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MASTERTHESIS

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The digital transformation of the telecommunication industry: A qualitative benchmark study in the telecommunication industry to identify success factors for a new business model approach which best leverages digital technologies to improve customer interaction.

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Student declaration

I hereby declare that this master thesis is my own work. I have acknowledged material taken from other people's work and I have clearly marked and given references to all quotations.

Jonas Wiemker
Bissendorf, 24.09.2015

Preface

(Confidential)

Executive Management Summary

Due to a combination consisting of a poor economic forecast and multiple new disruptive digital technologies, such as broadband, smartphones, social media etc., the telecommunication industry is under remarkable pressure. Within this situation, three forces can be identified which attack the current position of telecommunication service providers (Telcos): The digital technology itself is the first force, which changes the way people work, communicate, socialize or do business. New digital consumers, who are always online and who demand new personal tailored products and services, constitute the second force. The third force consists of new competitors e.g. Amazon, Google, Facebook or Whatsapp, which have shaped and embraced the technologies. These companies are taking over fundamental parts of the value chain which has been traditionally monetized by telecommunication services e.g. telephony and SMS. Hence, there is a high chance that the current business model of a telecommunication service provider might not be sufficient any longer to cope with this situation and to be suitable to navigate through the digital transformation of the industry.

Consequently, Telcos have to reconsider how they can position their company in the context of the digital transformation of the industry and how they can increase their profitability in consideration of the shortfall of their core business.

One major asset of a Telco is its huge customer-base. A strategy to increase the profitability might be to increase the revenue generated with customers and to lower the costs of the customer relationship during the customer life cycle. A cheap and efficient way to execute this strategy might be an improvement of the digital customer interaction. On the one hand, using new digital technologies e.g. Big Data, Analytics or Social Media can decrease the costs of communicating and interacting with customers. On the other hand, customer interaction can be improved by leveraging digital technology in order to increase the turnover. For example, having more and better information of the customers received from new insights of Big Data and Analytics, a Telco can make use of a more effective approach to increase the money a customer spends for offered services. Digital customer interaction can mainly be applied via various digital touchpoints e.g. a smartphone Apps or the website of a Telco.

Therefore, the following research question has been formulated: “How should telecommunication service providers adjust their business model to successfully leverage new digital technologies to improve customer interaction?”

First of all, the literature research has shown that the organisational design of a Telco, which is a subpart of a business model, plays an important part in context of the presented research question. Therefore, in order to adjust a business model of a Telco to successfully leverage new digital technologies to improve customer interaction, this thesis focusses on the innovation of the organisational design. In fact, some scholars support the theory that the organisational design might be an important factor for the leverage of new digital technology.

Furthermore, in order to leverage digital technology to improve the customer interaction and to remain profitable, a Telco has the opportunity to impact its prospective and existing customers during the customer life cycle. This customer life cycle consists of three phases i.e. Acquisition phase, Development phase and Retention phase. In each of these phases, Telcos have the opportunity to impact their prospective and existing customers with the help of customer interaction leading to decreasing costs and increasing revenues. To do so, Telcos can use their capabilities. Since the purely existence of ordinary capabilities in form of solely owning digital technologies are no guaranty for success, dynamic capabilities are needed to improve digital customer interaction by leveraging digital technology.

Consequently, eight representatives of companies which operate in the telecommunication industry of Europe have been interviewed in order to create case studies and a cross-case analysis of six different companies. On the one hand, the case studies revealed striking differences in the way Telcos leverage digital technologies during the customer life cycle phases. In fact, being able to apply a suitable customer experience or acquiring, developing and retaining customers with the help of data & insights and a functioning IT-infrastructure can differ among the cases. These differences might be influenced by the way the organisation is designed regarding digital topics. Due to this, a second part of the semi-structured interviews investigated significant insights of the companies´ underlying organisational designs. The design consists of five components i.e. Strategy, Structure, Processes, Metrics and People.

Having the goal of the research in mind, Telcos should design their organisation mainly with a strong focus on a digital transformation.

This includes inter alia having a clear focus and a transparent digital strategy executed by a top-down approach and a support of the top-level management. In addition, knowledge linking mechanism e.g. matrix structures are recommended. This structure combines digital and traditional parts of the company, not only in a theoretical way but also practical in forms of mutual offices, co-locations or near flooring. Knowledge-linking should also be supported with well-functioning knowledge management software which is responsible for providing important information to the appropriate staff. Since digital seems to be a quite new topic within an organisational design, there should clear accountabilities and responsibilities fostered by digital metrics, which are incentivised among the staff. Nevertheless, mutual metrics between traditional and digital parts should also be included in order to increase the digital mentality and culture within the organisation. Coping with the ambitious situation which Telcos are confronted with, new and digital skilled staff might prevent an organisational inertia. Moreover, a constructive and structured approach to train existing employees in the field of digital technologies finalizes the approach of an organisational design for Telcos in the context of the research question.

Key words: *Telecommunication Industry, Digital Transformation, Business Model, Digital Technology, Customer Interaction, Customer Equity, Organisational Design, Capabilities*

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List of Abbreviations

B2C	-	Business to Consumer
Telco	-	Telecommunication Service Provider
HFC	-	Hybrid Fibre Coax
UMTS	-	Universal Mobile Telecommunications System
LTE	-	Long Term Evolution
MNO	-	Mobile Network Operator
MVNO	-	Mobile Virtual Network Operator
OTT	-	Over the Top Service Provider
RBV	-	Resource Based View
GPS	-	Global Positioning System
RFID	-	Radio Frequency Identification
CRM	-	Customer Relationship Management
SCM	-	Supply Chain Management
ERP	-	Enterprise Resource Planning
CEM	-	Customer Experience Marketing
NBA	-	Next Best Activity

1 Introduction: The need for investigating an approach for telecommunication service provider to stay competitive within the digital transformation of the telecommunication industry

1.1 The telecommunication market of Germany is under pressure by several new competitors and a poor economic perspective

Since the German telecommunication market has finally been liberalized with the privatisation of the Deutsche Telekom AG in 1998, the market consists of a growing number of competitors which provide telecommunication services in form of voice, data, text, sound and images/video transfer to business and consumer customers.[1] The total turnover of the telecommunication market continuously declined and fell from €67.3 billion in 2005 to presumably €56.5 billion in sales volume in 2014.[2] Moreover, the Bundesnetzagentur does not forecast any growth potential for the whole market for the next few years.

As this thesis focuses on the business to consumer (B2C) market of Germany with a special focus on telecommunication service providers (Telcos), the German telecommunications market can be classified into 4 sub-markets namely fixed-line, cable, mobile and value added services.[3] Services which are offered by relevant market players can be summarized as "triple play" service consisting of data, voice and video services or even "quadruple play" services which adds mobile to the triple play services.[4] That means that companies in the telecommunication industry can offer fixed line telephone and internet as well as mobile telephone and internet and even fixed line and mobile entertainment services.

The prerequisite to offer telecommunication services is based on a network infrastructure, which enables data transfer up to approximately 150 Mbit/s dependent on the underlying technologies (most popular technologies are copper wire lines, HFC-lines, fibre optic cable or satellite based networks for fixed line services and UMTS and LTE for mobile

[1] See Statistisches Bundesamt (2008), p. 437; See Doellgast (2009), p. 4; A historical description of the process from state monopoly to privatisation of the German telecommunication market can be found in Appendix A.
[2] See Bundesnetzagentur (2015), p. 70.
[3] See Pavel et al. (2014), p. 6.
[4] See She et al. (2007), p. 87; See Yoo et al. (2012), p. 1399.

services).[5] Approximately 58% of all German households have internet access with an average speed of ~50 Mbit/s and there is a comprehensive coverage of internet speed of ~6 Mbit/s in Germany.[6] The majority of networks are owned by Telcos but they also offer their network for rent. To get an overview of the player in the industry, the market can be divided into four different types of companies:

Telecommunication service provider (Telco): These are companies which offer quadruple play services for B2C customers and provide the network infrastructure for data transfer. That means that Telcos own directly the facilities and technologies to provide data exchange. The applied technology in Germany is called Digital Subscriber Line (DSL). This technology uses the standard telephone line and converts it into a data highway up to 50-100 Mbps.[7] Because of this, Telcos experiences a high degree of trustworthiness in relation to "over the top player" which do not own the infrastructural facilities.[8] Telcos compete in the fixed line marked as well as in the mobile market as MNO. There are only three national wide Telcos in Germany, namely the market leader Deutsche Telekom AG (€25 billion revenue), followed by Vodafone (€10.78 billion) and Telefónica (€5.52 billion).[9]

Mobile Network Operator/ Mobile Virtual Network Operator (MNO/ MVNO): According to Shin (2008), MVNOs are mobile service operator without owning a network infrastructure or any licences for mobile frequencies.[10] They are renting data capacities at Telcos and act as retailer with their own brand name. German companies from this sector are e.g. 1&1 or freenet (Mobilcom Debitel). Instead, companies which own frequency allocations and the mobile network infrastructure to offer mobile services to customers are called mobile network operator (MNO).[11] In Germany MNOs are the same companies as Telcos.

Cable network operator: In contrast to Telcos which mainly use a telephone cable, Cable network operators provide a cable network for TV, telephone and cable internet on a different cable. They make use of a broadband technology which was primarily invented for cable TV. The cable in use is out of coaxial and can provide simultaneously data, tv

[5] See Pavel et al. (2014), p. 34; See Bundesnetzagentur (2015), p. 73.
[6] See Westermeier (2014), p. 659.
[7] See Distaso et al. (2006), p. 90.
[8] See Buvat et al. (2011), (online); See Bockemühl and Hofmeister (2014), (online).
[9] See Statista (y.u), (online).
[10] See Shin (2008), p. 158.
[11] See Shin (2010), p. 616.

and voice transfer up to a speed of 400 Mbps today.[12] German companies operating in this sector are e.g. Unitymedia and former Kabel Deutschland.[13]

Over the top player (OTT): These companies are pure internet companies like WhatsApp, Facebook, Skype etc. which make use of the internet for substitutive product of Telcos and offer data intensive services.[14]

Besides a saturation of the telecommunication market in Germany, there are several disadvantageous developments for the market players and especially for Telcos. In the fixed line telephone and internet as well as TV/entertainment sector, cable network operators strongly pressure Telcos with increasing internet access points in Germany.[15] Lately there has been a rise of access points which amount to 5.9 million in 2014, which is a rise of 800,000, whereas the development of broadband access points for DSL stagnated.[16] Due to an advantageous technology, cable network operators have flexible fibre optics which enable a customer oriented usage up to 150 Mbit/s for downloads.[17] The fibre optics enables delivering TV, internet and telephone signals on one cable. Consequently, cable network operators compete on the non-mobile service with Telcos and still have potential for growth.

Next to rising competition of cable network operators, OTT-player replace Telcos core services i.e. telephoning or writing SMS with internet data based alternatives.[18] With regard to the mobile sector in which Telcos used to offer short messaging services (SMS), the amount of sent SMS decreased from 59.8 billion messages to 22.5 billion messages from 2012 to 2014.[19] Instead, the volume of transferred data experienced a growth from 156 million GB to 393 million GB.[20] This might indicate a more frequently use of services related to OTT-player as they offer data intensive services which substitute Telcos core services e.g. SMS and telephoning.[21]

Focussing on the B2C market of Telcos, the developments of the telecommunication market of Germany indicate challenges inter alia caused by new technologies which

[12] See Distaso et al. (2006), p. 90; See Unitymedia (y.u.), (online).
[13] See Vodafone Deutschland (2014), (online).
[14] See Zuhdi (2011), p. 4; See Grove and Baumann (2011), p. 40; See Heise (2013), (online).
[15] See Pavel et al. (2014), p. 6.
[16] See Bundesnetzagentur (2015), p. 74.
[17] See Bundesnetzagentur (2015), p. 74.
[18] See Yoo et al. (2012), p. 1399.
[19] See Bundesnetzagentur (2015), p. 79.
[20] See Bundesnetzagentur (2015), p. 79.
[21] See Bundesnetzagentur (2015), p. 79.

support new competitors.[22] Therefore, a need for a further investigation to stay competitive within the market is given.

1.2 Game changing digital technologies as driving forces attack current business models of telecommunication service provider

In addition to the saturation of the market, a set of recent developments concerning digital technologies affect the telecommunication industry as it exists today. Those challenging developments can be summarized into three forces a Telecommunication Service Provider (Telco) has to face. Accordingly, the three major forces are new digital technologies, the digital customer and new competitors.[23]

The first major force is new digital technology itself. New digital technologies e.g. LTE mobile internet, new smartphones or other devices which can connect to the internet like wearables, cars or even domestic appliances dramatically increases the amount of data which is on a physical and logical way interconnected with each other.[24] Having the possibility to efficiently analyse a huge amount of data in real time and realise its findings opens a number of new possibilities for companies. Everything can be interconnected with each other. It starts with customers and ends with an own production processes leading to a better quality and efficiency. In order to take advantage of this force, companies might need to upgrade their old legacy IT networks to cope with new demands. [25]

In addition, those digital technological developments have a major impact on customers in their daily life. Therefore, the second major force is seen in a new digital customer. New digital technologies are integrated into their daily life and routine, leading to higher expectations for Telcos to meet increasing consumer demands.[26] New digital technologies enable customers being part of the production process or the service offered. Interactivity, personalisation or sharing of content is just an example of new trends customers nowadays focus on.[27] Also von dem Esche and Henning-Thurau (2014) argue that the users have changed. This statement is underpinned with an increasing digital communication (37% of daily communication appears to be digital), pure online time per customer (4.5 hours per

[22] See van Kranenburg and Hagedoorn (2008), p. 116-117.
[23] See Yoon (2007), p. 10.
[24] See Kaldenhoff (2014), (online).
[25] See Zuhdi et al. (2011), p. 1.
[26] Spiess et al. (2014), p. 3.
[27] See Zuhdi et al. (2011), p. 2.

day) and that almost every fourth purchasing decision is influenced by the internet and social media.[28]

As third major force, new competitors appear on the market and take over elementary parts of Telcos core business.[29] Examples are WhatsApp, Skype or Facebook which replace communication channels like Short Message Service (SMS) or phone-calls Telcos used to commercialize. Those internet companies solely make use of the internet for their purposes without providing the necessary prerequisite, i.e. internet, themselves.[30] Often they offer the service for free based on a different monetizing strategy e.g. based on advertisement.[31] Skype, Twitter, Facebook, WhatsApp and Instant Messenger enable customer data exchange via the internet.[32] The customer can inter alia chat, telephone, video telephone or exchange pictures or other documents. One major threat concerning those competing services might be that customers would make excessively use of them instead of alternatives offered by Telcos.

Old technologies which used to be highly profitable parts of Telco´s core business e.g. SMS slowly disappear.[33] In fact, the digital transformation creates an ambitious environment for Telcos by severely increase costs through expanding and maintaining the network infrastructures. In addition, the digital transformation threatens the turnover of Telcos as well as the current business models nowadays by new competitors e.g. OTTs and cable network operator and maybe even their whole future existence. As a consequence, Telcos might be degraded to simple network operators which are constrained on providing customers with access to internet.[34]

Therefore, the above represented transformation of the telecommunication industry leads to a hypothesis: The business model of Telcos might not be sufficient anymore regarding their business to consumer sector (B2C) to cope with the upcoming challenges.[35] Consequently, Telcos have to reconsider how they can position their company in the context of the digital transformation of the industry and how they can increase their profitability in consideration of the shortfall of their core business. One approach to cope

[28] See vor dem Esche and Henning-Thurau (2014), p. 6-7.
[29] See Leeflang et al. (2014), p. 5.
[30] See Noam (2010), p. 7.
[31] See Yovanof and Hazapis (2008), p. 570.
[32] See Grove and Baumann (2011), p. 40.
[33] See Leeflang et al. (2014), p. 5.
[34] See Noam (2010), p. 7.
[35] See Zuhidi et al. (2011), p. 110.

with this situation might be an improvement of a Telcos´ digital customer interaction by successfully leveraging digital technology through adjusting the business model of a Telco. Due to the fact, that most Telcos are profit driven in order to satisfy their shareholder, they have to find ways how to increase their profitability.[36] As Telcos have access to a huge customer-base, one way to increase the profitability might be to increase the revenue generated with customers and to lower the costs to achieve such revenues.[37] To do so, on the one hand, Telcos need to influence the customers to spend more money for the offered services. This can be done by marketing actions.[38] A cheap and efficient way to execute and communicate these marketing actions might be through digital customer interaction. Digital customer interaction is basically the exchange of goods, money or information between the company and its customers and can happen via digital touchpoints e.g. Apps for digital devices, a website, a web-based chat service, etc.[39] On the other hand, new digital technologies can be used to lower the general costs of customer interaction since a web-based customer interaction is cheaper than a customer interaction via e.g. a call centre.[40]

1.3 Research Question: Business Model Innovation concerning digital technology might be an opportunity for Telcos to improve customer interaction

Having not only the three challenging forces i.e. digital technology, a digital customer and new competitors but also the ambitious economic environment in mind, the following research goal has been defined:

"The goal of the research paper is the development of a telecommunication service provider´s business model approach, which aims at leveraging new digital technologies in order to improve the customer interaction."

To create a common understanding and a suitable scope for the research paper, a central research question serves as an anchor point for the reader. The whole paper will be structured for the purpose of finding an answer to the research question. Therefore, the following central research question has been formulated:

[36] See Spiess et al. (2014), p. 5.
[37] See Berger and Nasr (1998), p. 27.
[38] See Gupta et al. (2006), p. 140.
[39] See Meyer and Schwager (2007), p. 2-3; See Rawson et al. (2013), p. 92.
[40] See Adebanjo (2003), p. 577; See Kumar and Telang (2012), p. 721.

"How should telecommunication service providers adjust their business model to successfully leverage new digital technologies to improve customer interaction?"

In order to find an adequate answer to the central research question, the master thesis is structured as follows. First of all an in-depth literature review will be conducted to get an overview regarding relevant topics i.e. digital technology (chapter 2), customer interaction (chapter 3) and business model innovation (chapter 4). Having reviewed the scientific literature, chapter 5 will emphasize a theoretical framework for a further empirical investigation. After that, a case study will be conducted among a number of Telcos in order to examine beneficial business models' characteristics. Therefore, the case study will be introduced by explaining the research design in the methodology part (chapter 6). A single case and a cross case analysis of the different cases resulting of the conducted research will be given (chapter 7) before the findings will be presented including an answer to the central research question (chapter 8).

2 Digital technologies: Definition, classification and prerequisites for competitive advantages

2.1 Definition: The interplay of digital technologies provides solutions to a given problem

Digital technology is one of the most popular technologies of the 21st century and a fundamental part of the customers' everyday life. Digital technology is also of great importance for Telcos. Therefore, to understand the meaning of digital technology concerning the research question, this chapter will elaborate the definition. The phrase consists of the two components 'digital' and 'technology'. Before the term 'digital technology' will be defined in more detail, the two components will briefly be explained on their own.

'Digital' or 'Digitalisation' means to express analogue data on the basis of binary codes consisting of the digits 0 and 1, which are called bits. Those binary codes represent words, images, sounds or videos.[41] This way, digitalisation allows for example physical books to be visualized/ expressed on a computer screen. But the main question remains: "What is technology?"

[41] See Schafer (2003), (online).

Unfortunately, there is no given definition upon which the majority of scholars agreed. Throughout history technology as a phrase has been used for many different issues and from many different points of views. For example, some authors use the phrase 'technology' interchangeably with the word innovation.[42] Others use the phrase without providing any definition of it or distinguishing between the terms 'technology' and 'science'. A set of definitions, which is given by the Oxford Dictionaries, is as follows: "The application of scientific knowledge for practical purposes, especially in industry", "Machinery and devices developed from scientific knowledge" and "The branch of knowledge dealing with engineering or applied sciences".[43] In conclusion, technology is something which is created by the use of scientific knowledge and is transferred into something practical e.g. a machine. Furthermore, as technology is based on scientific knowledge it can be concluded that technology is something produced by human beings. In addition, Arthur (2009) claims in the preface of his book about "the nature of technology" that new technology can be created by several other technologies, so that technology is always a combination of technologies.[44]

While theory still lacks precise definitions, the European Space Agency (ESA) which engages itself with technology very intensively gives a more precise answer to the question. According to ESA "technology is the practical application of knowledge so that something entirely new can be done or so that something can be done in a completely new way".[45] In contrast to ESA´s definition, Koellinger (2008), states that "the performance implication of new technology, such as information and communication technologies (IT) are mediated by innovative activities that result from the adoption of these technologies".[46] By comparing his statement with the definition given by ESA, Koellinger (2008) uses the term innovation interchangeably with the term technology, because he sees the information and communication technology as a driving motor for new innovations.[47] Pinkham et al. (2010) support the definition of ESA and states that "technology is 'a technical method of achieving a practical purpose' (…) or even simpler (…) 'how we get things done'".[48] Due to this, the thesis will make use of the definition of ESA.

[42] See Chesbrough (2010), p. 354.
[43] Oxford Dictionaries (y.u.), (online).
[44] Arthur (2009), p. 2. (preface)
[45] European Space Agency (2012), (online).
[46] Koellinger (2008), p. 1317.
[47] See Koellinger (2008), p. 1317
[48] Pinkham et al. (2010), p. 226

By combining both terms “digital” and “technology”, it is understood as applied knowledge for achieving something new or in a different manner in the field of digitalisation. Furthermore, in a broader sense, the term “digital technology” is not limited to a product and can also be regarded as a process. To illustrate this definition on basis on the theory stated above, digital technology is something which provides solutions to a given problem in a digital way by using digital tools and devices. On the one hand it can be seen as digital technology on its own but on the other hand, it can also be seen as a combination of several other technologies on a digital basis.

2.2 The use of different types of digital technologies does not guarantee competitive advantages for companies: A capability approach

In order to emphasize the importance of digital technologies for Telcos, this chapter structures digital technology according to Greenberg and Kates (2014) based on the approach of Scott Brinker (2010).[49] Accordingly, digital technology is divided into three main parts i.e. internal technologies, external technologies and product technologies. As it occurs to be still a challenge for service organisations like Telcos, each of these parts includes relevant digital technology which Telcos could successfully leverage to improve their customer interaction,.[50]

According to Scott Brinker (2010) *internal technology* consists of digital technology based on owned resources of a company and which companies use to manage.[51] Typical examples of internal technologies are social media monitoring, customer relationship management, digital asset management or Business Intelligence, which sums up Big Data and Analytics.

The second category is called external technology and deals with “platforms used to reach customers and deliver content”.[52] Typical examples of external technologies are websites, Apps, mobile marketing, and behavioural marketing, E-Mail marketing or interactive advertisements.

[49] See Greenberg and Kates (2014), p. 284; See Brinker (2010), (online).
[50] See Setia et al. (2013), p. 566.
[51] See Brinker (2010), (online).
[52] Greenberg and Kates (2014), p. 284.

The third and last category of digital technology represents product technology and includes all kind of connectivity (e.g. LTE), social sharing features, cloud computing[53], GPS, RFID or user generated content. Product technologies are features which generate added value to products e.g. GPS or LTE for smartphones.

The potential benefits of those technologies for Telcos are not related to one specific digital technology. Instead, it is a technological process, i.e. the interaction of different technologies rather than the impact of one digital technology on its own, from which organisations can profit.[54] In fact, convergence is the key trend, which implies convergence between internal, external and product technologies.[55] Yovanof and Hazapis (2008) illustrate the internet, voice over IP and smartphones as an example of converged technologies.[56]

In conclusion, a mix of new digital technologies offers a broad variation of new opportunities for companies to gain competitive advantage. Nevertheless, in order to leverage new digital technologies, capabilities to implement and to gain benefits of them for improving customer interaction are needed, because new technology on its own gives no guarantee for generating value.[57] Therefore, the following passage will highlight the importance of ordinary and dynamic capabilities for companies.

Capabilities can be divided into ordinary and dynamic capabilities.[58] Ordinary capabilities of companies mainly consist of resources of the company in order to produce and sell certain products and to grant a service e.g. operations, administration and governance.[59] In fact, they do not specifically cause long term competitive advantages on their own, except for surroundings which make it uncomfortable for competitors to copy those capabilities.[60]

On the contrary, dynamic capabilities are capabilities, which enable organisations to shape and orchestrate existing resources (ordinary capabilities) in order to meet the current and future needs of customers.[61] Therefore, those capabilities are often located at the top level

[53] See Nesse et al. (2013), p. 1162.
[54] See Brinker (2010), (online).
[55] See Yovanof and Hazapis (2008), p. 570.
[56] See Yovanof and Hazapis (2008), p. 570.
[57] See Chesbrough and Rosenbloom (2002), p. 530; See Chesbrough (2010), p. 354; See Bharadwaj et al. (2013), p. 472.
[58] See Leih et al. (2014), p. 6.
[59] See Teece (2007), p. 1321; See Teece (2014), p. 18.
[60] See Teece (2014), p. 20.
[61] See Leih et al. (2014), p. 7.

management, which makes it also difficult to replicate dynamic capabilities.[62] Due to this, Teece (2007) developed a framework consisting of sensing, seizing and transforming as important managerial activities.[63] Sensing means that managers are able to identify external opportunities for a company. Seizing is characterized by the ability to make use of existing resources in order to capture value from the opportunities originated from sensing. Finally, transforming contains the continuous renewal of sensing and seizing.[64] To sum up, acquiring new digital technology alone is no guarantee for taking benefits from it.[65] Instead, dynamic capabilities are needed to successfully implement those technologies into the company and finally receive advantages.

2.3 Agile IT-architecture, Big Data and Analytics can be seen as prerequisites for gaining competitive advantage

By focussing on the improvement of customer interaction, especially agile IT-architectures ease the use of digital technologies like Big Data and Analytics.[66] Traditional tools and technologies create a huge amount of unused data caused by scalability problems and uneconomical reasons, which has fostered new digital technologies and tools being developed in order to handle the enormous amount of data.[67] These kinds of data which are not feasible to store and analyse with conventional technology are summarized under Big Data technologies.[68] Gartner IT Glossary (y.u.) describes Big Data as "(…) high-volume, high velocity and high-variety information assets (…)".[69] According to the defining attributes of Big Data, high volume is regarded to the growing amount of data, whereas high velocity characterizes the increasing speed of data.[70] Moreover, the attribute of high variety refers to the different types of data which have been handled with.[71] Furthermore, Gandomi and Haider (2015) explain that as a first step "[d]ata management involves processes and supporting technologies to acquire and store data and to prepare and retrieve it for analysis".[72] As a second step, analytical techniques are required to get intelligent

[62] See Teece (2007), p. 1319-1320; See Leih et al. (2014), p. 3.
[63] See Teece (2007), p. 1319.
[64] See Teece (2007), p. 1346-1347.
[65] See DaSilva et al. (2013), p. 1171.
[66] See Leeflang et al. (2014), p. 5; See Bharadwaj et al. (2015), p. 16.
[67] See Spiess et al. (2014), p. 4.
[68] See Spiess et al. (2014), p. 4.
[69] Gartner IT Glossary (y.u.), (online).
[70] See Spiess et al. (2014), p. 4.
[71] See Spiess et al. (2014), p. 4.
[72] Gandomi and Haider (2015), p. 140.

insights from Big Data.[73] In contrast to traditional data management, Big Data technologies are capable of creating real-time insights.[74] Consequently, in order to achieve benefits from the huge amount of data, the interplay of different technologies and capabilities for storing, analysing and interpreting data is necessary. The convergence of digital technology, based on the internet, Big Data and analytical tools as key technologies offer many different capabilities, Telcos could achieve e.g. valuable insights to leverage marketing campaigns, reduce the costs for communicating with customers, optimize workflows, realize an enhanced quality of customer interaction or increase relationship and personalisation opportunities.[75]

Nevertheless, those capabilities are not easy to achieve nor might current systems of Telcos be prepared to cope with the requirements for a convergence among IT-systems. Today, most IT-systems of Telcos are vertically structured, based on services e.g. fixed line or mobile which often resulted from merger and acquisition activities.[76] That means that there is an independent IT-Architecture for each service consisting of a Front-End and a Back-End system. The Front- End often represents the interface which is visible for the customer e.g. the web-shop or a mobile App and provides the presentation of the product-portfolio or self-service tools. In order to provide the customer with relevant data and information, the Front-End has to access the Back-End. The Back- End consists of systems like CRM, SCM, ERP or other data bases where those relevant data is stored. Due to this, the Front-End has to interact with the Back- End in order to provide necessary information which is needed for ordering, payment, product or customer information. [77]

So having different systems for each product or customer group includes having different websites, online portals or mobile Apps. Not only are more systems not customer friendly, they are also more costly for the organisations, because they have to run several different systems instead of an integrated one.[78] Apart from that, having pure vertical and not integrated IT systems limits the level of agility due to a missing coupling of the systems.[79] As a result, an organisation cannot make use of dynamic capabilities to sense challenges and opportunities and use its own resources in order to quickly react e.g. integrate a new

[73] See Gandomi and Haider (2015), p. 140.
[74] See Gandomi and Haider (2015), p. 138.
[75] See Adebanjo (2003), p. 577.
[76] See Pollet et al. (2006), p. 2.
[77] See Chen (2006), p. 120.
[78] See Yoo et al. (2012), p. 1401; See Bharadwaj et al. (2015), p. 24.
[79] See Bharadwaj et al. (2015) p. 25.

product in a suitable timeframe. After all, in order to use Big Data capabilities these vertical IT-structures need to be adjusted for today and future opportunities. One approach to cope with these challenges is service oriented architecture (SOA). This approach enables a loosely coupling between different systems and optimizes business processes by reducing redundancies and improving agility which is illustrated in figure 1. [80]

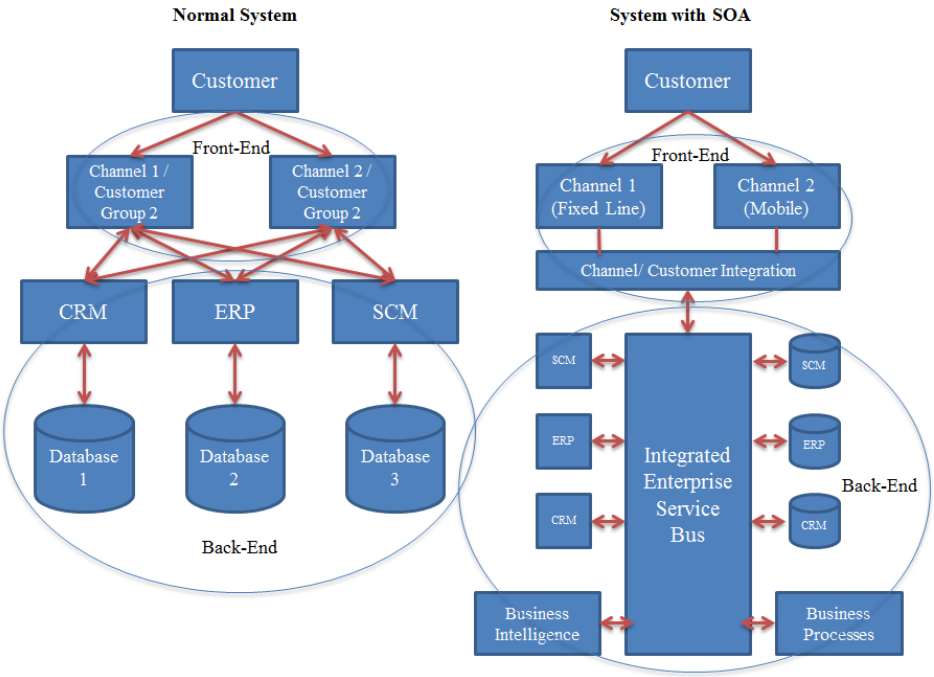

Figure 1: Classical IT Architecture vs Service Oriented IT Architecture (SOA)
Source: Own creation based on Bharadwaj et al. (2015) p. 22-23

3 Customer Interaction: What it is and why is it important for Telcos?

3.1 Customer interaction can be seen as a hub to increase the company´s value to the customer and the customer´s value to the company

As increasing customer interaction is a fundamental component of the central research question, this chapter focuses on its origin and its derivation. The term, "customer interaction" is literally understood as the communication between a customer and a company.[81] Therefore, authors refer customer interaction to customer experience and customer relationship.[82]

[80] See Bharadwaj et al. (2015), p. 25.
[81] Cambridge University Press (2015), (online).
[82] See Gentile et al. (2007), p. 397; See Meyer and Schwager (2007), p. 4.

As companies are changing their strategies from product-focused-production or goods-dominant-logic to customer-focused-strategies[83], the customer, as an external stakeholder, has become a more important part within the value creation process.[84] To enhance the manufactured value and to generate a competitive advantage, organisations used to become lean by optimizing internal processes and tried to reach competitive advantages emphasized by characteristics like market power, economies of scale or broad product lines.[85] Woodruff (1997) predicted that in addition to internal improvements, external opportunities and threats would become more popular for organisations and that the shift from internal improvements to external influencing factors e.g. customers will be the next "major management transformation".[86] As a consequence, the theory about customer value has recently experienced great publicity in scientific literature and can be characterized as a key goal of market-driven organisations.[87] There are two different concepts of customer value. On the one hand, the term value can be seen in the context of an organisation. In this case, customer value illustrates the monetary worth of a customer for an organisation. On the other hand, customer value can be seen in the context of the customer who experiences a certain value by making use of a product or service of an organisation.[88] In context of this research, both approaches of customer value will be used. A well-known interpretation and definition of customer value is given by Woodruff (1997), who states that "[c]ustomer value is a customer's perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations".[89] Given the definition of customer value, the decomposed attributes of the definition e.g. product attributes, attribute performances and consequences arising from its usage, can also be interpreted as added value. This added value is granted to a product, perceived through customer interaction in form of marketing, sales and service offerings.[90] Those activities are often controlled and executed by a combination of Customer Experience Management (CEM) and Customer Relationship Management (CRM) systems.[91]

[83] See Narver and Slater (1994), p. 22.
[84] See Chan (2005), p. 32; See Tynan et al. (2014), p. 1059.
[85] See Narver and Slater (1994), p. 22.
[86] Woodruff (1997), p. 140.
[87] See Slater (1997), p. 166.
[88] See Woodruff (1997), p. 140.
[89] Woodruff (1997), p. 142.
[90] See Chan (2005), p. 32.
[91] See Chan (2005), p. 33.

Although CEM- and CRM have similar points of origin e.g. based on customer interaction executed by different touch-points[92], the striking difference between both approaches is their purpose. On the one hand, CEM focuses more on the company´s value to the customer by increasing the whole customer experience, which should lead to increasing customer loyalty (second approach of customer value).[93] On the other hand, CRM primarily focuses on the customer´s value to the company, by providing higher levels of marketing, sales and services in order to increase customer satisfaction and improve sales and profitability (second approach of customer value).[94] Both approaches are suitable to commonly increase customer value, loyalty and finally a company's profits.[95]

3.2 Importance of Customer interaction for Telcos: Successful customer interaction is driven by customer equity as underlying concept to increase the shareholder value

Customers are generating costs (e.g. product costs, selling costs, servicing costs, relationship costs and business-sustaining costs) as well as revenues.[96] Due to this, customer interaction becomes relevant within Telcos´ B2C segment because it enables them to actively and passively influence the level of profitability of customers.

Leveraging digital technology to increase the effectivity and efficiency of digital customer interaction might be particularly important for Telcos regarding their B2C-sector. In this sector Telcos are selling contract goods (post-paid) dependent on the level of usage for a maximum duration of 24 month or so called pre-paid services when it comes to mobile.[97] A study among 122 industry professionals by Zuhdi et al. (2011) concludes that customer relationship is regarded as the most valuable asset of a Telco.[98] However, gaining a competitive advantage and being profitable has for a long time been limited to firm internal processes to reduce costs, product lines and competition, before attention has been paid towards customers.[99] The fact that customer profitability can be influenced by decreasing costs related to customers or by increasing the turnover volume, has created a customer-

[92] See Chan (2005), p. 34; See Gentile et al. (2007), p. 397; See Meyer and Schwager (2007), p. 3.
[93] See Meyer and Schwager (2007), p. 4; See Gentile, Spiller and Noci (2007), p. 404.
[94] See Payne and Frow (2005), p. 168; See Meyer and Schwager (2007), p. 4.
[95] See Martelo et al. (2013), p. 2047; See Long et al. (2013), p. 251.
[96] See Murphy (2005), p. 9.
[97] See Gerpott et al. (2001), p. 250; See Bundesministerium der Justiz (2012), p. 971; See Bundesnetzagentur (2015), p. 79.
[98] See Zuhdi et al. (2011), p. 106.
[99] See Jain and Singh (2002), p. 35.

centric-approach in contrast to a product-centric-approach.[100] According to Chang et al. (2012) "[c]ustomer profitability refers to the revenues less the costs that one particular customer generates over a given period".[101] In general, a customer-centric-approach uses customers as assets which generate revenues but also cause costs by e.g. acquisition and retention efforts.[102]

Due to the fact that telecommunication services are complex, Telcos interact with their customers at many stages within the customer life cycle and via several different touch-points aiming at long-time relationships or strengthening of the satisfaction level.[103] Since most telecommunication markets are saturated[104], the retention of current customers, acquisition of new customers and customers from competitors gets more important.[105] Therefore, the concept of customer lifetime value becomes an important aspect regarding customer interaction for Telcos by improving customer interaction in form of e.g. targeting less profitable or unprofitable customers more effectively or analyse different actions created for customers in real time.[106]

The concept of customer lifetime value emphasizes the total amount of money a customer can spend for the company during his entire life.[107] In fact, customer lifetime value is the total net profit or loss a company receives during the whole time range of a transaction between the company and the customer.[108] There are several models to calculate the customer lifetime value, which differ in underlying assumptions.[109] Nevertheless, these models all lead to the same benefits in case companies have achieved this information about the customer lifetime value. By calculating the customer lifetime value, companies are able to understand potential opportunities and threats concerning different levels of customer profitability.[110] Furthermore, companies can use this information for future strategic decisions in order to benefit regarding the cost reduction or revenue increase.[111] In addition, it enables companies to analyse its customer base to classify them into a

[100] See Jain and Singh (2002), p. 35.
[101] Chang et al. (2012), p. 1057.
[102] See Jain and Singh (2002), p. 35.
[103] See Meyer and Schwager (2007), p. 1.
[104] See Seo et al. (2008), p. 182.
[105] See Gerpott et al. (2001), p. 266.
[106] See Jain and Singh (2002), p. 43.
[107] See Chang et al. (2012), p. 1060.
[108] See Qi et al. (2012), p. 283.
[109] See Jain and Singh (2002), p. 37-40.
[110] See Jain and Singh (2002), p. 43.
[111] See Chang et al. (2012), p. 1062.

hierarchical order regarding profitability.[112] Since companies have realised the importance of the customers to a firm´s success and therefore, the need of managing the relationship and the customer experience in a beneficial way, customer interaction can be an important tool to support and enhance long-term-relationships.[113] Therefore, it might be reasonable for companies to increase the level of customer lifetime value by improving customer interaction.[114]

3.3 Operationalisation of Customer interaction: Customer Lifecycle and the Customer Journey operationalize customer interaction

In order to provide a structure and a useful framework to improve the customer lifetime value for a Telco the framework of Gupta et al. (2006) will be introduced.

In dependence to the customer-service-lifecycle[115], Gupta et al. (2006) use a simplified framework to explain influencing factors on customer equity.[116] Company actions in form of marketing campaigns influence customer acquisition, customer retention and customer expansion, which finally affect customer equity. As figure 2 illustrates, the framework consists of three levers, i.e. acquisition, development and retention which have a direct impact customer lifetime value. Those levers can be influenced through marketing actions which are usually executed in form of different customer interaction channels of the company.

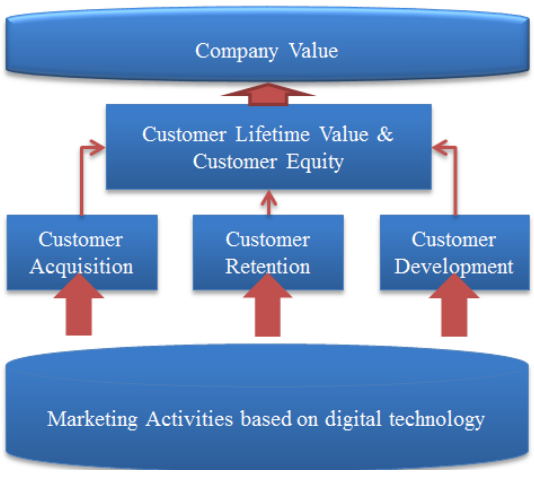

Figure 2: Conceptual Framework for Modelling Customer Lifetime Value

Source: Own creation based on Gupta et al. (2014) p. 140

[112] See Chang et al. (2012), p. 1062.
[113] See Keropyan and Gil-Lafuente (2012), p. 11269.
[114] See Qi et al. (2012), p. 281.
[115] See Piccoli et al. (2001), p. 39-45.
[116] See Gupta et al. (2006), p. 140.

Due to this, the approach of Gupta et al. (2006) to increase the customer lifetime value characterized by Acquisition, Development and Retention as driving forces will be used as structuring model.[117] Therefore, the three levers will briefly be explained concerning Telcos. The driving forces will be divided into revenue increasing factors and cost reducing factors:

I. Revenue increasing factors:

A. Customer acquisition

According to Gupta et al. (2006) customer acquisition "(…) refers to the first-time purchase by new or lapsed customers".[118] As the telecommunication market is a mature market with almost no growth potential, [119] customer acquisition might become expensive and more difficult. It is by far more expensive than retaining current customers and one of the most expensive parts of a beginning relationship.[120] Nevertheless, it is the only opportunity to proactively increase the current customer base and create a long-term relationship with them. Consequently, the acquisition of new customers should not be regarded as additional costs. On the contrary, it should be seen as an investment in a long term relationship, which will result in higher earnings than costs as it might increase the customer lifetime value.[121]

B. Development (Expansion)

Analysing the customer lifetime value of single customers enables the opportunity to proactively increase the revenue generated by single customers. Therefore, offering customers add-on-selling opportunities or added value services could lead to a direct increase of the customer lifetime value.[122]

C. Customer Retention

Being able to have a long term relationship with customers and binding them to the company leads to an increase in profits.[123] Furthermore, customer loyalty is seen as a key force for retention which is inextricably linked to the value creation of a company.[124] Due to this, customer retention could be increased by value creation (e.g. customer value)[125].

II. Cost reduction:

[117] See Gupta et al. (2006), p. 140.
[118] Gupta et al. (2006), p. 144.
[119] See Bundesnetzagentur (2015), p. 70.
[120] See Hung et al. (2006), p. 515; See Seo et al. (2008), p. 182.
[121] See Rožek and Karlíček (2014), p. 32-33.
[122] See Rožek and Karlíček (2014), p. 33.
[123] See Reicheld et al. (2000), p. 135.
[124] See Reicheld et al. (2000), p. 135.
[125] See Reicheld et al. (2000), p. 135.

A. Reduce cost-to-sell (Acquisition)

Based on a literature review regarding customer relationship value drivers, Richards and Jones (2008) proposed inter alia that the customer lifetime value and finally the customer equity, which is the discounted sum of all customer lifetime values, will benefit by improving sales force efficiency and effectiveness.[126] Therefore, new digital technology offers the opportunity to reduce cost-to-sell.

B. Reduce cost-to-serve (Development)

If Telcos reduce service related costs by technological improvements, costs to serve will decrease. Furthermore, improvements regarding customer relationship management simplifies customer service and decreases service related costs.[127]

C. Detect and dispose unprofitable customers (Retention)

Unprofitable customers produce higher costs than generate revenue, which leads to questioning their relevance for companies.[128] By detecting unprofitable customers companies should think about disposing them or turning them into profitable customers by offering add-on-selling opportunities in case the investment does not exceed the customer lifetime value.[129]

3.4 Opportunities concerning new digital technologies enable Customer Interaction to be more effective and efficient

On the one hand, digital technologies can lead to a higher efficiency rate by reducing operational costs for Telcos and still reaching formulated goals and on the other hand digital technology can lead to a higher efficiency and effectivity-rate for acquiring, retaining and developing customers.[130]

Call centres have been the favourite tools of service companies to offer support and communication possibilities for end customers.[131] Due to the fact that costs for call centres mainly consist of direct labour costs, Telcos seek for cheaper alternatives.[132] Instead of just offering a broad call centre support, the IT and digital technology also enables companies to offer self-service management solutions or chat based support instead of telephone calls. As self-service management provides a more efficient and cheaper communication

[126] See Richards and Jones (2008), p. 122.
[127] See Richards and Jones (2008), p. 127.
[128] See Sun et al. (2008), p. 111.
[129] See Rožek and Karlíček (2014), p. 33.
[130] See Panajotovic and Odadzic (2009), p. 143.
[131] See Kumar and Telang (2012), p. 721.
[132] See Kumar and Telang (2012), p. 721.

between a company and its customers it can also lead to a higher profitability.[133] In contrast to $5.50 for a customer service representative assisted interaction via telephone, a web-based self-service interaction costs approximately $0.24.[134] Self-service management is just one example of many more alternative activities which were enabled by new digital technology.

Apart from using new digital technology for customer interaction to save costs, the new digital technology might also be regarded as an opportunity for growth in sales, because Telcos could have insights into an enormous amount of digital data. Big Data technologies and Analytics can help to structure and analyse the information in order to get useful interpretations.[135] On the one hand, this information can be generated from their customers in various forms e.g. text, audio, video or social media data created by call centre activities, surfing behaviour of the website, telephoning activities etc.[136] On the other hand, companies can actively listen to the so called "(…) customer´s voice: what people say about the firm and its products in blogs, podcasts, forums and online communities".[137] Being able to handle such Big Data and analyse it adequately, Big Data may have an enormous impact on customer interaction improvement.

One significant prerequisite to do so is an agile IT-architecture which integrates all kinds of different data sources. Transactional and interactional data from online- and offline-channel as well as data across service-lines e.g. fixed line and mobile, need to be merged and integrated into one system or database. This integration allows a single view on all combined data for each client or segments on one system. Kennedy (2006) calls such a database an eCRM which integrates all data sources. [138] In fact Chen, Chiang and Storey (2012) name "long-tail marketing, targeted and personalised recommendations [and] increased sale and customer satisfaction"[139] as potential impacts of business intelligence and analytics. For example, long-tail marketing might generate an advantage for a Telco by achieving higher turnover in niche markets e.g. making customers special offers which have extraordinary demands like immense internet data consumption.[140] Therefore, customer interaction could be applied more effectively in order to increase sales and

[133] See Xue et al. (2007), p. 552; See Panajotovic and Odadzic (2009), p. 143.
[134] See Kumar and Telang (2012), p. 721.
[135] See Gandomi and Haider (2015), p. 144.
[136] See Gandomi and Haider (2015), p. 137.
[137] See Constantinides and Fountain (2008), p. 241.
[138] See Kennedy (2006), p. 65.
[139] Chen et al. (2012), p. 1173.
[140] See Anderson (2004), (online).

customer satisfaction. By making use of analytical tools, customers could be addressed more effectively across a variety of digital channel concerning cross- and upselling activities by knowing their interests and needs.

In conclusion, new digital technologies enable the application of customer interaction in a more efficient and effective way and pave the way for a competitive advantage of a Telco.

4 Business Model: Origins and definition, success factors, business model canvas, organisation design as focus

4.1 Taking technological characteristics and potentials as inputs and converting them through customers and markets into monetary outputs: A business model

Although, the concept of business models seems to be a very young phenomenon, it has developed itself within the era of the internet and has found its way into annual reports of fortune 500 firms.[141] Therefore, the concept of business model acts as an appropriate tool in management to describe the own business concept.

Although there is a variety of scholars today who publish articles about business models. There is no consistent, explicit and commonly accepted definition of the term 'business model' in contemporary scientific literature.[142] Teece (2010) goes even a step further and declares that "a business model lacks theoretical grounding in economics or in business studies".[143] This might be an explanation why it is rather complicated to find a common definition. Nevertheless, a lot of different definitions from different point of views about business models can be found. They all have some core aspects in common. In order to get a first insight into the very complex concept of a business model, one very simple definition might be that a business model explains how a company makes money and creates value.[144]

Shafer et al. (2005) define a business model "as a representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value

[141] See Osterwalder et al. (2005), p. 4; See Shafer et al. (2005), p. 200; See Zott et al. (2011), p. 1020; See DaSilva and Trkman (2014), p. 380.
[142] See Chesbrough and Rosenbloom (2002), p. 532; See Shafer et al. (2005), p. 200; See Zott et al. (2011), p. 1020.
[143] See Teece (2010), p. 175.
[144] See Magretta (2002), p. 4.

network".[145] This definition is in accordance with the fact that the concept of a business model is often related with "a view of the firm´s logic for creating and commercializing value".[146] So creating value for customers and transferring it into a monetary reward can be seen as one of the core aspects of the concept. In addition to core logic and value creation the concept of business model is also illustrated as "(…) architecture of revenues, costs, and profits associated with the business enterprise delivering that value".[147] Due to a variety of different point of views and definitions, Osterwalder et al. (2005) provide an understanding of a business model, consisting of an aggregation of different components which are popular in scientific literature.[148] The definition of Osterwalder et al. (2005) is stated in the following quotation:

"A business model is a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams."[149]

This definition has been chosen as the core understanding of the term business model, because it is influenced by many different approaches which prevents being too focussed on a special business area. Furthermore, it contains several different components e.g. the architecture of the firm or the network of partners, which provides the prerequisite for capturing value within an organisation. Taking this definition as starting point enables a more comprehensive view on interrelating subparts. Moreover the opportunity of a company to identify aspects to be adjusted for leveraging digital technology in order to improve a Telco´s customer interaction is given.

In conclusion, it can be said that the term 'business model', is a relatively new phenomenon, but has nowadays become an important tool for companies to conceptualize their strategic business decisions to create and commercialize value.

[145] Shafer et al. (2005), p. 202.
[146] Osterwalder et al. (2005), p. 7.
[147] Teece (2010), p. 173.
[148] See Osterwalder et al. (2005), p. 12-13.
[149] Osterwalder et al. (2005), p. 10.

4.2 Business Model Innovation can provide a competitive advantage for companies

As internal and external factors may have challenging impacts on companies business models the need for adjusting single parts of a companies´ current business model or the creation of a total new one has experienced great popularity in the recent history among the term business model innovation.[150]

Briefly explained, a business model of a Telco (based on the simple definition of creating and capturing value) consists of creating value for the customer by offering a quadruple play service based of proper network infrastructure for mobile, fixed line telephone and internet as well as entertainment services.[151] These services generate value for the company by commercializing those services based on a contractual revenue model which is in return dependent on the level of usage of the customers.[152]

As companies are under continuous pressure inter alia caused by new technologies, there is a level of uncertainty how to benefit from it. New technologies might affect the current business model of Telcos in various forms. According to Chesbrough (2010) technology on its own gives no guarantee for generating value, instead, a business model is needed to generate value by commercializing the technology.[153] Incumbents tend to have a running business model to generate and capture value which might not be compatible for a new technology. This matter of fact causes a need to renew a certain part of a business model or to create a completely new one in order to stay competitive.[154] Subsequently, Amit and Zott (2012) explain business model innovation with three layers. Accordingly, business model innovation can be seen as a change of a current business model as first layer, adding novel activities as second layer and linking activities in a novel way or changing one or more parties that perform any of the activities as third layer.[155] In addition, Chesbrough (2010) highlights the importance of companies having capabilities to innovate their current business.[156] Teece (2010) agrees that without having the capacity of business model innovation the capacity of capturing value is limited[157]. Due to this a continuous

[150] See Khanagha et al. (2014), p. 323.
[151] See She et al. (2007), p. 87.
[152] See Gerpott et al. (2001), p. 250; See Bundesnetzagentur (2015), p. 79.
[153] See Chesbrough and Rosenbloom (2002), p. 530; See Chesbrough (2010), p. 354.
[154] See Chesbrough and Rosenbloom (2002), p. 532; See Teece (2010), p. 173.
[155] See Amit et al. (2012), p. 44.
[156] See Chesbrough (2010), p. 358.
[157] See Teece (2010), p. 186.

monitoring of the current business model for improvements is recommended.[158] In fact, a change or adjustment of the business model of a company can leverage new opportunities on the current market or even create a new market.[159]

Other scholars define business model innovation as an imitation of new product development characteristics. In consideration of this fact, business model innovation in the broadest sense can be divided into incremental and radical innovation.[160] In this aspect Bucherer et al. (2012) go even a step further and divide the term depending on the level of innovativeness, into incremental, market breakthrough, radical and industry breakthrough.[161] As the focus is on how Telcos could adjust their current business model to successfully leverage digital technology to improve customer interaction, it is rather about adjusting the business model on an incremental level than inventing a total new business model.

4.3 Identification of suitable areas for a business model innovation: From the business model canvas across infrastructural management towards organisational design

4.3.1 The Business Model Canvas is a conceptual tool to analyse and understand a company´s business model

Several authors have created conceptual tools or frameworks to analyse and illustrate a company's business model.[162] Applying a conceptual tool to analyse the business model of a Telco might offer the opportunity to identify a certain component which seems to be suitable for an incremental business model innovation. Wirtz et al. (2015) have created a comprehensive overview of different frameworks in contemporary literature. In fact, they have evaluated the frameworks based on the number of different components.[163] Among these frameworks, authors as Osterwalder (2004), Hedman and Kalling (2003) or Yip (2004) show a certain level of comprehensiveness regarding different components within their frameworks to analyse a company's business model.[164] On the contrary, other authors

[158] See Teece (2010), p. 187.
[159] See Amit et al. (2012), p. 44.
[160] See Demil &Lecocq (2010), p. 241.
[161] See Bucherer et al. (2012), p. 192.
[162] See Zott et al. (2011), p. 1027-1028.
[163] See Wirtz et al. (2015), p. 7.
[164] See Hedman and Kalling (2003), p. 53; See Osterwalder (2004), p. 42-43; See Yip (2004), p. 20; See Wirtz et al. (2015), p. 7.

such as Voelpel et al. (2004) or Lehmann-Ortega and Schoettl (2005) include far less components within their framework.[165] Whereas some framework consists of a broad variety of components in the field of e.g. resources, network, customers, value proposition, revenues, services and finance (e.g. Osterwalder & Pigneur (2010)) other frameworks only include components of the field of resources, customers and finances (e.g. Bouwman (2003)).[166] Due to the fact that less components offer less specific areas for an incremental business model innovation, more comprehensive concepts will better serve to allocate suitable components.

By comparing the business model frameworks which are more comprehensive, a distinction can be seen regarding a strategy, network and the procurement component. Most authors include a strategy component within their framework as well as a component regarding procurement consisting out of production factors and supplier relations. The business model canvas by Osterwalder (2004) is an exception. The reason therefore is that Osterwalder (2004) sees the strategy aspect not as direct part of the business model. It is rather the first instance which paves the way for the business model.[167] Moreover, Osterwalder (2004) splits aspects of the procurement components into its infrastructural management. Above that, the business model canvas includes the component which is called “network” and names it key partners. As ICT simplifies outsourcing and cooperation with external partners nowadays, this aspect is crucial and an important component with regard to the telecommunication industry.[168] Although, the business model canvas by Osterwalder might have some weaknesses, however, it will be used for further purposes, because of the network aspect and because it is already well-known in management practice. In addition, the management book how to use the business model canvas is a best-seller. In fact, this is actually no meaningful criteria in scientific literature; nevertheless, it shows its popularity in practice.

The business model canvas is based on the Balanced Scorecard by Kaplan and Norton (1995) and consists of 4 interrelated main pillars.[169] Each pillar has sub-parts called ‘building blocks’, which are based on an intensive literature review. Only building blocks

[165] See Voelpel et al. (2004), p. 262; See Lehmann-Ortega and Schoettl (2005), p. 6; See Wirtz et al. (2015), p. 7.
[166] See Wirtz et al. (2015), p. 7.
[167] See Osterwalder and Pigneur (2004), p. 2-3.
[168] See Osterwalder and Pigneur (2004), p. 15.
[169] See Kaplan and Norton (1995), p. 66-74; See Osterwalder (2004), p. 43.

were taken into account, which has been mentioned at least twice independently by different authors.[170] Table 1 gives an overview of all nine building blocks with its meanings within the business model canvas.[171]

As the business model canvas structures a company´s business model into several components, it offers a suitable approach to identify a possible component for adjustment.[172] In addition, the domains which are addressed in the business model canvas have an internal focus and exclude external and market related factors.[173] Especially the internal focus supports the central research question which is focussed on finding change opportunities at a Telco´s business model.

Pillar and Building Block		Description of the Building Block
Product	Value Proposition	Gives an overall view of a company's bundle of products and services that are of value to the customer.
Customer Interface	Target Customer	Describes the segments of customers a company wants to offer value to.
	Distribution Channel	Describes the various means of the company to get in touch with its customers.
	Relationship	Explains the kind of links a company establishes between itself and its different customer segments.
Infrastructural Management	Value Configuration	Describes the arrangement of activities and resources.
	Core Competency/ Capability	Outlines the competencies necessary to execute the company's business model/ to create value for the customer.
	Partner Network/ Partnership	Portrays the network of cooperative agreements with other companies necessary to efficiently offer and commercialize value.
Financial Aspects	Cost Structure	Sums up the monetary consequences of the means employed in the business.
	Revenue Model	Describes the way a company makes money through a variety of revenue flows.

Table 1: The nine business model building blocks

Source: Osterwalder et al. (2005), p. 10; Osterwalder (2004), p. 43

The business model canvas conceptualizes the definition used in this master thesis and provides an opportunity to analyse, understand, share and formulate a company´s business model on one single page.[174] Appendix B1 shows an illustration of the business model canvas. That means that this framework can simplify complex processes by creating a

[170] See Osterwalder et al. (2005), p. 11.
[171] See Appendix B1 for an illustration of interrelation of the pillars of the business model canvas
[172] See Osterwalder and Pigneur (2004), p. 1; See Osterwalder (2004), p. 42.
[173] See Osterwalder et al. (2005), p. 10.
[174] See Osterwalder and Pigneur (2004), p. 23.

mutual language for stakeholders and enable the opportunity to create a graphical illustration. By doing so, the business logic of a company can be captured, realized and visualized.[175] Furthermore, the fact that all important aspects of a company´s business model are presented in one framework has a number of advantages. This supports analysis abilities as well as management tasks.[176] In addition the business model canvas is supposed to be a useful tool to plan future scenario´s, as answer to fast moving trends and innovations based on Allen´s law of excess of diversity in evolutionary theory.[177] Allens´s law of excess diversity contains, that in order to stay competitive on a long term, a company needs to have a level of internal diversity which is greater than the environment.[178] That means that a Telco should have a number of different business models in storage to react to possible changes by the environment.

4.3.2 Optimisation of the Organisational Design / Infrastructural Management might leverage digital technology

As chapter 1.1 has already highlighted different companies which act in the telecommunication market, one can see that some pillars of the business model canvas have similar characteristics among these companies. The value proposition (triple or quadruple-play) and its revenue model (post or pre-paid contract model with slightly different price strategies) as well as the customer interface (e.g. pre- and post-paid contract customers using quadruple or triple-play services; touch points via physical stores, Websites, Social Media, Apps, SMS or Call-Centre; long term relationship based on a contractual approach) are very similar among market player in the B2C segment.[179] If a company wants to deliver a value proposition via certain distribution channel to new or current customers based on new insights from new digital technology, the infrastructural management of a business model might be the differentiating factor to succeed in improving the customer interaction of a Telco.

As leveraging is understood in the context of using digital technology in a beneficial way for a Telco, the infrastructural management pillar of the business model canvas might be a relevant starting point. Due to the fact, that the pillar of infrastructural management consists of the key activities (value configuration), the key resources (core competency and

[175] See Osterwalder et al. (2005), p. 11-14.
[176] See Osterwalder et al. (2005), p. 14.
[177] See Osterwalder et al. (2005), p. 16.
[178] See Allen (2001), p. 175.
[179] See Behrendt (2013), p. 6-19.

capability) and key partners (partner network or partnership) of a company, it can also be interpreted as the organisational design. In fact, organisation design is briefly defined as "the process of configuring a company´s resources to execute on a given strategy."[180] In comparison Osterwalder and Pigneur (2004) describe the infrastructural management pillar as "activities, resources and partners [that] are necessary to provide the first two blocks [i.e. product and customer interface]"[181]. As both definitions show significant similarities, the infrastructural management will be seen as the organisational design of a company within this research.

The incremental change of a current business model has high obstacles and seems to be difficult.[182] That is why Chesbrough (2010) highlights organisation´s culture and processes as fundamental parts which are responsible for maintaining a current business model while realigning changes for a new approach.[183] Because of this, organisational design, which includes an organisation´s culture and processes, can be seen as an important aspect which facilitates the creation and capturing of value.[184]

Leeflang et al. (2014) identified in a study among 777 marketing executives that the redesign of organisations regarding accountability, incentives and decision-making processes is one of the biggest improvement opportunities for companies concerning digitalisation.[185] Consequently, the challenge occurs how to integrate new digital technologies into the traditional organisational design of Telcos. There might appear difficulties regarding accountabilities between different departments, because e.g. marketing activities are also executed in more departments than in the traditional marketing department.[186] In fact, customer data is often allocated in different departments which act independent from each other.[187] According to Kennedy (2006) there are often negative effects of different perceptions and expectations between the Marketing and the IT department. Front-end changes are mainly done by marketing staff whereas the back-end is mainly administered by the IT-staff. Due to this, especially the difference in knowledge about the impact of front-end changes for back-end systems causes extreme

[180] Greenberg and Kates (2014), p. 289.
[181] Osterwalder and Pigneur (2004), p. 4.
[182] See Chesbrough (2010), p. 362.
[183] See Chesbrough (2010), p. 362.
[184] See Leih et al. (2014), p. 2.
[185] See Leeflang et al. (2014), p. 2.
[186] See Leeflang et al. (2014), p. 9.
[187] See Spiess et al. (2014), p. 4.

challenges.[188] Apart from that it is argued that "*projects driven by a functional head, such as Marketing or IT, rarely produce an enterprise view of customers and modelling applications to a single functional view can often lead to failure. Successful [digital] strategies necessitate improved levels of integration between functions to successfully harness the opportunity available*."[189] In fact, a consolidation of various digital tasks within a company to a new functional department with a dedicated leader would allow "focus, accountability, and the ability to create common technology platforms and build deep technical skills."[190] Furthermore, new digital technologies could be limited in its effectiveness and efficiency caused by the so called "not-invented-here" syndrome of employees[191], as well as general organisational inertia.[192] Leih et al. (2014) suggest that changes within the organisational design in general might lead to new opportunities[193] e.g. a high degree of coupling and functional integration increase the opportunity to detect value.[194] Furthermore, the dynamic capability approach, which has already been discussed in chapter 3.3, is also stressed by Leih et al. (2014). They argue that the organisational design itself has impact on dynamic capabilities concerning sensing.[195] For example, Leih et al. (2014) emphasize that a high degree of delegation enables better customer interaction. Moreover vertical communication supports a faster decision making process and increases the success of sensing new considerations.[196] In fact, acquiring new digital technology alone is no guarantee for taking benefits from it.[197] Instead, dynamic capabilities are needed to successfully implement those technologies into the company and finally receive advantages.

In conclusion, a change or adjustment of an organisational design might improve the capability to successfully leverage new digital technology. Consequently, the organisational design of a Telco will be the topic of analysis, representing one component of the infrastructural management pillar of the business model canvas.

[188] See Kennedy (2006), p. 66; See Yoo et al. (2012) p. 1401.
[189] Kennedy (2006), p. 66.
[190] Greenberg and Kates (2014), p. 289.
[191] See Kathoefer and Leker (2012), p. 660.
[192] See Witteloostuijn (1998), p. 516-517.
[193] See Leih et al. (2014), p. 12.
[194] See Leih et al. (2014), p. 3-4.
[195] See Leih et al. (2014), p. 3-4.
[196] See Leih et al. (2014), p. 3.
[197] See DaSilva et al. (2013), p. 1171.

4.3.3 The Star-Model as underlying concept of organisational design

There are several different approaches to describe the organisational design. Daft (2012) divides organisational design into structural dimensions and contextual dimensions.[198] Structural dimensions consist of different points which describe the internal characteristics of a company i.e. the levels of formalisation, specialisation, hierarchy of authority and centralisation. Contextual dimensions involve the organisational setting consisting of size, technology, environment and goals, which influence the structural dimensions.[199] In addition, Keinz et al. (2012) use organisational design encompassed by terms as work processes, people, coordination and control, incentive mechanisms, goals, strategy and structure to identify success factors for organisational design for user innovation.[200] Moreover, Foss et al. (2013) limit the organisational design to decentralisation and coordination as most important criteria related to opportunity exploitation regarding external knowledge.[201]

Focussing on an organisation´s success with leveraging digital technology, table 2 shows the implementation of the Star-Model by Greenberg and Kates (2014), primary designed by Jay Galbraiths (2011).[202] They explain that "organisational design is the art and science of aligning structure (power), lateral connections (linkage), and metrics and people practices to achieve a given strategy".[203] Furthermore, they argue that organisation design is "the process of configuring company´s resources to execute a given strategy".[204] This Star-Model summarizes all relevant organisational design aspects described before and operationalizes them into a useful framework. Subsequently, a perfect fit of the components of the Star-Model can create a competitive advantage in case they are used in an optimal way and aligned with the strategy of a company.[205]

Star-Model	Suggested Operationalisation for Digital Success
Strategy and Capabilities	• Strong leadership from the top. • Management attention for digital technologies.
Structure	• Various forms are possible. (central vs. decentral) • Diversity of business portfolio is dependent on level of centralisation. • Strong functional leadership is required.

[198] See Daft (2012), p. 17.
[199] See Daft (2012), p. 17.
[200] See Keinz et al. (2012), p. 23.
[201] See Foss et al. (2013), p. 1457.
[202] See Galbraiths (2011), p. 1; See Greenberg and Kates (2014), p. 307-308.
[203] Greenberg and Kates (2014), p. 286.
[204] Greenberg and Kates (2014), p. 284.
[205] See Leih et al. (2014), p. 7.

Lateral Connections (Processes)	• Importance of knowledge linking across departments. • Community of practice or matrix reporting must ensure that the right people get the right information and that the right people have the right conversation.
Metrics (Rewards)	• Setting targets which enable an easy way of collaboration and alignments across various departments. • Good collaboration is essential to digital success.
People Practice	• A new kind of workforce is required having deep knowledge of marketing and technology. • Attracting, developing and rewarding people that have a digital DNA.

Table 2: The Star-Model operationalised for organisation´s digital success

Source: Own creation based on Greenberg and Kates (2014) p. 307-308

5 Summary of the theoretical framework: A conceptual model

In the context of the central research question '*How should telecommunication service providers adjust their business model to successfully leverage new digital technologies to improve customer interaction?'*, the analysis of the literature concerning the three main parts digital technology, customer interaction and business model innovation has created a profound basis and structure for a further empirical research.

First of all, the customer life cycle, consisting of an Acquisition phase, Development Phase and Retention phase, has been identified as a technical framework.[206] In each of these phases, Telcos have the opportunity to impact their prospective and existing customers with the help of digital technology to decrease costs or increase revenue. To do so, Telcos should use their ordinary and dynamic capabilities in order to improve the customer interaction.[207] The literature has given a number of capabilities for each phase and in addition, also general capabilities which have a cross-phase-character. The following passage will sum up the most important capabilities mentioned in the literature:

Increasing the online conversion to reduce the costs-to-sell[208], offering a personalized customer experience by real time insights[209] or make use of the so called "external technology" to reach customers and deliver content[210], are referred to the Acquisition phase. Moreover, the capability to add-on-selling or offering added value services[211] and

[206] See Gupta et al. (2006), p. 140.
[207] See Teece (2007), p. 1346-1347.
[208] See Richards and Jones (2008), p. 122.
[209] See Gandomi and Haider (2015), p. 138.
[210] See Greenberg and Kates (2014), p. 284.
[211] See Rožek and Karlíček (2014), p. 33.

improving the customer self-service[212] are related to the Development Phase. Instead, churn prevention by increasing the customer loyalty through great customer experience and a proactive customer relationship management can be aligned to the Retention phase.[213] In addition, there are a number of general capabilities like having analytical techniques to get insights from all the customer data of a Telco[214] or being able to execute proactively marketing actions with a cross-channel approach.[215]

Figure 3 below illustrates the conceptual approach, which provides the basis for a further empirical study. First of all, the digital capabilities of different cases within the telecommunication industry are being evaluated based on their general existence and their different specifications and implementations. The assessment will result in an elaboration of the maturity regarding digital capabilities alongside the customer life cycle.

Based on the theory of business model innovation, organisational design, as one main block of a sub-part of the business model canvas, has been identified to be suitable for a detailed analysis in order to find opportunities for improvement. In fact, literature supports the theory that the organisational design might be an important factor for the leverage of new digital technology.[216] Therefore, this study will try to identify trends and success factors of organisational design of leading companies in the field of digital capabilities.

General Digital Capabilities				
• Customer Experience Management • Segmentation/ Personalisation • User Interface Design		• Customer Data Integration • Digital Analytics • Insights to Action • IT Convergence and Architecture		
Acquisition Capabilities		**Development Capabilities**		**Retention Capabilities**
• Digital Advertising • Personalisation • Visitor Conversion		• Cross-Upselling • Next Best Activities • Customer Self Service		• Churn Prevention • Contract Termination/Extension • Win-Back
Organisational Design Trends and Success Factors				
Strategy	**Structure**	**Processes**	**Metrics**	**People**

Figure 3: Conceptual Framework of the Masterthesis

Source: Own creation based on the literature analysis

[212] See Richards and Jones (2008), p. 127.
[213] See Reicheld et al. (2000), p. 135.
[214] See Gandomi and Haider (2015), p. 140.
[215] See Gupta et al. (2006), p. 140; A list of all digital capabilities being used within the study can be seen in table 6 in Appendix B2.
[216] See Chesbrough (2010), p. 362; See Leeflang et al. (2014), p. 2.

6 Methodology:

6.1 Research Strategy and Research Design: Using a qualitative research strategy in order to apply a comparative research design influenced by cross-sectional and case study design characteristics

In order to understand the organisational design including available capabilities of a Telco, the master thesis will make use of a qualitative research. A qualitative research strategy rather follows an inductive approach and often tries to generate theory by analysing and emphasizing words. In contrast, a quantitative approach is more deductive and often aims at testing theory by quantification of numerical data.[217] The most important difference regarding the setting of this master thesis is the generalisation aspect, which will not be achieved by following a qualitative research strategy. Instead, the focus is more on receiving rich data for a better contextual understanding of a real life problem in form of the organisational design.[218] This is also supported by Babbie (2010) who defines qualitative research as a "nonnumerical examination and interpretation of observations, for the purpose of discovering underlying meanings and patterns of relationships".[219]

The literature offers a variety of different research designs, of which each one is specialized for different purposes. Regarding the scope of this research, relevant design types represent a case study design, a cross sectional design and a comparative design.[220] Other typical design types e.g. a longitudinal design or experiments can be excluded from the beginning due to missing requirements such as a long time range, which is not feasible due to certain time restrictions[221] or experimental interventions[222].

A cross-sectional design would be well suited for the existing research goal due to the fact that the data collection happens at one point in time and that more cases than one case can be analysed.[223] Furthermore, it focuses on descriptions but is not limited to it[224] as most descriptive studies have a tendency to analyse and compare.[225] Nevertheless, cross-sectional design has a nomothetic approach, which means to generate results which are

[217] See Bryman and Bell (2011), p. 27.
[218] See Bryman and Bell (2011), p. 410-411.
[219] See Babbie (2010), p. 394.
[220] See Bryman and Bell (2011), p. 45.
[221] See Pettigrew (1990), p. 269.
[222] See De Vaus (2001), p. 176.
[223] See Bryman and Bell (2011), p. 53.
[224] See De Vaus (2001), p. 176.
[225] See Ebrahim and Sullivan (1995), p. 68.

independent of time and place.[226] Instead, the case study design focuses on understanding unique features of a certain case or multiple cases by applying an idiographic approach.[227] Being concerned with finding success factors of organisational design, Gerring (2004) supports this goal by defining a case study as a study which is aimed at understanding the bigger picture by analysing one specific case in depth.[228] Moreover, within a case study the cross-sectional criteria of collecting data at one point in time are not prohibited.

In addition, Bryman and Bell (2011) also introduce the comparative design which is defined as a "(…) study using more or less identical methods of two or more contrasting cases".[229] Furthermore, a comparative design often makes use of a data collection employed within a cross-sectional design.[230] In conclusion, the research design which will be applied within this study can be interpreted as a comparative design with influencing factors of cross-sectional and case study design characteristics.

6.2 A comparative research design: unit of analysis and sampling method

As the unit of analysis is described as "things we examine in order to create summary descriptions of all such units and to explain differences among them"[231], the unit of analysis in the context of this study represents companies in the telecommunication industry of Germany, Switzerland and Austria offering services out of the product portfolio of Mobile Telephony and Mobile Internet, Fixed Line Telephony and Fixed Line Internet and TV or Entertainment services. That means basically companies, which can be classified as Telcos, MNOs or MVNOs.[232]

According to the classification of sampling strategies by Flyvbjerg (2006), an information oriented selection type will be chosen in order to "maximize the utility of information from small samples and single cases. Cases are selected on the basis of expectations about their information content".[233] Moreover, the subcategory of maximum variation cases will be chosen in combination of deviant cases as selection of sampling strategy is not mutually exclusive.[234] Due to the fact that the goal of this investigation is to understand the

[226] See Bryman and Bell (2011), p. 60.
[227] See Bryman and Bell (2011), p. 60.
[228] See Gerring (2004), p. 342.
[229] Brymann and Bell (2011), p. 63.
[230] See Bryman and Bell (2011), p. 63.
[231] Babbie (2010), p. 99.
[232] See Chapter 1.1
[233] Flyvbjerg (2006), p. 230.
[234] See Flyvbjerg (2006), p. 233.

organisational design regarding digital technologies and to identify success factors regarding the performance of customer interaction, it is important to analyse companies which also have distinctions. In addition to certain similarities concerning the unit of analysis, different strategies and approaches of organisations in the telecommunication industry increase the variety and richness of information.[235] Moreover, companies which seem to be quite extreme regarding certain characteristics are valuable for receiving extraordinary information regarding those weak or strong points.[236] Due to the limitation of firms operating in Germany, Switzerland and Austria which provide telecommunication service like triple or quadruple play to B2C customers, a number of 12 companies consisting out of Telcos, MVNOs and Cable Network Operator have been addressed from Germany, Switzerland and Austria.[237] Finally, 6 companies agreed to participate within this study.

6.3 Data Collection Method: Semi-structured interviews

The literature offers a broad variety of different data collection methods to receive rich data. Data collection can happen e.g. by classical observations, semi-structured and unstructured interviews, focus groups or extractions regarding a qualitative research strategies[238] or by structured interviews with closed questions or questionnaires regarding a quantitative research strategy.[239] According to Denscombe (2010), qualitative interviews are aimed at "the exploration of more complex and subtle phenomena" and furthermore enable the opportunity to get insights into "people´s opinions, feelings, emotions and experiences".[240] Subsequently, a qualitative interview is a data collection method "that is attuned to the intricacy of the subject matter".[241] Bryman and Bell (2011) also support this argument by claiming that qualitative interviews are expected to gather rich and detailed answers and that there is a higher level of flexibility to explore new insights concerning the direction of the interview.[242]

A comparative research design requires a cross-case analysis. Therefore, the form of semi-structured interviewing has been chosen, because it enables a slight structure which

[235] See Flyvbjerg (2006), p. 230.
[236] See Flyvbjerg (2006), p. 229.
[237] See Fuentelsaz et al. (2012), p. 97.
[238] See Guest et al. (2012), p. 34.
[239] See Bryman and Bell (2011), p. 68.
[240] Denscombe (2010), p. 174.
[241] Denscombe (2010), p. 174.
[242] See Bryman and Bell (2011), p. 467.

simplifies a comparison between several different interviews.[243] Semi-structured interviews are conducted with the help of an interview guide. This guide contains relevant topics and questions which are necessary to be covered, but not restricted to a certain order.[244] Moreover, the interviewer has the possibility to dive deeper into a topic by making use of probing questions, to ensure getting sufficient insights for an addressed topic or a correct understanding.[245] Subsequently, an interview guide has been prepared to receive valuable information concerning the organisation design of Telcos as well as the performance at leveraging digital capabilities. The interview guide can be seen in Appendix C1.

As structuring approach, the interview guide uses the Star-Model developed by Galbraiths (2011), which provides a framework for analysing the organisational design of a company.[246] In fact, the interview consists of two parts. Part one includes the organisational design characteristics as strategy, structure, processes, metrics and people practice whereas part two investigates the digital capabilities of the companies alongside the customer life cycle.

Due to the flexibility which is offered by semi-structured interviews, the questions do not have to follow a concrete order. Furthermore, some questions can be omitted in the discretion of the interviewer, in case an adequate answer has already been provided before.

Before the interviews will take place, all participants will receive adequate background information about the investigation and a rough list of topics and possible questions which will simplify the whole process.[247] In order to gain a confidential atmosphere during the interview in which the participants may speak without reservations, a contract of confidentiality will be offered. This contract includes the opportunity for the participant to stay anonymous. At the same time it also suggests/ includes/ implies that the results of the interview will be sent back for a feedback or approval.[248]

6.4 Data Analysis: Coding

In order to receive useful findings out of qualitative raw data the approach of grounded theory will be used by applying the data analysis method of coding. Therefore, if not

[243] See Bryman and Bell (2011), p. 473.
[244] See Harrel and Bradley (2009), p. 27.
[245] See Harrel and Bradley (2009), p. 27; See Denscombe (2010), p. 176.
[246] See Galbraiths (2011), p. 1.
[247] See van Aken et al. (2007), p. 135.
[248] See van Aken et al. (2007), p. 135.

permitted, all interviews will be audio-recorded and transcribed or alternatively reflected with the help of an extensive summary of each interview topic.[249]

Van Aken et al. (2007) explain that "(t)he grounded theory approach is a structured approach for the exploration of unfamiliar territory (…) [and] a method to develop theory out of raw qualitative data in a systematic way."[250] In order to guarantee a systematic way of analysing the interview data, the method of coding will be used which is described as "(…) classifying or categorizing individual pieces of data."[251] In addition, Babbie (2010) also highlights the fact that coding can be used for the "(…) discovery of patterns among the data, patterns that point to theoretical understandings of social life".[252]

In general, coding is the procedure of labelling or classifying textual data in the context of semi-structured interviews.[253] In fact, data is decomposed into single components which are described by certain names (codes).[254] Creswell (2009) indicates three different origins of code names. Codes can be collected during the collection, after the collection, before the collection or even as a combination of all criteria. This study includes a combination of all criteria by making use of predefined codes based on the literature review as well as generating new codes which emerge while collecting the data.[255]

While making use of the coding method, the computer software MAXQDA 11 will be involved which simplifies coding of prepared transcripts.

6.5 Quality of the study: Credibility, transferability, dependability and confirmability

This chapter will provide quality increasing methods used by emphasizing the criteria of trustworthiness. Those criteria have been chosen, because quantitative research quality criteria as reliability and validity are not common for qualitative research.[256]

The criteria of credibility highlight the fact to what extend findings are congruent with the reality.[257] Moreover, credibility is the counterpart of internal validity within quantitative research.. In order to grant a certain level of credibility this study will make use of the so

[249] See Bryman and Bell (2011), p. 482.
[250] van Aken et al. (2012), p. 138.
[251] Babbie (2010), p. 400.
[252] Babbie (2010), p. 400.
[253] See van Aken et al. (2007), p. 138.
[254] See Bryman and Bell (2011), p. 577.
[255] See van Aken et al. (2007), p. 139; The coding system can be found in Appendix C2.
[256] See Krefting (1991), p. 214.
[257] See Bryman and Bell (2011), p. 396.

called “member checking”, which offers the participants the opportunity to give feedback to the analysed data in order to prevent misunderstandings.[258]
Transferability refers to the level of generalizability which is utilized as external validity within quantitative research. “Since the findings of a qualitative project are specific to a small number of particular environments and individuals, it is impossible to demonstrate that the findings and conclusions are applicable to other situations and populations.”[259] Therefore, to enable transferring the study into other settings a dense description of contextual information is recommended.[260] As this study provides most of the information which is demanded, a certain level of transferability is given.

As a third criteria dependability can be regarded as a parallel to reliability in quantitative research. “The results of a study are reliable when they are independent of the particular characteristics of that study and can therefore be replicated in other studies.”[261] In fact, van Aken et al. (2007) name four fields which are unimmunised for bias i.e. the researcher, the instrument, the respondents and the situation. To overcome such biases the above mentioned dense description of the methodology as well as triangulation will cause an adequate level of dependability.

Last but not least, in order to grant a certain quality for a research study the criteria of confirmability is covered. Confirmability stands for the level of objectivity of a study and basically suggests that the researcher does not involve any personal values into the process.[262] In order to ensure a certain level of confirmability, several tools and procedures e.g. audio-taping the interviews, transcribing the interviews and offering feedback to the interviewees’ serve as basic components of the study.

Subsequently, by applying all those criteria, this research aims at gaining rich and sufficient information about the study. All tools and procedures are offered to provide readers and stakeholders of this master thesis a contextual understanding about how the findings and interpretations of this study have been derived. Furthermore, the described method approach grants an internal coherence of the research.

[258] Krefting (1991), p. 219.
[259] Shenton (2004), p. 69.
[260] See Krefting (1991), p. 220.
[261] van Aken et al. (2007), p. 158.
[262] See Bryman and Bell (2011), p. 398.

7 Empirical Findings: Results of the interviews about digital capabilities and organisational design in consideration of a digital transformation of the telecommunication industry

7.1 In-case analysis: Overview of the companies being involved in the study with regard to digital capabilities and organisational design characteristics (confidential)

7.1.1 Company 1 (confidential)

7.1.2 Company 2 (confidential)

7.1.3 Company 3 (confidential)

7.1.4 Company 4 (confidential)

7.1.5 Company 5 (confidential)

7.1.6 Company 6 (confidential)

7.2 Cross-case analysis concerning digital Capabilities[263]

7.2.1 Characteristics of general digital capabilities across the customer life cycle show similarities with regard to challenges of the IT- infrastructure and differences in the customer experience approach among the cases

The results of the cross-case analysis among the interviewed companies indicate significant differences but also similarities within the manner of manifestations of digital capabilities alongside and across the customer life cycle. Appendix E2 gives an overview of the cross-case analysis based on the digital capabilities each customer life cycle phase and of general capabilities across the customer life cycle. This chapter starts with a cross-case analysis of general capabilities across the customer life cycle. Thereby the capabilities of an agile IT-architecture, the use of data integration from different sources as well as the capability to grant an overall customer experience independent from the customer life cycle phase and the capability to collect and benefit from customer feedback will be analysed to find similar and different approaches among the case companies. This analysis

[263] See Appendix E2 to get an overview of the capabilities per case company.

will provide the prerequisite for a qualitative assessment regarding the capability to leverage digital technology to improve customer interaction.

Often the case companies run more than one IT-systems.[264] A common separation of IT-systems appears between the two customer groups of fixed line and mobile. There even is one company which has integrated the data of both customer groups but runs different IT-systems dependent on the contact channels e.g. one system especially for Call-Centres, one system for the website and one system for the shops.[265] Recently, one company has finished the development of a total convergence among the Quadruple-Play services on one system[266] and there is only one participant which had an integrated IT-system from the beginning (confidential).[267]

- A striking similarity is that most participants have no integrated IT-systems which would support an agile development capability within digital channel. [268]

"I am totally decoupled within the Front-End in case of simple content changes (...), but if there are new products, which have impact on the shop process for example, I have to wait for the next release (...) there is even a complete shut-down [of the website] for 12 hours then. (...) actually, this is a really intolerable situation at the moment." [269]

Instead of an expensive integration of IT-systems e.g. integrating four systems into one system which has been estimated with a capital expenditure of € 0.5 billion by one participant[270], decoupling e.g. the Front-End from the Back- End is seen as the less costly approach. Although some participants have already implemented a more agile Front-End design[271] there are other participants which do not have this kind of decoupling. Some of the participating companies do not even mention a rudimental decoupling of systems at all.[272] Another aspect is mentioned by a participant whose company also does not have decoupling but is still flexible qua content management.[273]

[264] See Interview 2, Appendix D2, ll. 502-504; See Interview 4, Appendix D4, ll. 487-495; See Interview 5, Appendix D5, ll. 880-886.
[265] See Interview 7, Appendix D7, ll. 424-440.
[266] See Interview 1, Appendix D1, ll. 559-569.
[267] See Interview 6, Appendix D6, ll. 399-403.
[268] See Interview 7, Appendix D7, ll. 433-434.
[269] Interview 7, Appendix D7, ll. 87-91.
[270] See Interview 5, Appendix D5, ll. 893-896.
[271] See Interview 5, Appendix D5, ll. 884-886.
[272] See Interview 3, Appendix D3, ll. 555-556; See Interview 4, Appendix D4, ll. 501-515.
[273] See Interview 1, Appendix D1, ll. 575-577.

- In fact, the awareness of the importance of this topic is given but most participants do not show great progress regarding a decoupling.[274] In the context of leveraging digital technology and reacting fast via digital channels, the Release-Cycle-dependence as well as the decoupling still seems to be a big challenge for most of the case companies.

In addition to the general IT architecture, another important aspect is the capability to integrate different customer data into one system, e.g. combining fixed line and mobile customer data and interactional and transactional data across channel. Few have properly integrated traditional and digital customer data within one Data Warehouse but still lack capabilities for a sufficient analysis and interpretation.[275] Other companies still have two different platforms, one for fixed line and one for mobile customers and are not able to combine this data for an overall perspective.[276] In contrast to this, one participant has already an integrated platform with all customer data available for all kind of different services offered. However, the company has also no capability for a real –time analysis based on digital insights.[277]

- Consequently, the majority of the case companies try to integrate different kind of data, but even if they have the integration capability, all companies lack sufficient resources to analyse and interpret those data to get insights. As the following quotation stresses, there is a common problem among the case companies to integrate customer data and furthermore, to use this integrated data efficiently to receive valuable insights and information.

"At the moment, there is a complete separation of Online and Offline. We do not have a Big Data Model or anything else in this direction"[278]

With regard to customer experience, several companies have their own departments or teams which are responsible for ensuring a superior customer experience across all channels. The case company which puts the most effort into the customer experience runs a very powerful team consisting of a significant number of staff who tries to increase the

[274] See Interview 1, Appendix D1, ll. 575; See Interview 3, Appendix D3, ll. 543-546; See Interview 4, Appendix D4, ll. 501-515; See Interview 7, Appendix D7, ll. 444-446.
[275] See Interview 1, Appendix D1, ll. 533-536.
[276] See Interview 3, Appendix D3, ll. 499-502; See Interview 5, Appendix D5, ll. 816-822; See Interview 7, Appendix D7, ll. 381-387.
[277] See Interview 6, Appendix D6, ll. 377-392.
[278] Interview 7, Appendix D7, ll. 381-382.

level of customer experience across all possible levels and touchpoints.[279] Instead, there is also a company which employs only one employee for this topic. The company's representative argues that on the one hand customer experience is generally wanted but is on the other hand not sufficiently supported and provided with enough significance within the company.[280] A common approach among the participants to grant a certain level of customer experience is to create blueprints for several expected Customer Journeys and align internal processes to meet those blueprints.[281]

- Accordingly, there are different approaches to grant superior customer experiences across different offline and online channels, which are mainly recognised by the amount of effort which is put into an overall customer experience optimisation.

"In addition, we use a mechanism regarding the FAQs area. We really wonder if the answer is satisfying the customer in order to avoid additional hotline calls. Therefore, we have a two-parted feedback box beneath the FAQ answer. The first part is "Was this information helpful?" and the second part is "Would you have called instead?" These feedback boxes can be filled in with verbatims. (...) The answers are analysed on a daily basis."[282]

Taking a look at the customer feedback capability, for instance, there is one participant mentioning the analysis of the digital voice of the customer in social media and forums.[283] Other companies concentrate more on single KPIs like the overall Customer Satisfaction or the Net-Promoter-Score.[284] Moreover, one company highlights a direct SMS-survey approach after each transaction for sales and service.[285] Interestingly, there still is one participant who questions the fact whether the customer experience has been sufficiently implemented after all.

- Apart from differences regarding the execution, almost all participants have highlighted the fact that the customer feedback is collected in a structured way and constructively implemented for improving the customer experience.[286] To sum up,

[279] Interview 5, Appendix D5, ll. 491-496.
[280] See Interview 4, Appendix D4, ll. 269-280.
[281] See Interview 2, Appendix D2, ll. 278-281; See Interview 6, Appendix D6, ll. 224-234; See Interview 7, Appendix D7, ll. 248-253.
[282] Interview 5, Appendix D5, ll. 561-568.
[283] See Interview 5, Appendix D5, ll. 554-556.
[284] See Interview 6, Appendix D6, ll. 264-267; See Interview 7, Appendix D7, ll. 267-271.
[285] See Interview 4, Appendix D4, ll. 326-330.
[286] See Interview 1, Appendix D1, ll. 409-412.

collecting customer feedback is a commonly used capability among the case companies.

7.2.2 Characteristics of digital capabilities in the Acquisition phase show similarities with regard to online marketing activities and differences concerning a multi-channel communication approaches as well as in the quality of conversion increasing capabilities

The next part of the cross-case analysis examines if there are different or similar approaches to use digital capabilities during the acquisition phase of the customer life cycle. Therefore, the answers of the interviews are analysed on basis of advertising and conversion increasing capabilities.

First of all, Search Engine Optimisation (SEO) and Search Engine Advertisement (SEA) are used in order to be easily accessible for the customer via search engines like Google. Moreover, Affiliate Marketing or Re-Targeting completes the portfolio of advertising activities. Affiliate Marketing is a cookie-based marketing tool which places online advertisements within the customers' browser based on his or her browser history.

- Consequently, there are no striking differences within the online marketing approach. Alongside the Acquisition phase, the majority of the case companies is making use of all kinds of online marketing activities in order to be visible for their customers in the digital world and no striking differences have been recognised within the analysis. [287]

"The offline communication is certainly the most important aspect for digital"[288]

According to some of the representatives, the companies are especially successful in using the offline marketing channel to advertise for digital channel.[289] One example is a drive-to-web campaign which exploits offline TV-advertisements to promote the website or the mobile App.[290] Another approach is to instruct local stores to send interested customers

[287] See Interview 1, Appendix D1, ll. 420-434; See Interview 2, Appendix D2, l. 354; See Interview 4, Appendix D4, ll. 366-369; Interview 5, Appendix D5, ll. 611-614; See Interview 6, Appendix D6, ll. 280-285; See Interview 7, Appendix D7, ll. 286-290.
[288] Interview 4, Appendix D4, ll. 368-369.
[289] See Interview 4, Appendix D4, ll. 368-369; See Interview 5, Appendix D5, ll. 603-605; See Interview 6, Appendix D6, ll. 285-290.
[290] See Interview 6, Appendix D6, ll. 285-290.

into online channels.[291] Instead, there is one company which does not use the traditional channel at all. [292]

- In contrast to pure digital activities there are striking differences among the cases with regard to the use of capabilities across different communication channels.

In contrast to offline channels, digital channels offer very fast insights which can be used to increase the conversion rate.[293] The most often established tools among the companies are AB-Testing or simple Test & Learn approaches. This has been mentioned by all participants.[294] The Test & Learn approach means for instance that the offer of a product is placed at two different positions within the layout of a webpage. Afterwards, one can identify the more suitable position for the offer regarding the conversion on basis of the amount of people who clicked on that offer.[295] Apart from that, another approach represents a change in value added services, visible for customers via banner ads near the purchase button within the digital channel.[296] Finally, there is one outlier company which described their approach of conversion optimisation more intensively. Based on a customer-time-efficiency KPI which is set up as an objective, the company improves each single step of the process from the very first contact at the digital channel until the purchase has been executed, with a strong focus on time efficiency for the customer. Therefore, the company cooperates with a market research institution, which allow eye-tracking in addition to several AB-tests per month.[297]

- Concluding, in addition to the fact that conversion increasing capabilities are employed by all cases, the cross-case analysis indicates differences of the quality of those capabilities. The differences are mainly expressed with the amount of activities and effort put into the capability.

[291] See Interview 5, Appendix D5, ll. 603-605.
[292] See Interview 7, Appendix D7, ll. 291-293.
[293] See Interview 6, Appendix D6, ll. 303-304.
[294] See Interview 1, Appendix D1, ll. 456-466; See Interview 2, Appendix D2, ll. 377-383; See Interview 3, Appendix D3, ll. 420-435; See Interview 4, Appendix D4, ll. 391-397; Interview 5, Appendix D5, ll. 666-673; See Interview 6, Appendix D6, ll. 307-311; See Interview 7, Appendix D7, ll. 306-3015.
[295] See Interview 5, Appendix D5, ll. 666-667.
[296] See Interview 4, Appendix D4, ll. 391-397.
[297] See Interview 5, Appendix D5, ll. 654-666.

"When we cooperate with the [a market research institute], they say, that we are the only ones they know who are really stopping the time with a stopwatch in order to measure the time for each step of the process per customer."[298]

7.2.3 Characteristics of digital capabilities in the Development phase show similarities with regard to challenges of complex functionalities within the Self Service Portals and differences concerning the usage and level of customer data between different countries

Another aspect which has been examined during the qualitative interviews refers to digital capabilities which positively impact the customer lifetime value during the Development phase. Consequently, digital capabilities which imply the use of customer data e.g. offering cross- and upselling, next best activities and self-service customer support, have been analysed regarding similar or different approaches among the different cases.

In Germany, there are limitations by law regarding the use of digital customer interaction data unless a customer grants permission.[299] Moreover, the creation of user-profiles based on customer data is allowed but only in use with pseudonyms. A linkage of user-profiles with data which makes a personal identification possible is not allowed. Thus, collecting customer data for advertisement, market research and personalisation is allowed when using pseudonyms. A clear identification of a customer by combining data is permitted.[300]

- Hence, there are striking differences between participants regarding the level of cross- and upselling as well as NBA usage and the sources where the data comes from. There is a particular distinction between companies operating in Germany and companies operating in other countries regarding the utilisation of different kinds of customer data.

"We are still light-years away from Amazon. But we have initial approaches like personalised Newsletters."[301]

There are some participants who are able to perform cross- and upselling and NBAs which are revenue increasing capabilities via the website and the mobile App.[302] However, some

[298] Interview 5, Appendix D5, ll. 662-665.
[299] See Interview 3, Appendix D3, ll. 110-118, 527-536; See Interview 5, Appendix D5, ll. 830-843.
[300] See Der Bundesbeauftragte für den Datenschutz und die Informationsfreiheit (2013), p. 187.
[301] Interview 6, Appendix D6, ll. 315-316.
[302] See Interview 1, Appendix D1, See Interview 2, Appendix D2, ll. 397-399, 472-478; See Interview 5, Appendix D5, ll. 705-707.

companies only use the website.[303] Furthermore, some distinctions between the deductions of the information which are the basis for cross-and upselling can be identified. In fact, one group of participants is able to combine customer data on the basis of the correlation of transactional customer data with digital customer behaviour in some cases.[304] Other participants make use of cross- and upselling during or directly after the ordering process.[305] This means, e.g. if a customer has purchased a mobile contract including an iPhone, he gets an offer to purchase additional Apple equipment. Finally, the last category of participants uses cross- and upselling and NBAs which are based on coincidence.[306]

- In conclusion, some participants offer cross-and upselling and NBAs via the mobile App as well as the website whereas other companies solely perform revenue increasing activities via the website or offer cross- and upselling on a very low level. Due to this, there are differences regarding the digital channel in use for cross- and upselling and the level of execution.

Nevertheless, there is a consistent discourse about the value of this capability. Participants argue that due to a small range of different articles consisting of a few services and products e.g. three to five tariffs and additional accessories like smartphones , there is no sufficient variety for personalised offerings compared to online shops which can leverage economies of scale e.g. Amazon.[307]

"The App does not have this information today, but in the customer self-service portal on the website this is possible. (...) First of all, that means that the system has a next best activity. The question occurs how to communicate this to the customer [across different channel]."[308]

There has been a question during the interviews whether the participants could name any crucial characteristics which cannot be applied within the customer self-service area today. One problem which is mentioned by some participants is portrayed in the following quotation:

[303] See Interview 6, Appendix D6, ll. 332-334; See Interview 7, Appendix D7, ll. 319-334.
[304] See Interview 1, Appendix D1, ll. 472-484.
[305] See Interview 3, Appendix D3, l. 441; See Interview 5, Appendix D5, ll. 695-719; See Interview 7, Appendix D7, ll. 319-322.
[306] See Interview 4, Appendix D4, ll. 423-428.
[307] See Interview 4, Appendix D4, ll. 413-415; Interview 5, Appendix D5, ll. 708-715; See Interview 6, Appendix D6, ll. 319-323.
[308] Interview 6, Appendix D6, ll. 332-337.

"In addition, an aspect which I would like to be enabled today represents the case if someone moves house and wants to take his DSL-access."[309]

Changing the address of the internet access for DSL seems to be a complex process and is only available at a few case companies.[310] Apart from that, the change of the operator is a further issue which has been mentioned by one participant[311]. Another important aspect which has been mentioned by one representative of a case company was the disability to pay for a fee via certain online tools.[312]

- The Self-Service Portal on the website and self-service via the App has a huge potential to reduce costs-to-serve mainly caused by more expensive Call-Centres. Due to this, most information about products and services and support is already included within these channels among most participants in order to relieve the workload of Call-Centres. Nevertheless, there are still some processes and options which cannot be portrayed with digital channels due to technical complexities.

7.2.4 Characteristics of digital capabilities in the Retention phase show similarities with regard to preferences of classical Call-Centre for Retention and differences concerning allowance of digital contract terminations

Digital capabilities to improve churn prevention and to win back customers have been another significant topic during the qualitative interviews regarding the retention phase of the customer life cycle. Furthermore, the approach to offer digital contract extension as well as the possibility of digital termination has also been topic of the interview. Accordingly, this chapter will elaborate on similarities and differences of retention capabilities.

Companies argue that customers who are willing to terminate their contract are difficult to convince to stay via digital channels, because in most cases they are dissatisfied with something.[313] Therefore, all companies prefer the personal contact via Call-Centres for retention activities since the companies do not see digital technologies as being suitable for

[309] Interview 5, Appendix D5, ll. 728-729.
[310] See Interview 7, Appendix D7, ll. 349-351.
[311] See Interview 2, Appendix D2, ll. 406-408.
[312] See Interview 7, Appendix D7, ll. 342-348.
[313] See Interview 5, Appendix D5, ll. 763-765.

this approach.[314] Interestingly, the use of digital channels for churn prevention and win back attempts is seen critically by all case companies, particularly with regard to win-back-attempts.

Although all participants agree to the fact that the customers should be addressed in person via a human being, only a few representatives highlight the support of Call-Centre activities with digital capabilities.[315] This means that customers who are logged in on the website or the mobile App and have frequently clicked within the termination area might be categorized into a group of customers who are in danger of churn. Afterwards this information will be sent to the Call-Centre.
Again, there is one company which sticks out of the participating companies. This company makes proactively use of the mobile App regarding churn prevention in form of offering proactively a NBA or a cross- and upsell. In case customers have allowed push notifications on their mobile devices, these customers will automatically receive attractive offers for a contract extension via the App provided that they are classified as potential target group.[316]

- Concluding, there is a common understanding about the necessity of Call-Centres for churn prevention and win back activities. However, the answers of some representatives indicate that at least some companies understand how to leverage digital technologies with regard to this aspect.

"Contract extension yes. (...) Termination, intentionally no!" [317]

Another significant aspect regarding digital capabilities within the customer life cycle phases is the topic of digital contract termination and digital contract extension. First of all, the participants have the capability to let customers extend their contract via digital channels. But as soon as it comes to possible terminations, a clear distinction can be recognised. Half of the companies offer terminations in self-service-areas on the website or via the App but do not overly expose this functionality for obvious reasons.[318] In fact, there

[314] See Interview 1, Appendix D1, ll. 510-523; See Interview 3, Appendix D3, ll. 465-466; See Interview 4, Appendix D4, ll. 462-465; See Interview 6, Appendix D6, ll. 355-359; See Interview 7, Appendix D7, ll. 375-376.
[315] See Interview 5, Appendix D5, ll. 758-761; See Interview 6, Appendix D6, l. 351.
[316] See Interview 5, Appendix D5, ll. 776-781.
[317] Interview 4, Appendix D4, ll. 439-445.
[318] See Interview 5, Appendix D5, ll. 748-761; See Interview 3, Appendix D3, ll. 478-482; See Interview 7, Appendix D7, ll. 355-359.

is no one-click-termination in contrast to very customer friendly extension opportunities. Instead, the other half does not offer the termination opportunity on purpose. [319]

- The differences within these aspects indicate the thin line between granting a maximum of customer experience and the risk of lowering the switching-cost to another operator.

7.3 Qualitative Capability Assessment (confidential)

7.4 Striking Characteristics of Organisational Design based on the Qualitative Assessment of Capabilities

This chapter highlights general findings of digital organisational design characteristics. A special focus is laid on cases which have been identified as leading performer during the qualitative capability assessment. The chapter will be structured according to the components revealed from the literature i.e. strategy, structure, processes and governances, metrics and rewards and people.

Appendix E3 gives a detailed cross-case analysis overview of the organisational design characteristics of all case companies

There are different approaches regarding a digital strategy. On the one hand, some companies have a formulated digital strategy which is communicated among the workforce.[320] On the other hand, there are companies which have a strategy which is not transparent within the company[321] and there is also one company which claims not to have a digital strategy at all.[322] Surprisingly, the two overall leading companies as well as the company which is allocated at the last position have both a clear formulated and broadly communicated strategy.

In addition, the interviews with representatives of the companies were also examined regarding a digital culture within the company. First of all, the digital culture is proactively supported by a lot of effort from the top, operationalized by c-level executives. One company highlights the fact that a digitalisation or the digital transformation is already

[319] See Interview 1, Appendix D1, l. 526; See Interview 4, Appendix D4, ll. 439-445; See Interview 6, Appendix D6, ll. 366-70.
[320] See Interview 1, Appendix D1, ll. 24-34; See Interview 4, Appendix D4, ll. 20-34; See Interview 5, Appendix D5, ll. 14-36.
[321] See Interview 2, Appendix D2, ll. 21-24; See Interview 7, Appendix D7, ll. 31-51.
[322] See Interview 6, Appendix D6, ll. 21-27.

implemented within the DNA of the employees[323] whereas another representative of a company stresses the importance of digitalisation during annual meetings.[324] Except for one company, all other participants of the study which have mentioned a proactively support of a digital culture classify the approach as a top-down approach initiated by the c-level executives. In contrast, another representative also stresses the importance of a top-down approach. However, he rather recognises a Bottom-Up approach within his company, which is facilitated by a general digital attitude from operational employees.[325]

- Nevertheless, a clearly formulated and communicated strategy in combination with a proactively supported digital culture within the company seems to be the leading approach among most companies. This fact can particularly be asserted among the leading companies based on the qualitative capability assessment.

The next component of the organisational design is classified as "structure" and refers to the allocation of digital tasks within the organisation. Special emphasis is given to the structure of digital tasks within the organisation.

Taking a closer look at the ownership of digital tasks, one company allocates digital tasks around the digital transformation process at the head of digital. Furthermore, the tasks are delegated down the line on project basis to several functional departments e.g. customer service, sales or marketing.[326] Another company highlights the fact of a tight cooperation between the CEO and the COO to create a digital strategy and to be responsible for digitalisation of the company. Again, this company delegates the responsibility down the line towards the commercial department which includes marketing and sales.[327] Apart from that, one representative of a case company explains that there is a strong linkage between the mother company and its national subsidiaries. The Chief Operations Director from the mother company provides some guidelines for the national management who owns digital tasks. Consequently, the national owner has the authority for creating the digital strategy based on these guidelines.[328]

- Noticeable among all case companies is the fact that the ownership of digital tasks is not allocated within the management executive boards, but instead within the

[323] See Interview 1, Appendix D1, ll. 322-329.
[324] See Interview 4, Appendix D4, ll. 20-34.
[325] See Interview 5, Appendix D5, ll. 441-483.
[326] See Interview 2, Appendix D2, ll. 44-48.
[327] See Interview 4, Appendix D4, ll. 38-41.
[328] See Interview 5, Appendix D5, ll. 38-41.

company´s 2nd or 3rd hierarchical level e.g. in the marketing or other departments. Therefore, digital topics might not be represented in steering boards to the same extend as with a concrete Chief Digital Officer who is integrated within such a committee.

A striking similarity regarding the structure can be seen in the operative execution of digital tasks. Among all case companies there is a clear separation between the business-demands in the Front-End of IT systems and the technological execution of the Front-End and the Back End. The business-demands are allocated to the full extend in several digital related departments whereas the IT department runs the technological execution.[329] There are some exceptions in case of IT-systems which are outsourced via a cloud based system. Furthermore, the execution of the digital platforms and systems is not located within the own IT department but instead at an outsourced service provider.[330]

- Consequently, a clear separation between business and IT regarding designing and technical execution seems to be the leading approach among the participants at the moment.

Another significant similarity among the case companies highlights the fact that there are often two analytics teams within the case companies. On the hand, there is a classical analytics team which is located near the IT or Marketing department with direct access to the Data Warehouse. This team is responsible for classical customer data analytics based on transactional data within the CRM system. On the other hand, there are special digital analytics teams which employ On-site web analytics based on new customers.[331] Although those separations of digital and classical analytics are performed across all cases, there are still different approaches to foster an interdepartmental exchange of information and data. In fact, one company highlights the aspect that it works with interdisciplinary teams on a project basis where digital and classical analysts work together.[332] Another approach which has been mentioned by some participants is a general collaboration between both teams.[333]

[329] See Interview 1, Appendix D1, ll. 89-98; See Interview 3, Appendix D3, ll. 4-5; See Interview 4, Appendix D4, ll. 55-70; Interview 5, Appendix D5, ll. 96-99; See Interview 6, Appendix D6, ll. 54-78.
[330] See Interview 3, Appendix D3, ll. 39-45.
[331] See Interview 1, Appendix D1, ll. 105-136; See Interview 3, Appendix D3, ll. 70-113; See Interview 4, Appendix D4, ll. 75-84; Interview 5, Appendix D5, ll. 110-141; See Interview 6, Appendix D6, ll. 83-93; See Interview 7, Appendix D7, ll. 101-115.
[332] See Interview 1, Appendix D1, ll. 131-136.
[333] See Interview 3, Appendix D3, ll. 70-84; See Interview 6, Appendix D6, ll. 83-93.

- Currently, the existence of two teams regarding analytics seems to be the common approach among the case companies. Even though some leading companies have already realised the need for a better integration or convergence of both teams in order to benefit from an integrated analysis.[334]

Due to the fact that digital tasks are done by departments which are not characterized by a significant number of employees many participants perform an orchestration of external service provider regarding operative tasks of digital channels (30% internal and 70% external).[335] Particularly creative parts like visual design and communication are being outsourced by case companies to marketing and PR-agencies.[336] In contrast, there is one company which can be assigned to the leading group of leveraging capabilities preferring having internal resources instead of outsourcing. It is argued that some parts need to be outsourced due to capacity problems but the number of projects being outsourced is planned to be decreased. This is also supported by another company which still allocates digital tasks to external partners but wants to decrease the level of outsourcing in the future. [337]

- To sum up, mainly creative digital parts are not seen as core competencies of the participating companies. Therefore, outsourcing is currently executed to a great extend regarding digital tasks but there is a trend towards internal execution which might indicate the increasing importance of digital tasks within the company.

In addition to the structural allocation of digital tasks and an overall digital strategy, the next component of an organisational design deals with processes and governances among the case companies. Especially organisational structures and information exchange are examined.

Except for two companies, all participants emphasised the fact that digital tasks and traditional tasks are integrated within the company with the help of cross functional integration. This integration is applied for instance with a Co-Location on a project basis. During a certain project which requires information from traditional as well as digital

[334] See Interview 1, Appendix D1, ll. 114-122.
[335] See Interview 4, Appendix D4, ll. 88-93; See Interview 6, Appendix D6, ll. 97-102; See Interview 7, Appendix D7, ll. 119-135.
[336] See Interview 1, Appendix D1, ll. 158-159.
[337] See Interview 5, Appendix D5, ll. 145-152; See Interview 3, Appendix D3, ll. 155-170.

experts, all project members work together in one big office.[338] Other approaches to foster cross functional integration are consistent interdisciplinary boards and weekly directional jour fixes.[339] Moreover, near flooring of different departments has been mentioned as well as a cross functional tool.[340] In contrast to that, there are two companies which do not show any organisational structures supporting a cross functional integration of digital tasks.[341]

- Consequently, the majority of the participants, which also include the leading companies according to the qualitative capability assessment, have created structures and formalities similar to a matrix structure in order to foster the integration of traditional and digital parts of the company.

In addition to the organisational structure, a cross functional integration can also happen via a structured and constructive approach of information exchange. The level of information exchanges differs between the companies. There are simple meetings[342] and short information lines caused by low hierarchies[343] up to constructive approaches in terms of integrating knowledge management systems and special Apps for employees to foster information exchange.[344] Companies which perform a constructive approach including knowledge management systems have been classified as leading performer regarding leveraging digital technology.[345]

- In order to foster the integration of traditional parts of the company with departments responsible for digital tasks and to improve the information exchange, a structured and constructive approach consisting of knowledge management systems can be named to be suitable.

As next component of an organisational design, metrics and rewards have been analysed among the case companies. The way of setting measurable objectives, which are broken down to operational units based on digital topics, can be classified into two approaches being executed among the participants. The first approach contains objectives regarding digital performances, which are clearly defined as well as broken down and communicated

[338] See Interview 3, Appendix D3, ll. 182-185; See Interview 1, Appendix D1, ll. 196-199.
[339] See Interview 1, Appendix D1, ll. 186-188.
[340] See Interview 4, Appendix D4, ll. 126-129.
[341] See Interview 6, Appendix D6, ll. 124-125; See Interview 7, Appendix D7, ll. 141-146.
[342] See Interview 7, Appendix D7, ll. 151-161.
[343] See Interview 4, Appendix D4, ll. 148-156.
[344] See Interview 1, Appendix D1, ll. 206-226; See Interview 5, Appendix D5, ll. 225-256.
[345] See chapter 7.3

to involved functions and measured. However, there are no cross functional or interdepartmental objectives.[346] The second approach mirrors the first one but includes objectives across channels and departments. [347] On the one hand, metrics and objectives are service related as a customer effort score, customer satisfaction rate, a self-service share or a workload equivalent. The workload equivalent implies the time and effort which would have been needed if service related problems had not been solved via digital channels. On the other hand, there are sales related objectives which have been named like classical online shares. These shares can be divided into service related and sales related aspects.[348] Interestingly, the fact that there are often discrepancies regarding service and sales shares have been claimed as well as the threat of not having cross-channel objectives which could lead to cannibalisation by some participants.[349]

- Consequently, digital metrics have been found their way into the organisations and are getting higher attention. Moreover, the importance of cross-departmental and cross-channel objectives has been realized by many companies but there still seem to be challenges for not leading companies.

The last aspect of the organisational design which has been examined by conducting qualitative interviews refers to the component of "people". In fact, this component involves aspects of talent enablement and recruiting.

First of all, there is no structured approach to recruit digital talents with a certain set of skills or a digital mind-set. The only approach which has been mentioned was being active in university marketing, but there was no special emphasis on digital.[350] In general, recruiting happens based on the required position and on an unstructured approach often in form of leveraging personal networks.[351] With regard to talent enablement, significant differences have been identified. One approach consist of an event which happens twice a year in order to create an awareness of the customer journey among the employees. However, the representative of the company has not mentioned any kind of other trainings

[346] See Interview 3, Appendix D3, ll. 257-277; See Interview 4, Appendix D, ll. 180-208; See Interview 6, Appendix D6, ll. 166-180.
[347] See Interview 1, Appendix D1, ll. 264-303; See Interview 5, Appendix D5, ll. 312-314; See Interview 7, Appendix D7, ll. 170-192.
[348] See Interview 1, Appendix D1, ll. 264-281; See Interview 2, Appendix D2, ll. 183-204; See Interview 4, Appendix D4, ll. 180-199.
[349] See Interview 3, Appendix D3, ll. 257-277; See Interview 5, Appendix D5, ll. 312-376.
[350] See Interview 1, Appendix D1, ll. 316-319.
[351] See Interview 2, Appendix D2, ll. 223-229; See Interview 4, Appendix D, ll. 219-221; See Interview 5, Appendix D5, ll. 385-418; See Interview 6, Appendix D6, ll. 188-197; See Interview 7, Appendix D7, ll. 214-225.

for its staff.[352] Another approach includes a structured talent enablement and training regarding digital topics based on the relevance for their position.[353] Apart from that, there is one approach left which is mainly conducted by leading companies according to the qualitative capability assessment. This approach includes a structured and constructive way of digital trainings, which fosters the digital experience on the one hand and a digital mind-set on the other hand.[354]

- Consequently, in order to train its staff and to create a digital mind-set, leading companies make use of a structured approach, including regular trainings and programmes to foster the digitalisation. Nevertheless, with regard to the recruitment process there seems to be no special approach which might indicate impact influences of a digital culture.

7.5 Comparison of the theoretical and empirical analysis:

The literature review about the organisational design has developed several suggestions how companies should design their organisation to be digitally successful. The cross-case analysis of the case companies regarding the digital organisational design has been based on the qualitative capability assessment. This assessment has identified case companies which best leverage digital technologies alongside the customer life cycle in order to improve the customer interaction. Therefore, the empirical analysis has investigated current approaches how the companies, which have been classified as leading companies, design their digital organisation in comparison to not leading companies. The following table compares findings from the literature review and the empirical analysis:

Star-Model	Suggested Criteria for Digital Success based on the Literature Review	Suggested Criteria for Digital Success based on the Empirical Study
Strategy	• strong leadership from the top • management attention for digital technologies • dynamic capabilities of sensing[355]	• formulated and communicated digital strategy • proactively supported digital culture via Top-Down or Bottom-Up
Structure	• various forms are possible • diversity of business portfolio is dependent on level of centralisation • strong functional leadership is required • high degree of delegation enables better customer interaction[356]	• ownership of digital tasks is often linked to C-level executives of different functional tasks (no digital function) • clear separation between business and IT regarding designing and technical (decentralised task analytical task allocation)

[352] See Interview 4, Appendix D4, ll. 227-248.
[353] See Interview 2, Appendix D2, ll. 239-246; See Interview 6, Appendix D6, ll. 201-206.
[354] See Interview 1, Appendix D1, ll. 336-353; See Interview 5, Appendix D5, ll. 422-435.
[355] See Leih et al. (2014), p. 3-4.

		• outsourcing is executed to a great extend regarding digital tasks but there is a trend towards internal execution.
Processes	• importance of knowledge linking across departments • community of practice or matrix reporting must ensure that the right people get the right information and that the right people have the right conversation • functional integration[357] • preventing different perceptions and accountabilities between departments[358]	• structures and formalities similar to a matrix structure to foster the cross functional integration of traditional and digital parts of the company vs. no special organisational structures • high level of knowledge linking via knowledge management systems
Metrics	• setting targets which enable an easy way of collaboration and alignments across various departments • good collaboration is essential to digital Success	• digital metrics have been found their way into the organisations and there are first approaches of alignments across various departments
People	• a new kind of workforce is required having deep knowledge of marketing and technology • attracting, developing and rewarding people that have a digital DNA • avoiding the not-invented here-syndrome and a general organisational inertia[359]	• structured approach, including regular trainings and programmes to foster the digitalisation • no special approach which might indicate impact influences of a digital culture regarding recruiting

Table 3: Comparison of organisational design criteria for digital success between theory and practice

Source: Own creation based on Greenberg and Kates (2014) as well as further literature and the results of the empirical analysis

The table indicates many overlaps between theory and practice. For instance, a strong leadership from the top as well as management attention for digital technology concerning strategical aspects is recommended according to the theory. Similarly, the conducted case study has also shown that a strong top-down approach supports the spread of a digital culture within a company. This top-down approach implies that there is a strong involvement of the top-management as well as the existence of a formulated and communicated strategy. Additionally, both theory and the results from the interviews identified a matrix structure as leading approach to "ensure that the right people are having the right conversation."[360]

[356] See Leih et al. (2014), p. 3-4.
[357] See Leih et al. (2014), p. 3-4.
[358] See Leeflang et al. (2014), p. 9; See Kennedy (2006), p. 66.
[359] See Kathoefer and Leker (2012), p. 660; See Witteloostuijn (1998), p. 516-517.
[360] Greenberg and Kates (2014), p. 308.

Consequently, table 5 illustrates that there is a high conformity between the suggested organisational design criteria for digital success which derives from both the theoretical and empirical results.

In addition, the empirical analysis has identified the fact that the digital tasks within the company are not allocated within the top management. Due to this, there is no real representation of digital aspects within the executive board meetings. In contrast to this empirical finding, the theory suggests to have an own functional leader for digital tasks. Thus, this theoretical suggestion cannot be confirmed by the study. Nevertheless, the data do not provide sufficient information to conclude whether having no own digital leader would lead to benefits for the organisation.

8 Conclusion and Future Research & Limitations

8.1 Conclusion & Recommendations: Leveraging digital capabilities by designing the organisation with a strong focus on a digital, -strategy, -structure, -knowledge-linking, -metrics & rewards and a digital culture as well as expertise among the workforce

Having conducted a detailed theoretical analysis as well as a qualitative empirical analysis, this chapter will provide the answer to the central research question "*How should telecommunication service providers adjust their business model to successfully leverage new digital technologies to improve customer interaction*?"

First of all, to find a starting point for a business model innovation the literature and particularly the business model canvas[361] has identified the organisational design as a suitable component. The organisational design might foster the success of leveraging digital technology for an improvement of a Telco´s interaction with its customers.[362]
Consequently, seven representatives of companies which operate in the telecommunication industry of Europe have been interviewed in order to create case studies and a cross-case analysis. On the one hand, the case studies revealed significant information about the ability to leverage digital technologies in order to improve the customer interaction, which has been operationalized through the customer lifetime value and the customer life cycle. On the other hand, the case studies have gained significant insights of the companies´

[361] See chapter 4.3.2
[362] See Chesbrough (2010), p. 362; See Leih et al. (2014), p. 12; See Leeflang et al. (2014), p. 2; See Greenberg and Kates (2014), p. 286.

underlying digital organisational designs. Therefore, success factors and trends have been identified. As the existence of ordinary capabilities in form of solely owning digital technologies is no guaranty for success to improve the customer interaction, dynamic capabilities are needed.[363] Therefore, the interviews revealed striking differences in the way Telcos leverage digital technologies. These differences might be influenced by the way the organisation is designed regarding digital topics. On the one hand the following recommendations result from theoretical suggestions how to design an organisation in the digital transformation. On the other hand, the recommendations are based on the capabilities identified as being in use at the participating companies which seem to have the ordinary and dynamic capabilities to successfully leverage digital technology in order to improve the customer interaction. The following six points show general advices how Telcos should adjust their business model to successfully leverage new digital technologies in order to improve customer interaction. Figure 6 illustrates a more concrete recommendation for practical implementations.

1) On the one hand, implementing a strong digital culture supported by the top management. On the other hand, maintaining a digital culture within the company with a clear digital strategy, which is transparently communicated to the last employee in line.
2) Using structured mechanisms e.g. matrix structures or Co-Locations to improve the exchange of information from traditional and digital parts of the organisation.
3) Improvement of knowledge linking via digital tools like knowledge management systems or other software based tools, which helps providing the information and knowledge to the appropriate positions within the organisation.
4) Using digital metrics particularly across the company´s departments to support an overall digital mentality and place those metrics within incentive programmes for the employees.
5) Providing structured and constructive trainings regarding digital topics across departments to foster the digital transformation and to avoid a not-invented-here syndrome as well as organisational inertia.
6) Attract and hire people with a digital skill-set having deep knowledge in marketing and digital technology to prevent artificial boarders between digital and traditional departments.

Outsourcing does not represent a dominant approach within the participating companies. It is therefore not formulated as a recommendation. Often caused by capacity problems, the

[363] See Chesbrough and Rosenbloom (2002), p. 530; See Chesbrough (2010), p. 354: See Bharadwaj et al. (2013), p. 472.

companies do outsource digital tasks to external agencies, but the data does not allow for recommendations with regard to these aspects.

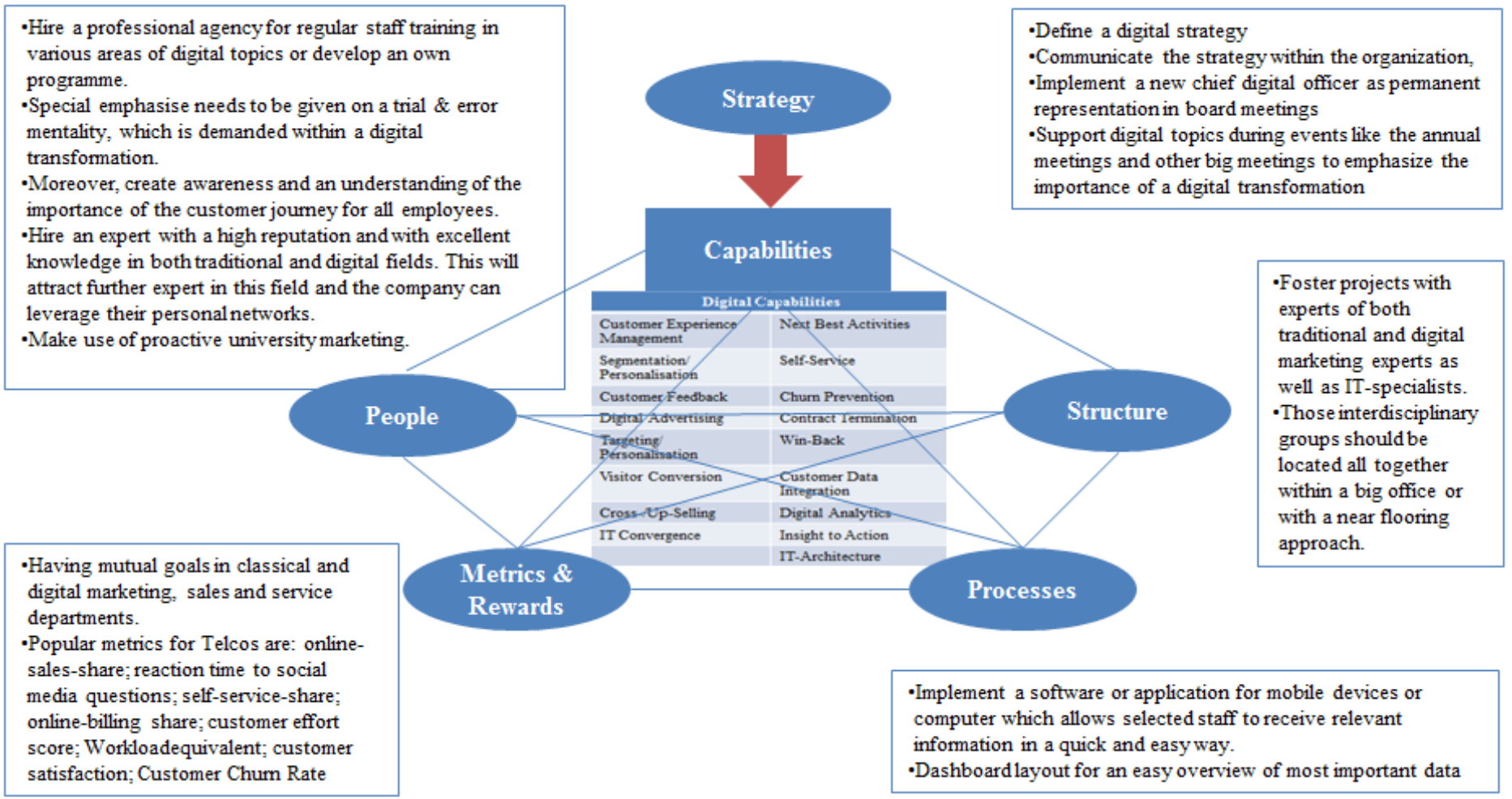

Figure 4: Recommendations to answer the research question

Source: Own creation based on the Star-Model by Jay Galbraith (2011) p. 1

8.2 Limitations and Further Research

In addition to the provided answer to the research question this study has created a very detailed picture of the current situation of the case companies which are able to leverage digital technology and its underlying organisational design. Because of this, the output provides useful information which can be leveraged by the management consulting company the researcher has been cooperated with. Moreover, also academics might find this research very useful as the results of the empirical analysis have confirmed theoretical success factors for designing an organisation with regard to a digital transformation.

Nevertheless, this study has a qualitative research strategy and aims at generating a bigger picture of a complex topic exploring a real life problem of digital capabilities and digital organisational designs of six companies. Therefore, this study and the results do not allow for generalizability and grant no wide-ranging external validity.[364] To do so, further research is needed. One approach could be to conduct a similar research with a significant larger sample size including cases around the world in order to investigate general differences between national or regional organisational cultures. Moreover, the interviews express rather subjective valuations of the interviewees of the topics involved. Therefore, a suitable way of proving a comparison of the different cases especially with a focus on the leverage of digital capabilities, a comparison based on numerical values e.g. digital key performance indicators can be a starting point for future research in this area.

In conclusion, not only a qualitative research design, but also a mixed method approach including quantitative measures regarding digital performances would gain more significant results which might allow for creating correlations and causal relationships.

Finally, the study has revealed interesting insights regarding digital capabilities which have solely been used to provide passive information to answer the research question. Because of that, this could be another starting point for another future research. In fact, major challenges have been examined especially regarding a convergence of the IT-architecture, which can be stated as a prerequisite for making use of Big Data technologies and Analytics. Finding a suitable way in order to act more agile in the fast moving world is one of the greatest opportunities for the near future across the cases.

[364] See Bryman and Bell (2011), p. 410-411.

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10 Appendix

Appendix A: The former structure of the telecommunication industry is a result of a prior state owned business sector in Germany: From state monopoly to liberalisation

In order to understand the situation of the telecommunication industry in the federal Republic of Germany its historical development since the late 80´s has to be examined. This chapter will contribute to the former transition from state owned monopoly into a privatized competitive market of the telecommunication industry.

Because of article 87 of the Constitutional Law and the "Fernmeldegesetz" from 1929, the supply of inter alia the post service, railway and telecommunication has been exclusively assigned to the state owned institution Deutsche Bundespost[365][366]. Consequently, there has been a monopoly regarding the telecommunication industry in the Federal Republic of Germany. In those times, there was a common understanding of monopoly being the best and most effective market situation for the utility industry, because of e.g. economies of scale. [367] Furthermore, the so called "Fernmeldegesetz" enabled the administration to exclusively provide telecommunication installations[368]. Therefore, the market of telecommunication was dominated by a subsidiary-company of Deutsche Bundespost, namely Deutsche Telekom. This publicly owned company was responsible for providing local fixed line phone service, mobile telephone, internet and cable markets during the 1980s and 1990s[369].

Due to the fact, that Germany has been one of the least liberal Western European countries regarding the telecommunications industry[370] several decisive reasons caused the beginning of the development towards privatizing and liberalisation of the market.

Vogelsang (2003) explains that in general changes of three different aspects influenced the transition from monopoly to a competitive market. Those three changes are technical changes in the industry, e.g. new technologies like cellular technology, fibre optics and computer technology, demand changes like expansion and diversification and dependency

[365] See Vogelsang (2003), p. 319.
[366] See Schmidt (1991), p. 210.
[367] See Bartle (2002), p. 12.
[368] See Schmidt (1991), p. 211.
[369] See Doellgast (2009), p. 4.
[370] See Schmidt (1991), p. 209.

of other industries on telecommunication and changes in governance technologies[371]. Furthermore, he concludes that "all these developments called for competition as the preferred mode of market organisation, because it presumably best copes with technical and demand changes and because those changes themselves destroyed natural monopoly properties"[372]. In addition, Kopetzky (2001) sees new upcoming interdependencies between different industry and the telecommunication industry, caused by computerisation of many national and international companies as a driving force for a change of the market situation[373].

Complementary to the demand by economic forces for a transition of the telecommunication industry, the European Commission claimed liberalisation especially for the telecommunication industry until 1993 for their member states[374]. Because of feasibility issues of the ratification deadline, all major components for a transformation to a liberal and privatised market have been agreed on to be realized by the member states by 1998[375].

This claim of the European Commission removes the last concerns and barriers for the change from the monopoly to a competitive market in Germany. In order to adjust the constitutional law article 87, a 2/3 majority during a vote in the German Bundestag would have been needed[376]. Because of this and to find a consensus in Germany three steps were needed to achieve full industry change from monopoly to liberalisation. First of all Postreform I was conducted in 1989. This law separated the Deutsche Bundespost into their three major components, the postal service, the post bank and the telecommunication service. This reform was followed by the needed constitutional change in form of Postreform II in 1995[377]. It was the starting point for privatising as it allows the liberalisation of state owned companies in the telecommunication and postal service. As a consequence the fulfilment of the industry reform can be regarded as being completed in 1998. According to Vogelsang (2003) the reform can be measured by the variables of privatisation, deregulation and liberalisation. The first variable contains the degree of state ownership, the second variable the degree of state supervision and the third variable the

[371] See Vogelsang (2003), p. 314.
[372] Vogelsang (2003), p. 314.
[373] See Kopetzky (2001), p. 303-304.
[374] See Kopetzky (2001), p. 307.
[375] See Kopetzky (2001), p. 307.
[376] See Schmidt (1991), p. 210.
[377] See Vogelsang (2003), p. 318.

amount of competition[378]. Finally in 1998, Deutsche Telekom AG was privatized as a joint stock-company[379], an EC liberalisation package concerning national regulations was introduced and the voice markets had been opened[380].

In conclusion, it took Germany more than one decade to first separate the Deutsche Bundespost into their three major elements and furthermore establish those firms as privatized companies and finally open a competitive liberalized market.

Appendix B: Tables and Figures

Appendix B1: Business Model Canvas

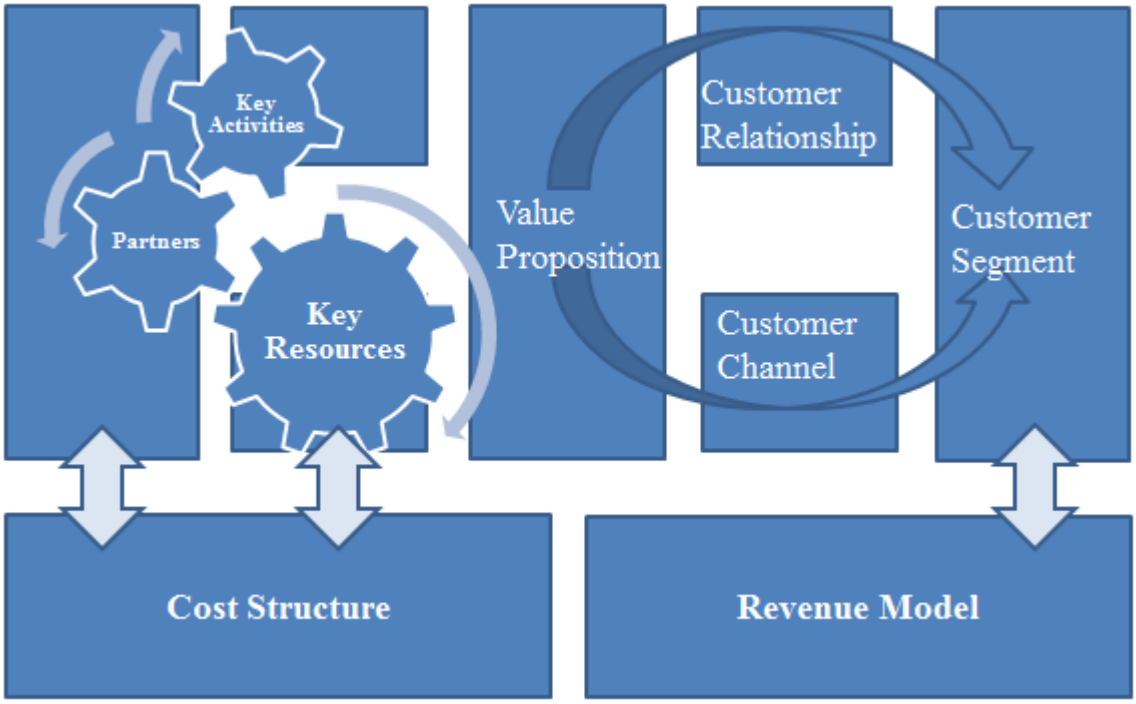

Figure 5: Business Model Canvas

Source: Own creation based on Osterwalder (2004), p. 43 Osterwalder et al. (2005), p. 10;

[378] See Vogelsang (2003), p. 313.
[379] See Doellgast (2009), p. 4.
[380] See Vogelsang (2003), p. 318.

Appendix B2: Digital Capabilities (confidential)

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Table 4: Definitions of Digital Capabilities

Source: Own creation based on various literature and a validation of an expert of a leading international consulting firm

Appendix B3: Qualitative Capability Performance Rank Order (confidential)

Table 5: Qualitative Capability Performance Rank Order

Source: Own creation based a Cross-Case-Analysis

Appendix C: Study Preparation

Appendix C1: Interview guide with motivations from literature (confidential)

Appendix C2: Coding System

Category	1st Sub-Category	2nd Sub-Category	Coding Rules Categorize all text passages that refer to…	Example German (confidential)	English Translation (confidential)
Organisational Design	Strategy	Strategy/ Mission/ Vision	...strategic Decisions, Roadmaps, Mission statements regarding the digital Transformation of the Organisation		
	Structure	Digital Ownership	...structural decision regarding the ownership of the digital strategy or workflow		
		Digital Execution	…operational responsibility of Digital		
		Analytics	...operational responsibility of analytical tools.		
		Outsourcing	...activities which are executed by external partners		

	Processes & Governance	Crossfunctional Integration	...any kind of activities which provide cross functional structures.		
		Information Exchange	...activities to actively support Information/Knowledge Exchange.		
		Demand Management	...the demand management, release cycle of the IT-department etc.		
	Metrics & Rewards		...objective agreements and measurable goals for the organisation, departments or employees		
	People	Talent Acquisition	...structural approach to acquire talents with a digital mind-set		
		Talent Enablement	...structural approach to train existing staff regarding Digital		
		Digital Culture	...activities which support the organisational culture and gives evidence of a currently existing digital culture		

Category	1st Sub-Category	2nd Sub-Category	Coding Rules Categorize all text passages that refer to…	Example German (confidential)	English Translation (confidential)
Capabilities	Customer Acquisition	Digital Advertising	…activities which leads customers to the digital touchpoints		
		Visitor Conversion	…conversion improving activities		
	Customer Development	Cross-and Upselling	…to activities or capabilities which support Cross and Upselling activities in any form		
		Next Best Activity/Offer	…the ability to offer or create Next Best Activities based on analytics		
		Customer Self-Service	…any kind of digital customer self service		
	Customer Retention	Churn Prevention	…any activity, especially in a digital way, which highlights preventive measures to avoid customers from terminating their contract		
		Contract Termination/ Extension	…digital enablement of contract termination or extension		
		Win Back	…any activities, especially in a digital way, which are aimed at winning back customers after termination		

	Data & Insights	Customer Data Integration	…the integration of all kind of customer data from digital and traditional channel		
		Digital Analytics	…the collection and analysis capability of customer data from digital channel		
		Insights to Action	…the ability to generate valuable insights from digital channel		
	Technology Platform	IT Convergence	…any capabilities which enables a convergence of IT-Systems (e.g. Integration of fixed line and mobile in one IT system)		
		Architecture	…refer to Multispeed, Two Speed, Three Speed		
	Customer Experience/ Segmentation	Customer Experience Management	…activities to improve the customer experience		
		Segmentation/ Personalisation	…activities which enable personalisation or refer to segmentation and personalisation capabilities		
		Customer Feedback	…the handling of customer feedback data		

Appendix D: Transcribed Interviews (confidential)

Appendix E: In Case Analysis and Cross Case Analysis (confidential)

Appendix E1: Overview of the operationalisation of different level for each capability (confidential)

Appendix E2: Cross Case Evaluation for each case company based on the different levels (confidential)

Appendix E3: Cross-case analysis overview of the organisational design characteristics of all case companies (confidential)