	10 (83%)	<b>8.25</b>	<b>Adapted for service integration</b>
Service Catalogue Management*	6 (50%)	<b>8.25</b>	<b>Adapted for service integration</b>
Supplier Management	11 (92%)	<b>8.19</b>	<b>Adapted for service integration</b>
Release and Deployment Management	6 (50%)	<b>8.19</b>	<b>Adapted for service integration</b>
Service Portfolio Management	9 (75%)	<b>8.13</b>	Implemented (not adapted)
Problem Management	8 (67%)	<b>7.94</b>	<b>Adapted for service integration</b>
IT Service Continuity Management	7 (58%)	<b>7.75</b>	Implemented (not adapted)
Financial Management	6 (50%)	<b>7.69</b>	Implemented (not adapted)
Incident Management	8 (67%)	<b>7.63</b>	<b>Adapted for service integration</b>
Access Management	6 (50%)	<b>7.19</b>	<b>Adapted for service integration</b>
Service Asset and Configuration Mgmt.	8 (67%)	<b>7.19</b>	Implemented (not adapted)
Event Management	6 (50%)	<b>6.92</b>	Implemented (not adapted)
Knowledge Management	8 (67%)	<b>6.38</b>	Implemented (not adapted)
Information Security Management	5 (42%)	-	Implemented (not adapted)
Strategy Mgmt. for IT Services	4 (33%)	-	Not implemented
Transition Planning and Support	4 (33%)	-	Implemented (not adapted)
Availability Management	3 (25%)	-	Implemented (not adapted)
Capacity Management	2 (17%)	-	Implemented (not adapted)
Request Fulfilment	2 (17%)	-	Implemented (not adapted)
Change Evaluation	-	-	Not implemented
Design Coordination	-	-	Not implemented
Service Validation and Testing	-	-	Implemented (not adapted)

(\*Selected for case study; Continuous Service Improvement not considered as stand-alone process)

Table 4 Importance of ITIL service management processes for service integration (N=16).

Service Level Management has been ranked as the most important process, which is consistent with the high amount of paraphrases from our initial expert interviews. Our interviews indicate that particularly the end-to-end management of service levels is becoming important. Consistently, one interviewee argues that the “management of end-to-end SLAs [...] is the basis for basically everything else: service measurement, monitoring, quality improvements and so on” (IT Service Management Consultant, global IT management consultancy). In this regard, our interview findings indicate that particularly the engineering of consistent SLAs across providers is a challenge. Potential approaches for service level engineering are discussed in literature (Kieninger et al., 2011, Kieninger et al., 2013).

Demand Management is ranked second with an average importance of 8.39. This process received less support during our qualitative study, though. Our interview results indicate that the importance of Demand Management depends on how strategic the role of IT is within the company. Next, Business Relationship Management received strong support both during our interviews and our questionnaire with an average importance of 8.31. Accordingly, one interviewee argued that there is a need to “understand the business to select, manage, and coordinate the services that support the strategy of the enterprise” (IT Sourcing Manager, global service integrator). With an importance rating of 8.25, both Change Management and Service Catalogue Management are also rated as fairly important.



The ranking (based on column 3 “Mean Questionnaire Importance”) in Table 4 provides a starting point to define a roadmap for selecting the important processes and adapting them for the changing service integration requirements. Customers could focus time and efforts on the more important processes. On the other hand, some interviewees also recommend to first build a basis for service integration by “implementing the operational processes first before doing the next steps” (IT Service Management Consultant, global IT management consultancy). Correspondingly, another interviewee argues that “operational service management [...] is the core of a lot of this: Problem, incident, change – making sure that things are working and if they are not working then getting them fixed” (IT Management Consultant, global IT management consultancy). This implies that approaches need to be adapted to the specific circumstances.

## 5 Case Study: Implementation of Selected ITIL Processes

Having identified the importance of processes for successful service integration, we now analyze three important processes in detail, based on a single case study. We present implementations for the three most important processes that have been adapted for service integration by Alpha.<sup>2</sup>

For each process, we outline its process design, design rationales, issues and lessons learned. Process designs including process steps, roles and responsibilities are Alpha’s definition which deviate from the ITIL standard. Designs are illustrated with RACI matrices (see Table 5-7). They list process steps and assign responsibilities to four process roles: *Business Relationship* (the interface with the business units embodied by Alpha’s Global IT Business Relationship function), *GSMI* (Alpha’s Global IT Service Management & Integration function), *Service Desk* (Alpha’s service desk function) and *Service Provider* (the respective internal and external service provider(s) relevant for the process step).

### 5.1 Case Description

Alpha is a leading global chemical manufacturing company. Its business operations encompass the development, production, and marketing of chemical products. The organizational structure is a multinational business group with a central group headquarter and several legally independent business entities. Its IT organization follows a federal governance approach consisting of a centralized core IT, organized in several regional IT service centers, and several decentralized local IT units for production units. Alpha pursues a multi-sourcing strategy with eleven global and regional service providers (not including small local providers). Outsourced services cover infrastructure (including server, storage, network, WAN, and desktop services) delivered mainly by three different providers, platform services (mainly SAP services), and several application services based on public cloud solutions (e.g. HR and procurement applications). Alpha classifies three providers as ‘strategic providers’: a global infrastructure provider (‘Provider B’) and two platform and application service providers (‘Provider A’ and ‘Provider C’). These three providers deliver significant amount of services, have permanent onsite account teams, and are engaged in a continuous relationship management approach. The other 8 providers deliver a smaller number of selected services.

Until 2013, Alpha had a highly decentralized IT structure with six independent IT organizations across the globe, led by regional CIOs. Each of these IT organizations had their own sourcing strategy and provider base. The result was a dispersed, non-standardized IT organization and a highly unconsolidated provider landscape. Along with unification and consolidation on the business side, Alpha set up an IT restructuring program from July 2013 to June 2015. In the course of the program, a new IT organizational structure was introduced under a single global management system. As part of the program, Alpha re-defined their multi-sourcing approach establishing a global service integration model and consolidating their global provider base. To govern the multi-sourcing and integration activities, Alpha

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<sup>2</sup> Alpha did chose to not adapt Demand Management and Business Relationship Management. We will, thus, analyze the next most important processes.

formed the centralized “Global IT Service Management & Integration” (GSMI) department (see Figure 2). The GSMI is responsible for managing and integrating the services of all internal and external service providers. The organizational model adopted, thus, reflects the model where the customer performs service integration itself (Goldberg and Satzger, 2015).

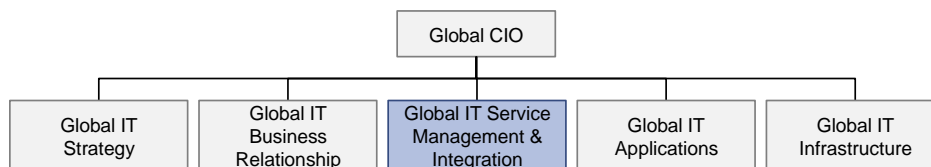


Figure 2 Top-level organizational structure of Alpha's IT organization

At the beginning of the program, Alpha assessed their current IT service management processes together with an external IT management consultancy. Based on the assessment, Alpha selected and re-designed eight processes to incorporate service integration requirements (see Table 4). Out of these eight processes, we will analyze the ones rated with the highest importance in our quantitative study. Alpha did not adapt Business Relationship Management and Demand Management as they were considered to have only minimal provider involvement. Hence, we select the next most important processes Service Level Management, Change Management, and Service Catalogue Management as target for our case study research.

## 5.2 Service Level Management

Service Level Management ensures that all current and future IT services are provided at the level agreed in Service Level Agreements (Bernard, 2014).

In Alpha, Service Level Management was had a medium maturity. Several shortcomings existed with regard to integration both internally (between internal delivery functions) and across external providers. Service levels were defined and managed individually per provider and only rarely end-to-end per service. The lack of a single, end-to-end-accountable entity was seen as a key reason. Instead, delivery managers and service providers were managing service levels within their domain. In this matter, one IT manager expressed that “often, if service levels aren't met, people are starting finger pointing and no one's taking ownership” (IT Application Integration Manager, Alpha). Another issue was the lack of integrated tool support. The tools used for Service Level Management differed across the various regions and between providers. They did not allow for end-to-end analyses.

Resulting problems include inconsistent service levels. For example, service availability committed to the business by the IT organization for a specific service was 99.9%, while one supporting service was only available at 98.5%. Similarly, the sum of several small individual disruptions could lead to severe issues: “In some cases, the sum of small outages led to a breach of the overall service level targets [...], even though all service providers met their SLAs” (IT Supplier Manager, Alpha).

In consequence, Alpha decided to re-design the Service Level Management process. It was implemented based on a newly introduced IT service management tool that integrates with various service provider tools. In doing this, Alpha aimed to increase the accuracy of service performance monitoring and reporting, and to allow for more convenient and transparent service level engineering.

To address the issue of insufficient accountability, the process pools almost all accountabilities in the centralized GSMI (see Table 5). Service providers are only accountable for *provider service reviews* and *service level management performance evaluations*. The Business Relationship function representing the business customers within the IT is only responsibly involved in the *development of service level relationships*, *creation of service level agreements* and *definition of customer service improvement plans*. That way, Alpha wants to ensure more rapid ownership of performance issues, and pro-active definition of inter-organizational operational and service level agreements.

Process Step	Business Relationship	GSMI	Service Desk	Service Provider*
Develop Service Level Relationships	R	A/R		C/I
Create and Maintain Service Level Agreements and KPIs	R	A/R	R	R
Monitor and Report Service Level Performance	I	A/R	R	R
Conduct Customer Service Review	I	A/R	I	I
Conduct Provider Service Review		I	I	A/R
Define Customer Service Improvement Plan	R	A/R	C/I	C/I
Define Provider Service Improvement Plan		C/I	C/I	A/R
Evaluate Service Level Management Performance	C/I	A/R	C/I	C/I
Continual Service Improvement	I	A/R	R	R

(\*internal and external service providers for their services, R=Responsible, A=Accountable, C=Consulted, I=Informed)

Table 5 Alpha's Service Level Management process RACI.

Based on the new process, Alpha's IT Management attests improved transparency of service performance. The pooled accountability results in increasingly aligned service levels and more rapid ownership of performance issues. They have also perceived an increased business satisfaction.

### 5.3 Change Management

Change Management is responsible for controlling the deployment of approved changes into production environments while minimizing disruptions to the business (Bernard, 2014).

Due to several issues, Alpha identified Change Management as a key area for action. Consequently, the process received much attention during the program. Among the main issues that we encountered at Alpha were long implementation times of change requests and a significant number of incidents resulting from unsuccessful changes. As one of the reasons for the poor performance, IT personnel identified the fact that different Change Management processes existed across the various regions depending on the service providers involved. That is, both process steps and process policies (e.g. change impact assessment guidelines) varied. This hindered the dialogue and coordination between service providers regarding changes to interdependent services.

In the course of the program, Alpha introduced a single globally unified process based on a common service management tool: "We wanted a single change approval tool to reduce disruptions and to increase transparency and accountability for changes" (Director IT Service Management and Integration, Alpha). Lengthy discussions were required to negotiate upon the change management process, its policies, and interfaces before all providers agreed.

Again, the GSMI is defined as the single accountable entity (see Table 6). Clearly defined roles and responsibilities were seen as essential during process implementation: "It was essential for us to establish a viable change management organization across the enterprise to ensure timely decisions and concerted actions" (Application Integration Manager, Alpha).

As main body of approval, Alpha institutionalized a formal *Integration Change Advisory Board*. All changes rated as "major change" (with a high impact and probability of change failure) need to be approved by this board. In addition to customer personnel, all main providers are required to permanently participate. In agreement, a consultant working for Alpha argued that "to identify the impact of a change, you need participants of your main suppliers in the [Integration] CAB [n.b.: Change Advisory Board]" (Senior Strategy Consultant, global IT consultancy). If interdependencies between services exist, but the change is not qualified as major, regular *Change Advisory Boards* can approve changes. Only providers affected by the change are required to participate.

Process Step	Business Relationship	GSMI	Service Desk	Service Provider*
Create and Record Request for Change	R	A/R	R	R
Accept and Categorize Change		A/R	R	R
Assess Change		A/R	R	R
Authorize and Schedule Change	R	A/R	R	R
Coordinate Change Implementation		A/R	R	R
Review and Close Change		A/R	R	R
Monitor and Report Change Management	I	A/R	I	R
Evaluate Change Management Performance	C/I	A/R	C/I	C/I
Continual Service Improvement	I	A/R	R	R

(\*internal and external service providers relevant for the change, R=Responsible, A=Accountable, C=Consulted, I=Informed)

Table 6 Organizations A's Change Management process RACI.

Alpha's senior IT Management expressed their general satisfaction with the adapted change management process. They stated that they are more confident that changes are thoroughly assessed by all relevant stakeholders and that issues during implementation are mitigated. Concern, however, was raised because of the fact that integrated configuration management data is not yet easily available for all providers. This still impedes change impact analyses. Therefore, Alpha plans to adapt their *Service Asset and Configuration Management* process, as well.

#### 5.4 Service Catalogue Management

The goal of Service Catalogue Management is to publish and maintain a single source of information for all services (Bernard, 2014).

Despite its high ranking in our quantitative study, Service Catalogue Management was perceived as less important than Change Management at Alpha. IT personnel, however, recognized a well-structured and integrated service catalogue "as the basis for conveniently defining integrated service levels" (Service Manager, Alpha).

As key area for improvement, Alpha identified the presentation towards business customers. The various IT departments had their own service catalogues that differed based on their regional service providers. Consequently, the service catalogues were perceived as non-uniform with varying level of detail and quality. This was further aggravated by the fact that services were not defined end-to-end leading to fragmented service catalogues. Also, difficulties to determine dependencies between services and their sub-components existed: "Our service catalogue is extremely confusing [...], we often have no clue which parts depend on each other" (Service Manager, Alpha). This issue, however, also points to a not yet integrated *Service Asset and Configuration Management* process (cp. section 5.3).

In the same way as Service Level Management, all accountabilities within the Service Catalogue Management process are assigned to the GSMI (see Table 7). Hence, it is responsible for maintaining a single service catalogue towards the business. While each service provider is required to provide a service catalogue for their services, the GSMI defines the standards and templates that these service catalogues need to comply with. It is held accountable for ensuring accuracy and timeliness of published information. A key activity with regards to integration is maintaining and updating dependencies between the services to provide an accurate basis for the Service Level Management process.

Ultimately, the quality of the service catalogue is considered to have improved significantly, while it still does not fully meet the expectations of the business customers in terms of uniformity. The head of the GSMI, however, argues that Service Managers "can now more easily determine reasonable Service Levels of the complete Service". Increasing uniformity is planned as part of ongoing optimizations.

Process Step	Business Re- lationship	GSMI	Service Desk	Service Provider*
Define Service Package Catalogue Requirements	C	A/R	R	R
Build and Maintain Service Catalogue		A/R	R	R
Publish Service Catalogue		A/R		
Monitor, Analyze and Report Service Catalogue	I	A/R	R	R
Evaluate Service Catalogue Management Performance	C/I	A/R	C/I	C/I
Continual Service Improvement	I	A/R	R	R

(\*internal and external service providers for their services, R=Responsible, A=Accountable, C=Consulted, I=Informed)

Table 7 Alpha's Service Catalogue Management process RACI.

## 6 Discussion and Options for Future Research

Our paper addresses two research questions. First, we aim to develop an understanding of the *most important IT service management processes for successful service integration*.

The overview discussed in Section 4 provides a ranking according to the perceived importance based on quantitative data. We see that service management processes have different impacts on the success of service integration. Our research shows, however, that this average importance can only provide a general guidance. The importance of individual service management processes depends on the specific circumstances and specific contingency factors may alter the individual importance. In Alpha's case, Change Management was generally perceived as more important than Service Level Management and Service Catalogue Management since the specific issues had more severe impacts. This implies that companies implementing service integration can use our research as a starting point for revising their process designs. A specific implementation plan with appropriately prioritized investments needs to be adjusted according to the respective situation.

Our findings also indicate that the question of importance needs to be separated from the extent to which changes to process designs are required. Not necessarily all processes seem to require changes for successful service integration. For example, Business Relationship Management is rated as the third most important process. In our case study, however, Alpha chose not to adapt the process. They considered it as mostly business oriented without significant provider involvement. Our study can only provide an initial view on this topic. Therefore, we highly encourage future research to further investigate the impact of service integration on IT service management processes. Academic research needs to develop a better understanding of the extent of changes required to individual processes. Again, our research provides a starting point by ranking processes according to their importance. Further studies could start with the most important processes and investigate whether service integration does impact these processes. If it does, they could identify the required changes and the resulting process designs. Our paper already provides potential designs for three processes supported by RACI matrices. Additional studies should deepen our understanding by analyzing additional processes.

To address our second research question, we investigate *how selected IT service management processes can be designed and implemented for effective service integration*. We investigate specific process implementations in our case study. Our analysis of three important process implementations reveals several interesting insights. First of all, our case study highlights the need for a central authority with overall end-to-end accountability for service integration. Alpha established an internal department solely responsible for service management and integration. The concept of service management and integration functions with end-to-end accountability for service integration is also recognized in literature (e.g. Goldberg and Satzger, 2015). Another important aspect that we identified is an integrated tool base that provides end-to-end information transparency and coordination. Particularly for Change Management, a fragmented tool landscape has been identified as a critical issue. According to Goldberg et al. (2015), an integrated tool basis is also important to manage cross-provider incidents.

A critical challenge described by several of Alpha's IT managers was to get agreements with all providers on the planned process changes and tool integrations. Most providers were operating based on their own processes and utilizing their own set of tools. It required lengthy discussions and negotiations to get buy-in from all providers, to agree on uniform process designs, and to integrate the various tools or replace them with a single tool (in case of the Change Management process), respectively.

Looking back, most people involved perceive the changes made at Alpha as significant improvements to the former status quo. In summary, the issues most often mentioned as solved during our discussions are a lack of collaboration between providers, a lack of transparency, as well as insufficient understanding of end-to-end services. Former issues with high efforts due to duplications, missing standardization, and frequent disputes were also perceived as less severe. Additionally, IT managers reported improvements in managing providers' performances, and with more consistent service levels. They also perceived increased business customer satisfaction.

## 7 Conclusion

In this paper, we have investigated service management in the area of multi-sourcing service integration. To answer our research questions, we performed a qualitative study, a quantitative study, and a case-study-based research. Our findings advance the current knowledge of service integration with a particular focus on service management. They provide a basis for systematic future research.

Our findings reveal that the importance of IT service management processes for service integration success differs. On average, the highest importance can be attributed to Service Level Management, Demand Management, and Business Relationship Management. The specific importance, however, depends on the specific circumstances. With regards to process implementation, we reveal various significant insights. We find that end-to-end accountability and integrated tool support are key factors. A challenge that we encountered is achieving agreement across all service providers.

Several implications for practice result from our findings. Overall, our findings indicate the need for adapting current IT service management implementations to the changing requirements of service integration. Organizations should sufficiently invest in this area. When doing so, they should ensure clear end-to-end accountability for service integration. Our results show that forming a service integration and management function is a possible solution. Literature outlines different models for these functions (Goldberg and Satzger, 2015). When organizations intend to adapt service management processes, they can use the ranking provided in this paper as basis for prioritization. They should assess, however, their specific issues and requirements to adapt the implementation to their individual needs.

A potential limitation of our work is that the main contribution – namely the analysis of potential process designs – is only based on a single case study. However, research regarding service integration and particularly with a focus on service management is in a nascent state. Yin (2003) argues that a single case study provides value if covering a previously under-researched field. Alpha presents an ideal case for our research because of its high complexity and the fact that a systematic service integration approach was applied from scratch – which is seldom the case. Hence, Alpha is an extreme case under unique circumstances, which justifies a single case study approach (Yin 2003). We think that our case study, thus, provides a basis for advancing this important research area. In addition, we complement our findings with insights from qualitative and quantitative research. Although the number of questionnaires is relatively low, the ranking of the processes provides an initial understanding of the importance of processes. We encourage future research to verify and extend our findings.

IT Service Management is a cornerstone for successful service integration. Further work is required, however, to evolve current implementations into end-to-end service management that enables effective and efficient multi-sourcing solutions.

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