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Towards a Process Reference Model for Business Process Outsourcing Providers in Customer Relationship Management

Master Thesis

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Any sufficiently advanced technology is indistinguishable from magic.

Arthur C. Clarke

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Abbreviations

BPM	Business Process Management
CD	Corporate Design
ERCIS	European Research Center for Information Systems
KMU	Kleines und Mittleres Unternehmen
NPM	Node Package Manager
SQL	Structured Query Language
WWU	Westfälische Wilhelms-Universität

Symbols

$\bowtie$	Natural Join
Π	Projection
σ	Selection

Abstract

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

With the adoption of digital devices, the way customers wish to communicate with companies is changing. This increase in complexity lead to the outsourcing of the customer relationship management process. Service providers in this field are subject to this work. In order to represent distinguishing characteristics of their business, manage communication channels and enable a aligned organization across clients, a process reference model is constructed. This thesis is part of a research collaboration with the European outsourcing provider Arvato, which provided fundamental data for this undertaking. Using design science, the resulting model artifact is an example for ...

1 Motivation

Prozessorientierung ist eine nicht mehr wegzudenkende Maxime in der Gestaltung von Unternehmen. Sie ist ein wesentlicher Bestandteil der Forschung in der Be- triebswirtschaftslehre und der Wirtschaftsinformatik. As put by Thomas Friedman, "The world is flat". Globalization facilitates combinations value-creating activities in economic networks like never before. The key driver of it is information technology, which sets the base for the connectedness we take for granted today. Its implications on markets and businesses are described in the following section.

Reference modeling is a central disciple in IS research Fettke and Loos (2004); König et al. (1996); Becker and Schütte (2004). It refers to the use and construction of reference models.

vorhoef, lemon!!

information society

Process orientiation is a precept in business organization. It is an essential part of research in business adminstration as well as Information System (IS). To make use of it, models as the language of IS take an important part. In particular, the reference models support businesses in these reorganization projects. They guide the user and help to incorporate best and common practices so that there is solid foundation to customize the model for the businesse's originalities.

Outsourcing customer service to external providers is a common practice throughout many industries. Dialling a contact number for a service request often ends up with talking to a service agent anywhere around the world. Several companies have specialized to provide professional customer support using various contact channels. Providing customer relationship management (CRM) as service requires the careful and cost-efficient deployment of contact centres. Such centres are often staffed with hundreds of agents that must be hired and trained before customer contact. For years, special focus has been put on the voice channel (Loudhouse, 2013). Meanwhile digital trends have affected many areas of life, which implies new challenges in customer relationship management. A recent study revealed that 78.7% of call centre operations managers point out that their current systems fail to meet future needs, as they are telephone-centric and costs for an architecture overhaul are too high (Dimension Data, 2015). Nowadays consumers can use a plethora of devices and software applications to interact with organizations (Köffer, Ortbach and Niehaves, 2014). As a result, the number of used channels to reach organizations increases. More specifically, analysts have seen a move from the traditional voice channel

to digital channels, such as chat or social media. For instance, private instant messengers offer faster and less complicated ways to interact with the company. Digital channels in contact centres now take 42% of overall interactions and are said to overtake voice by the end of 2016 (Dimension Data, 2016). To this end, multichannel CRM has become a "must-have" for customer service management providers (Agnischock et al., 2015). In this context, the term omnichannel CRM is increasingly dragging intention. Omnichannel CRM can be distinguished from multichannel CRM by not only providing multiple channels for customer interaction but also through seamless integrations of various channels and their underlying data (Verhoef, Kannan and Inman, 2015), which is a difficult task in CRM. At this point in time, omnichannel CRM is often not realized. However, customers more and more expect that they are able to switch between interaction channels without the loss of information. Contact centre interactions will often require the customer to repeat information again, although he or she has earlier written an email or a chat message to the same company. Omnichannel CRM also comes with important benefits for organizations. Integrated data throughout various channels allows getting a better understanding of the customer's profile and wishes through analytical support. Still, 40% of contact centres have no data analysis tool in place despite of being named the top factor to shape the industry in the next five years (Dimension Data, 2015). To this end, organizations can better target marketing campaigns or increase the quality of service provision. To realize this, organizations that use outsourcing need close relations to outsourcing providers, since the integration of channels affects various information systems both at the organization but also at the outsourcing provider. More specifically, CRM business processes need to be harmonized since they often span organizational boundaries.

Outsourcing processes have be

- Janina BA
- ECIS Paper
- Refmod motivation Püster?
- Omnichannel
- purpose statement
- research question and hyptoheses
- Crewsell: State problem,
- review studies that have addressed the problem,
- indicate definciencies in studies,

- advance significance,
- state purpose statement

2 Methodology

This chapter outlines the underlying methodology of this work and justifies that standards of research are applied.

While the research project, where this thesis is part of, has begun ahead of this work, the following approach puts emphasis on methodology employed in this thesis. Prior work in the project helped to create a foundation where this work can build up on. Design science research (DSR) is chosen as a research design, which is described in detail in the following sections, along with the epistemological aspects. Data was gathered in interviews with domain experts, supported by literature, as well as documents from the research partner. Descriptions of these aspects complete this chapter.

2.1 Epistemological perspective

Stating epistemological view of this work helps to support the reader in understanding the author's statements. Furthermore, it demonstrates a systematical method, which is sometimes perceived as lacking in qualitative research. Drawing on a framework by Becker and Niehaves (2007), five questions are mentioned to help structuring the epistemological positioning of research.

(1) What is the object of cognition? (Ontological aspect)

Ontological Realism | Ontological idealism | Kantianism

(2) What is the relationship between cognition and the object of cognition?

Epistemological realism | **Constructivism**

(3) What is true cognition? (Concept of truth)

Correspondence | **Consensus** | Semantic theory of truth

(4) Where does cognition originate?

Empiricism | Rationalism | **Kantianism**

(5) By what means can cognition be achieved? (Methodological aspect)

Inductivism | Deductivism | Hermeneutic

Ad 1. Object of cognition

Ontology is the science of *what is* and *how it is*. The existence and nature of reality are subject matter. Ontological realism assumes a real world that exists independently

of cognition. Ontological idealism sees reality as a construct depending on human consciousness. Kantianism brings together the two mentioned views by distinguishing in things in themselves and the appearing of those things to an observer.

This work takes the view of ontological realism, as the construction of the reference model is intended to solve a real-world problem. Hence, this world should exist for every observer.

Ad 2. Relationship between cognition and the object of cognition

This question asks whether entities beyond human thought can be recognized as objective (in principle). Epistemological realism affirms this question. Constructivism deems cognition as subjective and hence makes understanding a private construct determined by the subject.

Because subjects that use the reference model will show different understandings and requirements, the constructivistic view is taken.

Ad 3. Concept of truth

The *true* cognition and how humans can achieve it is foci of this question. Correspondence theory of truth states that true statements refer to facts of the real world. This requires a realistic view in both ontology and epistemology. Consensus theory of truth bases on constructivism: A statement is true *for a group*, only if all peers agree and true, if everyone agrees. Hence there can be no proof of truth. Thirdly, semantic theory of truth proposes src that truth is always related to an object language where the possibly true statements are communicated in. Therefore there has to be a meta-language that is able to analyze the correctness of a statement in object language.

Following the constructivistic view, the consensus theory of truth is taken. The correctness of modeling is dependent on the group of reference model users and its designer. If they find a consensus, truth can be achieved within the group.

Ad 4. Origin of cognition

There are three origins of cognition. Cognition from experience falls under the school of empiricism. Rationalism puts intellect as the source of cognition. Kantianism again combines both views so that both experience and intellect can be origin of cognition.

Both intellect and experience are seen as integral parts of cognition in this research. Practical experience, as included by the later described interview component, is combined with the cognitive efforts and reflection of the author to design the artifact.

Ad 5. Methodological aspect

While inductivism describes the extension from individual cases to universal phrases, deductivism is the derivation of the individual from the universal. Hermeneutic assumes prior knowledge in an issue by a subject that is able to better its understanding of *the entire* by consumption of new knowledge.

src, refpormulate hermeneutic

The act of design within this work is characterized by a hermeneutic aspect. The model is shaped by the consumption of existing scientific concepts, as well as views from the practical case. As the approach towards interview topics was to increase detail over time, a repeating process emerged: Prior knowledge was used to design the model, while the next interview gave new input that related to additional knowledge. This additional knowledge closes the circle as it became preknowledge to the next repetition. In addition, inductivism is focal in reference modeling, as the case needs to be abstracted to achieve the required universality in reference modeling. Deductivism is also part, as general business processes were applied to the domain of BPO and more specifically BPO in CRM.

induktion, deduction definieren + src

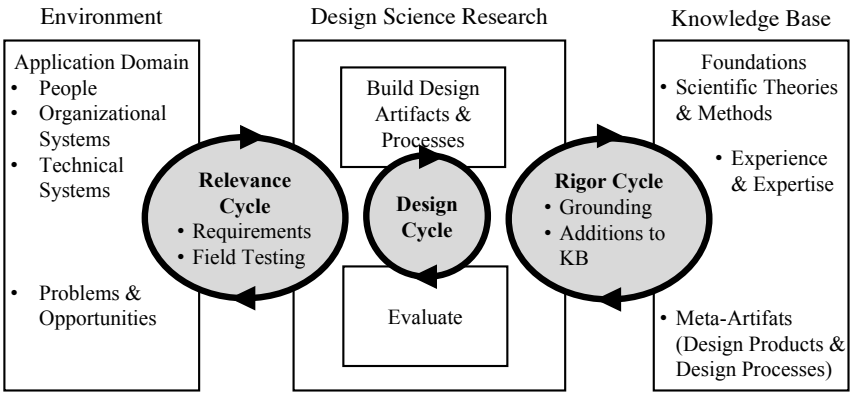
2.2 Design Science

Research has to employ accepted methodology to be accepted in the community. Creswell names the selection of a research approach as the first of preliminary considerations (Creswell 2014). Design science research (DSR), as conceptualized by Simon (1996) is getting more and more attention in the IS field and will be the leading paradigm for this thesis.

Motivating this choice is its overall goal, namely to create innovative artifacts to solve real-world problems. This addresses the often criticized limited practical relevance in IS research (Hirschheim and Klein 2003), while still employing the relevant rigor that separates it as a research project from the practice of routine design (Winter 2008). The common understanding of DSR today is seen in the work of Hevner et al. (2004). It stands in contrast to behavioural science research,which takes a problem *understanding* approach by developing theories. However, their complementary nature justifies both paradigms, as IS artifacts (as an outcome of DSR) provide utility and are subject to behavioral science research, which in turn provides truth in form of theories to be used in DSR.

wofür steht es denn? grafik?

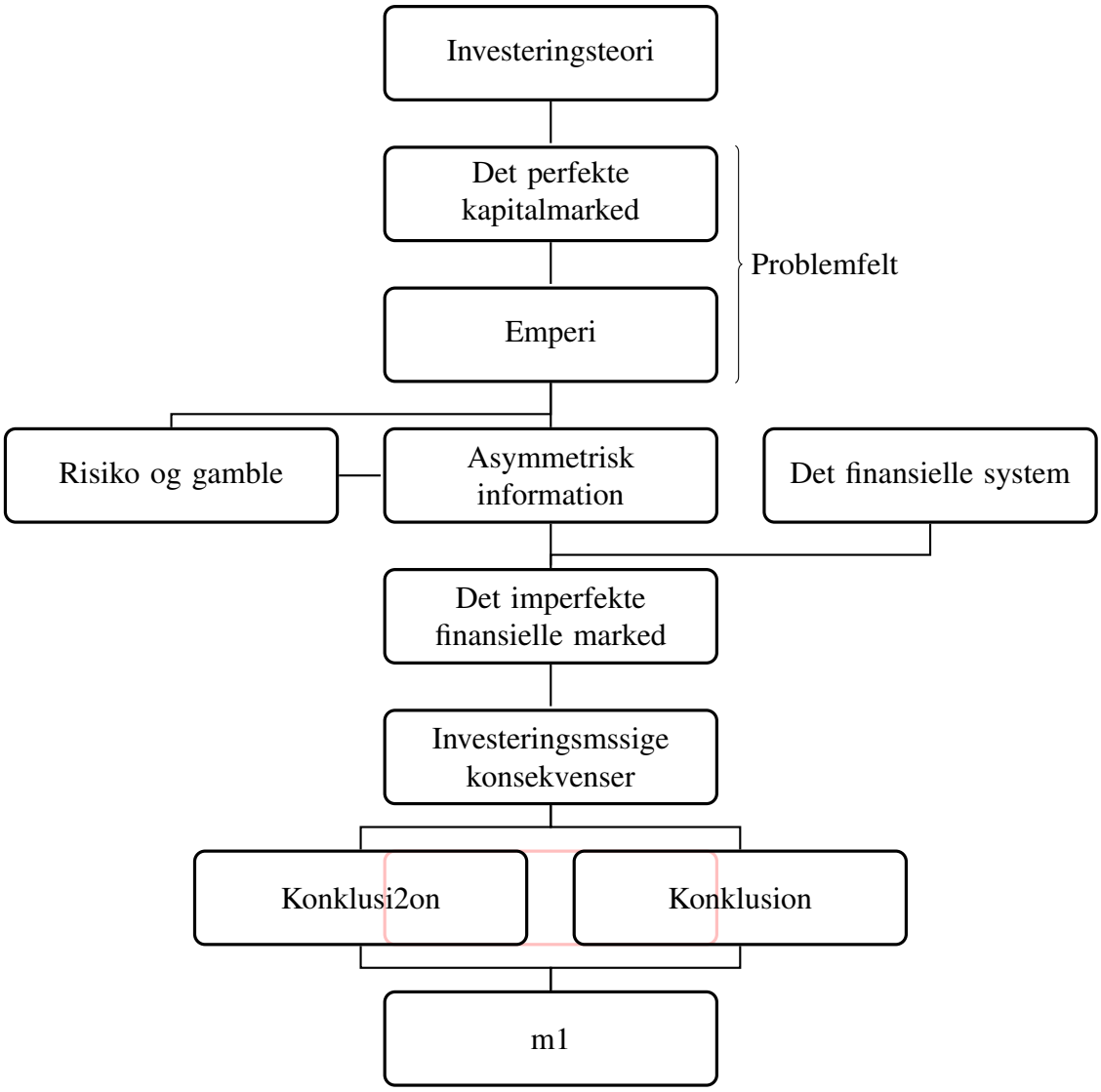
grafik geil machen



Source: (Hevner and Chatterjee 2010)

Figure 1 Design science research cycles

Fig. 1 shows three research cycles, that should be identifiable in every DSR project (Hevner and Chatterjee 2010). The environment is origin of the wish to design an artifact that solves a particular problem. In this thesis it is the absence of a process model that has referential character in the domain of BPO providers in CRM. The contextual environment of the partnering BPO provider is used to define requirements, which are transferred via the relevance cycle to the DSR component. Its inherent design cycle brings together the building of the artifact and its evaluation. An (IT)-artifact can be a model (Hevner and Chatterjee 2010) like the reference model at hand. Evaluation of the design with help of the relevance cycle ensures that the problem is addressed in a meaningful way by. The design itself is connected to the knowledge base via the rigor cycle. It draws from vast knowledge in form of scientific theories or experience and expertise. It grounds the design of the artifact to be in harmony with existing knowledge. By using proven methods and structures of reference modeling, a solid foundation is chosen. The application and transfer into the domain is supported by data from the literature, as well as by qualitative research in form of interviews with experts. Their experience and expertise is input to the design process. The separation from routine design implies that a thorough examination is necessary in the design process, to ensure the universal applicability of the reference model artifact.



2.3 Literature Review

- Where, How, For what
- später: was wurde konkret durchsucht und wo?
- streichen?

2.4 Empirical Research

As stated in the epistemological positioning, a Kantianistic view with cognition from intellect and experience is taken. While the cognition from intellect is of special importance in design of the artifact, the transfer of knowledge from domain experts motivates the cognition from experience. Following Gill and Johnson (2002), the sequence of a research

process is (1) Identify area, (2) Select research topic, (3) Decide on approach, (4) Formulate plan, (5) Collect data, (6) Analyze data, (7) Present findings. As the first two steps are specified, this section especially reasons approach, plan and data aspects.

The communication with the research partner was key for gaining insights in the domain. As automated process modeling approaches, like process mining, is not possible due to lack of suitable data, manual techniques are used. These require a data basis, which builds on the school of empiricism. Qualitative research techniques in form of workshops, document analysis and interviews were used in the research project.

A plan for the selection of interview candidates was developed in collaboration with the research partner to ensure coverage of the application domain, which is a form of theoretical sampling[1]. In a top-down approach managers from core processes in the organization were interviewed face-to-face or by call. For this thesis, interviews with nine domain experts were conducted, transcribed and analyzed. Each interview lasted for approx. 40 minutes. Additional presentations and documents were provided by the interviewees and served as an additional source of information. Since the thesis is part of an ongoing research project, other data sources that were not directly connected to the thesis are used like the outcomes of a process modeling workshop and notes from previous meetings, where no transcription was possible. The process modeling workshop was conducted over two days and included four practitioners and four researchers.

Analysis of data started before all interviews were conducted, as coverage of fields of interest was necessary on the required detail level. With the last interview, the primary analysis started that lead to the designed artifact.

[1] For more information about sampling in qualitative studies see (Coyne 1997).

3 Research Background

einleitende worte

3.1 Domain

3.1.1 Business Process Outsourcing

The phenomenon of outsourcing can be explained by basic economic theory. The following section describes how the theory of the firm, the value chain, outsourcing and process orientation are interwoven.

Theory of the Firm

In theory, a firm exists because of transaction and production costs efficiencies. They are organizational innovations to reduce costs involved in market transacting. A transaction here means the transfer of a good or service across a technologically separable interface (Williamson 1981, 1971), like the boundaries between firms. If the transaction costs across markets become larger than the costs of managing the firm, firms will substitute market transactions through internal execution. IT has drastically reduced these transaction costs and the IS field is applying transaction cost theory to explain its impact on the boundaries of the firm (Aron et al. 2005). The theory of production cost efficiency states that production by multiple individuals is the characteristic of a firm (Alchian and Demsetz 1972) and it will exist as long as the output is sufficiently larger than the output under independent production, so that the costs of organizing individuals are justified. What economists describe as increasing returns, i.e., economies of scale or experience, follows a simple rule: the more you do of something, the better you get. umformulieren

As an asset's productivity increases with specialization, this in return explains why firms specialize in certain tasks: costs of managing the firm increase with size, benefits in productivity are reachable through focusing on core business. When a firm makes its core business to parts that others do not choose to, they can provide these as a service on the market place - and decreasing transaction costs make it more and more attractive to make us of these.

The value chain

Drawing on the concept of the value chain by Porter (1985), the idea is to model each firm as a set of systems, which add value to a product or service. These chains can be

concatenated, as more and more actors are involved on the way to the end consumer to make a final product out of raw materials and components. Transaction costs are the glue that hold chains together. Within each chain lie different subsystems, which contribute to the created value through the consumption of resources - like money, labor or material. Strategy demands that firms build sustainable competitive advantages to be able to survive in the market. As firms cannot build these in all stages of their value chain (Ramachandran and Voleti 2004), they choose to focus in certain activities (core business) and hence invest less resources in others.

As transaction costs are composed of costs for communication and information processing (Evans 2014), one can see how digitalization impacts these theories from the last century. Communication costs have fallen faster than processing costs since the mid 90s, which is manifested in the internet. With falling costs, value chains can easier break up and be more flexible. SRC

Combining the previously mentioned theories of the firm and the value chain, organizations can easier transfer activities to other actors in the market that have specialized on it and can deliver it better and more efficient.

(Business Process) Outsourcing

The term outsourcing can be derived from **out**side re**sourcing** and dates back to 1981(OED Online 2016). It can be broadly defined by "the purchase of a good or service that was previously provided internally" (Lacity and Hirschheim 1993, p. 74) or narrowly as "contracting with an external firm for the ongoing management and delivery of a defined set of services to a prescribed level of performance" (Cohen and Young 2006, p. 2). However, it does not necessarily mean relocating it to a foreign country (offshoring), which falsely gave the term a negative connotation in Germany in the past[2]. Outsourcing can be distinguished by other types of partnerships through a contract that clearly defines subject and duration of the cooperation . src

Lee et al. (2000) give an overview about theoretical foundations in outsourcing research. Three major views are identified:

- Strategic management view
- Economic view
- Social view

[2] "Outsourcing" was chosen the Un-word of the year 1996 http://www.unwortdesjahres.net/index.php?id=33

The first builds on the resource-based view (Wernerfelt 1984) and takes a merely internal view. Here, the firm's strategy is about its capabilities, captured in scarce resources, and reasons outsourcing to focus on its core competencies. The economic view brings transaction cost theory into play and argues that specialized organizations (outsourcing providers) are able to achieve economies of scale in producing services. Lastly, apart from this cost efficiency focus, relationships between provider and client are also an issue worth explaining. Here, social exchange and power political theory (Lee and Kim 1999) can be named. This view is justified by two mechanisms, namely trust and power, are explaining relationships between organizations. These play an important role in establishing and especially maintaining a relationship, which is leveraging economies of scale and scope provided by partnering organizations (Rai et al. 1996).

Processes in which IT plays an important role became prime candidates for outsourcing, as transaction costs for information are negligible. More sharply, one can speak of IT enabled services (ITES) that can be outsourced using the power of IT (Ramachandran and Voleti 2004, p. 49). In addition, IT itself has become the most outsourced function (60% penetration (Deloitte 2014) considering firms with more than 1 billion USD revenue) and is called IT Outsourcing (ITO). Next to IT, finance, legal, real estate and facility management, HR and customer service are popular outsourcing applications (Deloitte 2014).
BPO is a special form of outsourcing. It is defined as BPO as the transfer of complete processes to an external service provider (Wüllenweber et al. 2008). Mani et al. (2010) add that it-enabled processes are subject to BPO. It is unquestioned that the reduction in transaction costs driven by IT permits the BPO business and that IT will expand its importance. One can argue that BPO, which requires more coordination and a more complex relationship between client and provider than outsourcing, is only possible through IT as an enabler: The transaction costs without the empowerment of IT for outsourcing complete processes are too high to be reasonable from an economic point of view. Groundedly, this work views BPO as "the delegation of one or more information technology enabled processes to an external service provider" (Mani et al. 2010, p. 39).

process standardization impact in bpo

BPAAS hier 1/2?

Process orientation

The concept of processes is a central part of this thesis. As it turns out, there are conflicts in the wording between the business process management and outsourcing domain. A process is defined a self-contained time-logical sequence of activities that work on a business relevant object. (Becker et al. 2012a, p. 6). Drawing from the Architecture of Integrated Information Systems (ARIS) (Scheer 1997), one could take four different perspectives on modeling of business from an IS perspective: organizational,functional, data and process. The process perspective integrates the other three views. A business process

is a special process that is directed by the business objectives of a company and by the business environment (Becker et al. 2012a, p. 6). This definition needs to be carefully separated from the notion of business process within BPO, which only stresses the outsourcing of complete processes and does not necessarily limit its applicability to business processes as defined here. The author notes that BPO is a common term and it is therefore mandatory to use it to correctly describe the domain. However, for the act of process modeling, the distinction between processes and business processes is necessary. An example for this conflict is that outsourcing the payroll management process would be considered BPO, while the very nature of the process is clearly not directed by the business objectives of the company.

BPAAS hier 2/2?

Porter's value chain differentiates into primary and supporting activities. The former are directly contributing to the created product or service and therefore have impact on the economic outcome of the company. Logistics, Operations or Service are parts of these primary activities. Supporting activities on the other hand do not have a direct relatedness to the product or service, but are necessary to perform primary activities. Human resource management or IT can be named here. This distinction between primary and support activities may be flowing and leaves room for interpretation and is additionally dependent on the business domain and company itself. The concept of the two activities is borrowed and applied to processes that shall be distinguished in core and support processes.

Management activities are value-creating...

A framework for BPO participants

There are at least two parties involved in an outsourcing setting. The business that is outsourcing a process is called *client*, while the business that is servicing the outsourced process is called *provider*. This thesis focuses on building a model for the provider and takes its perspective. Due to this view, it is also referred to as the focal company. With respect to the outsourced process, there additionally may be *customers* involved. These can be other businesses or private consumers. **??** shows an Entity Relationship Model (ERM) **?** among participants.

Chen74

Client and provider are connected with their outsourcing agreement and a provider is very likely to have multiple of these relationships. Multi-Sourcing, i.e., the outsourcing of services to multiple providers even within a functional area is reflected in the *(1,n)* relation of the client to the provider. Clients and their customers are connected, as a customer is buying goods from multiple companies (clients), which in turn have multiple customers. The outsourced process can involve client customer contact (for instance in CRM), but does not have to (accounts payable). In addition, a customer may be connected to multiple outsourcing services and every outsourcing service is likely to handle multiple client customers.

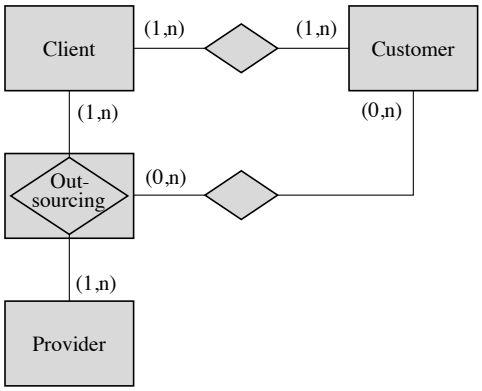


Figure 2 Outsourcing ERM

The outsourcing of customer facing processes is often not to the knowledge of the customer . This is due to the fact that clients do not have interest in confusing their customers or damaging their brand by bringing another party into their relationship with the customer. Hence, client and provider fuse to one unit from the customer's perspective. 3 visualizes the described B2B2B/C chain as an analogy on B2B and B2C as existing shorthands for business-to-business and business-to-consumer. The chain underlines the two critical intersections of the focal company (provider) with the other markets. As shown in the ERM, an outsourcing provider has multiple clients (each having customers that may be part of the outsourcing) and hence provider's businesses can be visualized as multiple chains with different client and customers attached to the provider. Consequently these form markets that the provider interacts with.

src

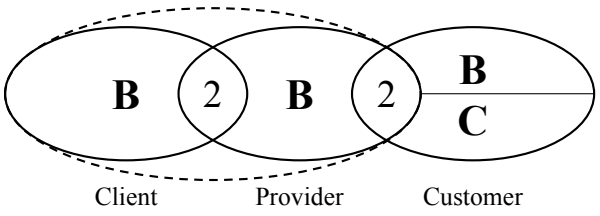


Figure 3 BPO B2B2B/C Chain

- IT as an enabler ok
- offshore, nearshore, inshore - nur nennen und auf interessante Aspekte für case eingehen
- Model ? Matrix ?

Parent Company

Motivation for outsourcing of services is based on sound economic principles, as laid out in the section about the theory of the firm. From the previously described theories explaining outsourcing, especially the economic and strategic management view applies to justify outsourcing decisions. Bartell names improved business focus, mitigate risks, build sustainable competitive advantage, extend technical capabilities and free resources for core business purposes (Bartell 1998). Cost reduction is not included in this list (even though it was a primary driver at first), as the experience has shown that 80% of customer service outsourcing projects aimed for cost cutting are failing [3].

cost savings argument noch diskutieren, zahlen von schewe

Outsourcing Provider

The business of an outsourcing provider is oriented towards clients. Outsourcing contracts are individually negotiated and can put the provider into different roles. While companies can use outsourcing as a means to drop off operative work and manage related processes by themselves, a closer relationship between provider and client facilitates more cooperation. Providers can become partners that take responsibilities collateral to their front-line business.

Schewe and Kett (2007) provide a framework about processes of an outsourcing provider, which is located in Appendix A.3. It counts three main areas: Service management, delivery management and service delivery. Service management comprises *client support* and *help desk*, which are about the nurturing of the client relationship and providing help with respect to the provided services, respectively. Delivery management can be loosely compared to product development in a manufacturing business. It contains *program management*, which handles the offered service portfolio and *projects*, that develops and deploys new outsourcing engagements. The last area, service delivery, is about the outsourcing activity itself. Its components are finance, HR and Procurement / Logistics, as well as transaction processing. The latter refers to the creation of services, which is the main business, while the first three are supporting activities for service delivery.

A recent market overview segmented BPO-providers into five categories: Human resource outsourcing (HRO) specialists, customer care specialists, BPO multi's, IT multi's and document management providers (Snowdon et al. 2016). While the authors note that the split is subjective, it helps to get an overview about the market's composition, as shown in Fig. 4. The notion of customer care is hardly seen in academics, as a search

[3] cf. http://www.gartner.com/newsroom/id/492113

on sciencedirect unveils[4]. It seems that customer care is used to emphasize activities that exceed narrow customer service provision. Here, the term CRM is preferred to capture this extension, which is reasoned in the following.

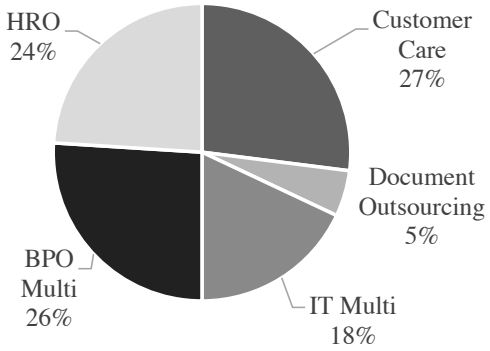


Figure 4 BPO market composition

In terms of growth, customer care is expected to grow 4%, which is one percent behind the highest growth rate of HR providers.

+market volume, geiler formulieren

3.1.2 Customer Relationship Management

"A company's most precious asset is its relationship with its customers" is a quote of Theodore Levitt, Harvard Business School professor emeritus (Levitt 1983). Following this idea, marketing has undergone a shift from a brand- or product-centricity to a more customer-centered view (Chen and Popovich 2003). An absence of sharp definitions has lead to a considerable confusion in academic literature about the term customer relationship management (Payne and Frow 2005).

Essential terms surrounding CRM are marketing, relationship management and relationship marketing. Drawing on the taxonomy of (**?**), a visualization of the fundamental relationships is given in Fig. **??**. Under the umbrella of marketing, relationship management describes the active and systematic analysis, planning, design, selection and control of all business relationships in the sense of a holistic concept of systems, activities and goals (Diller 1995, p. 442). It has to be noted that not only relationship to customers, but also suppliers, communities, authorities, as well as internal relationship are enclosed by this term. Relationship marketing is a subset of relationship management and more strongly

[4] 1294 results for "customer service" in title, abstract or keywords in comparison to 58 for "customer care"

emphasizes customers as a target, but also comprises vertical relationships, i.e., relationships to suppliers. Within relationship marketing lies customer management or customer relationship management. Both terms are often used interchangeably (Leußer et al. 2011; Ryals and Payne 2001). Conducting an analysis of publications w.r.t. the terms, CRM is identified as the most used term (cf. A.2). Therefore, this thesis prefers the term customer relationship management.

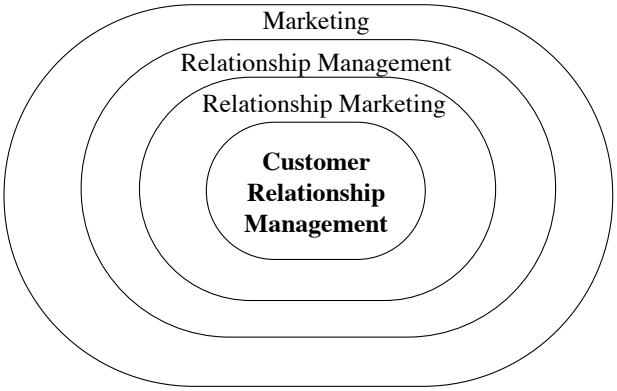


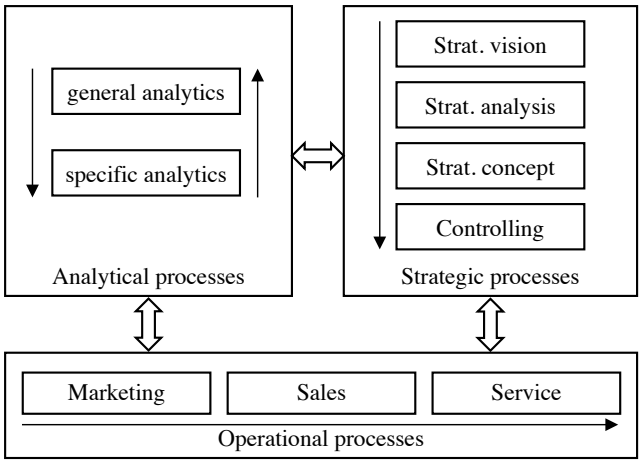
Figure 5 CRM in the field of marketing

Chen and Popovich see a process, people and technology component in CRM (Chen and Popovich 2003). Payne and Frow (2005) compile different standpoints and propose three views, that will be described in the following. As the name suggests, the building and sustaining of relationships to customers is always a defining characteristic of CRM, but the importance of the technological component is varying.

Narrowly and tactically defined, CRM refers to a technology solution and its implementation, which justifies the term's popularity in the technical field to create one view of the customer in the IS. With an increased scope, CRM can be seen as the implementation of an integrated series of customer-oriented technology solutions. Widely and strategically defined, CRM can be seen as a holistic approach to managing customer relationships to maximize customer value, corporate profitability, and thus, shareholder value (Payne and Frow 2004). This value is realized through the developed of a relationship, that is profitable and preferably long-term. Customer service is seen as a part of CRM (Helmke et al. 2012, p. 11). It exists in order to create additional value before, during and after a purchase.

For this thesis, a customer is defined as an individual or business that has entered the process of buying a good or service from another business. Hence, the customer has a relation to the latter, that is of interest in CRM. This relationship can be strengthened by

a plethora of marketing instruments that businesses use to bind the customer. These are initiated from the businesses and directed towards the customer. The reverse way, i.e., a customer reaching to the company by considering a product is also possible.



SOURCE: adapted from (Helmke et al. 2012, p. 39)

Figure 6 CRM processes

geil machen (boxen unten)

Processes in CRM can be divided into strategic, analytical and operative (Neckel and Knobloch 2005). Strategic processes build up on an strategic analysis (for instance Strengths Weaknesses Opportunities Threads (SWOT))) to derive goals of the CRM initiative and structures necessary to reach them. Operative processes describe execution loosely separated in marketing, sales and service processes. Analytical processes support both strategic and operative processes through data-driven insights either on a general level (i.e., customer segmentation) or bound to a specific activity (i.e., cross-selling). Operative processes are customer-facing processes and are of special interest in this thesis.

For contact between the company and customer, two terms have emerged: (interaction) channels and customer touch points (Leußer et al. 2011). A channel is a medium that facilitates communication and seen from a company perspective, while a customer touch point is more specific and from the customer's view. A touch point shall be every moment of contact with the company from the customer's perspective (Zomerdijk and Voss 2010). Linking touch points together forms a customer journey.

A channel can be composed of platforms. Social media as a channel represents platforms like facebook, twitter or instagram. It will likely be a long-lasting medium in CRM, while a platform, may or may not withstand the test of time. Platform members can publicly communicate via posts, which are touch points between company and customer.

However, it is noted that one can see platforms as channels in business, as the argument of platform popularity is of little interest in operations. This granularity stands in contrast to the intended applicability of this work, therefore a channel is not seen as a platform here. In that sense, a channel is seen here as a more abstract type and a touch point an instance of a communication between company and customer.

Communication between the customer and company can be done through a number of channels which have grown in the past years. Integration of these channels is a central task of CRM and shows increasing complexity. Payne and Frow (2005) propose six categories: (1) sales force, (2) outlets,i.e., stores and the alike, (3) telephony, (4) direct marketing,i.e., mail, radio, television, (5) e-commerce,i.e., e-mail and internet, (6) mobile-commerce (i.e., text messaging, mobile telephony). Applying the mutually exclusive; collaborative exhausting (MECE)-rule, one faces problems with this definition. With the advent of smart phones, mutually exclusion of (3),(5) and (6) is hardly possible. In addition, social networks have become increasingly important for customer interaction. This necessitates another view, which conforms to today's channel landscape and is forearmed for new channels that might emerge in future.

This thesis takes a two-dimensional views on different interaction channels in CRM. Building on the framework by Payne and Frow, the digital component gets more emphasis, as it is of striking importance today. The matrix displayed in 7 positions different channels with respect to their personal or universal way of communication, as well as their orientation towards IT. The aforementioned categories (1) sales force, (2) outlets and (4) direct marketing are located in the matrix with no further change of meaning to the primary literature. Especially in the digital sphere, a more diverse view on the remaining problematic categories is taken.

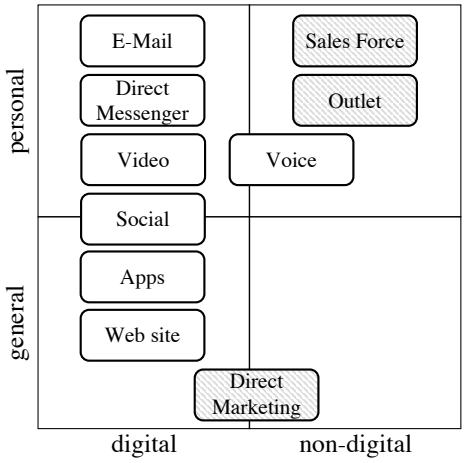


Figure 7 Channel matrix

Digital channels are characterized by the web as an underlying technology for communication. Non-digital channels on the other hands rely on real world interaction. In general, a shift towards digital channels is undeniable. For customers they are a convenient way of communication, as their devices enable them to do interact with less effort. A stop at a retail store is more effortful than a lookup of information on the company website. Nevertheless, non-digital channels will always be part of the channel portfolio, as complicated issues reason interaction with another human being face-to-face, especially in the B2B-sphere.

The customer-centric view underlines the shift to personal marketing activities . This is enabled by IT and the ever increasing amounts of data that is available and possibly attributable to a single consumer. While the more personal approach is standard practice in B2B-relationships, mass media direct marketing has been the only way to target private customers in the past decades through the use of radio or television. In a data-driven world personalized relationships with customers is an imperative to stay competitive. However, an anonymous way of retrieving information is also demanded, even though this way will likely increase the effort due to a less tailored presentation of information.

one2one marketing ref

360 degree kram?

The two trends in the dimensions renders the personal / digital quadrant as an strategic priority. The identification of single customers is of paramount interest for a customer-centric view, which is only efficiently possible by information technology. This again can be mapped back to the work of Payne and Frow: They name information management and multichannel integration as strategic processes.

Not every channel is used by every company. Coming from a pre-digital age, digital channels were integrated gradually and often in a heterogeneous information system landscape (Chen and Popovich 2003). The following paragraphs shortly describe all channel categories that are not named in Payne and Frow (2005). A special focus is put on the role of customer service provision.

Voice

Coming from traditional, non-digital telephony, voice is a very important service channel. While non-voice channels are said to overtake by the end of 2016, it is still accounting for half of the customer service volume on its own (Dimension Data 2016). However, voice is becoming more and more digital for example through Voice over IP (VOIP) technology, which is one reason for the renaming. Defining characteristic is the synchronous communication and interaction with a customer service representative (CSR). A channel's popularity is reasoned by customer's expectation to explain their problem easily (35.2%) and get a fast response (46.4%) according to (Agnischock et al. 2015). Voice is well suited

here, but is also a costly option for customer service through the one-to-one interaction. CSRs are not able to process multiple calls simultaneously. Outsourcing call centers has therefore become a major application across industries () as low-wage countries like India offer significant savings.

SRC und cost savings argument

Regarding data, the shift towards digital call processing enabled the tracking of numbers, efficient routing and conversation recording for instance. Identification of callers is often possible through the caller's phone number (if not suppressed), but a problem arises in outsourcing: When the client provides call routing systems and uses outsourcing as a means to process first level support for instance, the phone number might not reach the provider's systems. This renders a customer identification before start of the call impossible. Audio recordings also need to be automatically transformed into a processable format through sophisticated text-to-speech tools before using them for analytical purposes. Due to privacy reasons, these activities are restricted in many countries.

E-Mail

By 2020, 50% of the world's population is expected to have an email address (**?**). In the developed world this number will be significantly higher. The convenience of electronic mail is the asynchronous communication from various devices, with attachments, at any time of the day and without the need to personally interact with the receiver. In customer service it is ranked second in terms of volume. 90.1% of call centers support e-mail (Dimension Data 2016) today.

As the message content is directly processable, analytical support plays an important role in routing mails. The sender can be identified by the address, that can not be suppressed.

+++

Direct Messenger

The vast adoption of smart phones replaced the temporary very popular short messaging service (SMS) in a scratch. While in 2012, traditional text messaging in Germany counted 162 million messages (the messenger whatsapp: 20 million), whatsapp overtook in 2013 and is now the goliath (667 million messages expected for 2015) in this business (39 million SMS are expected)[5]. The popularity stems from no character limit, no extra costs to their data plan and easy sharing of photos. Strong network effects tie users to the platform, while other players are existing in the market. In addition to this mobile app bound instances of messengers, many other platforms provide a direct messaging function, which is often called chat. Being a asynchronous channel from a technological perspective, it is de facto synchronous: customers expect a flowing conversation and hence a quick so-

[5] cf. https://de.statista.com/statistik/daten/studie/3624/umfrage/entwicklung-der-anzahl-gesendeter-sms--mms-nachrichten-

lution to their problems. Web sites of companies nowadays have a chat embedded to quickly solve issues that arise while browsing. An economic advantage for messengers in customer service is that an agent is able to process multiple chats in parallel, which is not possible in voice for example. In addition, automation technology enables artificial intelligence to participate in chats. Being fed and trained by a knowledge base, so called *Chat Bots* are able to dynamically infer queries from customers that are transferred via chat messages. While complete control of bots is likely in future, support of human agents through analysis of chat input and recommending answer content contains less risk, as a human only gets decision support and still makes the decision. The reader is referred to 3.1.2 for a discussion of self service technology in CRM.

App abschnitt... oder einfach integrieren... ist in dem sinne auch kein channel, sondern wieder eine plattform, die informationen wie die website beinhaltet.

Video

Video shares several characteristics with voice: It is synchronous, two human beings are involved and the communication is based on a common spoken language. In some sense, it is *voice+*, as it adds the visual representation of communication partners, which is why one can argue that they will ultimately merge into one channel category. The reason for the split here is that voice has its roots in the non-digital world, while video is clearly a digital channel. In terms of adoption, voice is accepted and used across the technological, cultural and demographical sphere. This is not the case for video-based communication technology. While technological requirements (i.e. mobile devices with front-cameras) are given, it can be put into the early adopters group w.r.t. theory of diffusion of innovations (Rogers 2010). Consequently, the use in customer service is rarely seen. However, it offers advantages not possible via voice for example through the ability to perform legally binding identification or show objects of interest live during the conversation. These innovations are reasons to put it into place in customer service, as the customer knows of their necessity in the process. The technology acceptance model (Adams et al. 1992) helps to explain the obstacles: customers do not see the added value in revealing themselves visually in front of a stranger and also expect it to be more complicated than a normal phone call.

Social

More than 40% of Germans are members of a social network [6]. The dominant player on this market in the western hemisphere is facebook. Characteristics of personal profiles and the ability to interact with ones network through public or private communication. The former is referred to as a post. With increasing private use, companies realized the potential in CRM through these platforms. The ability to communicate *with* the company

src

[6] cf. https://www.statista.com/statistics/312918/social-network-penetration-in-germany/

on a public stage in the network is a novelty, which justifies its attractiveness for customers and companies. In customer service, it is often used as a channel for complaints, as publicly sharing ones grief puts more pressure on the company and hence benefits the chances of a customer to get a satisfying solution or compensation. The company needs to react quickly and well-considered to these inquiries, as the nature of social networks make it possible to generate a myriad of displeasing content by a single post (so called *shit storms*). Furthermore, the answering agent represents the company as a single person in the post, which necessitates a review process.

The public posting also has implications on the ability to process customer inquiries. As personal or order related data should not be available on the network due to data privacy regulations, agents often have to switch to a private channel (i.e. private messenger within the network or unrelated channel). Despite the use in customer service, companies also use social networks as a marketing channel. As typically all published content can be commented by users, there is no clear boundary between service and marketing activities.

Website

A company's website is likely the first address a customer visits to satisfy his information needs. It can be a starting point for switching to another channel, i.e. visiting the website for retrieving the service hotline number, or the channel that solves his problem. 15.1% name it as their preferred contact channel (Agnischock et al. 2015). Often, a Frequently asked questions (FAQ) section is provided to quickly answer questions in-demand. In addition to these sections, websites can offer a customer service area, that aims to solve customer's problem without personal interaction of a CSR, which is called self service. The magnitude of these areas is varying largely by industry and company, as it is the companies own responsibility to design, implement and maintain it. A social network component can be seen in communities where customers help themselves. These brand communities (Hsieh and Wei 2017) are typically moderated by CSRs to ensure correctness of solutions. Elements of gamification give incentives to participate and follow the rules. This type of crowd-sourced knowledge is a substitute for customer service employees and therefore offers cost saving potential.

Furthermore, company websites may be platform for self service technology that actively processes queries against a knowledge base. Chat functionality can accompany the customer service area to give an medium to communicate issues in natural language, without the need to navigate through the website.

Non-Digital Channels

While digital channels continue to grow, other ways of contact exist. For customer service, the importance is diminishable if one counts voice as a digital channel : mail and fax account for 1.4% across age groups (Agnischock et al. 2015), with the highest popularity among the elderly. These can be included in the e-mail channel, as their content can be digitized (viz. scanned). Brick and mortar stores, if available, amount for 28.5% and are therefore very important. Narrowing the scope to ITES leads to an exclusion of sales force or branches, as these are not outsourced.

Self Services

Self Service technologies enables customers to produce services without direct involvement of a service employee (Meuter et al. 2000). This automation is relying on information technology to enable its functionality. Early examples include ATMs or balance checks on cellphones, which underline the diversity of self-service channel opportunities. Today, the internet makes companies create comprehensive self-services, which are accessible through websites or apps. However, these examples convey that self service technologies cannot be seen as a channel, but as an additional component that enables service delivery standalone or combined with other services.

Standalone self services provide a solution to a customer's problem, i.e. by providing the needed information in an FAQ section (also called Self-Help (Meuter et al. 2000)). Another possibility is the support in another service process, for example through call routing automation to the correct specialist in a call center. Here, the customer receives self-services by passing information to a technological interface, which in turn determines the contact, that solves his problem.

Reasons for self-service implementation are cost savings, due to less labor-intensity and scalability, as no employee needs to deal with the request. Customers can ignore service times and help themselves without the need to explain their issue to another person. Blut et al. provide a comprehensive study about technology acceptance in self service technologies (Blut et al. 2016).

Multi-Channel and Omni-Channel CRM

An explosion in touch points (Lemon and Verhoef 2016), especially in digital media, has lead to new developments in customer relationship management. Motivated by the availability of data across channels, its integration is a major challenge. Companies seek to make use of the data to enhance their customer relationships and improve customer

experience. For this work, customer experience shall be defined as the internal and subjective response customers have to any contact (direct or indirect) with a company (Meyer and Schwager 2007)[7]. In the last century Pine and Gilmore claimed it will be the next "competitive battleground", which now seems to come into reality. A recent study named customer experience the number one priority of executives in the next months (**?**).

Payne and Frow define five strategicprocesses in CRM, which include a multi-channel wiederholung! Integration process and an information management process (Payne and Frow 2004). The former underlines the strategic role of integration from a customer experience perspective and the latter emphasizes the IT focus of CRM.

Two developments take place, multi-channel and omni-channel management. It is abstracting from the CRM case to include other domains, like retail. While multi-channel management is existing longer in the literature[8] and is now interpreted as the management of multiple channels to deliver high service quality in each of them, the notion of omni-channel management has recently emerged and seeks to deliver a seamless customer experience across channels. Omni-channel CRM originates in the domain of retail (Brynjolfsson et al. 2013; Rigby 2011; Piotrowicz and Cuthbertson 2014) and envisioned shopping of goods across different sales channels (i.e. online, store, telephone). This concept is now transferred from goods to the customer experience in its center, so that omni-channel management creates one view of a customer and thereby strengthens the relationship and increases its value. Measures like the customer lifetime value instead of value creation emphasize the long-term view of the customer (Lemon and Verhoef 2016) and the need of CRM to run like a golden thread through different interactions of the customer.

Separating multi-channel from omni-channel is difficult, as the latter formed as an amplification of the latter. Verhoef et al. (2015) try a distinction shown in Table 1, which is here masked from the retail domain.

Aspects in channel focus and scope can be criticized in this juxtaposition. It is questionable that channels are excluded from multi-channel management, because in essence the distinction is seen in the relationship *between* channels and not the channels themselves. The excluded channels from multi-channel management (viz., mass communication) go back to the channel definition of Neslin et al. (2006), which emphasizes interaction between customer and company. From this, Verhoef et al. infer that solely two-way communication channels can be part of multi-channel management. The understanding

[7] cf. Lemon and Verhoef (2016) for a detailed discussion of customer experience and the customer journey

[8] For an overview of existing research see (Neslin and Shankar 2009)

	Multi-channel management	**Omni-channel management**
Channel focus	*Interactive channels only*	*Interactive and mass-communication channels*
Channes scope	*Store, online website and direct marketing*	*In addition mobile channels (i.e., smart phone, tablets, apps), social media*
Separation of channels	Separate channels with no overlap	Integrated channels providing seamless customer experiences
Brand versus channel customer relationship focus	Customer - channel focus	Customer - channel - brand focus
Channel management	Per channel	Cross-channel
Objectives	Channel objectives (i.e. sales per channel, experience per channel)	Cross channel objectives (i.e., overall customer experience, total sales over channels)

Adapted from (Verhoef et al. 2015, p. 176)

Table 1 Multi- and omni-channel comparison

in this work is different and makes no difference in possible channel focus and scope among omni- and multi-channel management. As Verhoef et al. describe multi- and omni-channel as "phases", they put mobile channels and social media as additions from multi- to omni-channel. This view might be reasoned in the publication time, because multi-channel publications in the early 2000s could not predict the impact of smart phones and tablets on marketing, as the more recent omni-channel publications. Appendix A.2 holds an overview about publications over time regarding omni- and multi-channel management and proves the greater impact of multi-channel management over omni-channel management in the literature.

This work agrees with the view that omni-channel management puts in a holistic view and emphasizes communication with the brand across channels. The objectives of omni-channel management emphasize the overall, holistic customer experience, which forges a bridge to the CRM domain. Adding the temporal dimension of the customer relationship, these experiences over different interactions (in separate, integrated channels) describe omni-channel CRM as a means for a superior customer value creation.

3.1.3 Customer Relationship Management Business Process Outsourcing Providers

Putting together the theory of business process outsourcing, customer relationship management and recent omni-channel approaches, this section underlines how these concepts work together in business.

From the process groups in CRM, especially operational services are subject to outsourcing activities. Reasons for this lie in high intensity of manual work in customer service activities. While strategic or analytical processes are more connected to high skilled and differentiating activities for a company, customer service includes several tasks, that can be learned quickly. Outsourcing these makes use of (global) pay gaps and helps to realize cost savings. As the complexity of relationship management increases with the number of channels, companies find it harder to keep pace with their competitors. In addition, customers expect an individual and customized treatment, which justifies sophisticated techniques by companies, to know and accompany them on their customer journey. Consequently, BPO providers have expanded their tool set from being an extended work bench, to provide solutions for challenges in the other processes of CRM, namely strategy and analytics.

Ramachandran and Voleti name two capabilities of outsourcing providers. On the one hand, they need to understand the client needs in the domain and business (e.g., CRM). This expertise is manifested in the understanding of the client's customer, as the relationship of the client to the customer is subject of the outsourcing engagement. Furthermore, the provider needs to have capabilities to excecute the services efficiently. Economies of scale and scope have to realized by the provider to reach a competitive cost level and superior service, respectively.

As visualized in 3.1.1 Fig. 3, outsourcing provider and client can form one unit when an end customer is involved in the outsourced business. Customers need not be aware of the outsourcing contract and therefore the customer service provision should keep up this delusion. For instance, a CSR in an outsourced setting will answer the phone on behalf of the client and does not leave any clues about being an employee of the outsourcing provider. As nowadays multiple channels are the norm, companies may outsource a subset of them, outsource all to one provider or cooperate with multiple providers (so called multi-vendor relationships). Implications on providers arise when managing more than one channel, as the aforementioned multi- or omni-channel management approaches apply. This development requires more expertise from the provider and moves away from the extended work bench-analogy. The spanning of an outsourcing business across channels requires higher emphasis on information management and therefore the IS landscape. Technological parameters can partly be set by the client, be it back-office systems

SRC

or knowledge bases, as well as application systems that manage specific channels. Varying requirements and leeway make general statements about the provider's responsibilities vague.

Another dimension is the complexity of requests, which are outsourced. One typically differentiates in different tiers in a contact center[9], that order the complexity of inquiries. Tier 1 support solves the most basic queries and is typically the first personal contact in a service inquiry. Tier 2 support handles complex issues, where tier 1 support is not able to solve the problem. Consequently, tier 2 CSRs need to be more skilled and trained than tier 1 CSRs. This reasons why tier 1 customer service is the first outsourcing candidate (54% tier 1 against 37% tier 2 outsourcing (Deloitte 2014)): it is more labor intensive through its gate-keeping property and requires less training to be productive in the job.

In terms of IS landscape, providers have to manage a plethora of customer service systems, as clients may bring in their own. In addition, they outsource single or multiple contact channels. Their own landscape may consist of a single system in the best case, but due to gradually introduction of digital channels, multiple systems are more likely. If new systems are put in place, clients may inherit the selection process, as the investment outlasts a typical outsourcing contract. Vendors on the market offer solutions for single or multiple channels and a provider selects the appropriate system for the client problem. Putting it into perspective across client businesses, the system landscape that the provider has to interact with can be described as highly heterogeneous, which is a reason why a centralized organization is hardly achievable. The client businesses need a sufficient amount of independence to meet client requirements.

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3.2 Reference Modeling

Conceptual models are representations of an application domain used to capture the important features to be incorporated into a specific information system (Batani et al. 1992; Bodart et al. 2001). –37 vom brocke intro

[9] The term contact center or service center is preferred over call center, as nowadays more than calls are handled in these facilities.

3.2.1 Concept

The Model as a construct

Reference Models can be seen as theory of information systems (Schütte 1998). A model itself is defined as an "immaterial representation of an original for the purposes of a subject" (**?**, p. 1). Based on the work of Stachowiak (1973), three characteristics of models are identified: mapping, reduction and pragmatism. Mapping describes the representation of natural or artificial originals, which can be models themselves. Reduction underlines the omission of certain elements of the original in a model. Pragmatism means that the selection of parts of the original is dependent on the intent of the model. Based on this notion, models of information systems (or information models in short) are explicit models that have information systems as subject matter. The purpose of modeling can be the constitution of application systems or the organization (Rosemann et al. 2012, p. 59). The latter is in focus here and encompasses among other aspects knowledge management, documentation of the organization and process management.Information modeling, the act of creating these models of IS is a complex task, which is why reference models are a useful means to reduce this effort (Becker et al. 2007) to create application models.

Reference Models and Application Models

An information model can be specified on a certain company, which is here denoted as an application model. Reference models on the other hand are not firm-specific and as the name suggests provide guidance in a defined modeling scenario. There is no accepted definition of reference model in the literature. Thomas compiles various definitions for reference models (Thomas 2006a). Vom Brocke and Buddendick brings in the notion of reusable conceptual models, where conceptual models are the representations of an application domain used to capture the important features to be incorporated in a specific information system (Vom Brocke and Buddendick 2006, p. 584), as the term reference model is predominantly used in the German literature. It is agreed that a reference or application model of German understanding is a conceptual model. However it is refrained to use the terms reference conceptual model and application conceptual model over Application model (RM) or Reference model (AM) . As an conceptual model's purpose is the representation of features of an information system, it is an information model.

(Schütte 1998) puts "universal validity" and "recommending characteristics" as defining for a reference model. Universal validity expresses that a reference model can only be valid for a class of companies, so that it can be used for creating application models. The recommending aspects states that a reference model should capture a wanted to-be state, which is in the modeler's intention. These two combined enable the wanted re-

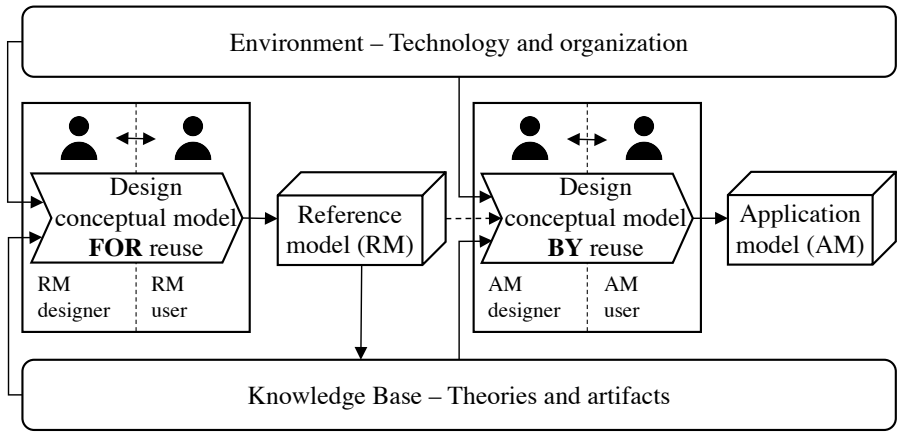
usability, which is planned by the modeler (Brocke 2003, p. 36). However, achieving a recommending characteristic is a subjective judgment and universal validity can always be achieved by shrinking down the target class of companies (Thomas 2006a). The other option, namely encompassing a large target class of companies to create *one* reference model stands in contrast to practical use, as the creation of application models gets increasingly complicated the more general (and hence abstract and theoretical) (Schütte 1998, p. 79) the reference model is. Striking a balance between these trade-offs is known as the reference modeling dilemma (Delfmann 2006).

For this thesis, a reference model is defined as an information model with content that is reused in the construction of other application models. The relationship between a reference and application model is characterized by reuse of reference model components in application model construction (cf. Püster (2015); Brocke (2003)).

verbessern...

To capture the complexity in business, a data, organizational, functional or process perspective can be taken (cf. 3.1.1). As only process models are subject matter in this thesis, the term process reference model is used interchangeably with reference model from here on.

vielleicht generisches Ref-Mod-Varianten-management



SOURCE: adapted from (Vom Brocke and Buddendick 2006, p. 587)

Figure 8 Design Process of Reusable Conceptual Models

A model is created by one or multiple subjects called designers and utilized by users (Becker and Schütte 2004). Model designers in context of reference modeling responsible for creating the RM itself. Their intention is to design *for* reuse, i.e. creating an artifact that is to be reused. The other involved stakeholder in this modeling process is the reference model user which collaborates with the designer and defines requirements for use. This first process is visualized in the left chevron in Fig. 8 and takes input from the

knowledge base as well as the environment. The output is the RM which itself contributes to the knowledge base as an artifact.

The right chevron is similarly structured w.r.t. the stakeholders, but designs an application model on base of the now existing RM which can be labeled as design *by* reuse. Akin to the reference model designer, the application model designer takes requirements from the application model user. By doing this, the AM can represent characteristics of the application environment (i.e. one organization), while still being conformable to the reference model.

3.2.2 Construction

A construction of an AM on basis of a RM requires the construction of the latter beforehand. Fig. 8 lists the knowledge base (theories and artifacts) and the environment (technology and organization) as inputs for reference modeling. For knowledge acquisition, one can differentiate in an inductive and deductive approach (Thomas 2006b). Inductive conclusions might stem from the organizational settings that are observed or existing AMs of organizations in the domain. Deduction is employed when drawing on existing theories from the knowledge base. Loosely, these two approaches refer to the two inputs for design *for* reuse in Fig. 8.

The reader is referenced to Fettke (2014) for an overview about different construction techniques. These show conformance with the design science approach (Püster 2015, p. 10) which is taken here.

Selected Reference Models

As mentioned, a reference model is suited to fit requirements of a certain domain. The purpose of this section is to briefly present two different reference models that are used in practice: The Supply Chain Operations Reference (SCOR) Model and the Retail-H. Both show a layer structure to manage complexity and both encompass a process reference model.

SCOR allows modelling of supply chains. It is a process reference model with three detail layers. It was developed in 1996 and is now maintained by the Association for Operations Management (APICS 2015). On the highest level, typically called regulatory framework, SCOR is based on six distinct management processes: Plan, Source, Make, Deliver, Return and Enable. While the regulatory framework assists in defining scope, the second configures the type of supply chain (Make-to-Order, Build-to-Order, Engineer-to-Order). On the thirds level these are decomposed into generic process steps (e.g., issue

product). Even more detailed processes are considered company specific and therefore no part of the model. Furthermore, performance metrics are also defined on each level.

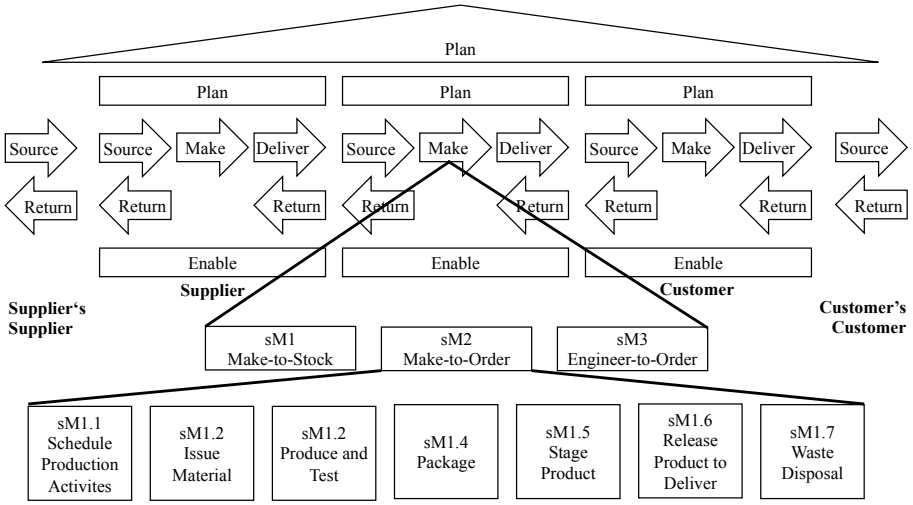


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Figure 9 SCOR Model

In the domain of retail, the Retail-H is a reference model that includes process, function and data models. Developed by Becker and Schütte (2004), it has been adapted to suit special segments of the domain[10]. It is structured with four layers of detail: the regulatory framework, main processes, detail processes and process building blocks, as an application of icebricks as a process modeling language. The core of the regulatory framework is made up of three parts that form the H (a connection to the German word for retail: "Handel"). While the left part of the H describes the supply side, the right covers the distribution side. Both are connected through logistics. All of these core processes are business processes, the roof and foundation consist of support processes thereby making use of the framework reference design as proposed in Meise (2001) while simultaneously capturing domain-specific aspects in the set-up of the framework.

[10] for instance eCommerce, Central Clearance or Central Settlement (Püster 2015)

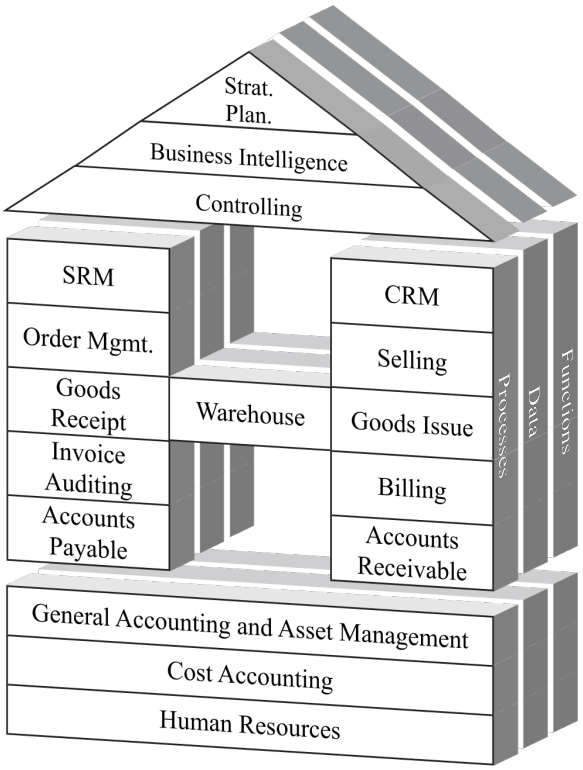

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Figure 10 Retail-H

3.2.3 Benefits

Becker and Schütte name benefits of reference models in combination with an explorative study (Schütte 1998, pp. 75). Similar to Vom Brocke and Buddendick (2006), they differentiate in model designers and users. Reflecting on Fig. 8, actors in the left process are subject in this section. Taking the view of the two parties, the following benefits are named:

- Designers

  Monetization through application and configuration

  Obtaining domain knowledge

- Users

  Cost reduction

  Risk reduction

  Documentation

  Analysis

  Exchange of information

Designers of RM are a research institutions or businesses. This distinction is not mutually exclusive, but helps to conclude the two main benefits. While the economic principles encourage the monetization through the use of the *product* reference model, the scientific world strives for cognition in the domain. It is noted, that the practical use of a reference model to form an application model is seen as hardly possible without additional consultative services in application model design (Schütte 1998).

The user side puts emphasis on cost reduction aspects . This stems from the avoidance of modeling from scratch which creates quality gains and time savings. Related to this, risk reduction refers to less modeling mistakes as the application model builds on a solid foundation. Through a more structured approach of information modeling an improved documentation can be achieved. The analysis and identification of weak spots is especially important in process reference models (Becker and Schütte 2004, p. 81). Finally, the exchange of information inside the company benefits from a common base for discussion. **?**A glossary for an unified terminology additionally supports communication inside the company, as well as with other reference model using companies. It can be summarized as *best practice sharing*. A feedback loop from users to designers also facilitates further development and adjustment of existing RM to new circumstances in the domain.

schütte?

vombrocke checken!

3.2.4 icebricks as a Process Modeling Language

A language is a system of signs and rules to their use (Holten 1999, p. 11). Fundamental is the ability to represent and communicate information through it (Brocke 2003, p. 64). While reference models are formulated in various languages, several options may arise. There are reference models like SCOR, which avoid the use of a defined modeling language to ensure wide industry adoption through not interfering with used modeling languages. However, this necessitates an increased complexity in adoption, as an application within a company requires the translation into a sound process modeling language. While the framework level does not need to comply to a formalized language, more detailed layers of the reference model without clearly defined syntactical guidance increase the risk of misunderstanding among users. This reasons the choice of using a defined process modeling language for this undertaking.

The next step is to decide what language to use. Traditional modeling languages like the Event-driven process chain (EPC) or Business process model and notation (BPMN) show similarities. Being syntactical languages, they offer large degrees of freedom in usage. What might look like an advantage at first sight, turns out to be disadvantageous. As process management approaches have increased number and variety of model designers

and users enormously, more and more non-experts get in contact with process models and thus create models of less quality. The definition of modeling conventions becomes necessary to help the modeler to conform certain standards. A way to confront this challenge are the Guidelines of Modeling (GOM) (Becker et al. 2012b), which are an analogy to the Generally Accepted Accounting Principles (GAAP). However, conforming to these guidelines will lead to increased resource requirements in these undertakings. Semantic process modeling languages avoid this by enforcing additional rules that models have to follow. icebricks (Becker et al. 2015) is one example that realizes this concept and has been used for reference modeling. In addition to syntactical correctness, i.e. conforming to an existing language's meta model, other aspects are also considered which would otherwise be taken care of by combining GOM and syntactical languages. Because the additional check for guideline compliance is unnecessary in semantic languages, they are more efficient. After a short summary of the language, the GOM are described and it is argued why icebricks conforms to the aspects.

SRC

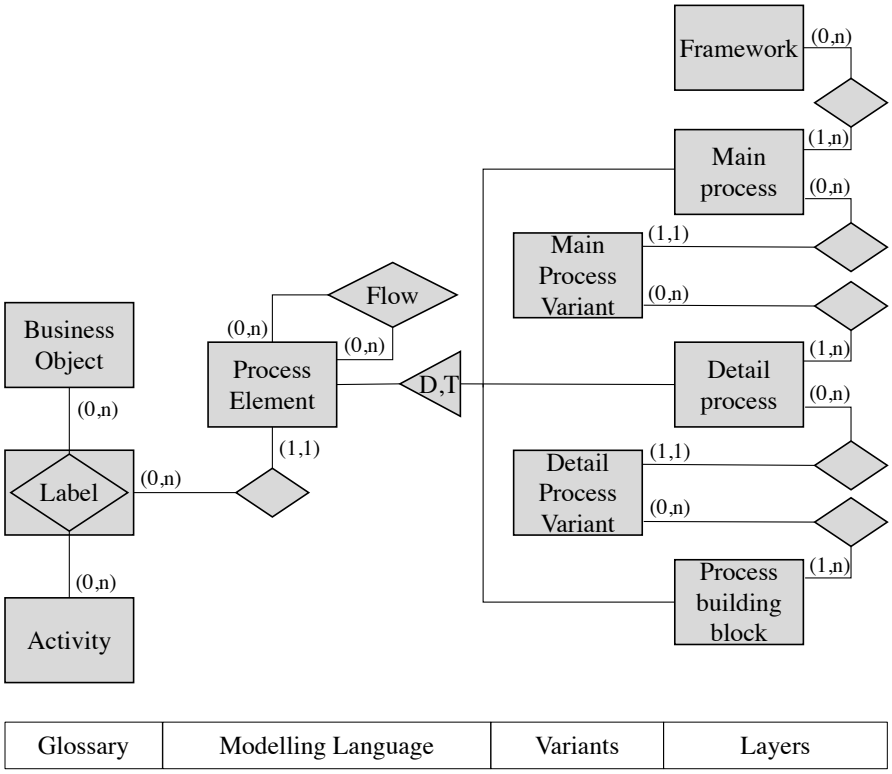
icebricks has a four layer architecture, which consists of four layers of abstraction: (1) process framework, (2) main process, (3) detail process and (4) process building blocks. Each lower layer is an element of the higher layer, i.e. an element on the framework layer is a main process. Each part of a main process is a detail process and so on. A glossary ensures unambiguous terminology and meaning of processes. Variants are integrated in the layer concept, so that every main or detail process can have different variants to model different peculiarities within a process. One example can be the three variants make-to-stock, make-to-order or make-to-engineer as variants of a production process. icebricks uses undirected graphs, which enables non-sequential flow of activities.

Correctness

Correctness can be seen from a semantical and syntactical point of view. The latter can be assured when the model conforms to a meta-model of the language, which is shown in 11. On the other hand, semantical correctness refers to the correct display of content inside the model. This correctness is hard to prove, but can be supported by a clear and simple structure that minimizes misunderstanding (which negatively impacts semantical correctness). While the other named languages tend to generate very complex models, the strict four layer structure of icebricks limits model complexity.

Relevance

Relevance refers to the depiction of elements inside the model, which are necessary for the modeling purpose. This causes two boundaries: On the one hand, no element should be included in the model that has no connection to the real world. On the other hand,



SOURCE: adapted from (Püster 2015, p. 75)

Figure 11 icebricks meta model

no aspect of the real world should be part of the model, which does not comply with the modeling purpose. Again, a simple structure of processes helps to guide the modeling procedure.

Economic efficiency

Syntactical languages are more error prone than semantical languages, because defects occur a posteriori, i.e., after modeling. As a semantical language ensures more guidance and strictness to its modeler, less errors exist in the model because they are identified during model creation. This reduces corrections on the outcome, which benefits the economic goal of successfully creating a model for the intended purpose with minimal effort (efficiency). In addition, icebricks as a reference modeling language has the ability to translate into other languages, because it only uses activities and control flow on every level. This enables a more efficient application of the reference model in companies and positively effects learning and use the language (zur Muehlen and Recker 2008).

Clarity

Clarity aims at a clear structure within a model and a simple navigation through different process models. The four layer approach, variant modeling and limited use of branches addresses a clear and consistent structure in an icebricks process model. Furthermore, the glossary ensures a labeling of processes, that conforms to the proposed verb + object construct (Mendling et al. 2010) and tackles the problem of naming conflicts.

Comparability

With respect to different modeling languages, comparability describes the transfer of content inside a model in language A to another language B without sacrificing information. icebricks was designed to provide this ability, as the application of a reference model in multiple companies consequently leads to contact with different process modeling languages. The transfer to EPC,BPMN can be performed lossless. püster?

Systematic Design

The scope of reference models necessitates different layers of detail to manage complexity. Consistence between different layers is a challenge when separate models are built for each layer. By applying a layer structure, variant modeling and the use of a glossary, icebricks guides the modeler during model creation to create well-structured models in the first place.

4 Case

This chapter serves to connect the scientific background and methodology with the research project. It sheds light into the organizational environment, which will be starting point for reference model construction.

4.1 Organizational Setting

This thesis comes into being as part of the *ERCIS Omni-channel lab powered by Arvato*. This cooperation fosters research in omni-channel CRM through cooperation with Arvato, a leading European outsourcing provider. The focus is set on the CRM services division, which is one of four solution groups. While the German market has the largest share, Arvato operates international. The organizational structure can be described as decentralized in the past, but it is intended to integrate the independent country organizations more deeply within the solution group. As clients intensify international outsourcing of customer services to Arvato, a need to deliver an orchestrated outsourcing concept across borders arises. The solution group CRM therefore needs more alignment in their three constituents

- Sales & Business Development,
- Portfolio Management & IT and
- Operations.

An investigation in organizational structures is not in scope of this work, but this view on the business helps to derive a process structure. As an analogy to the domain of retail, one can see its supply and distribution side in form of Sales & Business Development and Operations, respectively. The *Sales & Business Development* organization is oriented towards the outsourcing company, e.g., client. It is the main channel of communication to manage existing and potential clients and hence enables the *supply* of outsourcing contracts and therefore business to the organization.
Portfolio Management & IT organizes available service products and their technological foundation. Especially CRM platforms, their selection and implementation is part of its capabilities. With a decentralized orientation in the past, Arvato faces the problem of a heterogeneous system landscape in client businesses, as there was no guidance for platform selection. The aspired product orientation at Arvato demands standardization in platforms, so that a managed portfolio becomes necessary. As it is a characteristic of CRM outsourcing that clients dictate parts of the environment, e.g., technology or processes, a BPO provider needs to be flexible to react to these requirements. Interface to Sales &

Business Development are the product portfolio, which is marketed to the client. In addition, it supports in design and instantiation of products for a specific client. An internal view of product constituents, namely people, process and platform, is directed towards implementation of services and their operational use. *Operations*, on the distribution side in the retail analogy, is oriented towards the customer. With call center business as core of BPO in CRM, it becomes clear that human resources are one key ingredient of the service delivery.

Drawing from the three described constituents of the Arvato CRM solution group, one can identify three stakeholders in the BPO provider organization. Recalling the BPO Outsourcing chain (Fig. 3), one part of the provider is linked to the client, another to the customer and the third is located in the center. Applying this logic to the three aforementioned units of Arvato CRM and taking a perspective that is scoped on the essential task of the unit, Sales & Business Development targets clients and Operations is oriented towards the customers. Distancing from Arvato terminology, one can name these two stakeholders simply *Sales* and *Operations*.

Portfolio Management & IT influences both sides, as well as it acts between the two interfaces. Besides, the central part of the chain can be used to model the stakes of the BPO provider as a whole. With the taken perspective that factors out coordinating activities in the three units, the overall interest in terms of alignment across client businesses and country organizations can be captured in an isolated way. The definition of this stakeholder is necessary, as sales or operations act with focus on their objectives within the organizations and put less emphasis on the provider organization as a whole. This third stakeholder is named *Management*.

4.2 Use of a Reference Model for BPO providers in CRM

The business model of (CRM) outsourcing providers impacts the use of a reference model in the domain. Since the outsourcing service is provided for several clients, the provider's internal organization has to cope with this kind of diversity. Each client has its own contract and different parts of customer service process outsourced. While in general the business objects to work on (e.g., schedule in workforce management) or process steps (e.g., route incoming call) apply to all clients, they will differ on detail level (e.g., Client A will have a different routing logic as Client B and Client C has routing still in-house and outsources only after this process step). The process differences between distinct client types of CRM outsourcing providers motivate to provide adaptive aspects in the

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RM as described in (Delfmann 2006). In a provider model the organization can configure multiple client models based on the provided services that stay compatible and are linked with the provider model. By doing so, the provider model itself gets a reference model characteristics in the organization, while it is an application of the domain model . Fig. **??** visualizes the model levels. The highlighted domain (reference) model is center of this work. The case at Arvato represents a provider model, while businesses of Arvato can be seen as client models. By abstracting from single client business characteristics, the view of a provider is encapsulated in the empirical data that is basis of this work.

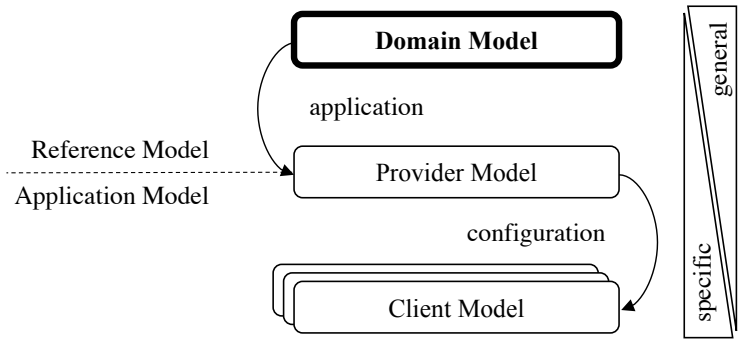


Figure 12 Model levels

The distinction in application and reference model becomes complicated on the provider level. The model is an application of the domain reference model, hence universal validity in the domain vanishes. However, in the domain of the provider this is still valid and has a recommending character as well. With an sufficiently-large client base, diversity of client businesses is captured and therefore the universal applicability is existing to a certain extent. It is noted that sufficiently-large is no further specified here, but Arvato is seen as such a provider[11]. For this work, the provider model is seen as an application model. Referencing aspects on provider level are considered at construction of the domain level reference model.

Applying the aforementioned benefits of reference modeling 3.2 to the domain in combination with the three stakeholders, one can map these together as in Tab. 2. Therefore it is mandatory to reason the benefits of reference modeling for the different stakeholders in the organization, as design science aims to solve the problem of these parties. The

[11] Arvato is ranked the 6th largest BPO provider 2015 in terms of BPO revenue (Snowdon et al. 2016). Explicit numbers for the CRM section of Arvato are not published.

interplay of provider and client model impacts benefits of reference modeling in several aspects and can be attributed mainly to the benefits for Management and Operations.

		Stakeholder		
		Sales	**Management**	**Operations**
Designer	Knowledge	Applicable only to researchers, not to stakeholders in the organization		
	Economic benefits from applications			
User	Cost reduction	Faster client approach	Reduced coordination effort	More efficient processes
	Profit aspects	Organized preparation of client meetings	Standardization facilitates better management	Usage of new concepts leads to improvement of operational processes
	Risk reduction	Lower risk of incorrect modeling through reference processes		
	Analysis	Customized offering for approached clients	Organization-wide benchmarking	Benchmarking
	Information Exchange	Structured communication of value proposition to client	Communication of best practices within organization	Exchange between client operations

Table 2 Benefits of Reference Modelling for BPO-providers in CRM

BPO is partly cost-driven from a client perspective. For the BPO-provider low costs are therefore a necessity. Cost reduction refers to less effort in coordinating the organization through the used framework and economies of scale and scope across client businesses. For management processes in CRM this means, that a reference process in workforce management enables a more efficient general process on provider level, while on client model level the savings are created. Client-facing processes like sales reduce costs by having a best practice process in the provider model (e.g., run consultative engagements). Operational processes like inbound call handling are always carried out for a specific client and are backbones of the BPO business. While allowing customization in client models, the compatibility to the provider model ensures the connection to reference processes.

Profit aspects often incorporate cost reduction aspects, but stand out through a significant improvement. Realization of up- and cross-selling potentials is one factor, as the

necessary steps can be tightly knit into processes. Moreover, historically grown process structures both on client model level and on provider level can be identified. In the CRM domain, improved channel integration through adjusted reference processes benefits both the provider's abilities towards omni-channel CRM and customer's perception toward the clients' customer service, when applied on client model level. As digital channels are becoming the dominant interaction channel, profits through analytics are more in reach.

The analysis aspect expresses the ability to compare and benchmark the business in a new way. Consistent KPI definition enables management to compare across client models, while operations is enabled to improve the analysis of employee performance, as the reference processes cover calculation rules and procedures. As cost efficiency is a primary characteristic in the BPO field, reference modeling supports the provider's performance management and enables more sophisticated methods through process standardization, especially with respect to more integrated customer service across channels being on the rise.

The last aspect called information exchange phrases the ability to speak a common language in the organization. In the domain of BPO providers this is especially important, because clients vary in their terminology and beliefs of the service. A glossary is seen as an integral part of the reference model to effectively communicate meaning of business vocabulary. As different clients will show different terminology, a consistent management of a general accepted language in the provider's organization is necessary to ensure comparability. Also, terminology can vary per geographical scope, which adds further complexity and is particularly important for global or multi-national providers. A reference model can propose guidance on this level, while custom definitions in client models will be necessary. Towards client acquisition, the models themselves can be used as basis for discussion, as well as a vehicle to communicate offered services and understanding of CRM.

rephrase

4.3 DSR Application for Arvato

Wilson states that three questions should be asked to research contributions: "Is it new? Is it true? Is it interesting?" (Wilson 2002, p. 168). As there is no research found that addresses processes of CRM BPO providers, one can consent the first question. The validity of the artifact, viz. the reference model, is examined on the case at Arvato and aligned with related literature. Regarding the value of this research, one can state the market of BPO amounts approximately 184 billion USD revenue today and CRM services grow above-average (Snowdon et al. 2016). As sound processes are critical for both providers and clients.

standardize processes

Gregor and Hevner define three levels of design science contribution types, that model the maturity of knowledge in artifacts (Gregor and Hevner 2013). The first level refers to instantiations, i.e. situated implementations of an artifact. Level two generalizes by designing constructs, models, that represent knowledge as operational principles or architecture. The highest level positions design theories that hold the most abstract, complete and mature knowledge.

One research project can build artifacts on multiple levels (Gregor and Hevner 2013) and this work aims levels one and two. As the research primarily builds on the case at the research partner Arvato, an instantiation (level one), viz. application in reference modeling terminology, can be undertaken. This serves two purposes. First, it expresses company specifics in comparison to the reference model. Second, it evaluates the use and applicability in a practical use case. Level two relates to the reference model, that has a higher degree of abstraction. The thesis pursues its construction with priority over the instantiation at Arvato, because there is a unidirectional dependency between the two artifacts: The instantiation has to build on the reference model. The environment in DSR influences the research and is linked through the relevance cycle. rephrase

Following Hevner et al.; Peffers et al., this work addresses the problem identification and motivation, definition of solution objectives, design and development. An evaluation is performed based on available information in the exemplary organization and available literature.

4.3.1 Problem Identification

CRM is characterized by the components people, process and technology (Chen and Popovich 2003), hence BPO outsourcing in this domain needs to address these three components. Here, processes stand in focus. Schewe and Kett (2007) see BPO as synthesis of outsourcing and process optimization. The latter necessitates coordination between provider and client, which would benefit from a common basis to build up on. In case of CRM, the distinctiveness of customer contact through the provider adds a challenge that is not typical for BPO in general.

Diversity in outsourcing contracts require an abstract view on processes, so that the organization can benefit from an appropriate model that enables use of synergies. In case of Arvato CRM, one challenge stems from a decentralized organization, that adds an additional organizational layer which conflicts with company-wide alignment. International clients also demand solutions across countries, which are hard to accomplish without a common understanding. The challenge is rooted in the decentralized internal structure and intensified by complexity of the outsourcing field (e.g., CRM).

The change to a digital society and with it the increase in contact channels, thereby requiring multi- and omni-channel management, makes an isolated view of channels impractical. IS need to be designed in order to handle, integrate and make use of diverse channel data for a better customer experience. As BPO providers cannot rely on single systems (cf. 3.1.3) which may provide a documented process tailored to the system, a more general representation is needed. Bringing together these aspects formulates a crucial problem for providers and identifies a research gap.

4.3.2 Solution Objectives

Based on identified problems, solution objectives outline requirements, that the reference model artifact should contain. A morphological box helps to structure reference model attributes. This pattern draws from the work of Püster (2015) and **highlights** pursued characteristics in Tab. 3.

Attribute	Characteristic			
Reusability	**generic reference model**		non-generic reference model	
Purpose	**organizational design**		application system design	
Description level	**concept**	data processing concept		implementation
Description type	**As-Is**	To-Be		Ideal
View	organization	data	functions	**process**
Knowledge generation	**induction**		**deduction**	

Adapted from: (Püster 2015, p. 63),(Brocke 2003, p. 98), (Thomas 2006b, p. 248)

Table 3 Reference model requirements

In terms of reuseability, the reference model is intended to be generic, so that it is reusable for a class of companies. Here, these are providers of business process outsourcing in customer relationship management. With the previously discussed provider models, one can name a non-generic reference model. Distinguishing processes of the domain are prioritized in the construction, as their value contribution to the model is higher in comparison to generic processes, that do not differ significantly from other domains (accounting for instance).

The purpose of the model is seen in organizational design. Drawing on the listing of use cases given by Rosemann et al. (2012), knowledge management and organizational documentation can be named in the first place.

The ARIS introduces three different conceptual levels with increasing IT-orientation. The reference model is seen on concept level, which facilitates comfortable communication with the business. +++

Regarding the description type, one can separate into three three model orientations. As-is aims to describe the current state of the domain, viz. showing common practices. To-be models a future state that incorporates wanted changes. Ideal modeling displays an optimal scenario. In this case, the intention is to capture the current state of the domain. ideal?

The process view integrates the organizational, data and functional perspective. It is noted that the time-logical sequence of processes may be of subordinate importance, as an application probably causes reordering of process steps. Nevertheless, the process view is the medium for capturing aspects from other perspectives, while leaving room for individual adjustments without sacrificing model integrity.

As mentioned before, induction and deduction are employed for knowledge generation.

General objectives

Combining these attributes implies demands, that relate to the solution objectives.

> **Solution Objective 1**: Construction of a generic reference model that covers distinguishing processes for BPO-providers in CRM on concept level
>
> **Solution Objective 2**: The reference model can be applied for use at Arvato CRM.
>
> **Solution Objective 3**: The construction process is well-documented, makes use of empirical research by induction, which is enriched by deduction from BPO and CRM theory.

The choice of the modeling language should not interfere with the intended use in the industry. As no studies regarding process modeling language use are available to the best knowledge of the author, the language should be transferable into popular candidates, e.g. BPMN and EPC. For reference modeling as such, there is neither a standard existing, but a trend towards use of existing languages exists (Fettke and Loos 2004).

While reference models aim for content-wise standardization, the use of formalized languages helps to sustain syntactic and semantic quality in the model (Fettke and Loos 2004). By doing this, the model should be comprehensible with ease from members of the business and IT organization.

> **Solution Objective 4**: A syntactic and semantic formalized process modeling language is used, that is transferable to other languages.

Stakeholder-related objectives

Building on the discussion in 4.2, the benefits of reference modeling in the domain are stated. Putting objectives of this work in direct relation to the three identified stakeholders is difficult, as the model represents the whole provider organization. The overall goal of increased alignment reasoned the decision to create this model at the research partner on a board level. However, the stakeholder's benefits do not directly create objectives. The construction merely should consider realization of the identified benefits, by incorporating requirements for their realization. Consequently, these requirements are formulated as objectives.

The organization uses an application model (provider model) that draws from the reference model, which is discussed in this work. Hence, stakeholder-related objectives are motivated by an application model and then mirrored towards the reference model. In this regard, the following paragraph uses the term model to express this ambiguity.

Sales is oriented towards clients and the model is a means to communicate more effectively with them. Their interest externally lies in a use as a statement of competence. The management uses it to encompass idiosyncrasies across client businesses. Thereby it facilitates alignment, which is incorporated in the use of reference models for organizational design (cf. Tab. 3). Operations is supported by the model to handle complexity of increasing channels and benefits from reference processes, as they enable standardized approaches. +++

Solution Objective 5: The model can be used as a statement of competence for sales activities towards clients.

Solution Objective 6: The model holds a process representation, which supports a common understanding across client businesses.

Solution Objective 7: The model is able to represent an omni-channel environment.

4.4 Limitiations

The title of this thesis expresses limitations in two ways. Firstly, its research is *towards* a reference model. It is not intended to complete the model with this work. It lays a foundation for detailed investigation in its components. Processes are only partly described on the lowest detail level. Also the focus is set on distinguishing processes in the domain, which neglects support processes as defined in 3.1.1. The simplification in this thesis

can be justified by the fact that the contribution to the knowledge base is insignificant for support processes, as these are subject to publications beyond number.

Secondly, *a reference model* is meant, which signifies limitations in used data to construct the model. As the primary data source the research partner and its organization as an example of a BPO provider in CRM, one can object the dispensation of an investigation in other providers. However, due to the nature of the BPO business with multiple client businesses and the size of the research partner, diversity is captured to a certain extent.

While the process view includes aspects of the data, organizational and functional perspective, especially a dedicated data view would be beneficial to out research in an omni-channel environment. The integration of data to identify customers across channels is an important, yet unsatisfactory explored research area. In this regard the process reference model helps to convey a perspective of activities from a time-logical order, to identify and structure moments that are important w.r.t. data availability, access or creation.

Regarding the structure of domain, provider and client model, it is noted that this proposal is only outlined in this work and not further described through generic reference modeling techniques, as discussed in Delfmann (2006); Brocke (2003).

The thesis puts special emphasis of customer service processes (cf. 3.1.2, Fig. 6). Outsourcing operational CRM may also be leaned towards other operational processes of CRM, like marketing or sales. However, customer service is the most frequent case, while clear boundaries vanish. This reasons the framing of the reference model in CRM instead of customer service.

5 Reference Model Construction

- Approach from Case advanced to the model itself
- ECIS model schemata
- type / instance : hybride leistungsbündel

A proposed Architecture for Reference Models in BPO

deloitte W14: managing change dispute:::: innovation und so... wichtig für begründung des frameworks

5.1 Process Framework

- meise 2001

5.2 Internal Services

5.2.1 ...

5.3 Client Services

5.3.1 ...

5.4 Customer Services

This analysis is necessary due to the complex and highly variable processes in Customer Service. Process Identification for Customer Service in the field of the After Sales Service as a Basis for “Lean After Sales Service”

im hippner buch it automation chapter für self service! Self Service: Servitization paper 1988!

5.4.1 ...

6 Evaluation

- Approach from Case advanced to the model itself
- ECIS model schemata
- type / instance : hybride leistungsbündel

6.1 Process Framework

- meise 2001

6.2 Internal Services

6.2.1 ...

6.3 Client Services

6.3.1 ...

6.4 Customer Services

Self Service: Servitization paper 1988!

6.4.1 ...

7 Conclusion

8 Sample

This LaTeX template has been developed as an alternative to the well-known Microsoft Word "Becker-Vorlage". `00_thesis.tex` is the master file.

It is build by Jan Betzing and Dominik Lekse and draws from the DBIS template by Till Haselmann and Florian Stahl, as well as from the IS template by Stephan Dlugosz.

This document is work-in-progress and provides instructions on how to use the template. It does not give advices on scientific writing.

Please feel free to contribute to this template. Members of the WWU Münster can request access to the template by contacting the author at jan.betzing@ercis.uni-muenster.de. Afterwards you will be able to clone the template from `https://wiwi-gitlab.uni-muenster.de/lsis/isthesis.git`, and create push-requests with their new features.

TODO

- Configuration switch for having \chapter{} begin on a new page
- Replace `kvoptions` with `pgfkeys`

8.1 Elements

This chapter gives examples on what you can do with this template. It's just a brief overview. Please consult the common sources on how to write sicentific documents and documents with LaTeX.

8.2 Structure

This template provides three structural levels that appear in the table of contents, viz., `\chapter`, `\section`, and `\subsection`. Chapters will always start on a new page. Additionally, you can use `\subsubsection` and `\paragraph` as non-hierarchical means to structure your thesis.

8.2.1 Lists

You can use the default LaTeX functions for writing lists, viz., `\enumerate` for numbered lists and `\itemize` for bullet point lists. Again, the `\subsubsection` and `\paragraph` can be used as structural elements, e.g., when listing definitions of terms.

8.2.2 Footnotes

Footnotes are contiguously numbered throughout the whole document. Use the `\footnote{text}` command. They appear on the page their reference is on [12]. Footnotes have to be placed without whitespace behind the word and within the sentence boundaries, i.e., before the period.

8.2.3 ToDo-Notes

You can use ToDo notes using the `\todo{text}` command. Please make sure to remove any ToDo notes before handing in your thesis!

ToDo: Remove me before publishing

8.3 Formatting Text

LaTeX provides `\textit{text}` for *italics*, `\textbf{text}` for **bold face**, `\texttt{text}` for `typewriter`, `\textsc{text}` for SMALL CAPS, `\underline{text}` for underline. Additionally, the template provides `\texthl{text}` for highlighted text. Please remove any highlighted text before handing in your thesis!

Please use the `\enquote{text}` command for “direct quotes”.

8.3.1 Colors

This template comes with the colors defined in the Corporate Designs (CDs) of the ERCIS and WWU. Tab. 4 lists the color names. You can apply them to text by using the `\textcolor{color name}{text}` command.

[12] This is an exemplary footnote.

Color Name	Result
ercis-black	Exemplary Text and 0123456789
ercis-grey	Exemplary Text and 0123456789
ercis-red	Exemplary Text and 0123456789
ercis-lightred	Exemplary Text and 0123456789
ercis-blue	Exemplary Text and 0123456789
ercis-darkblue	Exemplary Text and 0123456789
ercis-cyan	Exemplary Text and 0123456789
ercis-orange	Exemplary Text and 0123456789
ercis-green	Exemplary Text and 0123456789
wwu-black	Exemplary Text and 0123456789
wwu-green	Exemplary Text and 0123456789
wwu-lightgreen	Exemplary Text and 0123456789
wwu-blue	Exemplary Text and 0123456789
wwu-lightblue	Exemplary Text and 0123456789

Table 4 Colors defined by the template

8.4 Figures

The `figure` environment is wrapped around images. These images should either be included as PDF-file via `\includegraphics`, or created via *TikZ/PGF*. For included images, make sure to use high-resolution images, preferably vector images.

Figures float, i.e., they do not necessarily appear at exact the same position you have defined them. Make sure to set a *caption* and an optional *label* as figure parameters.

Figure 13 Relationship of students and theses

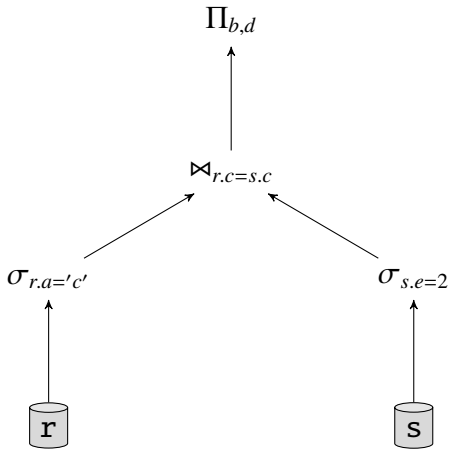
8.4.1 Subfigures

Sometimes it might be handy to contrast figures, i.e., by placing them next to each other. The template uses the *subcaption* package to provide subfigures. The following example contains two figures, where each subfigure has its own `\label` and `\caption`. Additionally, the whole figure has its own *caption* and *label*. That means, you can reference subfigures fig. 14a and fig. 14. Only the whole figure will be listed in the table of figures.

Subfigures are not limited to images, but may also include listings or tables. Fig. 14 shows a sample database query expressed in Structured Query Language (SQL) (fig. 14a) and as query plan in relational algebra (fig. 14b).

```
SELECT b, d FROM
  EXAMPLE.RELATION1 r,
  EXAMPLE.RELATION2 s,
WHERE
  r.a = 'c'
AND
  s.e = 2
AND
  r.c = s.c;
```

(a) SQL select statement



(b) Sample evaluation plan

Figure 14 Exemplary use of subfigures

8.5 Listings

You can use listings to typeset source code. This template uses the *listings* package. Wrap code inside the `lstlisting` environment and set the *language* (e.g., Java, SQL), *caption*, and optional *label* parameters. If the source code highlighting highlights the wrong keywords or misses keywords, use the *deletekeywords* resp. *morekeywords* parameters. Consult the package documentation for further information.

```
public class Euclid {

  public static int gcd(int p, int q) {
    if (q == 0) return p;
    else return gcd(q, p % q);
  }

}
```

Listing 1 Euclid's GCD algorithm implemented in Java

8.6 Algorithms

Some users might require specifying algorithms. This template uses the *algorithm*, *algorithmicx*, and *algopseudocode* packages. Consult the respective manuals for further information. Algorithms do not appear in a table at the beginning of the document, i.e., there is no list of algorithms.

Algorithm 1 Euclid's GCD algorithm in pseudocode

Require: nonnegative integer a, nonnegative integer b
  function EUCLID(a, b)
    if $b = 0$ **then** ▷ comment
      return a;
    else
      return EUCLID($b, a \mod b$);

8.7 Acronyms and Abbreviations

This template provides comprehensive support for acronyms and abbreviations. The template uses the *glossaries* package. Please do only define abbreviations and symbols that are uncommon. That means, common abbreviations such as "e.g. " or "i.e. " should not be listed. Abbreviations and symbols are sorted automatically by their label.

8.7.1 Common Abbreviations

Please note that each full stop in a common abbreviation should be followed by a non-breaking space. This template comes with a variety of macros for common abbreviations, that can be used throughout your theses. The macros differ for English and German theses. Please see the tables below.

Command	Result
\apprx	approx.
\as	a.s.
\cf	cf.
\eg	e.g.
\Eg	E.g.
\esp	esp.
\etal	et al.
\fig	fig.
\Fig	Fig.
\ie	i.e.
\Ie	I.e.
\iid	i.i.d.
\p{4711}	p. 4711
\pf{4711}	p. 4711 f.
\pp{11−−47}	pp. 11–47
\resp	resp.
\sect	sec.
\tab	tab.
\Tab	Tab.
\viz	viz.
\wrt	w.r.t.

Table 5 Common abbreviation macros for English theses

Command	Result
\aaO	a. a O.
\Abb	Abb.
\bspw	bspw.
\bzgl	bzgl.
\bzw	bzw.
\ca	ca.
\dgl	dgl.
\dsgl	dsgl.
\dh	d. h.
\etc	etc.
\eV	e. V.
\evtl	evtl.
\fs	f. s.
\gdw	g. d. w.
\ggf	ggf.
\hc	h. c.
\iAllg	i. Allg.
\iBa	i. B. a.
\idR	i. d. R.
\ieS	i. e. S.
\inkl	inkl.
\insb	insbes.
\Prof	Prof.
\Dr	Dr.
\PD	PD.
\Ing	Ing.
\iV	i. V.
\iW	i. W.
\iwS	i. w. S.
\Nr{123}	Nr. 123
\nW	n. W.
\oa	o. a.
\oAe	o. Ä.
\oae	o. ä.
\oE	o. E.
\oEdA	o. E. d. A.
\OEdA	O. E. d. A.
\oV	o. V.
\OV	O. V.
\resp	resp.
\S{123}	S. 123
\Sf{123}	S. 123 f.
\Sff{123}	S. 123 ff.
\siehe	s. o.
\sog	sog.
\sS{123}	s. S. 123
\sSf{123}	s. S. 123 f.
\sSff{123}	s. S. 123 ff.
\stu	st. u.
\su	s. u.
\Tab	Tab.
\tw	t. w.
\ua	u. a.
\etal	et al.
\uae	u. ä.
\uAe	u. Ä.
\uiv	u. i. v.
\usw	usw.
\uU	u. U.
\va	v. a.
\vgl	vgl.
\Vgl	Vgl.
\vs	v. s.
\zB	z. B.
\zT	z. T.
\zz	zz.
\zzgl	zzgl.

Table 6 Common abbreviation macros for German theses

8.7.2 Custom Abbreviations

Custom abbreviations are defined in the `acronyms.tex` file, using the `\newacronym[longplural={<long plural>}, shortplural={<short plural>}] {<label>}{<short>}{<long>}` command. The *longplural* and *shortplural* parameters are optional. The abbreviations are sorted by their labels. The label is furthermore used to reference the abbreviations in your text. You can do so using commands listed in tab. 7. In most cases, you just use \gls{<label>}. On the first occurrence, the full version is displayed, e.g., European Research Center for Information Systems (ERCIS). Afterwards, the short version will be displayed, e.g., ERCIS.

You pluralize your abbreviation by adding a `pl` to the resp. command. This will add a small s to the abbreviation, e.g., CDs. Tab. 7 shows custom short and long plural versions of the abbreviation KMU. You might need this esp. for more complex German abbreviations that do not have a "s" plural form.

Command	**Result**
\gls{<label>}	\acrfull on first occurence, \acrshort otherwise
\glspl{<label>}	\acrfullpl on first occurence, \acrshortpl otherwise
\acrshort{<label>}	KMU
\acrshortpl{<label>}	KMUen
\acrlong{<label>}	Kleines und Mittleres Unternehmen
\acrlongpl{<label>}	Kleine und Mittlere Unternehmen
\acrfull{<label>}	Kleines und Mittleres Unternehmen (KMU)
\acrfullpl{<label>}	Kleine und Mittlere Unternehmen (KMUen)

Table 7 Commands for printing abbreviations

Only referenced abbreviations will be added to the list of abbreviations.

8.7.3 Symbols

If required, you can define symbols in the `symbols.tex` file, using the `\addsymboltolist{<symbol>}{<label>}{<name>}` command. The symbols are sorted by their labels. Please note, regardless of using the symbols in the text, all symbols defined in the symbols file will be output to the list of symbols.

8.8 Citations and Bibliography

This template uses BibTeX for bibliographies. It comes with the MISQ style that takes care of proper formating and sorting of your references. Of course, you have to maintain a clean `.bib` file that caters all necessary attributes. References will appear in the alphabetical order of the surname of the first author. In case of several works by the same author, they are sorted by year.

Citing in the text is done with the \citep[<before>][<after>]{<citekey>} command. Citations without parenthesis are done with \cite{<citekey>}. You can reference authors with \citeauthor{<citekey>}. However, we suggest typesetting authors in Small Caps, e.g., Hammer is one father of Business Process Management (BPM).

Exemplary citations

- BPM is an integral management paradigm for building and running effective and efficient organizations (Hammer 2015; vom Brocke et al. 2014).
- A holistic approach to BPM goes beyond process modeling and workflow management systems (vom Brocke et al. 2014, p. 530).
- See vom Brocke et al. (2014) for a comprehensive review on BPM best practices.
- Hammer lists organizational capabilities for BPM (cf. Hammer 2015, p. 9 f.), while vom Brocke et al. give principles of good BPM (cf. vom Brocke et al. 2014, pp. 530–546).
- Two authors are automatically divided by an “and” in English or an “und” in German, e.g., (Becker and Kahn 2011).
- “BPM can provide a solid set of capabilities essential to master contemporary and future challenges” (vom Brocke et al. 2014, p. 534).

8.8.1 Misc

The name and matriculation number of the student will automatically be displayed on the header of every page when the thesis type *seminar* is selected.

9 Compiling the document

In order to generate a PDF-file from your TEX-file you have to run the following commands. We assume you have a master file `00_thesis.tex` that you want to typeset.

```
pdflatex 00_thesis
pdflatex 00_thesis
makeglossaries 00_thesis
bibtex 00_thesis
pdflatex 00_thesis
pdflatex 00_thesis
```

Listing 2 Commands to compile this document

Alternatively, you can use your favorite task runner. This thesis comes with a *Grunt* file to kick-start your LATEXwriting.

When running, Grunt will monitor your thesis and on file changes, the PDF-file is automatically rebuild using the commands from listing 2.

Please make sure to have node.js and the Node Package Manager (NPM) installed. Now you can open a command prompt at the document root and run the commands in listing 3.

```
# Install Grunt via npm (use sudo on Unix-based OS)
npm install -g grunt-cli

# Install Grunt plugins / dependencies
npm install

# Run the Grunt listener
grunt
```

Listing 3 Installing and running Grunt

9.1 Known Issues

Under some configurations on Windows machines, the `makeglossaries` command silently fails, which results in empty lists of accronyms and symbols. Same goes for the implicitly called `makeindex` command. In this case, you have to install `Perl`[13] on your machine.

[13] https://www.perl.org/get.html

Appendix

A Customer relationship management

A.1 CRM notions

brenneckes crm defs und so Appendices provide only two structural levels, viz., `\section`, and `\subsection`.

Search on scopus, queries are column headings searched in title, abstract and keywords.

Year	"CRM"	"Customer relationship management"	"Customer Management"
2016	211	34	8
2015	198	32	5
2014	178	35	4
2013	193	37	2
2012	166	40	5
2011	138	44	7
2010	131	32	1
2009	133	27	6
2008	99	22	2
2007	118	26	1
2006	111	19	1

Table 8 CRM publication comparison

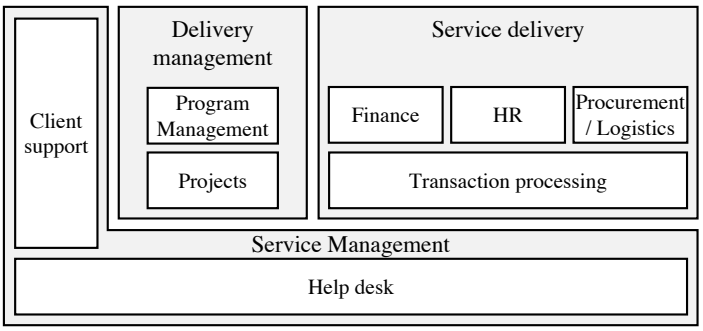
A.2 Multi- and Omni-channel

The search is done on scopus and queries are “TITLE-ABS-KEY ((omnichannel OR omni-channel) AND (crm OR management OR retail) AND customer)” and “TITLE-ABS-KEY ((multichannel OR multi-channel) AND (crm OR management OR retail) AND customer)”, respectively.

Year	"Multi-channel"	"Omni-channel"
2016	32	15
2015	33	10
2014	30	7
2013	17	1
2012	24	1
2011	24	
2010	25	
2009	34	
2008	29	
2007	23	
2006	29	

Table 9 multi- and omni-channel publication comparison

A.3 Outsourcing provider processes



SOURCE: (Schewe and Kett 2007, p. 98)

Figure 15 Outsourcing provider processes

A.4 Some Appendix Subsection

Suspendisse vitae elit. Aliquam arcu neque, ornare in, ullamcorper quis, commodo eu, libero. Fusce sagittis erat at erat tristique mollis. Maecenas sapien libero, molestie et, lobortis in, sodales eget, dui. Morbi ultrices rutrum lorem. Nam elementum ullamcorper leo. Morbi dui. Aliquam sagittis. Nunc placerat. Pellentesque tristique sodales est. Maecenas imperdiet lacinia velit. Cras non urna. Morbi eros pede, suscipit ac, varius

vel, egestas non, eros. Praesent malesuada, diam id pretium elementum, eros sem dictum tortor, vel consectetuer odio sem sed wisi.

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Declaration of Authorship

I hereby declare that, to the best of my knowledge and belief, this Master Thesis titled "Towards a Process Reference Model for Business Process Outsourcing Providers in Customer Relationship Management" is my own work. I confirm that each significant contribution to and quotation in this thesis that originates from the work or works of others is indicated by proper use of citation and references.

Münster, 31st March 2017

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