BENCHMARKING DIGITAL TECHNOLOGY ADOPTION IN THE UTILITY RETAIL INDUSTRY USING CAPABILITIES

Graduation Thesis Master Management of Technology

Committee

Prof. Dr. Ir. Marijn Janssen
dr. Sander van Splunter
dr. Ir. Mark (G.A.) de Reuver

Meershoek, Kjell
k.p.h.meershoek@student.tudelft.nl
Kjell.meershoek@gmail.com
+31 6 141 000 68

Abstract

This MSc graduation thesis focuses on benchmarking digital technology adoption within the utility retail industry in The Netherlands based on publicly available information in the data collection phase in order to contribute to the current literature on benchmarking methods and to fulfill a pragmatic research objective from Accenture.

The rise of mobile, social, cloud, internet of things, analytics/big data, and other digital technologies have increased the influence of digital technologies on businesses. Due to digital technologies traditional value chains were digitized, opening up new opportunities for business models, cost reduction and revenue streams. Whereas several researchers have studied effects of digital technologies on company performance, this study will focus on digital technology adoption within companies, which comes prior to the company's performance. In order to do so, one needs to define and evaluate the possibilities for implementing digital technologies within companies.

This graduation thesis was executed within Accenture Technology Strategy and Accenture sees that digital technologies have a disruptive impact on their clients. For example AirBnB and Uber showed the disruptive possibilities of digital technology adoption on existing industries. Although Accenture expects similar disruption within the electricity utility retail industry due to digital technologies, knowledge on the current status and the possible effects of digital technologies within the utility retail industry in The Netherlands is not readily available. Therefore, the desired methodology for analyzing the current status and the possible effects of digital technologies within the utility retail industry in The Netherlands and the intercompany differences was to benchmark the companies, since benchmarking has proven to be an important business tool for continuous improvement.

Benchmarking has been subject to many scientific studies but, whereas the de facto standard of data collection methodology in benchmarking are surveys and interviews, this data collection methodology was not available because of a lack of cooperation from the industry. Since a scientific benchmark model that has a data collection method not based on interviews and/or surveys was not found, the main objective of this graduation thesis was to benchmark digital technology adoption within the utility retail industry in The Netherlands on publicly available information in the data collection phase. This research therefore aimed to fulfill Accenture's research problem, contributes to the existing scientific benchmark literature and possibly indicates a new data collection method for benchmark studies.

The degree of digital technology adoption cannot be benchmarked directly, however one can determine digital technology adoption via defining a list of capabilities. This study used Forrester's Research definition of a capability as: an organization's capacity to successfully perform a business activity. The derived list of capabilities contained capabilities wherein digital technologies were used to develop the capability or wherein digital technologies were used in the capability.

An initial set of key capabilities was derived based on scientific literature, business literature, and desk research. This initial set was subsequently iteratively improved based on five semi-structured interviews with Accenture domain experts to derive a final set of 14 capabilities and 87 supporting capabilities. Afterwards, for every supporting capability one question was constructed including

scoring requirements and explanations, to increase the reproducibility, to assess the capability. In the assessment, seven electricity utility retail companies were benchmarked on their digital technology adoption, over three domains (Sales, Service, Strategy). A normative scoring mechanism, including explanation, was used. In this manner, this study could evaluate the digital technology adoption through the assessment of the derived capabilities.

Whereas the results of the benchmark gave insights in the degree of digital technology adoption of the electricity utility retail industry as a whole and the benchmarked companies in specific, the usefulness of the constructed benchmark was evaluated using Huppler's (2009) five main aspects of a good benchmark (Relevant, Repeatable, Fair, Verifiable, and Economic Feasible). Even though these aspects of a good benchmark were largely met, from a scientific perspective this research is not entirely reproducible and also not all research design choices were not fully argued for. This limited the scientific contributions of this research. Further research will be necessary to validate the results and methods. However interviews with Accenture experts indicated relevant business contributions and their research objective was met. To conclude, this thesis has demonstrated a benchmark model to benchmark digital technology adoption in the electricity utility retail industry, whilst using solely public information in the data collection phase, can be constructed. However, validation of the benchmark model will both increase the scientific contributions and increase the practical relevance.

Table of Contents

List of Figures

List of Tables

1. Introduction

Over the last decade, the rise of mobile, social, cloud, internet of things, analytics/big data, and other digital technologies has increased the influence of digital technologies on businesses (Thomas, 2014). As stressed by Hansen and Sia (2015), many organizations face challenges to successfully service digital-savvy customers. Traditional value chains were digitized, opening up new opportunities for business models, cost reduction and revenue streams (Thomas, 2014). Moreover, according Kharbande (1995) benchmarking is an important tool for organizations to understand *how well* and *how effectively* they meet the requirements from a customer perspective. This thesis focuses on benchmarking the adoption of digital technologies, from a customer perspective, in the electrical utility retail industry in The Netherlands. Benchmarking is the practice of identifying best practices and comparing one's company to other companies. It has proven itself to be a tool for continuous improvement (Anand & Kodali, 2008).

The trend that facilities, processes, people, and teams are becoming increasingly connected is called the Digital Era. (Frandina, Bjacek, & Walczyk, 2015) Additionally, this digital interconnectedness leads to the opening of existing technological regimes, new business models, cost reduction, and new revenue opportunities, which in literature is referred to as the Digital Economy. (Carlsson & Bo, 2004) This interconnectedness can be achieved via a wide range of programs, technologies, and behavioral adaptions. In addition, with the entrance of digital technologies like Social, Mobile, Analytics/Big Data, Cloud, and the Internet of Things, in short SMACI, the scientific community foresees disruptive change in the industry via digital technologies. (Baker, 2015; Carlsson & Bo, 2004; Lunardi, Becker, Maçada, & Dolci, 2014; Thomas, 2014) For these about-to-happen disruptive changes, Lucas Jr and Goh (2009) illustrated the possible consequences for companies that are not adapting or are not willing to adapt to new situations as they described via in the case of Kodak and the entrée of the digital camera.

Where new digital technologies and innovative companies have disrupted industries within the Business-to-Consumer markets, of which well-known examples are Tesla, Coolblue, Uber, BlaBlaCar, and AirBnB (Gartner, 2014; IDC, 2016).

Benchmarking is an important tool for continuous improvement within large organizations and it therefore is important for innovation (Dattakumar & Jagadeesh, 2003). According to McNair and Leibfried (1992), benchmarking as a practice has begun in the late 1970s by the company Xerox. Xerox was at the time not in its best shape and tried to become competitive again. To do so they decided to compare themselves with their competitors. According to McNair and Leibfried (1992) benchmarking *"provides the stones for building a path toward competitive excellence and long run success".* Benchmarking is considered to be an important tool for continuous improvement within large organizations and it therefore is important for innovation (Dattakumar & Jagadeesh, 2003). The definition of benchmarking used in this study, and derived in the literature study (Chapter 3.1), is:

"Benchmarking is a process to identify inter and intra industry best practices and quality standards to assess one's company to identify gaps and suggest a course of action to innovate and/or improve its products and services"

Most benchmarks consist, adapted from Jetmarová (2011) and Bhutta and Huq (1999), of five phases which include : 1. Team formation 2. Planning 3. Data collection 4. Analysis 5. Adaptation. However, these five phases can be defined into many steps. To illustrate, the Kodak benchmark model consists of five steps, whereas Xerox' benchmark model follows a ten step procedure (Bhutta & Huq, 1999). In addition, Huppler (2009) identifies five key aspects of a good benchmark, which include; Relevance, Repeatability, Fairness, Verifiability, Economical feasibility. Furthermore, he argues a good benchmark cannot perform outstandingly on all aspects, but a well-retrieved benchmark can only excel on one or two of these aspects, whereas it should perform sufficiently on all other aspects. A quick desk research learned that many benchmark studies used surveys and interviews in their data collection phase**.**

To assess whether different aspects of a company can adopt new digital technologies, one could make use of a capabilities approach (Keller, 2009). By practically constructing the digital capabilities one divides different functions within the company into small assessable blocks. Terminologically, capabilities are closely related to a functional decomposition, but the term capability is widely used within business literature, which does not hold for the scientific literature (Keller, 2009).

To conclude, many different forms of benchmarking exist, which differ amount of steps, purpose, and data collection methods. However, Huppler (2009) defined universal aspects defining a good benchmark. So the benchmark delivered in this MSc research project will be evaluated according to the aspects of Huppler (2009).

1.1 Domain

The electricity utility retail sector is, according IDC (2016), facing a disruptive digital transformation in the coming three years, and the first developments in that direction are already happening: e.g. Smart Grids, Smart Meters, E-vehicles, and Home Automation Systems (IDC, 2016). This makes the electricity utility retail sector interesting as a focus of this study. Moreover, this graduation thesis was executed in collaboration with Accenture Strategy and their interests lie, for the same reason, also on the electricity utility retail industry.

In The Netherlands, the electricity utility retail industry is a former state owned industry. During the 1990's the industry was privatized and companies were forced to split their Supply, Network, and Retail activities. However, as of today, some companies have only split their company legal-wise, whereas, for example, Delta has not even split its business activities into several entities.

Currently, the three large incumbents, Nuon, Eneco, and Essent, still hold over 80% of the market, although this is decreasing year-on-year[1]. currently, Each of these companies have about 2 million customers, the fourth biggest electricity retail company in The Netherlands, De Nederlandse Energie Maatschappij (NLE) has about 800.000 customers.[2] Given the 7.7 million households in The Netherlands, these four companies combined have a market share close to 90%. According to research by the Dutch Authority Consumer & Market, in The Netherlands, the percentage of households that changes their energy provider increases every year. The percentage of households that switched energy provider in 2014 was 13%.[1] In addition, in the same research, the Dutch Authority Consumer & Market concluded that the main driver to switch energy provider is price. Also, the increasing decentralised energy production of photovoltaic panels & wind turbines, combined with a stagnating energy consumption growth pressurize profitability. IDC (2016) states the utility retail industry and the automotive industry are on the edge of disruption, which they expect within the next 2-3 years. The definition IDC uses for disruption is as follows: a digital transformation that alters the current industry not by replacing a 'bottleneck', but by changing how the system operates (IDC, 2016).

The utility industry in The Netherlands holds three major groups, namely: water, natural gas, and electricity. The research within this thesis focusses on electricity. The electricity utility industry itself includes three business areas: Supply, Network, and Retail. Within the electricity utility retail industry, the scope of this study, one can differentiate between Business-to-Business, out of scope, and Business-to-Consumer, in scope. To clarify, the industry scope is graphically depicted in Figure 1.

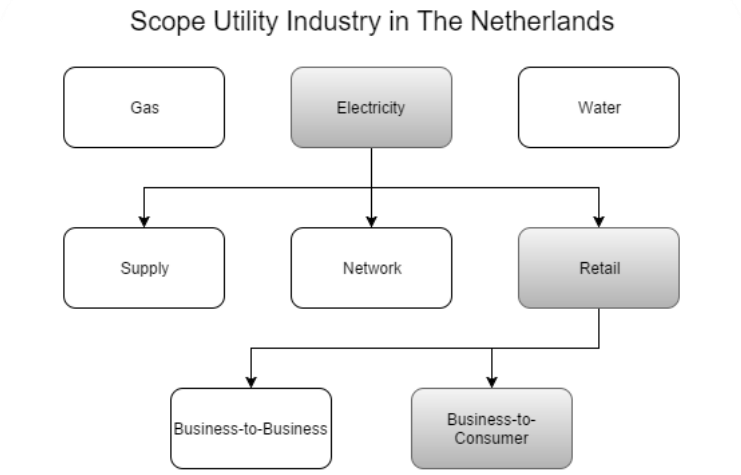


Figure 1 The industry scope of this thesis

Within this scope, this thesis includes companies to cover at least 90% of the Dutch market. In 2015, The Netherlands had about 7.7 million households, so together, the companies

[1] Autoriteit Consument & Markt, https://www.acm.nl/nl/download/publicatie/?id=14218, retrieved: January 7th 2016

[2] De Nederlandse Energie Maatschappij, www.nle.nl, retrieved: January 14th 2016

should at least cover 7 million households. In addition, to capture all market segments, it is preferred to include at least one company of the following types:

- incumbent
- new entrant
- multinational
- green
- budget
- non-profit

1.2 Problem Description

The focus of this research is on the digital technology adoption within the electricity utility retail industry in The Netherlands. In relation to other industries e.g. water utility, the electricity utility retail industry privatised in the business to consumer market, whereas this does not hold for the water utility industry. As introduced, the Dutch electricity utility retail market is pressurized by several trends. Given the disruptive effect of digital technologies on other retail and service industries, the current state of digital technology adoption within the electricity utility retail industry could provide insights in the likelihood of disruption within this industry in The Netherlands.

The problem this thesis tries to assess is dyadic. Beside that this thesis attempts to contribute to the current benchmark literature, it addresses a practical problem, namely the absence of a benchmark of digital technology adoption focusing on the electricity retail industry based on an outside-in approach to increase objectivity and repeatability. By resolving this practical problem, in hindsight, this enables a discussion on contributions to the scientific literature.

1.3 Research Scope

Beside the industry scope discussed in section 1.1, also in terms of research scope and methodology pre-research choices were made.

To start, an earlier graduation research study focusing on the digital maturity of the Dutch insurers within Accenture Strategy learned that the companies involved were reluctant to cooperate and in order to be able to perform a successful benchmark, the research study had to focus their benchmark on public available information in their data collection phase, and they had to focus on sales, service, and strategy functions, also described as customer focused and strategic functions. In order to increase the chances of a successful research that same scope was chosen despite the possible limitations it could result in. These limitations will be part of the discussion chapter.

1.4 Research Objective

The main research objective of this MSc research project is to benchmark companies within the Dutch electricity utility retail industry on digital technology adoption using publicly available information in the data collection phase. This provides insights in the current status of digital technology adoption, in combination with identified best practices from a business perspective, as well as paves the path for a benchmark model wherein the data collection phase does not require surveys or interviews. Since in order to benchmark, first a benchmark model first needs to be chosen and adopted. This research should contribute to the existing benchmark models.

1.5 Research Questions

As discussed in the previous section, the main objective of this research is to benchmark companies on their digital technology adoption within the electricity utility retail industry in The Netherlands. Therefore, this thesis aims to answer the following main research question:

"How can we benchmark digital technology adoption (within the electricity utility retail industry in The Netherlands) using only publicly available information in the data collection phase?"

To resolve this main research question, a set of supporting research questions have been formulated. This will not only provide insights, but also builds the argumentation for answering the main research question. In the following sections, the line of argumentation in this thesis is instantiated in five steps in which each step answers one of the sub-research questions.

The first step towards answering the main research question is to conduct a literature study on different benchmarking models to study which models focus on performance benchmarking, and especially facilitate benchmarking of technology adoption.

> Sub-RQ 1. "*What is benchmarking, and* w*hich benchmark models focus on performance benchmarking and facilitate benchmarking of technology adoption?"*

The result will provide an overview of the benchmark models focusing on performance and facilitating technology adoption. Moreover, the discussion on the existing literature will give more insight in the specific scientific gap this research attempts to contribute to.

Hereafter, the second step consists of the construction of an overview of and insights in customer-focused and strategic digital capabilities from scientific publications.

> Sub-RQ 2. "*What are the, based on scientific publications, customer-focused, and strategic capabilities for which digital technologies can be adopted?"*

The result of the second sub-research question provides an overview of key digital capabilities from a scientific perspective. This not only aids the discussion on the results and its limitations, it also provides food-for-thought on the differences between theoretical and practical views on this matter in combination with the results of the third step.

The third step is the construction of an overview of key customer-focused and strategic digital capabilities from a business perspective, acquired via desk research and expert interviews.

> Sub-RQ 3. "*What are the, based on desk research and expert interviews, customer-focused, and strategic capabilities for which digital technologies can be adopted?"*

The result provides an overview of key digital capabilities from a business perspective. This not only supports the discussion on the results and its limitations, it also provides food-for-thought on the differences between theoretical and practical views on this matter in combination with the second sub-research question.

The fourth step aims to investigate which capabilities are needed to fulfill the customer-focused and strategic capabilities. It will ultimately result in an overview of capabilities and underlying sub-capabilities needed to assess the digital technology adoption in the electricity utility retail industry.

> Sub-RQ 4. "*What are the capabilities and underlying sub-capabilities needed to assess the customer-focused, and strategic capabilities?"*

The result of Sub-RQ 4 is an overview of key capabilities, and it, in combination with accompanying questionnaire, forms the instantiation of the framework within the benchmark.

The fifth step aims to evaluate the framework by executing the benchmark. Subsequently its ability to assess the current state of digital technology adoption within the electricity utility retail industry in general and for companies within the industry in specific is discussed.

> Sub-RQ 5. *"Is the resulting benchmark acceptable and which criteria should be assessed in order to judge the acceptability?"*

The result of this step gives the start of the discussion on the results, as it will indicate the research's value from a scientific publications and from a business perspective based on desk research and expert interviews. Moreover, it will fuel the discussion on limitations and indicate possible recommendations and improvements.

1.6 Thesis Structure

The remainder of this MSc research project is structured in six more chapters, as depicted in Table 1. Chapter 2 describes the methodology, including research design and benchmark methodology. Subsequently, in Chapter 3 the results of the literature studies are synthesized, whereafter in Chapter 4 the framework is constructed. The results of the benchmark are discussed and evaluated in Chapter 5. Lastly, Chapter 6 presents the discussion and conclusions to finalize with suggestions for further research in Chapter 7.

Table 1 Thesis Structure

Chapter	**Content**
2. Methodology	Research Design Benchmark Methodology
3. Literature Study ***Sub-RQ 1 & 2***	Benchmarking of Technology Adoption Key capabilities Technology Adoption Retail Industries
4. Framework Digital Technology Adoption ***Sub-RQ 3 & 4***	Framework Digital Technology Adoption
5. Results ***Sub-RQ 5***	Results Benchmark Digital Technology Adoption Benchmark evaluation
6. Discussion & Conclusion	Discussion benchmark results, methodology & Contributions Conclusion
7. Recommendations	Suggestions for further research

2 Research Methodology

This chapter presents the research methodology. Starting with research design in section 2.1, the general approach for answering the main research question is presented. Subsequently, in section 2.2, the methodology used to construct the framework and to perform the benchmark is described.

2.1 Research Design

This research consists of three main parts: desk research, semi-structured interviews, and qualitative evaluation interviews in combination with a literature discussion to evaluate the results.

Desk Research

In this first part, a literature study will be conducted on the topics; 'Benchmarking of Technology adoption' and 'Key capabilities Digital Technology Adoption'. This provides an overview of the main concepts, ideas, and best practices on these topics, as well as possible limitations, knowledge gaps, and challenges. The results form the basis for the answers to sub-RQ1 and sub-RQ2. In addition, this serves as groundwork for the discussion and, for sub-RQ3 as a start for the construction of the benchmark. Furthermore, the benchmark data collection also will be performed via desk research, which forms the input for the qualitative validation interviews after analysis of the data.

Semi-structured Interviews

The second part, will be used to start a series of interviews with a pre-formulated direction from the findings of the initial desk research. The goal of these interviews is to extent and verify the capabilities & sub-capabilities and discuss the structure of the benchmark. These interviews will be held consecutively, enabling to iteratively improve the benchmark's structure and therewith result in answering Sub-RQ3 and Sub-RQ4. The main reasons a semi-structured interview structure were chosen was to maximally utilize the interviewees' expertise by pre-formulate only a maximum of three open questions, and whilst these maximum three open questions still give direction to the interview to ensure coverage of the entire topic within the limited available time. Additionally, this gives the interviewees a clear idea of the goal of the interview at an early stage.

In the third part, semi structured interviews are used to evaluate the results of the benchmark to assess the perceived business value. The interview results are then used to fuel the discussion on the methodology, the benchmark, and the scientific contributions. This gives an answer on Sub-RQ5.

Research Structure

Figure 1 visualizes how all sub-RQ are related and contribute to the main research question.

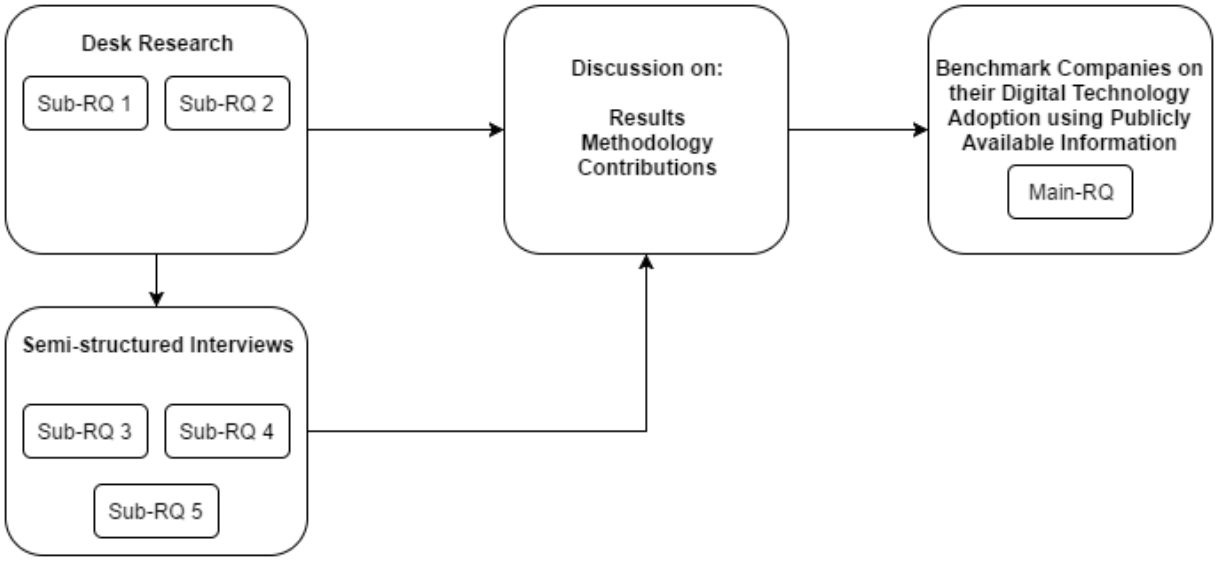


Figure 2 Research Structure

Due to the duration of this MSc research project, desk research in combination with semi-structured interviews are used. Therefore, the rigidness of the desk research, as well as the expert knowledge of the interviewees will largely influence the outcome of the research. Moreover, the willingness and availability to participate of the interviewees is important, since, because of the short duration of the research, there is great importance of the interviews for answering the main research question.

2.2 Benchmark Methodology

As briefly discussed in the introduction, adapted from Jetmarová (2011) and Bhutta and Huq (1999) benchmark models roughly consist of five phases: 1. Team formation 2. Planning, 3. Data Collection, 4. Analysis, and 5. Adaptation. The team formation can be considered a pre-thesis activity, which resulted in this MSc research project. The team formatted consist of the author and the supervisors involved in this MSc research project. The focus of this research is to assess the current state of digital technology adoption in the electrical utility retail industry based on publicly available information, in order to test whether it is a benchmark model without interviews or surveys in the data collection phase would be a possibility. This means that the focus will be on the Planning, Data Collection, and Analysis phases. Given the approach, – and the given timeframe of this MSc research project – Phase 5. Adaptation, is outside the scope of this research.

The benchmark methodology is separated in three phases, which is aligned with the phases adapted from Bhutta and Huq (1999) and Jetmarová (2011). The first phase is the planning phase, herein the scope, approach, capabilities & sub-capabilities, and the assessment questions and score mechanism/requirements are defined. In the second phase, data collection, the selected companies are assessed on digital technology adoption and scored accordingly. In the last phase, the collected data is analyzed to indicate the current state of digital technology adoption and therewith enables an intra-industry comparison to distillate opportunities and best-practices.

Phase 1: Planning

This first phase of the benchmark methodology focuses on all aspects prior to the actual benchmarking. These include: scope, benchmark approach, goals, assessment structure, and score requirements & mechanism. These aspects are implicitly addressed in the planning methodology.

Huppler (2009) argues that industry knowledge is important for a good benchmark. Even though his argument can be easily derived by common sense, it is vital for this research to cover this since acquiring thorough industry knowledge is not possible in a few weeks' time. Within this thesis' research, industry experts are interviewed to make up for the lack of knowledge. The first step of the planning phase is to decide on the benchmark scope and structured. In this thesis is chosen for a benchmark with an outside-in approach based on publicly available data and closed questions on the Dutch insurance industry. The reasons for this approach is that the research is partly conducted within Accenture Technology Strategy, who experienced to gain unsatisfying results from interviews, surveys, and open questions within their benchmarks. In contrast, benchmarks with an outside-in approach were well-retrieved. As briefly mentioned in the Introduction, this research focuses on digital technology adoption within the electricity utility retail industry. An initial desk research on company websites, business journals, and Accenture internal knowledge documents in combination with informal unstructured interviews, led to an initial view on trends and possibilities for

digital technology adoption within the electricity utility retail industry. There are four main categories wherein digital technologies can be adopted: Sales, Service, Strategy, and Organization (technology architecture & personnel. Since organizational aspects are enabling and/or supporting the Sales, Service and Strategic functions, and digital technology adoption in organizational aspects are hardly ever publicly addressed, this category is outside the scope of this research. In addition, many digital sales and service capabilities are enabled via the adoption of digital technologies within the organization, therefore measuring the digital sales and service capabilities also provides information on the digital technology adoption of the organization category. In summary, for these reasons, the benchmark focuses on the externally visible, from an outside view, digital technology adoption, meaning the focus lies on what a company is/will be able to do and/or provide, seen from a customer perspective.

As stated above, Starting the benchmark's research with a desk research on the electricity utility retail industry to gain an initial view of trends and best practices. This results in a preliminary framework of digital capabilities and abilities per category. To incorporate industry knowledge and therefore ensure a solid and complete overview of digital capabilities and abilities, this initial overview is iteratively improved via semi-structured interviews. On a sub-capability level closed-questions are formulated, which may be double-barreled. These are used to assess whether the company has adopted digital technology for that ability. This in total gives an initial view on the extent to which digital technologies are or will be adopted within the different categories.

Initially, three semi-structured interviews will be held to iteratively improve the overview of capabilities, abilities, and questionnaire three times elaborate on role of interviews. However, if required, the number of interviews, and therewith iterations, can be increased to a maximum of five. Time-wise, it is not possible to iterate more than five times and still be able to finalize the research in time. The input for the interviews forms the current framework in combination with an explanation of the research objective, scope, and methodology.

The interviewees will be industry experts from Accenture employed on seniority levels. To increase the objectivity, the interviewees must be from different groups within Accenture. In Accenture, there are three groups with employees affiliated with digital technologies within the electricity utility retail industry, these include: Accenture Business Strategy, Accenture Digital, and Accenture Technology Strategy. Each interview is structured around the following three questions:

1. Are there capabilities and abilities that aren't listed in this overview?
2. Do you have comments on the structure of the overview and the questions per level 2 capability?
3. Do you have other comments or suggestions?

After each interview, the suggestions will be incorporated in the framework, hereafter the improved framework forms the input of the next interview. These iterations result in the final framework that, by including these expert opinions, is both complete and defendable.

Phase 2: Data Collection

The second phase focuses on the data collection. As stated in the scope, the number of companies is limited. First, and foremost, because the Dutch B2C electricity utility retail market does not hold too many companies, and second, time-wise this thesis does not allow to assess a large number of companies. Therefore, the number of assessed companies is limited to seven.

The data is collected via desk research and is based on public sources, which includes, but is not limited to: corporate responsibility reports, annual reports, company websites, mobile applications, news-websites, Google, and social media. Each of the three sections – Sales, Service, Strategy – is evaluated from a different perspective. The sales section is analyzed from a prospect perspective, this means it is judged from the perspective of a potential customer. The service section is analyzed from a customer perspective. The strategy section is analyzed from a general perspective.

The data is documented in the appendix as a separate excel document. The closed questions are answered with either yes or no. When the question is double-barreled, or a number is required, three possible answers are possible: yes, half, no. The requirement to award a certain score are predefined in the requirements per question. This increases both clarity and reproducibility. To increase the verifiability, and provide contextual information, a motivation including source is provided per question.

Phase 3: Analysis

As explained in Phase 2, a normative scoring mechanism is applied per question with a maximum of three possible answers. To maintain the benchmark as clear as possible, a simple total analysis is applied. Every section – Sales, Service, Strategy – has a total of 100%. The underlying capabilities sum up to the 100%. E.g. In digital sales five capabilities are defined, the maximum score per capability is then 100% divided by five, thus 20% per capability. Same holds for the level 2 capabilities. The maximum score per capability is divided by the number of level 2 capabilities to calculate the maximum score for that particular level 2 capability. Herein the yes, half, no, result in respectively maximum, half, or no score on per question.

To arrive at the final degree of digital technology adoption, the average of the scores per section are taken, and therefore the resulting degree of digital technology adoption is a percentage of a maximum of 100% percent.

The digital technology adoption can be discussed on a general level, per section, and per level 1 capability. If needed, the supporting data and motivation can easily be displayed.

To summarize, the most important aspects of the total benchmark methodology are:

1. External Digital Technology Adoption
   Focus on the *External* Digital Technology Adoption increases the data availability and decreases liabilities
2. Fact-based capability assessment
   Assess on key *digital capabilities* to ensure factual data-driven analysis via an *outside-in approach*
3. Built on three main pillars
   The framework is built on the categories *Digital Sales, Digital Service,* and *Digital Strategy*
4. Subject Matter Expert Interviews
   At least three Accenture experts from *Business Strategy, Digital & Technology Strategy* are interviewed
5. Assessment based on public sources
   Use sources including: corporate responsibility reports, annual reports, company websites, mobile applications, news-websites, Google and social media

To evaluate the benchmark, the benchmark is discussed via the five aspects of a good benchmark defined by Huppler (2009). Huppler's definition and aspects are used because within the literature search it was the sole source with a clear view on what a good benchmark should be like. Huppler's five aspects are:

1. Relevance
2. Repeatability,
3. Fairness
4. Verifiability
5. Economic feasibility

The resulting discussion incorporates methodological aspects, results from the literature study, and evaluation interviews with both the interviewees from Phase 1, and with senior experts from Accenture who are not previously familiarized with the research.

Chapters 4 and 5 describe the results of the planning phase (Chapter 4), data collection & analysis (Chapter 5), and benchmark evaluation (Chapter 5).

3 Literature Study

This chapter holds the literature studies on benchmarking of technology adoption & key capabilities of digital technology adoption for retail industries. This literature study has been conducted in an structured manner, in which three steps have been followed. Central to the first step is the search for literature related to the subjects. In the second step, the obtained sources were read and summarized. Lastly, the results were synthesized in step three. A detailed overview on the methodology of the literature research can be found appendix A. In this chapter solely the third step is presented. Section 3.1 discusses the available benchmark literature in general, a benchmark typology, and challenges and limitation of benchmarks. Section 3.2 discusses capabilities to assess digital technology adoption whilst focusing on retail and service organisations to provide an overview of key digital capabilities.

3.1 Benchmarking of Technology Adoption

Benchmarking is an important tool for continuous improvement within large organizations and it therefore is important for innovation (Dattakumar & Jagadeesh, 2003). According to McNair and Leibfried (1992), benchmarking as a practice has begun in the late 1970s by the company Xerox. Xerox was at the time not in its best shape and tried to become competitive again. To do so they decided to compare themselves with their competitors. Bhutta and Huq (1999) found a publication by Feigenbaum from 1951 which discusses benchmarking and the process of comparing one's company to the best available other companies to obtain information and improve one's own company. This indicates that benchmarking as a practice has its origin even earlier than the 1970s.

In literature and in dictionaries may definitions of 'benchmark' can be found. For example, Cambridge Dictionary defines benchmarking as: Noun: *"A level of quality that can be used as a standard when comparing other things''* Adjective: *''To measure the quality of something by comparing it with something else of an accepted standard''*[3] Table 2 presents an overview of a view of literature definitions including the source.

Table 2 Benchmarking definitions

Author	**Definition of benchmark**	**Source**
Robert Camp	*"Benchmarking is the search for industry best practices that lead to superior performance."*	Kharbande (1995)
D.T Kearns (former CEO of Xerox)	*"Benchmarking is the continuous systematic process of measuring products, services, and practices of companies that are recognized as industry leaders for the purpose of achieving superior performance."*	Kharbande (1995)
Gregory J. Balm (former IBM)	*"Benchmarking is the ongoing activity of comparing one's own process, product, or service against the best known similar activity, so that challenging but attainable goals can be set and a realistic course of*	Kharbande (1995)

[3] Cambridge Online Dictionary, The definition of 'benchmark', http://dictionary.cambridge.org/dictionary/english/benchmark, retrieved on: 18/3/2016

	action implemented to efficiently become and remain best of the best in a reasonable time."	
Kumar et al., (2006)	*"It is the process of identifying, understanding, and adapting outstanding practices from organizations anywhere in the world to help an organization improve its performance. It is an activity that looks outward to find best practice and high performance and then measures actual business operations against those goals"*	Anand and Kodali (2008)
Bhutta & Huq	*"The essence of benchmarking is the process of identifying the highest standards of excellence for products, services, or processes, and then making the improvements necessary to reach those standards"*	Bhutta and Huq (1999)
The American Productivity and Quality Center (1996)	*"The process of identifying, understanding, and adapting outstanding practices and processes from organization anywhere in the world to help your organization improve its performance."*	Jetmarová (2011)
Hyatt (2011) & Ramabadron et al. (1997)	*"benchmarking is the process of identifying superior performance or practices of other organizations and internalizing such knowledge for competitive advantage"*	Jetmarová (2011)
Yasin (2002)	*"benchmarking is a technique that can be utilized to identify operational and strategic gaps, and to search for best strategies that would eliminate such gaps"*	Jetmarová (2011)

Common to these definitions is the notion that benchmarking is an activity to compare one's company's performance with another company to indicate and adopt best practices in order to thrive. Robert Camp was one of the first to describe benchmarking and its benefits in the scientific literature (Camp, 1989). Hereafter benchmarking has been studied extensively and numerous benchmark methodologies and types exist today (Anand & Kodali, 2008). Kharbande (1995) listed a few definitions of 'benchmark' which were included in Table 2. However, according to Anand and Kodali (2008) the definition of 'benchmark' has changed over the past decades. In this thesis the following definition of a benchmark is used, which is a combination of the definitions listed in Table 2 and the dictionary definition:

"Benchmarking is a process to identify inter and intra industry best practices and quality standards to assess one's company to identify gaps and suggest a course of action to innovate and/or improve its products and services."

In terms of the function of benchmarking and its perceived benefits for the company Elmuti and Kathawala (1997) identified seven reasons to indicate why benchmarking could be valuable for companies. The seven reasons are presented in Table 3.

Table 3 Reasons and perceived benefits of benchmarking, adapted from Elmuti and Kathawala (1997)

Purpose	**Explanation**
Increasing productivity and individual design	A company can use a benchmark to look outside itself for a breakthrough in thinking so that a product/process/service adapted from another company can improve and provide insights in the company's original product/product/service
Strategic tool	A company can use a benchmark as a strategic tool to develop aspects by using strategies and therewith open an opportunity that competitors are not aware of
Enhance learning	Using a benchmark to tell employees about other company's processes/products to convince them that there maybe is a better way to compete
Growth potential	A company can be stuck at looking for growth from inside the organisation and by benchmarking a company can look outside the company for growth potential. In addition, a company that looks outward seems to be an future oriented company
Assessment of performance tool	Benchmarking can be defined as "the process of identifying and learning from best practices anywhere in the world". Herewith, companies can use benchmarking to identify best practices around the world and measure their performance against these best practices
Continuous improvement tool	Benchmarking can also be used as a continuous improvement tool. Organisations that use benchmarking regularly are said to achieve significant cost savings
Vehicle to improve performance	Benchmarking can help companies to set realistic improvement goals that are already proven possible and therewith help overcoming friction to reach improvement goals

Reflecting on this research' goals, the purpose of the benchmark in this study can be defined as 'Assessment of performance tool', since the objective is, business-wise, to identify the best practices and subsequently, measure companies against these best practices. In addition, from a perspective by Accenture, the benchmark results could be used in sales process which is in line with the purpose 'Vehicle to improve performance'. Given that that objective is secondary, it can be concluded that the objective of this research is most in line with the purpose 'Assessment of performance tool'.

When reflecting on the general definitions and the definition of the purposes, it strikes that the viewpoint of the definitions mostly is from a company viewpoint. In this research, this is not the case. Here companies are benchmarked from a third party perspective. The retrieved articles do not mention benchmarking by a third party and the possible consequences it could have for definitions, scope, used methods, limitations & challenges. Since this research does benchmark from a third party perspective, this could on one hand fill this gap, but the research could on the other hand face limitations or other hurdles that are not mentioned with current benchmarks. The definition of benchmarking derived in this section remains in line with the

"our company" approach and the benchmark in this research could be interpreted by a company as it was from the "our company" perspective, nonetheless there is a difference in perspective, and therewith, this possible holds consequences for this research.

3.1.1. Benchmark Models

Researchers are not completely aligned concerning the typology of benchmarking. Whereas Bhutta and Huq (1999) identifies seven different types, Elmuti and Kathawala (1997) identify only four types. In addition, Anand and Kodali (2008) constructed a typology scheme based on 13 different publications and came to the conclusion that there are over 15 types of benchmarks. Clearly, there is no consensus on the classification schemes. The typology Bhutta and Huq (1999) presented in his review paper seems best accepted amongst other researchers. The typology is composed on the basis of what is compared and against what is the comparison made. Table 4 provides an overview of the seven benchmarks types according to Bhutta and Huq (1999).

Table 4 Seven benchmarking types, adapted from Bhutta and Huq (1999), McNair and Leibfried (1992)

Type	**Definition**
Performance benchmarking	A comparison of performance metrics to determine how good the company is compared to others
Process benchmarking	Comparing processes to improve processes in one's own company
Strategic benchmarking	Comparing strategies with competitors in order to change strategic direction
Internal benchmarking	Comparing divisions or departments within one's company
Competitive benchmarking	Compare one's company against the best in class to compare results and performance
Functional benchmarking	Comparing the technology within one's industry or technological area to become the best in that technology
Generic benchmarking	Comparing one's processes against the best processes inter-industry

Bhutta and Huq (1999) adapted the view from McNair and Leibfried (1992) that types of benchmarking are complementary rather than being exclusive and multiple benchmarking types can be combined for a specific objective. McNair and Leibfried (1992) also state that different benchmarking types are usually combined. They created a matrix of several combinations and argue that some combinations are of higher value than others. Their benchmark combination matrix is displayed in Table 5.

Table 5 The benchmarking matrix, adapted from Leibfriend & Mcnair (1992)

	Internal benchmarking	Competitor benchmarking	Functional benchmarking	Generic benchmarking
Performance benchmarking	Medium	High	Medium	Low
Process benchmarking	Medium	Low	High	High
Strategic benchmarking	Low	High	Low	Low

This thesis attempts to benchmark the performance and strategies of several competitors in the electricity utility retail industry. According to Table 5 this benchmark would be of high value since both the Performance-Competitor Benchmarking as the Strategic-Competitor Benchmarking are of high value. One could also argue that this thesis focuses on functional benchmarking since it benchmarks digital technology adoption, but this is not the case since functional benchmarking is a benchmarking technology to further develop that technology, whereas this thesis focuses on the adoption of a technology and benchmarks the performance to do so. Therefore it can be concluded that this thesis' benchmark can be defined as a performance/strategic-competitor benchmark.

Even though McNair and Leibfried (1992) would classify the benchmark type in this thesis as a high value benchmark, the five key aspects of a good benchmark defined by Huppler (2009) enables a structured evaluation of the benchmark for this thesis. These aspects have also been mentioned in the methodology. The five key aspects of a good benchmark Huppler (2009) defined, including characteristics can be found in Table 6.

Table 6 Key aspects of a good benchmark according to Huppler (2009)

Aspect	**Characteristics**
1. Relevant	• Meaningful and understandable • Leading edge • Broad applicability • Does not misrepresent itself • Has a target audience that want the information
2. Repeatable	• A re-run of the benchmark yields the same results
3. Fair	• All benchmarked objects/companies are benchmarked equally
4. Verifiable	• The benchmark can be checked on accuracy
5. Economic feasible	• Worth the investment of resources

The first aspect defined by Huppler (2009) implies that for a good benchmark it is important that the targeted audience believes that the results actually reflects something important. Moreover, there should be confidence that the benchmark is repeatable and yields the same results every time. This means that documentation and steps taken should be clear. Also, the

benchmark should be fair to the benchmarked subjects or companies, which can be quite a challenge. In addition, the results and the method should be verifiable in the sense that stakeholders can verify the results and are confident that the results are real. Lastly, the benchmark should be economical; a benchmark should be worth the investment of resources. Huppler (2009) also argues that for a benchmark to be able to be relevant, it could be that the benchmark has to give up on some of the other four aspects, but a well-retrieved benchmark only needs to excel in one or two of these aspects, whereas it should perform sufficiently on all other aspects. Also, other authors contribute to the discussion of the aspects of a good benchmark. Elmuti and Kathawala (1997), states that "*the structure of a benchmark should not get in the way of the process*", meaning that the steps taken in the benchmark should not create barriers for reaching the benchmark's objective. In addition, Kathawala (1997) quotes Kent Johnson, Corporate Counsel at Texas Instruments, on the importance of openness in the benchmarking process.

3.1.2. Benchmark structure

In the past decades many benchmarks have been developed (Anand & Kodali, 2008). Anand and Kodali (2008) analysed and benchmarked 35 benchmarking models. They classified the origin of the benchmark models in three categories; 1. Academic/research-based models, 2. Organization-based models, 3. Consultant/expert-based models. They defined Academic/research-based models as models which are developed by researchers and academics; researchers/academics tend to take a theoretical and conceptual approach and the benchmark may not be implemented and validated in real-life cases. Their definition of Organization-based models includes that these models are developed within or specifically for a certain organization, these models tend to be difficult to generalize. Consultant/expert-based models are models developed by consultants based on their own experience and opinion (Anand & Kodali, 2008). These models tend to be more practical oriented and often are adequately evaluated through implementation (Anand & Kodali, 2008). Clearly, with the approach used in this MSc thesis, the benchmark model would fall under the Consultant/expert-based models. In comparison with the other categories this thesis' benchmark could be too practically oriented and would possibly benefit from a theoretical and conceptual redesign. These are aspects that could be taken into consideration in the evaluation.

The five phases identified by Jetmarová (2011) and Bhutta and Huq (1999) are similar to the phases and steps defined by Camp (1989). Although Camp does not define 'Team formation' as a phase, 'Team formation' is an activity prior to his benchmark framework; he formulates the other phases as: 1. Planning, 2. Analysis, 3. Integration, 4. Action. These phases can be defined into many steps (Anand & Kodali, 2008). To illustrate, the Kodak benchmark model consists of five steps, whereas Xerox' benchmark model follows a ten step procedure (Bhutta & Huq, 1999). To accommodate the four phases, Camp (1989) describes ten steps, which can be seen in Figure 3. The Xerox benchmark model will be used in the discussion to discuss the model used in this MSc research project.

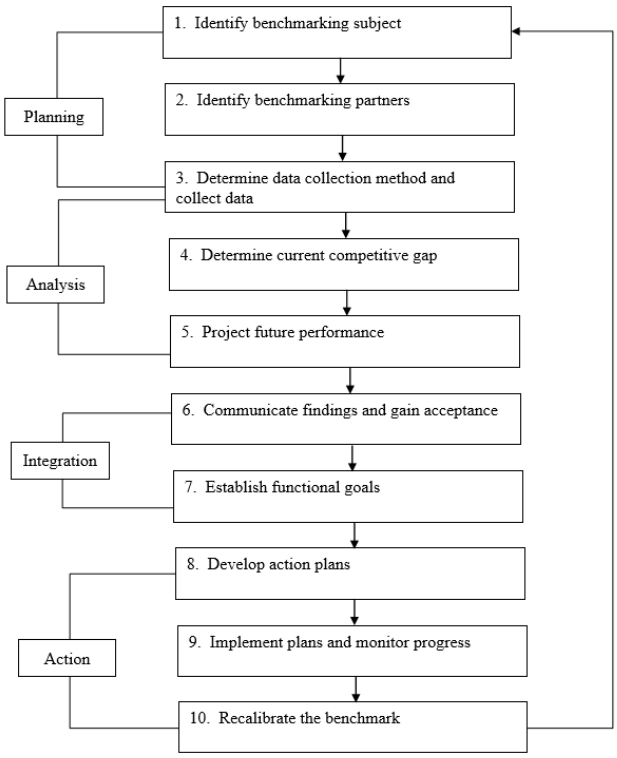


Figure 3 Camps, thus Xerox', benchmark framework as depicted in Kodali (2008)

Anand and Kodali (2008) states that this structure has proven successfully and that Camps structure has not been modified over the years, therewith indicating that it is widely considered a good benchmark structure.

Anand and Kodali (2008) analysed and benchmarked 35 benchmarking models to identify unique, common and best-practice steps. They identified a total of 71 steps of which 13 he sees as common steps. They defined a common step when at least 45% of the benchmark models list this step in their benchmark model. Furthermore, occurrences of steps between 14% and 45% he indicates as 'best-practices'. Steps with an occurrence lower than 14% he called 'unique practices' and he suggest further research on these steps. All combined, leaving out doubles and a-logical steps, he comes to a 12 phases, 54 steps, benchmarking process.

Reviewing the steps Anand and Kodali (2008) identified, two aspects drew the attention:

1. **Perspective**

The whole list of steps, phases and definitions are all formulated like every benchmark is ultimately performed out of a company to compare that company to another company. This not necessarily holds true. For instance, a consultant could wish to benchmark a specific industry and the companies in that industry for purposes as building knowledge & developing insights for a sales instrument. Moreover, the author presents a benchmark that is not initiated from within a company. The benchmark in this thesis is initiated outside of a company and the results of this study could contribute to the discussion this aspect.

2. Data collection method

In the steps Kodali described, the steps concerning data collection method and data collection are steps 27 and 32.

Step 27: "*Determine the data collection method – which can be a questionnaire or site visits or interview or a combination of all methods*" - (Anand & Kodali, 2008)

Step 32: "*Perform benchmarking study which might include collecting information through questionnaire/survey, interview, site visit, etc."* - (Anand & Kodali, 2008)

These steps suggest that a benchmark de facto uses questionnaires to conduct surveys, site visits or interviews, or a combination those three. In addition, the scientific publications read in this literature study mention another data collection method than questionnaires for surveys, site visits, or interviews to collect data. The only benchmark that uses another data collection method is Kodali's paper itself.

To quote the third step in the benchmark (Anand & Kodali, 2008):

"*Step 3. Determine data collection method and collect data. For our case, the data collection method is literature review, where the published models from the print and online journals sources were analysed. The method of data collection can be considered as external data collection method, because the research papers and internet information are owned by online publishers (e.g. Emerald, Taylor and Francis), online database providers (e.g. EBSCO, ABI/Inform), web site owners, companies, academicians, consultants, individuals, etc."* - (Anand & Kodali, 2008)

Beside in Kodali's own benchmark, an external data collection method in a benchmark model has not been apparent in the publications retrieved in the process of this literature study. Therefore, proposing a benchmark that deliberately adopts an external data collection method could fill this gap in the benchmark literature.

3.1.3. Discussion

Beside the aspects of a good benchmark discussed by Huppler (2009) and Kathawala (1997), several authors also addressed concerns and possible limitations of benchmark models and the benchmarking process. To start, Kathawala (1997) states that the main problem with benchmarking is the focus on data instead of focus on the process on how that data was created. He argues that a benchmark should not be used for its precision, but as a guide for improvement. In addition, Jetmarová (2011) states that although following the steps in a benchmark model is important, one cannot just adopt a certain benchmark approach. Moreover, she adds that support of high level management, employee involvement, implementation experience and internal situation prioritization contribute to a successful benchmarking process. Lastly, one cannot simply incorporate an industry best practice, a best practice always has to be adapted to a specific company (Kathawala, 1997).

Openness is important for a successful benchmark (Kathawala, 1997). However, for example when benchmarking to renew company strategies, there could be a possibility that a company

would not want its employees to know, thus a benchmark process that is not open could be preferred in such as case. This also implicates that an external data collection method would be preferred in such a case. In addition, as discussed in section 3.1.2, interviews, surveys, and site visits, are the listed methods to collect data. However, for these data collection methods to be successful one needs the cooperation of the interviewees, surveyees, and employees working on that specific site one is visiting respectively. Kathawala (1997) also listed *resistance by employees* as one of the limitations and concerns of benchmarking. If there is resistance to cooperate, one of the Huppler's (2009) key aspects of a good benchmark, *verifiable*, is pressurized, since the data collected from uncooperative subjects cannot be trusted. As discussed in section 3.1.2, adopting an external data collection method in a benchmark model has not been described in the studied literature. Combined, this indicates that a benchmark that adopts an external data collection method could both contribute to this gap in benchmark model literature as contribute to a practical problem.

To discuss benchmarking for technology adoption, no literature was retrieved in the process of this literature study that indicated that there are specific concerns or approaches in relation to the adoption of a certain technology into an organization. There are papers focusing on specific benchmark for the adoption of information technologies, but this did not yield relevant aspects that are not mentioned in this section.

3.2 Key Capabilities Digital Technology Adoption Retail Industries

As briefly discussion in introduction of chapter 1, the rise of mobile, social, cloud, internet of things, analytics/big data, and other digital technologies has increased the influence of digital technologies on businesses (Thomas, 2014). As stressed by Hansen and Sia (2015), many organizations face challenges to successfully service digital-savvy customers. This literature study discusses the current literature on the key capabilities wherein digital technologies can be adopted in order to successfully face current and future customer needs. In section 3.2.1 an introduction to digital technologies in organizations is presented. Subsequently, the concept of digital capabilities and an overview of digital capabilities is presented in section 3.2.2., concluded by a discussion in section 3.2.3.

Reflecting on the retrieved literature from the structured literature search, the literature on digital technology adoption, especially in combination with capabilities is fragmented. The relevant literature is discussed in the next section in the structure provided in the methodology.

3.2.1. Introduction to Digital Technologies in Retail Organizations

Digital Technologies can be defined as "*the branch of scientific or engineering knowledge that deals with the creation and practical use of digital or computerized devices, methods, systems, etc.*" – Dictionary.com[4]. This is quite a broad definition, but digital technologies include (Thomas, 2014):

- Social technologies
- Mobile technologies
- Cloud technologies
- The Internet-of-Things
- Analytics/Big Data

Digital technologies have become more and more important for businesses to achieve their business goals (Nylen & Holmstrom, 2015). In addition, T. Porter, Manley-Casimir, and Saint (2014) state that digital is, for the next generation of consumers, merely a way of life instead of a channel, wherein interactions should be 1. Easy, 2. Anytime, 3. Anywhere, and 4. Seamless. As these customer interactions occur more and more in an online environment, trust in that environment is an important aspect (Nilashi, Ibrahim, Mirabi, Ebrahimi, & Zare, 2015). However, besides literature addressing the importance of digital technologies in customer interaction, several authors also stress the importance of digital technologies in other aspects of the organization. The publication by Barrett, Davidson, Prabhu, and Vargo (2015) discusses service innovation in the digital age. It states that digital technologies can facilitate service innovation. On the topic of adoption of new technologies for service

[4] Dictionary.com; Meaning of the word "Digital Technology"; http://www.dictionary.com/browse/digital-technology; retrieved on: 24-03-2016

innovation it discusses the 'reverse product cycle model' created by Barras. Barras' model consists of three phases. First, companies adopt a technology to improve the efficiency of existing services. Second, the new technology is applied to increase the quality and effectiveness of existing services. Third, the new technology assists in completely transforming services or in creating new services. Moreover, Barrett et al. (2015) argue that a new service often requires a new service delivery system and changes to the client interface. To combine this, the creation a new service by adoption of a new digital technology, will likely result in a change in the client interface. If one would assess the client interface and the services, one would be able to discuss the adoption of a digital technology.

To address another aspect of the effect of digital technologies in organizations: digital technologies lead to the opening of existing technological regimes, new business models, cost reduction, and new revenue opportunities, to what literature refers to as the Digital Economy (Carlsson & Bo, 2004). In addition, with the entrance of digital technologies many authors in the scientific community foresee disruptive changes in the industries via digital technologies (Baker, 2015; Carlsson & Bo, 2004; Lunardi et al., 2014; Thomas, 2014). Also, examples of companies that have disrupted their industry – primarily Business-to-Consumer markets – are: Tesla, Coolblue, Uber, BlaBlaCar, and AirBnB (Gartner, 2014; IDC, 2016).

The companies that have disrupted industries with digital technologies not only have adopted digital technologies to enable services, but digital technologies also changed their business models, internal operations, and operational processes. (Westerman, Tannou, Bonnet, Ferraris, & McAfee, 2014) In addition, G. C. Kane, Palmer, Phillips, Kiron, and Buckley (2015) argue that, on the topic of digital transformation of a company, a digital strategy drives the digital transformation, not the digital technologies themselves.

From this introduction to digital technologies in organizations, it can be concluded that according to several publications, many aspects of an organization can benefit from and adopt digital technologies.

3.2.2. Digital Capabilities in Retail Organizations

To be able identify digital capabilities in retail and service organizations such as the utility retail industry from a literature perspective, first a definition of a capability is needed and how a taxonomy can be made.

The use of capabilities is definitely a hot-topic in scientific and business literature (Keller, 2009). However, the definition of 'capability' seems to vary. To illustrate, the definition of a capability from a business dictionary includes: "*Measure of the ability of an entity (department, organization, person, system) to achieve its objectives, especially in relation to its overall mission*" – Businessdictionary.com [5]. Merriam-Webster even has a simpler

[5] Definition of Capability, Businessdictionary.com, http://www.businessdictionary.com/definition/capability.html, retrieved on 25-03-2016

definition: "*the ability to do something"*- Merriam-Webster[6]. To continue, Keller (2009) quotes Forrester Research, who formulated a capability in a business and IT setting:

"A business capability defines the organization's capacity to successfully perform a unique business activity. Capabilities:

- *Are the building blocks of the business*
- *Represent stable business functions*
- *Are unique and independent from each other*
- *Are abstracted from the organizational model*
- *Capture the business interests"* – Forrester Research, 2009 (Keller, 2009)

Keller (2009) also mentioned that the invention of 'capabilities' is not new and that it is closely related to a functional decomposition. The general definition by Merriam-Webster still holds true in the more specified towards business and IT. In this thesis the definition of a capability by Forrester Research was used.

The concept of capabilities is also known within the strategic management literature. Herein capabilities are present in two major perspectives, namely the resource-based view and the dynamic capabilities view (Rasouli, Trienekens, Kusters, & Grefen, 2015). According to Rasouli et al. (2015), the resource-based view defines capabilities as underlying aspects that support processes to result in achieving current goals of a system, whereas within the dynamic capabilities view Teece in his 1997 paper defined a capability as *"the ability to integrate, build, and reconfigure internal and external competences to address rapidly-changing environments"* (Rasouli et al., 2015). Given the purpose and structure of this research, the resource-based view's perspective on capabilities is best in line with the definition of capabilities used and applied in this graduation research.

One can distinguish capabilities in different aspects of the organization and on different levels. Whereas some authors use a classification of level 1 capability, level 2 capability etc., other use the classification 'domain' for complete business sections, such as sales, service, organization, production, enterprise architecture etc. and define capabilities and sub-capabilities within a domain. Others even differentiate top-level-capabilities, underwriting capabilities and sub-capabilities (Keller, 2009; Merrifield, Calhoun, & Stevens, 2008; Scott, 2014). For the sake of coherency, throughout this thesis it is chosen to address the different levels of capabilities as: Domain, Capability, Sub-capability. Herein, a sub-capability belongs to a certain capability, and a capability falls into a certain domain.

On the concept of capabilities, Scott (2014) argues that, in a business setting, a well-defined capability rarely changes. They only change when there is a shift in the underlying business model. Moreover, he argues that individual capabilities reflect what an organization, or a part of it, can or cannot do. In line with this concept, Keller (2009) argues that when constructing

[6] Definition of Capability, Merriam-Webster, http://www.merriam-webster.com/dictionary/capability, retrieved on 25-03-2016

business capabilities, one should describe the aspects in terms of outcomes and or fundament purposes.

To conclude, capabilities in literature can be defined as described above. To define capabilities for digital technologies, which could be adopted in companies in the electricity utility retail industry, statements in the retrieved articles of this literature review related to this topic are listed in Table 7. Subsequently these statements can be translated to digital capabilities and synthesized in a capability framework.

Table 7 Statements on aspects for firms for digital technologies

Domain	**Statements**	**Source**
Sales/Service	*"Build a seamless customer experience"* (Omni-channel) On omni-channel: *"Align online branding"* On omni-channel: *"Build the omni-channel customer community"* On omni-channel: *"Integrate Physical store experience in omni-channel"*	(Hansen & Sia, 2015)
Strategy	*"Leverage the strategic role of a Chief Digital Officer"*	(Hansen & Sia, 2015)
IT infrastructure	*"integration of systems to support omni-channel retailing"*	(Hansen & Sia, 2015)
Organization	*"Developing the business-to-consumer e-commerce platform requires changes to logistics and finance practices"*	(Hansen & Sia, 2015)
Sales/Service	*"The user experience, or customer experience, is key and should be seamless"* (Customer Experience) On customer experience: *"for customer experience design key elements are: 1. Usability, 2. Aesthetics, 3. Engagement"*	(Nylen & Holmstrom, 2015)
Strategy	*"Digital innovation requires strategic pricing and positioning"* (value proposition) On value proposition: *"Elements of value proposition are 1. Customer segmentation, 2. Product bundling, 3. Commissions to channel owners"*	(Nylen & Holmstrom, 2015)
Strategy	"*A firm needs to scan their environment for changes and opportunities" (Trend awareness)* On trend awareness*: "Firms should be aware and inform themselves of: 1. New digital devices, 2. Digital channels, 3. Changed user behavior"*	(Nylen & Holmstrom, 2015)
Organization	"*To lever the benefits of digital innovation, firms need to incorporate new skills and establish new digital roles"* (Skills) On skills: *"Elements of skills are: 1. Continuous learning, 2. Define digital roles, 3. Build dynamic innovation teams"*	(Nylen & Holmstrom, 2015)
Organization	*"Managers should lever digital technologies to maximize creativity of employees by: 1. Allocate space, 2. Allocate time, 3. Coordination"*	(Nylen & Holmstrom, 2015)

Strategy	*"Digital technologies enable innovation processes that are entirely different from analog innovation process from the industrial era. Digital technologies have radically restructured entire industries"* (Disruption nature digital technologies)	(Nylen & Holmstrom, 2015)
Sales	*"For mobile commerce websites the factors 1. Security, 2. Design, 3. Content are important"* *"Content sub-factors include: 1. Accuracy of content, 2. Currency of content, 3. Completeness of content, 4. Relevance of content"* *"Design sub-factors include: 1. Navigability, 2. Customizability, 3. Understandability, 4. Multimedia capability"* *"Security sub-factors include: 1. Security features, 2. Payment systems security, 3. Privacy policy statements, 4. Site authentication"*	(Nilashi et al., 2015)
Strategy	*"Having a clear and coherent digital strategy is key"* (Digital Strategy) On digital strategy: *"The digital agenda must be led from the top"* On digital strategy: *"A digital strategy goes beyond implementing technologies"* *"The strength of digital technologies lies in how companies integrate them to transform their businesses and how they work"* (Vision)	(G. C. Kane et al., 2015)
Organization	"Organizations should create a culture that fosters digital initiatives"	(G. C. Kane et al., 2015)
IT infrastructure	*"Service Oriented Architecture gives companies the ability to create more focused, efficient and flexible enterprise structures"*	(Merrifield et al., 2008)
Organization / Strategy	*"Firms need leadership capabilities including: 1. Vision of the firms future, 2. Evolving the firm's culture, 3. Acquire new skills, 4. Cross-silo coordination"* (Vision, Governance, Engagement, IT-Business Relationships)	(Westerman et al., 2014)
Sales / Service	*"Firms need to establish technology enabled initiatives in customer engagement such as: 1. Location-based marketing, 2. Digital Design, 3. Mobile Sales, 4. Optimized pricing, 5. Communities in social media, 5. Connected products"* (Customer engagement)	(Westerman et al., 2014)
Organization / IT infrastructure	*"Firms need to establish technology enabled initiatives for internal operations such as: Real-time monitoring of operations" (Internal operations)*	(Westerman et al., 2014)
Sales / Service	*"Important aspects in customer facing processes are: 1. Social media, 2. Customer Experience, 3. Mobile channel"* On social media: "Aspects include: 1. Monitor reputation, 2. Promote products and services, 3. Sell products and	(Westerman et al., 2014)

	services, 4. Provide customer service, 5. Build customer communities" On customer experience: "*Aspects include: 1. Ensure cross-channels consistency, 2. Personalize the customer experience, 3. Offer self-service"* On mobile channel: *"Aspects include: 1. Promote products and services, 2. Sell products and services, 3. Provide customer service"*	
IT infrastructure	*"Digital technologies influence operational process such as: 1. Analytics, 2. Process Digitization, 3. Data Integration"* On analytics: "*Aspects include: 1. Target marketing more effectively, 2. Personalize marketing communication, 3. Optimize Pricing, 4. Better quality sales prospects"* On Data integration: *"Aspects include: 1. Customer data, 2. Finance data, 3. Supply-chain data, 4. Operations data"* On Process digitization: *"Aspects include: 1. Automating processes, 2. Monitoring operations real-time, 3. Adaptability to external changes"*	(Westerman et al., 2014)
Organization	*"On the topic of Internal Collaboration, important aspects are: 1. Active knowledge sharing, 2. Use of internal social networks and video conferencing, 3. Working anywhere, anytime, any device"*	(Westerman et al., 2014)
Strategy	*"Companies should be aware of the abilities of digital technologies to reshape competition and expanding of industry boundaries" (Disruption by digital technologies)*	(M. E. Porter & Heppelmann, 2014)
Organization	*"Companies should create a unified data organization"* *"New functions within the organizational structure include: 1. Dev-ops, 2. Customer Success Management"* *"IT and R&D departments must start cooperating in new product development"* *"Security within an organization becomes a shared responsibility"*	(M. E. Porter & Heppelmann, 2015)
Products	On products: *"Capabilities of smart connected products comprise the following areas: 1. Monitoring, 2. Control, 3. Optimization, 4. Autonomy"*	(M. E. Porter & Heppelmann, 2014)
Strategy	*"Firms must consider monetization of data retrieved by smart products and services"*	(M. E. Porter & Heppelmann, 2014)
Service	*"Digital technologies can assist in development of self-services, which in turn can lead to cost reduction, increased customer experience, and greater efficiency" (Customer self-services)*	(Barrett et al., 2015)
Service	*"Energy retail companies should master digital engagement"* (Customer experience)	(T. Porter et al., 2014)

	On customer experience: "*Customer interaction should be a 1. Seamless, 2. Easy, 3. Convenient experience"* *"Energy companies should address the connected prosumer"*	
Strategy	*"Companies need to: 1. Deliver operational excellence, 2. Optimize consumer interaction, 3. Create lasting engagement, 4. Extend their value proposition"*	(T. Porter et al., 2014)
IT infrastructure	*"In order to succeed, energy providers should incorporate a platform that combines data management with analytics to create insights for the decision-making for their new products and services"*	(T. Porter et al., 2014)

To briefly discuss and summarize Table 7, Hansen and Sia (2015) described the key aspects of adopting omni-channel for retail organizations. In their paper they described key changes to different aspects of the organization in order to adopt omni-channel (the integration of physical channels with mobile and social to deliver one customer experience and cross-channel marketing). Nylen and Holmstrom (2015) also discussed digital innovation to improve product and services, however their framework for diagnosing and improving digital product and service innovation is non-specific to types of organizations. They approached the disruption of entire industries by digital technologies from a managerial perspective, in which they evaluated how managers should react the these developments. Their framework for digital innovation strategies for managerial purposes was built around dimensions (Product, Environment, Organization), areas with a specific scope(e.g. User Experience) and elements (e.g. within user experience: Usability, Aesthetics, Engagement). To continue, Nilashi et al. (2015) discussed factors to build customer trust in mobile commerce. Their research focused on exploring factors for successful leveraging the vast potential of mobile commerce. The main factors identified were 1. Security, 2. Design, 3. Content. Each of the factors were split in four sub-factors. Whereas Merrifield et al. (2008) discussed the increase in agility and productivity enabled by service oriented architecture (SOA), G. C. Kane et al. (2015) argued in the MIT Sloan Management Review that it is digital strategy, not the digital technologies that drive digital transformation, and hence become a digital technology enabled enterprise. Also published in the MIT Sloan Management Review was an article on the digital advantage by Westerman et al. (2014). They discussed the effect of digital technologies on large traditional companies. They found that many firms already use digital technologies to change their customer engagement and internal processes. However, only a few companies have managed to fully lever the business benefits of digital technologies, they state. Towards reaping the full benefits of digital they identified technology-enabled initiatives to transform customer engagement & internal operations, and leadership capabilities such as: a clear digital vision, and the importance of governance structures, engagement, and IT-Business relationships. In 2014 and 2015 Michael Porter & Heppelmann published two articles in the Harvard Business Review on how smart, connected products are reshaping industries and companies (M. E. Porter & Heppelmann, 2014, 2015). They argued that companies and industries will restructure to reap

the benefits of digital technologies that enable smart connected products. Moreover, they stated that a unified data organization, led by a chief data officer, is crucial. Finally, they advocated for the deployment of Dev-Ops and Customer Success Management. Barrett et al. (2015) primarily described the recent development on service innovation in the digital age from a theoretical perspective. The authors state that digital technologies can assist in the development of customer self-services, which in turn can lead to greater efficiency, cost reduction, and an increased customer experience. Lastly, T. Porter et al. (2014) presented their energy consumer research in Fortnightly Magazine in 2014. Although this magazine article cannot be considered a scientific source in essence, it is the sole source that described current developments within the utility retail industry and the trend of digital technologies. They claimed that for energy providers the most important aspect is to understand what consumers want, given that consumer increasingly adopt energy technologies. Therefore, digital and mobile technologies should be leveraged to increase the customer experience.

The domains listed in the literature were: Sales/Service, Strategy, IT Infrastructure, Organization, and Products. The different topics covered in the table, combined with the different domains within organizations wherein digital technologies can be adopted, are structured around the domains they cover. These resulting domains are a result of combining explanations, definitions, and contexts of the listed sources in Table 7. Table 8 presents the adapted capabilities and sub-capabilities. The restructured table serves as an input to the discussion to compare with the structure derived from desk research and interviews. In order to come to this result, all data of Table 7 was combined and duplications were removed. In the Chapter 6, this Table will be used to discuss the results and framework derived from desk research and expert interviews.

Table 8 Derived capabilities and sub-capabilities per domain

Domain	**Capabilities & Sub-capabilities**
Sales / Service	1. Customer Experience 1.1. Omni-channel 1.1.1. Seamless 1.1.2. Align online branding 1.1.3. Social Community building 1.1.4. Physical store integration 1.1.5. Channel consistency 1.1.6. Personalization 1.2. Customer experience design 1.2.1. Usability 1.2.2. Aesthetics 1.2.3. Engagement 1.3. Customer engagement 1.3.1. Location-based marketing 1.3.2. Digital design 1.3.3. Optimized pricing 2. Customer self-service 3. Mobile commerce/channel

	3.1. Security 3.1.1. Security features 3.1.2. Payment systems security 3.1.3. Privacy policy statements 3.1.4. Website authentication 3.2. Design 3.2.1. Navigability 3.2.2. Customizability 3.2.3. Understandability 3.2.4. Multimedia capability 3.3. Content 3.3.1. Accuracy 3.3.2. Currency 3.3.3. Completeness 3.3.4. Relevance 3.3.5. Promote products and services 3.3.6. Sell products and services 3.4. Provide customer service 4. Social media 4.1. Monitor reputation 4.2. Promote products and services 4.3. Sell products and services 4.4. Provide customer service 4.5. Build customer communities 5. Connected Prosumer
Strategy	1. Chief Digital Officer 1.1. Chief Digital Officer assigned 1.2. Leverage strategic role Chief Digital Officer 2. Value Proposition 2.1. Strategic pricing 2.1.1. Customer segmentation 2.1.2. Product bundling 2.1.3. Channel owner commissions 2.2. Positioning 2.3. Data monetization 3. Trend awareness 3.1. New digital devices 3.2. New digital channels 3.3. Changed user behavior 3.4. Reshaping competition 3.5. Expanding industry boundaries 3.6. Connected Prosumers 4. Digital awareness 4.1. Disruptive nature digital technologies 5. Digital strategy 5.1. Digital Strategy 5.1.1. Clear

	5.1.2. Coherent 5.1.3. Beyond implementing technologies 5.2. Digital Agenda 5.2.1. Led from the top 5.3. Digital Vision 5.3.1. How digital transforms their business 5.3.2. How digital works
IT infrastructure	1. Integration of systems 1.1. Omni-channel support 1.2. Data integration 1.2.1. Customer Data 2. Service Oriented Architecture 2.1. Focus 2.2. Efficiency 2.3. Agility 3. Governance 3.1. Unified Data organization 4. Operations Digitization 4.1. Operational excellence 4.2. Real-time monitoring 4.3. Analytics 4.3.1. Targeted marketing efficiency 4.3.2. Personalized marketing communication 4.3.3. Pricing optimization 4.3.4. Quality sales prospects 4.3.5. Data driven insights 4.4. Automating processes 4.5. Adaptability to change 4.6. Data integration 4.6.1. Finance Data 4.6.2. Supply-chain Data 4.6.3. Operation Data
Organization	1. Align organization for e-commerce 2. Incorporate new skills 2.1. Establish digital roles 2.1.1. Assign Chief Digital Officer 2.1.2. Assign Chief Data Officer 2.2. Enable continuous learning 2.3. Build dynamic innovation teams 2.3.1. Dev-Ops teams 2.3.2. Customer success management teams 2.3.3. Innovation teams 2.3.4. Integrated IT & R&D teams for product development 2.4. Maximize creativity 2.4.1. Allocated space 2.4.2. Allocated time 2.4.3. Managerial coordination

	3. Digital Culture 3.1. Foster digital initiative 3.2. Shared responsibility security 4. Leadership 4.1. Future vision 4.2. Evolve firm culture 4.3. Acquire new skills 4.4. Cross-silo coordination 4.5. Employee engagement 5. IT-Business relationships 6. Internal Collaboration 6.1. Active knowledge sharing 6.2. Internal social networks 6.3. Video conferencing 6.4. Work flexibility 6.4.1. Anywhere 6.4.2. Anytime 6.4.3. Any device
Products	1. Smart Connected products 1.1. Monitoring 1.2. Control 1.3. Optimization 1.4. Autonomy

Although, the derived list of capabilities and sub-capabilities may seems quite extensive, (Keller, 2009) states that a full capability decomposition can result into approximately 2.000 capability, covering 5 to 7 capability levels. In addition, the derived capabilities in the list are not mutually exclusive and collectively exhaustive. This means that there is overlap between capabilities and all capabilities combined do not cover the complete organization. For example, within the domain Sales/Service, the mobile channel is extensively addressed, but other channels are not. To quote Nylen and Holmstrom (2015): *"Research on technological innovation tends to adopt a macro-level perspective on its object of study, often resulting in high-level descriptions of strategic recommendations*". Moreover, Keller (2009) states that capabilities are not just technologies, but are a combination of 1. People, 2. Processes, 3. IT-support. Combining with a customer centric approach, one could argue that if one assesses the capabilities on the customer focused domain and the long-term strategic focus, this would also give an indication on the status of the IT infrastructure and the organization since, arguably, in order to deliver a certain capability one should also have developed the back-end IT infrastructure and have covered the organizational aspects.

3.2.3. Discussion

This literature study attempted to define capabilities, both in a conceptual manner and applied in the context of digital technology adoption within firms. The number of studies on digital technology adoption in relation to energy providers focusing on capabilities has proven

to be scarce. The conducted literature search was therefore broader and it can be concluded that the available literature touching the addressed topics is highly fragmented. Clearly, research domain for the research topic is still small. A possible explanation could lie in the recent development of digital technologies, since business literature does report extensively on digital transformation, digital disruption, and digital capabilities. Another possible explanation could be that most of the research is highly practical and is therefore not of interest to the scientific community.

Even though the resulted capability list is far from complete, it can contribute in the discussion of the capability framework created in chapter 4.

4 Framework Digital Technology Adoption

The benchmark of digital technology adoption within the business to consumer electricity utility retail industry in The Netherlands consists of three phases, 1. Planning, 2. Data collection, 3. Analysis. This chapter describes the steps and results of phase 1. Planning of the benchmark, and phase 2. Data collection, as discussed in the Chapter 2. Methodology.

The steps as described in the methodology chapter were:

1. Desk research electricity utility retail industry
2. Construction preliminary framework of capabilities and questionnaire
3. Semi-structured interviews and iteratively improve framework
4. Final framework with questionnaire

These four steps are followed by the data collection. The remainder of this chapter discusses the activities and results per step.

4.1 Desk Research

The first step towards benchmarking the electricity retail industry was the desk research to construct a preliminary framework of digital capabilities. As introduced, the framework was built around three main domains, namely: Digital Sales, Digital Service, Digital Strategy. In order to increase the author's industry knowledge, initial view of trends, and indicate current best practices, a predefined number of sources were used.

Accenture internal knowledge documents

Accenture, internally, has different documents, white papers, and training courses on topics like: Digital Transformation, Digital Utility, Digital Retail, The Utility of the Future, The New Energy Consumer. These sources provided a lot of insights in trends and changes in and outside the utility retail industry in relation to digital technologies and its adoption and disruptive effects on companies and prospects & customers. Even though information of the internal reports and documents cannot be used directly, which also holds for the IDC & Gartner reports, it did contribute to gaining industry knowledge and to building the initial framework.

White Papers

White Papers on digital transformation and industry trends and developments are published by several companies on a regular basis. Whereas some of the white papers are also published in e.g. Harvard Business Review or MIT Sloan Management Review, others are solely published on their company website. Companies that published white papers that were useful to understand the electricity utility retail industry and trends on, and effects of, digital technologies included: Accenture, Capgemini, Deloitte, KPMG, McKinsey, BCG & Javelin Group.

Publications Market Intelligence Firms

Market intelligence firms, of which two major players are IDC & Gartner, conduct their own

research on market trends and adoption rates. Their search engines and reports require a subscription, which Accenture has. Even though their reports and its information cannot be used directly, which also holds for Accenture internal documents, it did contribute to gaining industry knowledge and to building the initial framework.

Company websites & mobile applications

Business to Consumer electricity retail companies' corporate website & mobile apps of Nuon, Essent and Eneco were used to search for aspects and specific capabilities the companies have to address prospect and customer, possible, needs. This generated ideas on how to structure the capabilities and what capabilities could be included.

News websites & Google

News websites such as www.nu.nl, www.fd.nl, and www.nos.nl as well as Google's search engine were used to search for publications and developments within The Netherlands in the, or affecting the, electricity retail industry. This gave ideas on recent and future developments within the industry in The Netherlands as well as possible strategic shifts in businesses.

4.1.1 Search Strategy

To build general industry knowledge and knowledge on digital and its effects and functions, within the mentioned sources several search strategies were used. Initially the search terms used were (and in combination): 'Digital Transformation', 'Digital Service', 'Digital Sales', 'New Energy Consumer', 'Utility Trends'. Then on the retrieved sources on the websites, google search, company news items, and internal Accenture documents both forward snowballing and backward snowballing was used to provide insights in the underlying concepts and sources.

4.2 Construction preliminary framework

The desk research as performed in section 4.1, gave insights in required and current & future capabilities across the three domains. The resulting capability list is structured in 2 levels: Capabilities and the underlying sub-capabilities. As discussed in the literature study, many researchers have formulated different levels of capabilities differently. Again, in this study the structure Domain – Capability – Sub-capability is used. The resulting structure is depicted in the Figure 4.

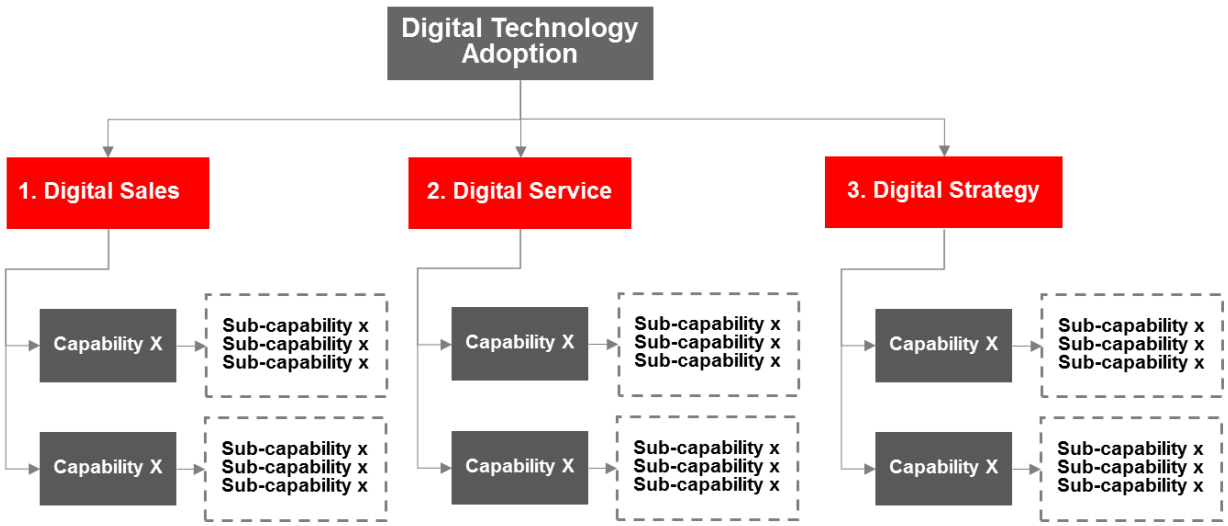


Figure 4 Framework Digital Technology Adoption Electricity Utility Retail

This structure is filled with capabilities and sub-capabilities based on the industry knowledge generated with the desk research. The full list of capabilities and sub-capabilities per domain can be found in the Appendix B, starting on page 5 of the Appendices.

For every sub-capability a closed question is formulated and the requirements to award a score are added. In this preliminary framework for Digital Sales and Digital Service all capabilities and sub-capabilities are assessed both via Mobile and Website, since desk research indicated that these were the two main channels. The assessment should then include both the scores as well as an explanation why the score was awarded. Awarded scores could be *zero*, *half*, and *full* as described in the corresponding score requirements, to keep the scoring possibilities as simple as possible. Initially it was chosen to base the scoring possibilities binary (zero or full), but because the sometimes double barreled questions or ranged questions the third *'half'* scoring possibility was added. Although double-barreled questions could have been prevented, it would have led to either: a need for additional questions per capability or an incomplete assessment of the capability. To simplify scoring choices in the assessment, double-barreled questions were preferred over complex scoring mechanisms. In case that a question or capability is not applicable the score -1 is awarded, which counts as zero. To give an example of a question, including results:

Domain	Digital Strategy
Capability	1. Trend Awareness
Sub-capability	1.3. Smart Home / Connected Home
Explanation	Check whether the company is aware of the rise of smart homes by assessing mentioning of Smart Home or Connected Home in annual reports, news-items and company communication channels (Website, mobile, Twitter, Facebook, LinkedIn)
Score requirements	If mentioned the points are awarded. Only including source & page number
Max Score %	3.6% (Based on total number of capabilities and sub-capabilities)

Awarded Score	Full score
Explanation	Based on: *xx MVO verslag 2013, page 31*: "Energy saving products like remote controlled smart thermostats" & *XX Corporate Responsibility Report 2014, page 56*

Although the Max Score% of 3.6% may seem detailed, the 3.6% as a maximum score is a direct result of the choice to make all capabilities combined add up to 100%. The structure, including the list of capabilities and sub-capabilities, will be used as input for the semi-structured interviews.

4.3 Semi-structured interviews

The second step towards the construction of the final framework is iteratively improving the preliminary framework with a series of interviews. Herein is the preliminary framework the input for interview 1, the improved framework after interview 1 is input for interview 2 etcetera. The expert interviews were scheduled between November 9th, 2015 and December 18th, 2015. Besides the framework, also a brief introduction was given to introduce the research objective and methodology of the research. Although initially only three expert interviews were scheduled, based on the feedback this was extended to the maximum of five – as stated in the methodology – to further improve the framework. This incorporated two additional views and this has, in hindsight, been of value to the framework in terms of structure and confirmation.

The five interviewed experts originated from different Accenture Business entities and levels of seniority. The interviewee details like: the business entity there are in, their level of seniority, and the interview dates can be found in Appendix C. Also details and suggestions per interview can be found in Appendix C.

The interviewed experts were carefully chosen and each of the experts had a specific contribution, view and specialty in relation to the subject at hand. The selection criteria for the interviewees were the following:

- He or she should have in depth knowledge of the utility retail industry or experienced with digital transformations
- The interviewees should be of different seniority levels to increase the objectivity

Furthermore, it was chosen to select only Dutch and Accenture employees as interviewees because of the sensitivity of the research project and because of the time limitations of the MSc graduation thesis project. Based on these criteria I consider the selected interviewees as relevant experts for this research. This did result in some limitations, since by selecting only Dutch employees possible international developments or international experience would perhaps not be incorporated in the framework. Also, since the interviewees are all Accenture employees, they are possibly biased in the sense that they are all consultants meaning they could have a limited view on the matter at hand. Lastly, since the interviewed experts are all

Accenture employees and because of the nature of this research the experts have chosen to remain anonymously.

Each interview was structured around the following three questions:

1. Are there capabilities and abilities that aren't listed in this overview?
2. Do you have comments on the structure of the overview and the questions per level 2 capability?
3. Do you have other comments or suggestions?

Most of their suggestions and feedback was incorporated in the next version, which served as input for the next interview. In case of a conflict of feedback between interviewees a choice was made in consultation with the direct company supervisors of this graduation thesis.

The first interviewee was a technology strategy analyst and has constructed a digital technology adoption analysis tool for insurance and banking. With his practical experience he was able to identify general and practical gaps, as well as posing a few notes to keep in mind for finalizing the framework. His main suggestions were:

- *Add only capabilities wherein a digital component is evident or is enabled via a digital technology*
- *Ask yourself: What if they have this/can do this, what does that mean?*
- *Being digital is also: Everything available and possible without human interference*
- *Keep in mind: How can a certain capability be enabled? Is that digital?*
- *In terms of scope: Make an evaluated decision whether and where to add E-charging*
- *In terms of scope: Make an evaluated decision whether and where to add Smart/Connected Home*

The second interviewee is a manager within the technology strategy practice with experience in utilities, finance and retail. His suggestions were aimed to increase clarity, and therewith usability, and to fill a possible digital strategy gap in the framework. His main suggestions were:

- *Have a look at the Garner Hype-cycle trends for utilities and retail to find additional capabilities especially for digital strategy*
- *Add small summaries on a capability level*
- *Try to align the type of questions and requirements for scoring*

The person that was interviewed hereafter is a senior manager within business strategy with experience in the utility industry. In line with Peter de Wit's suggestions, he stressed the importance of clarity. In addition, he posed questions on possible results and the transition needed to develop crucial capabilities and the investments needed to reap the benefits. His main suggestions were:

- *The list and questionnaire has some doubles. Have a look at this and try to make the overall list of capabilities as mutually exclusive and collectively exhaustive as possible*
- *Have a look at the strategic assets for utilities to identify in which directions utility retail can develop in the future and add this to the strategic capabilities*
- *Formulate as short and sharp as possible*

The fourth interviewee is a senior manager within the digital consulting division wherein he has experience in the customer-focused capabilities in the utility and retail industries. He posed many suggestions on a capability and sub-capability level to improve and extent the framework. His main suggestions were:

- *Address Omni-channel more explicit. Are there channels or possibilities that can be measured?*
- *Concerning Reachability: add Facebook, Twitter and other social media*
- *On additional services/products, split in:*
    1. *E-thermostat*
    2. *Storage*
    3. *Safety/Security*
    4. *Smart Appliances*
- *On Payments: add projected annual year end payment*
- *On Payments: add Adjust budget bill plan*

The fifth and last interviewee, an IT strategy manager, has experience in the resources industry and his main contributions were on the structure and scoring criteria of the framework. His main suggestions were:

- *On scoring: combine Mobile and Website columns in one column. Differentiate where needed into different channels (Facebook, WhatsApp, Mobile, LinkedIn, Website) where needed in the requirements and explanation.*
- *General suggestions to enhance mutually exclusiveness and collectively exhaustiveness*
- *Assess Digital Sales as a prospect, Digital Service as a customer, and Digital Strategy as a trend-watcher/investor/strategy consultant*

4.4 Final Framework

After the final interview, a last iteration was made and the resulting framework consisted of 14 capabilities divided into 87 sub-capabilities. Capability and sub-capability explanations and score requirements were included as well. The complete framework & Questionnaire is included in Appendix D. The capabilities per domain were structured as depicted in Table 10. Also the 87 underlying sub-capabilities can be found in Appendix D. As said in section 4.3. Semi-structured interviews, most of the suggestions of the interviewees were incorporated in

the next version of the framework. In case of a conflict of feedback between interviewees a choice was made in consultation with the direct company supervisors of this graduation thesis.

Table 9 Overview Digital Capabilities per Domain

Digital Sales	Digital Service	Digital Strategy
1. *Sales Channels*	1. *Reachability*	1. *Trend Awareness*
2. *Sales Process*	2. *Smart Home Services*	2. *Recognition Digital*
3. *Omni-Channel Sales*	3. *E-vehicle Services*	3. *Strategy*
	4. *Customer Data*	4. *New Business Activities*
	5. *Omni-Channel Support*	
	6. *E-insights*	
	7. *Payments*	

To briefly elaborate on each capability:

Digital Sales

1. *Sales Channels* assesses, from a prospect perspective, to which extend sales and sales related services are offered.
2. *Sales Process* assesses, from a prospect perspective, to what extend the sales process is automated and cross-selling is implemented. This represents the maturity of the fundamental sales capabilities
3. *Omni-channel Sales* assesses to what extent the company has implemented Omni-channel for Sales purposes. Thus does the company allow social log in and uses it social log in to remember prospects and acquire data on them to advance the sales records. Moreover, to assess whether the company does allow and develop a seamless experience by integrating different sales channels into one system.

Digital Service

1. *Reachability* assesses via which channels and the possibilities within that channel the company has to provide services to their customers.
2. *Smart Home services* assesses the activities towards smart home services and which basic capabilities the company has developed/provides in smart home services.
3. *E-vehicle Services* provides an overview of the E-vehicle services of the company and whether the company has developed services and integrated these within their existing business.
4. *Customer Data* provides an overview of the available customer data and general preferences/services the company provides automated via website and mobile.
5. *Omni-channel Support* assesses to what extend Omni-channel support has been adopted by the company. This provides, in combination with Sales section 3 , insight in the extend of integration of back-end systems.
6. *E-insights* provides an overview of the e-insights the company provides to its customers via mobile and website to assist and visualize their energy management.

7. *Payments* assesses what possibilities the company offers services regarding payments via both website and mobile and to what extend customers can alter preferences.

Digital Strategy

1. *Trend awareness* assesses whether the company recognizes seven big trends affecting the utility retail industry.
2. *Recognition Digital* assesses to what extend the company recognizes the disruptive effects of digital technologies and its effect on the utility retail business
3. *Strategy section* assesses the digital vision and whether the company has formed a strategic alliance to cope with the changing market and extent to new markets.
4. *New Business Activities* provides insights in to what extent, and in which directions the company is expanding its business to cope with the changing market.

In relation to the framework derived in the literature study in Chapter 3.2, the derived framework via interviews and desk research is more in depth on Sales, Service, and Strategy. But a limitation of this approach is that possible capabilities related to organizational and IT infrastructural aspects did not come up. In the discussion section this will be discussed more in depth, but it seems that a framework as derived from scientific literature could have contributed in the construction of the final framework, especially from an exploratory perspective.

4.5 Data Collection

The next phase in the benchmark is the data collection phase. As stated in Chapter 2. Methodology, the number of benchmarked companies will be limited because of two main reasons; 1. The Dutch Business-to-Consumer electricity utility retail market does not hold too many companies and 2. Time-wise the planning of this thesis does not allow a large number of companies to be assessed. Therefore the number of assessed companies is limited to seven.

To assess a representative group of companies and include at least 90% of the Dutch market, it was preferred to include at least one company of the following types:

- incumbent
- new entrant
- multinational
- green
- budget
- non-profit

In The Netherlands the three largest incumbents have a combined market share of about 80%, these are Nuon, Eneco and Essent.[7] In addition, a new entrant, Nederlandse Energie

[7] Autoriteit Consument & Markt, https://www.acm.nl/nl/download/publicatie/?id=14218, retrieved on: January 7th 2016

Maatschappij has around 800.000 customers[8], which is about 10% of the market. Herewith around 90% of the market would be covered. The Nederlandse Energie Maatschappij is a budget-type company and a relative new entrant to the market and so is EnergieDirect. EnergieDirect is a label of Essent/RWE. To cover the multinational type companies, Nuon is owned by Vattenfall, whereas Essent is owned by RWE. In the Dutch market E.On is a small player, but in the rest of Europe E.on is one of the larger multinational utility companies. Lastly, in The Netherlands there is one player who can be categorized as green and non-profit, namely, Qurrent. Combined the companies in this section already add up to seven and together cover all the types of companies. The overview per category is displayed in Table 10.

Table 10 Companies for benchmark per category

Category	**Company**
incumbent	• Nuon • Eneco • Essent
new entrant	• Nederlandse Energie Maatschappij • Qurrent • EnergieDirect
multinational	• E.on • Nuon (Vattenfall) • Essent (RWE) • EnergieDirect (RWE)
green	• Qurrent
budget	• Nederlandse Energie Maatschappij • EnergieDirect
non-profit	• Qurrent

The seven selected companies were:

1 Nederlandse Energie Maatschappij
2 Essent
3 Nuon
4 E.on
5 Qurrent
6 EnergieDirect
7 Eneco

For every company the data is collected via desk research, which included but was not limited to: corporate responsibility reports, annual reports, company websites, mobile applications, news-websites, Google and social media like Facebook, Twitter, Youtube, WhatsApp & LinkedIn. Since companies can attempt to display themselves different to their actual situation, all sources used are assessed as objectively as possible. However, due to the data

[8] De Nederlandse Energie Maatschappij, www.nle.nl, retrieved on: January 14th 2016

collection method, there is a possibility of misrepresentation of the assessed companies in the results. This is one of the limitations of this research and limits direct quantification of the results.

The assessment of each of the three sections – Sales, Service, Strategy – had a different perspective. The sales domain was analyzed from a prospect perspective, meaning as a potential customer. The service domain was analyzed from a customer perspective, meaning as a customer, wherefore actual log in credentials were required to collect all the data. The strategy section is analyzed from a trend-watcher/investor/strategy consultant perspective.

The data was documented in excel, anonymized, and is included in appendix E. The closed questions are answered with yes or no. When the question is double-barreled, or a number is required, three possible answers are possible: yes, half, no. The requirement to award a certain score are predefined in the requirements per question. This increased both clarity and reproducibility. To increase the verifiability, and provide contextual information, a motivation including source was provided per question. The desk research to collect data was solely performed by the author; However, given the explanation per capability and the extensive score requirements, anyone could have collected the data and should have retrieved the same results.

5 Results Digital Technology Adoption Benchmark

This chapter describes the benchmark results, which is the analysis phase of the benchmark methodology. In section 5.1 the analysis and the benchmark results are discussed. Hereafter, in section 5.2 the benchmark methodology and results in general are discussed to assess whether it can be considered a good benchmark according to the key characteristics of a good benchmark defined by Huppler (2009).

5.1 Benchmark Results

In the previous chapter the framework was built and the data was collected. As explained in Chapter 4.2 Construction preliminary framework, per question a normative scoring mechanism is applied with a maximum of three possible answers. The scoring possibilities were either Full, Half, or Zero. Although in most benchmarks a type of five scale Likert maturity scale is used, it was chosen to limit the scoring possibilities to maximum of three. This was chosen to enhance the clarity on an individual question level, since it enforced clear questions and straightforward answers, which increases the reproducibility.

To keep the benchmark as clear as possible, a simple scoring analysis was applied. Every domain – Digital Sales, Digital Service, Digital Strategy – has a total of 100%. The underlying capabilities sum up to the 100%. E.g. In digital sales three capabilities are defined, the maximum score per capability is then 100% divided by three, thus 33% per capability. Same holds for the sub-capabilities. The maximum score per capability is divided by the number of level 2 capabilities to calculate the maximum score for that particular sub-capability. Herein the Full, Half, Zero, result in respectively Full, Half, or Zero score on per question. For Excel purposes, the Full, Half, and Zero was converted to a 2, 1, and 0 respectively, accompanied with an explanation why a certain score was awarded. The data can be found in Appendix E.

To come to a final degree of digital technology adoption the scores per domain were averaged, and therefore the resulting degree of digital technology adoption is a percentage of a maximum of 100% percent.

The digital technology adoption can be discussed on a general level, per domain, per capability, and per sub-capability. If required, the supporting data and motivation can easily be displayed. However, due to sensitivity of the results and since it is unnecessary to fulfill the main objective of this research, the results are not discussed in detail.

To continue, the analysis provided insights in the individual differences, possible weaknesses – both for the market and for the individual companies –, and best practices on the capability and sub-capability level. Although these insights are not of direct value to this thesis and therefore not discussed here, more findings are presented and discussed in the evaluation interviews which are part of the next section, Benchmark Evaluation.

5.2 Benchmark Evaluation

In this section the benchmark is evaluated. Huppler (2009) argued that five key aspects define a good benchmark. The five aspects Huppler (2009) defined were: Relevance, Repeatable, Fair, Verifiable, and Economic feasible. He also argued that relevance and the other aspects are balanced on a scale. Herein an excellence on one aspects holds implications on the other(s). Moreover, a good benchmark should excel in one or two key aspects, whilst remaining acceptable on the others. The next sub-sections discuss these aspects one by one. The discussion incorporates four sources, namely:

1. Methodology
2. Literature study
3. Benchmark results
4. Evaluation interviews

5.2.1. Relevance

To discuss the relevance of the benchmark, Huppler (2009) that a benchmark should have certain properties. First, the benchmark and the results should be *meaningful and understandable* for the target audience. Second, the benchmark should be *leading edge*. This means that the benchmark should remain within reason. Third, the benchmark model should have a *broad applicability*. Fourth, the benchmark should *not misrepresent itself*. Fifth, the benchmark has *a target audience that wants the information*.

To discuss the relevance, the benchmark data, the used methodology, and the results were discussed with five senior Accenture Strategy employees covering Business & Technology Strategy and with seniority levels *manager, senior manager, managing director*. The interviewees were asked to discuss the relevance of the benchmark and to address suggestions for improvement. Based on their seniority, industry focus, and familiarization with digital in the broadest sense in their recent projects, I consider them experts and suitable interviewees. Due to the sensitivity of the research results, the interviewees have chosen to remain anonymously. In general the interviewees were complimentuous on the extensiveness of the results and the factual basis of the benchmark. Moreover, they were eager to use the results for future projects. Lastly, they all stated that the benchmark is relevant and reflects the current state of the industry. The input for the interviews (Benchmark Data & Presentation) can be found in Appendix E & F. The interview list can be found in Appendix G.

Reflecting on the first benchmark relevance property *meaningful and understandable*, the interviewees were not only enthusiastic about the results, they collectively stated the benchmark results gave relevant insights and the used methodology was easily understandable. Specifically the scoring mechanism and the explanation & requirements to score were applauded. In their opinion, the basis of the insights were clear and the underlying data was easily retrievable.

To continue, the second property *leading edge* is incorporated in the construction of the framework. The capabilities and sub-capabilities building up the framework and the

instantiation via the questionnaire and requirements were evaluated and improved in the framework interviews. These interviews ensured a final questionnaire that assessed companies on aspects that are leading edge, but there were no capabilities included that cannot realistically be met today. Moreover, the evaluation interviewees are eager to present the benchmark insights to the CIO's of the Dutch energy providers and they state that the benchmark whilst providing an overview of the current status within the industry, it also surfaces vulnerabilities of the industry as a whole and shortcomings of companies in specific. Combined, it may be concluded that the benchmark is leading edge. However, given the fast pace of digital technology developments and therewith service and business model innovation, the questionnaire and score requirements in this benchmark can become outdated in the near future.

The third property is *broad applicability.* The scope of this benchmark is limited to the utility retail industry in The Netherlands industry-wise. Also, the scope is limited to the sales, service, and strategy domain. As discussed in the literature study, additional domains that could be assessed are IT-infrastructure, Organization, and Products. In addition, the many of the capabilities on a sub-capability level are industry specific. On the other side, the used benchmarking process itself is speculatively widely applicable, but additional research will be needed to confirm this. To conclude, the constructed benchmark cannot be addressed as broadly applicable, however, it can neither be concluded that the constructed benchmark is not.

The fourth property is that the benchmark *does not misrepresent itself.* By describing all steps taken to come to the result as well the availability of the data collected in the process made the benchmark insightful. Moreover, in the evaluation interviews it became clear that both the purpose of the benchmark, as well as the limitations of the benchmark were clear. For clarity, in the evaluation interviews a presentation was given on the used methodology, objectives, and the results. The presentation can be found in Appendix F which can be found starting from page 65 of the Appendices. Since the methodology and the benchmark results has been clear and the benchmark attempts to present an objective overview of digital technology adoption, it may be concluded that the benchmark does not misrepresent itself.

The fifth and last property is that the benchmark has *a target audience that wants the information.* Not only was this benchmark constructed in cooperation with, and for, Accenture Strategy, the resulting insights are likely to be incorporated in future discussions with energy providers C-level executives. Therefore, it may be concluded that the benchmark has a clear target audience that also wants the information.

Combined, the discussion on the five properties of relevance of the benchmark learned that the benchmark's relevance is good since it performs well on four of the properties. It is only not clear whether the benchmark is widely applicable. Further research should evaluate this. However, combined, it may be concluded that the overall relevance is good especially since the interviewees, who have a business perspective, value the relevance as high.

5.2.2. Repeatable

To continue, the second aspect of a good benchmark is repeatability. This means that a re-run of the benchmark yields the same results. Since all steps in the benchmark are well documented and made available in the appendices. Prerequisites for repeatability include that the internal documents used to construct the preliminary framework are made available in that case. In addition, the re-run should be based on the current state of the industry since both the industry as the innovation and therewith digital possibilities are moving on a high pace. To conclude, given the well-documented appendices and the clear methodology, if one would request a re-run, the resulting benchmark framework would be comparable. Moreover, a re-run of the assessment should retrieve nearly the same results, since the analysis is kept simple and is documented, and the explanations and requirements to award a score a documented and made available in Appendix C, which can be found starting from page 15 of the Appendices.

5.2.3. Fair

The third aspect of a good benchmark is *fairness*, meaning all benchmarked objects/companies are benchmarked equally. In this case it means that all seven companies are assessed equally. Although the companies are all assessed on the same capabilities and all assessments were done by the author, not all capabilities were applicable to all companies. For example, only three companies had E-vehicle services, whereas only five of seven companies had a smart thermostat solution. In addition, companies can deliberately choose not to develop or make certain capabilities available for their customers. The benchmark does not compensate for these aspects. On the other hand, this is only a small part of the assessment, and the underlying data is available. Moreover, the purpose of the benchmark, from a business perspective, is to assess which capabilities companies have developed. The benchmark does evaluate all companies equally on the developed and available digital capabilities. Therefore, it may be concluded that the fairness of the benchmark is decent, but there are possibilities for improvement.

5.2.4. Verifiable

To meet the fourth aspect, *verifiable*, it should be possible to check the benchmark on accuracy. Since all steps in the benchmark are well documented and all data including explanation has been made available in the appendices, the benchmark can be checked on accuracy even on a detailed level. Therefore, it can be concluded that the benchmark is verifiable.

5.2.5. Economic feasible

The last aspect of a good benchmark is *economic feasible*. This means that constructing and performing the benchmark should be worth the investment of the resources. Since, in this occasion, the construction of the benchmark and performing the benchmark is part of the MSc research project, it is economically feasible. However, in commercial circumstances, there should be another weighted evaluation. If the perceived value of the insights of this

benchmark is worth paying for and can be used to form new strategies and define projects, then, given the resources spent, this benchmark is also economically feasible in commercial circumstances. This evaluation cannot be included in this project since this would be classified information. However, based on the evaluation interviews, it can be stated that the perceived value of the detailed insights is high.

To conclude on the benchmark evaluation, combining the discussion of the five key aspects of a good benchmark, it can be argued that the constructed and performed benchmark can be considered a decent benchmark. Not only is the benchmark perceived as highly relevant, the extensive documentation and the insightful data where the analysis was based on made the benchmark verifiable and reproducible. One of the aspects that could be improved were the relatively small applicability in this research, and further evaluation of the aspect of economic feasibility. Further discussion on the result of the benchmark and the methodology and its limitations are discussed in Chapter 6. Discussion & Conclusion.

6 Discussion & Conclusion

This chapter presents the discussion and conclusion to this thesis. First, in the discussion the benchmark methodology and the framework are compared to the literature. In addition the limitations and challenges are discussed. Second, in the conclusion the main research question is answered. The discussion in the following chapter builds upon the discussion under chapter 5.2 Benchmark evaluation.

6.1 Discussion

In this research project, a benchmark was designed and executed. The benchmark scored utility retail companies in The Netherlands on their digital technology adoption based on public information. In this benchmark the maximum score could be achieved if the company had implemented all defined capabilities and sub-capabilities. One of the limitations of the approach is that it is unlikely that an energy provider has all digital capabilities. Most energy providers seem to have different (digital) strategies and are targeting a different market segment. Therefore it is very unlikely for an energy provider to obtain a maximum score.

In addition, in the current assessment, the some capabilities may seem very easy to obtain, whereas other capabilities implicate complete IT-Infrastructural and Organizational changes in order to obtain them. In the current scoring mechanism this is not differentiated. A possibility would be to balance this making use of weighted digital capabilities. But then the question arises of how exactly these weights should be implemented. Moreover, coming up with arguments to appoint a specific weight to a capability can be trivial, since the difficulty of implementation is hard to assess and possibly company specific. Instead of adding weights based on the difficulty of implementation, weights can also be added based on importance.

To continue, in this MSc research project, capabilities for digital technology adoption were derived both via scientific literature and expert interviews. The literature study on digital capabilities attempted to define capabilities, both in a conceptual manner and applied in the context of digital technology adoption within firms. The number of studies on digital technology adoption in relation to energy providers focusing on capabilities has proven to be scarce. The conducted literature search was therefore broader and it can be concluded that the available literature touching the addressed topics is highly fragmented. Clearly, research domain for the research topic is still small. A possible explanation could lie in the recent development of digital technologies, since business literature does report extensively on digital transformation, digital disruption, and digital capabilities. Another possible explanation could be that most of the research is highly practical and is therefore not of interest to the scientific community.

However, comparing the literature capabilities to the capabilities that were derived with help of expert interviews could still be interesting. Table 11 presents these capabilities. In the table, the first column the domain is listed, in the second column the capabilities found via desk research and expert interviews are listed, whereas the third column listed the capabilities adapted from the literature study. In the table the supporting sub-capabilities are removed to increase the comparativeness on a general level.

Table 11 Comparison Capabilities Literature and Framework

Domain	Benchmarked Capabilities	Literature Capabilities
Sales & Service	1. Sales Channels (Sales) 2. Sales Process (Sales) 3. Omni-channel Sales (Sales) 4. Reachability (Service) 5. Smart Home Services (Service) 6. E-vehicle Services (Service) 7. Customer Data (Service) 8. Omni-channel Support (Service) 9. E-insights (Service) 10. Payments (Service)	1. Customer Experience 2. Customer Self-service 3. Mobile Commerce 4. Social Media 5. Connected Prosumer
Strategy	11. Trend Awareness 12. Recognition Digital 13. Strategy 14. New Business Activities	6. Chief Digital Officer 7. Value Proposition 8. Trend Awareness 9. Digital Awareness 10. Digital Strategy
IT Infrastructure	Out of scope	11. Integration of systems 12. Service Oriented Architecture 13. Governance 14. Operations Digitization
Organization	Out of scope	15. Align Organization for E-commerce 16. Incorporate new skills 17. Digital Culture 18. Leadership 19. IT-Business Relationships 20. Internal Collaboration
Products	Included in Service Domain	21. Smart Connected Products

Not all domains identified in the literature study were included in the benchmark in this MSc research project. The scope was limited to the service, sales, and strategy domain, not only because the experts believed that it was not possible to assess the IT infrastructure and organizational digital capabilities from an outside perspective, it was also argued that most digital capabilities in the sales and service domain implied certain developments such as integration of systems on the back-end domains like organization and IT-infrastructure.

Herewith, the digital capabilities defined in this benchmark provides indirect information on the status and performance of back-end domains. However, to make this insightful, it would be beneficial to also assess the IT-infrastructural and organizational aspects.

Moreover, scientific literature seems to barely distinguish between the Sales and Service domains. This was also discussed in one of the framework interviews. Ultimately, it was concluded that the sales and service domain, although they share many channels, digital technologies, and capabilities, have a different approach. The digital capabilities defined in the Sales domain are aimed at prospects, so potential customers, whereas the Service domain is focused on existing customers. However, from a literature perspective it could be argued to combine the two domains. Implications of combining the two domains would be that the scoring alters; the sales and service capabilities will have less influence on the overall digital technology adoption, whereas strategy capabilities have an increased influence on the overall digital technology adoption score.

Except that the capabilities defined within the assessed domains look similar, it is increasingly difficult to discuss the differences on a capability level since the comparableness is susceptible to changes of definition of the capabilities. Moreover, on a sub-capability level the capability list derived from literature has been far from complete. To conclude, it would be beneficial to include the capabilities derived from the scientific literature to make an improved benchmark.

To continue, given that the derived capabilities from scientific literature are more generic to retail and service organizations, the improved framework could be a start to develop a framework that can be used to benchmark a broad industry, and include the IT-infrastructure and organization domains.

Camp (1989) stated that benchmarking cannot be learned by reading a book or taking a class. It is a hands-on experience and mistakes are often inevitable. But, these mistakes can be avoided by setting goals and following strict rules to achieve them. This was done in this research. Clear steps were formulated, and views of experts were included to come to the result. However, the interviewees were all employees of Accenture, which could have given a colored view. It would be beneficial to have included additional views by adding non-Accenture experts to the interviewees. Furthermore, it is important to realize that benchmarks can become outdated soon. This research project, however, contains a method that allows for a consistent benchmark to be executed in the coming year. Therefore only the relevant digital capabilities need to be re-evaluated on a yearly basis, but the overall methodology remains the same.

This MSc research project constructed a benchmark methodology that based its data collection phase solely on publicly available information. Even though the perceived value of this benchmark model was high, and the benchmark can be considered a decent benchmark according to section 5.2., in order to actually contribute to the scientific literature the used approach and the constructed model needs to be evaluated by doing for example verifying the model by applying it to a different industry and compare the results with a conventional

approach to benchmarking applied on digital technology adoption within the electricity utility retail industry in The Netherlands whilst keeping all other variables a comparable as possible.

6.1.1 Limitations

Beside the aspects of a good benchmark discussed by Huppler (2009) and Kathawala (1997), the literature study learned that several other authors also addressed concerns and possible limitations of benchmark models and the benchmarking process. For example, Kathawala (1997) states that the main problem with benchmarking is the focus on data instead of focus on the process on how that data was created. He argued that a benchmark should not be used for its precision, but as a guide for improvement. The benchmark performed in this thesis also solely provides guidelines and possible opportunities, it cannot be seen as a road map. Eventhough this limits the direct practical applicability, it does indicate that the resulting benchmark, as discussed in section 5.2, is in line with the expectations of a benchmark according to Kathawala (1997).

In addition, Jetmarová (2011) stated that although following the steps in a benchmark model is important, one cannot just adopt a certain benchmark approach. Moreover, she added that support of high level management, employee involvement, implementation experience and internal situation prioritization contribute to a successful benchmarking process. Lastly, one cannot simply incorporate an industry best practice, a best practice always has to be adapted to a specific company (Kathawala, 1997). So in order to successfully use the benchmark, one must be able to interpret and adapt the findings to its specific situation.

One of the limitations of this research is that, although interviews were conducted to build the initial framework of capabilities, the interviewees were all employed by Accenture. An attempt to diversify the interviewees was made, but interviewing CIO's and higher management of utility retail companies has not been possible. Therefore diversification was limited to different departments within Accenture and with employees of different seniority and with different expertise. However, to increase the diversity of interviewees and therewith incorporate additional views and expertise, it may have been beneficial to interview experts from the scientific field and experts within the industry.

One of the more practical limitations of this benchmark, is that it does not tell energy providers what capabilities to develop in order to meet customer needs, since the benchmark solely analyses the current state of digital technologies. It does not evaluate the digital customer needs. Therefore, a direct relation to customer satisfaction cannot be made in the current research. In order to discuss possible relations of digital technology adoption in general or specific digital capabilities with other organizational metrics such as customer satisfaction, financial results, headcount, customer satisfaction, profit margin, customer retention, prospect conversion, and revenue, the number of benchmarked companies should be increased from seven to preferably thirty for statistical relevance. This is in line with a suggestion of a senior manager in one of the evaluation interviews. It was stated that *"to*

increase the value of the benchmark you should relate digital technology adoption to key performance indicators".

6.2 Conclusion

The main objective of this research was to benchmark digital technology adoption within the electricity utility retail industry in The Netherlands, which resulted in the following research question:

> *"How can we benchmark digital technology adoption (within the electricity utility retail industry in The Netherlands) using only publicly available information in the data collection phase?"*

In this research a clear benchmark methodology that based its data collection phase solely on publicly available information was constructed. Hereafter, the instantiation with a framework based on digital capabilities and subsequent benchmarking of digital technology adoption was performed and evaluated. The benchmark was discussed on the basis of the main aspects of a good benchmark, defined by Huppler (2009). From this information, it can be concluded that the benchmark constructed in this MSc research project is a decent benchmark. Hereby, the research objective is met and the main research question has been answered. In addition, seen from a business perspective, the contributions have been of clear value. However, from a scientific perspective, further research is necessary to validate the results and methods, even though these can be seen as promising. To conclude, this thesis has proven a decent benchmark can be constructed, however, to fully validate the benchmark model from a scientific perspective and increase practical relevance, further research is needed. In order to kick-start this further research, directions to guide this are given in the next chapter.

7 Recommendations

This chapter discusses the recommendations resulting from the research. The recommendations evolved from the previous chapter and are structured around two main topics. First, recommendations are discussed for further research to increase the scientific contributions. Second, suggestions are made to improve the current framework and benchmark for the utility retail industry in specific and to retail and service industries in general.

7.1 Scientific contributions

Within this MSc research project, a benchmark methodology, solely based on publicly available information in its data collection phase, was constructed. In section 5.2., it was discussed that the benchmark constructed can be qualified as decent. However, since only an unconventional data collection method has been used in this research project, it does not measure the effectiveness of this particular data collection method and thus does not highly contribute to scientific literature. Because the benchmark was particularly well-retrieved, it would prove valuable to investigate and compare the two data collection methods to contribute to the scientific literature on this topic. To achieve this, one could first verify the model by applying it to a different industry, and second, compare its results to the results of a conventional benchmark model. Important here would be to keep all other variables as comparable as possible.

7.2 Improve Framework

In the current assessment, some capabilities seem very easy to obtain, whereas other capabilities implicate complete IT-Infrastructural and Organizational changes in order to obtain them. In the current scoring mechanism this is not differentiated. As discussed a possibility would be adding weights to the capabilities based on importance. A way to do this is applying the best-worst method. Herein several experts are asked to pair-wise repeatedly indicate which capability is more important/or implies being ‘more digital’. Also, from a scientific perspective it would be interesting to add weights to capabilities and aspects of the organization. This has not done before on this topic and it would contribute to managerial practices and strategic choices. In addition, the weights combined with a more general framework of domains and digital capabilities would give insights to the importance of different digital technologies for superior competitiveness.

8 References

Anand, G., & Kodali, R. (2008). Benchmarking the benchmarking models. *Benchmarking: an international journal, 15*(3), 257-291.

Baker, J. (2015, 11-17 May 2015). Rick pickings lie within easy reach. *ICIS Chemical Business,* 3.

Barrett, M., Davidson, E., Prabhu, J., & Vargo, S. L. (2015). Service innovation in the digital age: key contributions and future directions. *MIS Quarterly, 39*(1), 135-154.

Bhutta, K. S., & Huq, F. (1999). Benchmarking - best practices: an integrated approach. *Benchmarking: an internation journal, Volume 6*(Issue 3), 254-268.

Camp, R. C. (1989). Benchmarking: the search for industry best practices that lead to superior performance. *Milwaukee, Wis; Quality Press; Quality Resources*.

Carlsson, & Bo. (2004). The Digital Economy: what is new and what is not? *Structural Change and Economic Dynamics, 15*(3), 245-264. doi:http://dx.doi.org/10.1016/j.strueco.2004.02.001

Dattakumar, R., & Jagadeesh, R. (2003). A review of literature on benchmarking. *Benchmarking: an internation journal, Volume 10*(Issue 3), 176-209.

Elmuti, D., & Kathawala, Y. (1997). An overview of benchmarking process: a tool for continuous improvement and competitive advantage. *Benchmarking for Quality Management & Technology, 4*(4), 229-243.

Frandina, P., Bjacek, P., & Walczyk, K. (2015). Chemical Business: Time to go Digital. *ICIS Chemical Business,* 2.

G. C. Kane, Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2015). Strategy, not technology, drives digital transformation. *MIT Sloan Management Review and Deloitte University Press*.

Gartner. (2014). What Service Providers Must Do to Succeed in the Digital Era. 12. Retrieved from https://www.gartner.com/doc/2808330/service-providers-succeed-digital-era

Hansen, R., & Sia, S. K. (2015). Hummel's Digital Transformation Toward Omnichannel Retailing: Key Lessons Learned. *MIS Quarterly Executive, Volume 14*(Issue 2), 51-66.

Huppler, K. (2009). *The Art of Building a Good Benchmark*. Paper presented at the First TPC Technology Conference: Performance Evaluation and Benchmarking, Lyon, France, August 2009.

IDC. (2016). The Digital Transformation Opportunity in Europe: Trends, Maturity, and the Next Big Thing by IDC's Jan van Vonno. Semi-public Presentation: IDC.

Jetmarová, B. (2011). Comparison of Best Practice Benchmarking Models. *Problems of Management in the 21st Century, Volume 2*, 9.

Keller, W. (2009). Using capabilities in Enterprise Architecture Management. Retrieved from http://www.objectarchitects.biz/ResourcesDontDelete/CapabilityBasedEAMWhitepaper.pdf

Kharbande, M. (1995). Effective Benchmarking. *Statements of Management Accountants: Business Performance Management*, 38. Retrieved from www.imanet.org

Lucas Jr, H. C., & Goh, J. M. (2009). Disruptive technology: How Kodak missed the digital photography revolution. *Journal of Strategic Information Systems, 18*(1), 46-55. doi:10.1016/j.jsis.2009.01.002

Lunardi, G. L., Becker, J. L., Maçada, A. C. G., & Dolci, P. C. (2014). The impact of adopting IT governance on financial performance: An empirical analysis among Brazilian firms. *International Journal of Accounting Information Systems, 15*(1), 66-81. doi:http://dx.doi.org/10.1016/j.accinf.2013.02.001

McNair, C. J., & Leibfried, K. H. J. (1992). Benchmarking: a tool for continuous improvement. *OMNEO*.

Merrifield, R., Calhoun, J., & Stevens, D. (2008). The next revolution in productivity. *Harvard Business Review*.

Nilashi, M., Ibrahim, O., Mirabi, V. R., Ebrahimi, L., & Zare, M. (2015). The role of Security, Design and content factors on customer trust in mobile commerce. *Journal of Retailing and Consumer Services, 26*, 57-69.

Nylen, D., & Holmstrom, J. (2015). Digital innovation strategy: A framework for diagnosing and improving digital product and service innovation. *Business Horizons, 58*, 57-67.

Porter, M. E., & Heppelmann, J. E. (2014). How Smart, Connected products are transforming competition. *Harvard Business Review, November 2014*.

Porter, M. E., & Heppelmann, J. E. (2015). How smart, connected products are transforming companies. *Harvard Business review, October 2015,* 19.

Porter, T., Manley-Casimir, N., & Saint, A. (2014). Architecting the Future: Consumer now are setting the agenda. *Fortnightly Magazine*.

Rasouli, M. R., Trienekens, J. J. M., Kusters, R. J., & Grefen, P. W. P. J. (2015). *A Dynamic capabilities perspective on service-orientation in demand-supply chains.* Paper presented at the 7th Industrial Product-Service Systems Conference.

Scott, J. (2014). Putting Business Capabilities to Work.

Thomas, I. I. I. (2014). *Making IT all work together enabling new business models in the web of everything*.

Westerman, G., Tannou, M., Bonnet, D., Ferraris, P., & McAfee, A. (2014). *The Digital Advantage: How digital leaders outperform their peers in every industry*. Retrieved from

Can I turn in a paper without citing all sources?

"No"[9]

[9] William Shakespeare, *Hamlet,* Act III, Scene I, line 96

9 Appendices

This chapter holds all the appendices.

Appendix A Literature Study Methodology

The literature studies within this MSc research project are each structured in three steps, described below. This appendix was first mentioned in the report on page 20.

Step 1: Searching for Literature

The main objective of this step is to search for literature by different search methods. First, a so-called 'long list' will be created, then, this 'long list' will be, based on the abstracts, reduced to a 'short list' of about 10-15 relevant sources.

In order to find all relevant information to answer the research question, the following search strategies can be used:

1. Use a set of keywords related to the topic. Adjustments to this set should be made based on new insights
2. Search in references of relevant articles to find new keywords or new relevant articles. Search engines algorithms that provide suggestions for articles, like ScienceDirect, can also result in new relevant articles
3. Search for authors who are known for their contribution in a specific field
4. Visit workshops or conferences and read the proceedings focusing on the research problem area

In the search for information, several electronic search engines can be used. These include: Google, Google Scholar, ScienceDirect, Scopus & TU Delft E-library.

Subsequently, the retrieved sources are, based on their abstracts, reduced to a list of 10 to 15 relevant sources.

Step 2: Reading & Summarizing

The second step consists of reading and summarizing the sources in excel, including the most important findings and statements of each article. At least included in the excel is the following information:

- Author(s)
- Year published
- Number of citations
- Title
- Keywords
- Key findings / statements

Step 3: Synthesizing Results

The third step consists of synthesizing the results to provide an overview of the sources and

identify different models/opinions/statements. It is also used to discuss the limitations and insights. In general, the following structure is used to synthesize the results:

1. Introduction to the subject
2. Overview of the main views
3. Factors addressed
4. Challenges & Limitations

Appendix B Preliminary Capability Framework

This appendix presents the pre-interview framework of capabilities and sub-capabilities per domain. The preliminary framework is structured around three domains This appendix was first mentioned on page 42 of the MSc project research report. The three domains are:

1. Digital Sales
2. Digital Service
3. Digital Strategy

1. Digital Sales

7 capabilities, 25 sub-capabilities

1. Customer Process

1.1. Decentralized authentication mechanisms

1.2. Video Call

1.3. Online Chat

1.4. Direct Mail

1.5. Direct Call

1.6. Call me back option

1.7. Responsive Design Website/App

1.8. General Terms & Conditions directly available

2. Authentic Products

2.1. Conclude Electricity Contract

2.2. Conclude Natural Gas Contract

2.3. CV-ketel advisory / buy / Lease?

3. E-vehicle Products

3.1. Conclude E-vehicle Electricity Pass Contract

3.2. Smart Charging

3.3. E-Car-as-a-Battery Support

4. Smart Home Products

4.1. E-thermostaat

4.2. Smart Meter

4.3. Smart CV-ketel

4.4. Analytics Solutions

4.5. Smart Beyond-the-meter Solutions

5. Energy Production Products

5.1. PV-collectors

5.2. Home Biogas

5.3. Cold/Heat system

5.4. Windmill

6. Energy (Saldering)

6.1. Possibility to conclude Saldering contract

7. Cross-selling

7.1. Smart suggestions based on other buys

2. Digital Service

6 capabilities, 34 sub-capabilities

1. Reachability

1.1. Direct call

1.2. Direct mail

1.3. Direct chat

1.4. Call me back option

1.5. Video Chat/support

2. E-vehicle/smart home services

2.1. Integration with current energy contract

2.2. Beyond-the-meter product support

2.3. Change Electricity E-vehicle pass contract

2.4. Support Home Automation systems

2.5. “Schakel Slimme Stekkers”

2.6. “Bekijk schakelschema”

3. Customer Data

3.1. Change home address

3.2. Change billing address

3.3. Change bank account number

3.4. Change Name

3.5. See contact data

3.6. Alter preference of contact

4. E-insights

4.1. Current use

4.2. Daily use

4.3. Use this period

4.4. Historical use

4.5. Compare use with similar households

4.6. Suggestions to save energy based on data

4.7. Gamification to save energy / alter behavior

4.8. Pre-made graphs

5. Support

5.1. All support available per channel in one place

5.2. All contracts/support in one place/system

5.3. Change Energy contract

6. Payments

6.1. Pay bills

6.2. Billing history

6.3. Direct customer support bills

6.4. Year overview

6.5. Calculation periodic payment

6.6. Overview open/fulfilled bills

3. Digital Strategy

4 capabilities, 24 sub-capabilities

1. Trend awareness

1.1. Awareness Changing Customer Expectations

1.2. Awareness changing market

1.3. Omni-channel awareness

1.4. Distribution-level Storage

1.5 Distributed renewable generation

1.6 Plug-in Electric Vehicles

1.7 Micro-grid operation

2. Recognition Digital

2.1. Disruptive Nature “Social”

2.2. Disruptive Nature “Analytics”

2.3. Disruptive Nature “Mobile”

2.4. Recognition “Smart Home” or “Connected Home”

3. Strategy

3.1. Assigned CDO

3.2. Developed Digital Vision

3.3. Formed Strategic Alliance to adapt to changing market

3.4. Formed Strategic Alliance to enter new markets

4. New Business activities / Energy solution Integrators

4.1. Distribution-level Storage solutions

4.2. Micro-grid development & operation

4.3. Plug-in Electric Vehicles services

4.4. Distributed renewable generation products & services

4.5. Data-related services

4.6. Beyond-the-meter-solutions for Efficiency & Demand response

4.7. Home automation

4.8. Power electronics hardware & Services

4.9. Smart Metering Services

Appendix C Framework Interview List

This appendix holds the detailed interview list for the semi-structured interviews to develop the framework. This appendix was first mentioned on page 43.

The next table presents the remaining details of each interview.

***Business Entity* & Position**	**Date**	**Feedback & Suggestions**
Technology Strategy Analist	09/11/2015 10:00-11:00	• Add only capabilities wherein a digital component is evident or is enabled via a digital technology • Ask yourself: What if they have this/can do this, what does that mean? • Digital is also: Everything available and possible without human interference • Keep in mind: How can a certain capability be enabled? Is that digital? • In terms of scope: Make an evaluated decision whether and where to add E-charging • In terms of scope: Make an evaluated decision whether and where to add Smart/Connected Home
Technology Strategy Utilities Manager	19/11/2015 8:00-10:00	• Have a look at the Garner Hype-cycle trends for utilities and retail to find additional capabilities especially for digital strategy • Add small summaries on a capability level • Try to align the type of questions and requirements for scoring
Business Strategy Utilities Senior Manager	24/11/2015 14:00-14:30	• The list and questionnaire has some doubles. Have a look at this and try to make the overall list of capabilities as mutually exclusive and collectively exhaustive as possible • Have a look at the strategic assets for utilities to identify in which directions utility retail can develop in the future and add this to the strategic capabilities • Formulate as short and sharp as possible
Digital Utilities Senior Manager	03/12/2015 16:00-17:00	• Address Omni-channel more explicit. Are there channels or possibilities that can be measured? • Concerning Reachability: add Facebook, Twitter and other social media • On additional services/products: Split in: 1. E-thermostat 2. Storage 3. Safety/Security 4. Smart Appliances • On Payments: Add projected annual year end payment • On Payments: add Adjust budget bill plan

IT Strategy Manager	18/12/2015 16:00-18:00	• On scoring: Combine Mobile and Website columns in one column. Differentiate where needed into different channels (Facebook, WhatsApp, Mobile, LinkedIn, Website) where needed in the requirements and explanation. • General suggestions to enhance mutually exclusiveness and collectively exhaustiveness • Assess Digital Sales as a prospect, Digital Service as a customer, and Digital Strategy as a trend-watcher/investor/strategy consultant

Appendix D Final Framework & Questionnaire

This appendix presents the final framework of capabilities and sub-capabilities per domain. The framework is structured around three domains and includes 14 capabilities and 87 sub-capabilities. In addition, every capability is explained and score requirements were added. This appendix was first mentioned on page 46 of the MSc project research report.

The three domains are:

1. Digital Sales
2. Digital Service
3. Digital Strategy

1. Digital Sales

Capability / Sub-Capability	Explanation	requirements for score	maximum score	Score	Explanation
1. Sales Channels	**This section assesses, from a prospect perspective, to which extend sales and sales related services are offered.**		**33.3%**	**0%**	
1.1. Have Video Call	Check whether there is a possibility to have a 1. direct video call or 2. schedule a video call	If it is possible for the company website then half of the score is awarded, if it is possible for the company's main app then another half of the score is awarded	4.8%		
1.2. Chat Online	Check whether it is possible to have a direct chat with a company employee	If it is possible for the company website then half of the score is awarded, if it is possible for the company's main app then another half of the score is awarded	4.8%		
1.3. Direct Mail	Check wheter there is a possibility to send a direct mail via or a (pre-filled) form or a direct link	If it is possible for the company website then half of the score is awarded, if it is possible for the company's main app then another half of the score is awarded	4.8%		
1.4. Direct Call	Check whether it is possible to have a direct call with a company employee by one push on a button e.g. via Skype or Mobile Phone	If it is possible for the company website then half of the score is awarded, if it is possible for the company's main app then another half of the score is awarded	4.8%		
1.5. Call me back option	Check whether it is possible to have an employee of the company call you back	If it is possible for the company website then half of the score is awarded, if it is possible for the company's main app then another half of the score is awarded	4.8%		
1.6. Responsive Design	Check whether the website or app is responsive to the device. E.g. Does de website responds to resizing or different screens?	If it is possible for the company website then half of the score is awarded, if it is possible for the company's main app then another half of the score is awarded	4.8%		
1.7. Smart Channel: Responsive Website	Check whether the website responds to activity of the users. E.g. Search Completion.	When the company website has a search completion then the full score is awarded.	4.8%		
2. Sales Process	**This section assesses, from a prospect perspective, to what extend the sales process is automated and cross-selling is implemented. This represents the maturity of the fundamental sales capabilities**		**33.3%**	**0%**	
2.1. Personal switch savings direct available	Does the company display your savings for a new energy contract based on average-use to your	If this is possible without having to log-in cq already be	11.1%		

	situation or based on your current contract?	a customer then the points are rewarded.			
2.2. Cross-selling: Smart suggestions based on order	Check whether the company poses suggestions to buy certain items based on your order	If the company provides suggestions to add to your deal/contract then half of the points are awarded. If the company also provides suggestions based on your order ("other customers also bought.." then the full score is awarded	11.1%		
2.3. Automated system till contract in mail/home adress	Check whether the sales process is fully automated, so no employee actions are necessary during the process	If the sales process via the website is completely automated till there is a contract in your (e-)mailbox, then half of the points are awarded. If the sales process can also be completed via another sales channel (FB, secundairy website, Mobile App), then the other half of the points are awarded. Not included are phone & physical shop	11.1%		
3. Omni-Channel Sales	**This section assesses to what extent the company has implemented Omni-channel for Sales purposes. Thus does the company allow social log in and uses it social log in to remember prospects and acquire data on them to advance the sales records. Moreover, to assess whether the company does allow and develop a seamless experience by integrating different sales channels into one system.**		**33.3%**	**0%**	
3.1. Channel Integration	Check whether there is a seamless integration of sales channels, meaning: different steps of the sales process can be completed via different channels. Thus the company needs to know what the customer did in every channel	When the company manages to remember your last visited products/services on the website the next time you enter the website, half of the points are awarded. When the company provides the possibility to complete various steps of the sales process via different channels then the full score is awarded. A full argument accompanying the score is required.	8.3%		
3.2. Channel Independence	Check whether the offers that are available on the website, are the same as on other channels (Facebook, Twitter, Mobile)	When the deals & offers that are present on the website can also be found on Facebook, Twitter, Mobile App, then points are awarded. Only one out of three: half of the points are	8.3%		

		awarded. All three: all points are awarded			
3.3. Channel Engagement	Check if the company uses same layout, style, text-style throughout all channels. So the experience across all channels should be consistent	If the company uses a consistent lay-out across Facebook, Twitter, LinkedIn, Website & Mobile App then half of the points are awarded. If the company uses a consistent language-style throughout the channels another half of the points are awarded.	8.3%		
3.4. Social log in	Check whether the company allows a social log in or has the incentive to allow this/ make this possible.	When the company has the incentive to make a social log in possible, then half of the points are awarded. If the company has a social log in available (a forum does not count) then all points are awarded.	8.3%		

2. Digital Service

Capability / Sub-Capability	Explanation	requirements for score	maximum score	score	Explanation
1. Reachability	**This section assesses via which channels and the possibilities within that channel the company has to provide services to their customers**		**14.3%**	**0%**	
1.1. Direct call	Check whether it is possible as a customer to have direct call with an employee by via a click on the website/mobile while logged-in.	If this is possible via the company website then half of the points are awarded, same hold for the mobile app. If this is possible via both channels then all points are awarded.	1.4%		
1.2. Direct mail	Check whether it is possible as a customer to send a direct mail via a click on the website/mobile while logged-in. Both forms and opening a new email count.	If this is possible via the company website then half of the points are awarded, same hold for the mobile app. If this is possible via both channels then all points are awarded.	1.4%		
1.3. Direct chat	Check whether it is possible as a customer to have direct chat with an employee by via a click on the website/mobile while logged-in. WhatsApp chat is not included in this question.	If this is possible via the company website then half of the points are awarded, same hold for the mobile app. If this is possible via both channels then all points are awarded.	1.4%		
1.4. Call me back option	Check whether it is possible to leave a phone number so an employee will call you. This also includes making an appointment to call back (employee calls customer) This holds both for website and mobile app.	If this is possible via the company website then half of the points are awarded, same hold for the mobile app. If this is possible via both channels then all points are awarded.	1.4%		
1.5. Facebook	Check whether it is possible to contact the company via facebook for service related questions	If this is possible then all points are awarded	1.4%		
1.6. Twitter	Check whether it is possible to contact the company via Twitter for service related questions	If this is possible then all points are awarded	1.4%		
1.7. Push messages mobile	Check whether it is possible to set push messages to your mobile (directly or via the mobile app)	If this is possible via the company website then half of the points are awarded, same hold for the mobile app. If this is possible via both channels then all points are awarded.	1.4%		
1.8. WhatsApp	Check whether it is possible to contact the company via whatsApp for service related questions.	If this is possible then all points are awarded	1.4%		
1.9. Linked-in	Check whether it is possible to contact the company via LinkedIn for service related questions.	If this is possible then all points are awarded	1.4%		
1.10. Video Chat/support	Check whether it is possible to have a video chat with an	If this is possible via the company website then half of the points are awarded, same	1.4%		

	employee, both via the website and mobile app.	hold for the mobile app. If this is possible via both channels then all points are awarded.			
2. Smart Home services	**This section assesses the activities towards smart home services and which basic capabilities the company has developed/provides in smart home services.**		**14.3%**	**0%**	
2.1. Smart thermostaat	Check whether the company provides/develops consumer E-thermostaat related services	If the company provides some kind of E-thermostaat allowing the user to remotely control/give insight in temperatures or energy usage then all points are awarded. If the company develops a smart thermostaat, then half of the points are awarded	3.6%		
2.2. E-Safety	Check whether the company provides consumers home safety related products/service/solutions	If the company provides home e-safety related products/service/solutions then all points are awarded	3.6%		
2.3. Remote access	Check whether it is possible to have a remote control over the home automation system and its individual components via the company website or a mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	3.6%		
2.4. Time-based routines	Check whether it is possible to set and/or adjust time-based routines of the home automation system via the company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	3.6%		
3. E-vehicle services	**This section provides an overview of the E-vehicle services of the company and whether the company has developed services and integrated these within their existing business.**		**14.3%**	**0%**	
3.1. E-vehicle charging subscription	Check whether it is possible to have an E-vehicle charge contract added/integrated to your current energy contract, which means an addition to the current gas & electricity products.	If this is possible then all points are awarded. If it is only possible to conclude an E-vehicle charge contract via a different system then only half of the points are awarded	1.8%		
3.2. Change Electricity E-vehicle pass contract	Check whether it is possible to change the E-vehicle charging subscription	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		

3.3. Variable charging schemes	Check whether it is possible to have a variable charging scheme based on consumer preferences. E.g. wholesale price, available time	If it is possible to vary charging scheme based on wholesale price or available time then all points are awarded	1.8%		
3.4. User login	Check whether it is possible to login via the company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
3.5. See current Charging status	Check whether it is possible to see the current/realtime charging status via company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
3.6. Insight in charged kWh	Check whether the company website or mobile app provides insight in the charged kWh	If this is possible via both website and mobile app then all points are awarded. If it is only possible to t via one channel then only half of the points are awarded	1.8%		
3.7.Search for nearby charging stations	Check whether it is possible to search for nearby charging stations based on 1. Charge kW 2. Plug type 3. Charging stations not owned by company 4. Availability Check this for both company website and mobile app	For both channels hold; half of the points are awarded when at least three out of four options are available via that channel. Points can only be awarded including explanation of which options are available via which channel	1.8%		
3.8. Search results options	Check whether the search results include: 1. Adress 2. Distance 3. Availability 4. Open location in Google Maps 5. Navigate to, show route, option Check this for both company website and mobile app	For both channels hold; half of the points are awarded when at least three out of five options are available via that channel. Points can only be awarded including explanation of which options are available via which channel	1.8%		
4. Customer Data	**This section provides an overview of the available customer data and general preferences/services the company provides automated via website and mobile.**		**14.3%**	**0%**	
4.1. Report Change of home	Check whether it is possible to change home adress "verhuizing doorgeven" via company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	2.4%		
4.2. Change billing address	Check whether it is possible to change billing adress via company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only	2.4%		

		half of the points are awarded			
4.3. Change bank account number	Check whether it is possible to change bank account number via company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	2.4%		
4.4. Change Name	Check whether it is possible to change name via company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	2.4%		
4.5. See contract data	Check whether it is possible to see contract data via company website or mobile app (including length, start date & kind of contract)	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	2.4%		
4.6. Alter preference of contact	Check whether it is possible to change preference of contact via company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	2.4%		
5. Omni-Channel Support	**This section assesses to what extend Omni-channel support has been adopted by the company. This provides, in combination with Sales section 3 , insight in the extend of integration of back-end systems.**		**14.3%**	**0%**	
5.1. All support in 1 place per channel	Check whether the company provides all support per channel in one place. Meaning that there is 1 website, 1 facebook, 1 twitteraccount, 1 mobile app having all functionalities	If the company has all support in 1 place for each of the 4 channels then all points are awarded. If this holds only for 2 or 3 channels then half of the points are awarded.	3.6%		
5.2. Channel Consistency	Check whether there is a consistent customer support by means of available support options. Meaning that the company provides the same support and options via mobile app and company website	If the company has a consistent customer support via website and mobile app then all points are awarded	3.6%		
5.3. Social Media Response: Facebook	Check whether the company provides adequate customer support via Facebook. Adequate is defined as a response within 1 hour during working hours (Monday-Friday 9:00-17:00)	If the company responds generally within the hour then all points are awarded. However, if the company only responds to the questions without actively providing support then only half of the points are awarded	3.6%		

5.4. Social Media Response: Twitter	Check whether the company provides adequate customer support via Twitter. Adequate is defined as a response within 1 hour during working hours (Monday-Friday 9:00-17:00)	If the company responds generally within the hour then all points are awarded. However, if the company only responds to the questions without actively providing support then only half of the points are awarded	3.6%		
6. E-insights	**This section provides an overview of the e-insights the company provides to its customers via mobile and website to assist and visualize their energy management.**		**14.3%**	**0%**	
6.1. Current use	Check whether it is possible to see the current energy use via the company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
6.2. Daily use	Check whether it is possible to see the daily use via the company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
6.3. Use this period	Check whether it is possible to see the energy use of this period via the company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
6.4. Historical use	Check whether it is possible to see the historical energy use via the company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
6.5. Compare use with similar households	Check whether it is possible to compare energy use with similar household via the company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
6.6. Suggestions to save energy based on data	Check whether the company website or mobile app provides suggestions to save energy based on your data (both questionnaire and measured energy use is possible)	If this is provided via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
6.7. Gamification to save energy / alter behavior	Check whether the company provides some kind of gamification to save energy and/or alter behavior via company website or mobile app. There should be a Fun element in	If this is provided via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only	1.8%		

	this gamification. (e.g. badges, compare with friends, levels etc)	half of the points are awarded			
6.8. Pre-made graphs	Check whether the company provides pre-made graphs on their company website or mobile app to display your energy related data	If this is provided via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
7. Payments	**This section assesses what possibilities the company offers services regarding payments via both website and mobile and to what extend customers can alter preferences.**		**14.3%**	**0%**	
7.1. Pay bills	Check whether it is possible to pay bills directly via the website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
7.2. Billing history	Check whether it is possible to see billing history via the website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
7.3. Direct customer support bills	Check whether it is possible to have direct customer support relating to payments/bills via the company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
7.4. Year overview, understandable & easily visible	Check whether it is possible to see the year overview "eindafrekening" and if this is understandable expressed on the company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
7.5. Insight in Calculation periodic payment	Check whether the company provides insight in the calculation of the periodic payment via the company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
7.7. Adjust budget bill plan	Check whether it is possible to adjust the periodic payments via the company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via 1 of these channels then only half of the points are awarded	1.8%		
7.8. Overview open/fulfilled bills	Check whether it is possible to see an overview of open and fulfilled bills via the company website or mobile app	If this is possible via both the company website and the mobile app then all points are awarded. If only possible via	1.8%		

		1 of these channels then only half of the points are awarded			

3. Digital Strategy

Capability / Sub-Capability	Explanation	requirements for score	maximum score	score	Explanation
1. Trend awareness	**This sections assesses whether the company recognises seven big trends affecting the utility retail industry.**		**25.0%**	**0.0%**	
1.1. Awareness Changing Customer Expectations	Check whether the company is aware of changing customer expectations by assessing mentioning of changing customer expectations/ increasing/changing customer demands in annual reports, news-items and company communication channels (Website, mobile, Twitter, Facebook, LinkedIn)	If mentioned the points are awarded. Only including source & page number	3.6%		
1.2. Awareness changing market	Check whether the company is aware of changing markets by assessing mentioning of changing markets, new developments & change, in annual reports, news-items and company communication channels (Website, mobile, Twitter, Facebook, LinkedIn)	If mentioned the points are awarded. Only including source & page number	3.6%		
1.3. Smart Home / Connected Home	Check whether the company is aware of the rise of smart homes by assessing mentioning of Smart Home or Connected Home in annual reports, news-items and company communication channels (Website, mobile, Twitter, Facebook, LinkedIn)	If mentioned the points are awarded. Only including source & page number	3.6%		
1.4. Distribution-level Storage	Check whether the company is aware of distribution-level storage by assessing mentioning of distribution-level storage or decentralised energy storage in annual reports, news-items and company communication channels (Website, mobile, Twitter, Facebook, LinkedIn)	If mentioned the points are awarded. Only including source & page number	3.6%		
1.5. Distributed renewable generation	Check whether the company is aware of distributed renewable energy generation by assessing mentioning of distributed renewable energy generation, 'Prosumer' or local energy generation in annual reports, news-items and company communication channels	If mentioned the points are awarded. Only including source & page number	3.6%		

	(Website, mobile, Twitter, Facebook, LinkedIn)				
1.6. Plug-in Electric Vehicles	Check whether the company is aware of the rise of Electric Vehicles by assessing mentioning of increasing amount of E-vehicles, E-vehicle charging stations or E-vehicle charging pass in annual reports, news-items and company communication channels (Website, mobile, Twitter, Facebook, LinkedIn)	If mentioned the points are awarded. Only including source & page number	3.6%		
1.7. Micro-grid operation	Check whether the company is aware of increasing need of micro-grid operation/ local grid operation by assessing mentioning of Micro-grid, local grid optimization or local demand/supply optimizaition in annual reports, news-items and company communication channels (Website, mobile, Twitter, Facebook, LinkedIn)	If mentioned the points are awarded. Only including source & page number	3.6%		
2. Recognition Digital	**This section assesses to what extend the company recognises the disruptive effects of digital technologies and its effectualizations have on the utility retail business.**		**25.0%**	**0.0%**	
2.1. Disruptive Nature "Social"	Check whether the company is aware of the disruptive nature of Social by assessing mentioning of the importance of Social in annual reports, news-items and company communication channels (Website, mobile, Twitter, Facebook, LinkedIn)	If mentioned the points are awarded. Only including source & page number	4.2%		
2.2. Disruptive Nature "Analytics"	Check whether the company is aware of the disruptive nature of Analytics by assessing mentioning of the importance of Analytics in annual reports, news-items and company communication channels (Website, mobile, Twitter, Facebook, LinkedIn)	If mentioned the points are awarded. Only including source & page number	4.2%		
2.3. Disruptive Nature "Mobile"	Check whether the company is aware of the disruptive nature of Mobile by assessing mentioning of the importance of Mobile in annual reports, news-items and company communication channels (Website, mobile, Twitter, Facebook, LinkedIn)	If mentioned the points are awarded. Only including source & page number	4.2%		
2.4. Acknowledge importance Customer Experience Design	Check whether the company is aware of the importance of Customer Experience Design by assessing mentioning of the importance Customer Experience Design or Channel integration in annual reports, news-items and company communication	If mentioned the points are awarded. Only including source & page number	4.2%		

	channels (Website, mobile, Twitter, Facebook, LinkedIn)				
2.5. Acknowledge importance Increased User Interaction	Check whether the company is aware of the importance of Customer Experience Design by assessing mentioning of the importance Customer Experience Design or Channel engagement in annual reports, news-items and company communication channels (Website, mobile, Twitter, Facebook, LinkedIn)	If mentioned the points are awarded. Only including source & page number	4.2%		
2.6. Acknowledge importance of Omni-channel	Check whether the company is aware of the importance of Omni-channel by assessing mentioning of omni-channel or multi-channel integration in annual reports, news-items and company communication channels (Website, mobile, Twitter, Facebook, LinkedIn)	If mentioned the points are awarded. Only including source & page number	4.2%		
3. Strategy	**This section assesses the digital vision and whether the company has formed a strategic alliance to cope with the changing market and extent to new markets**		**25.0%**	**0.0%**	
3.1. Assigned CDO	Check whether the company has a Chief Digital Officer assigned. Check for the CDO in: Annual Report, Company website, News items, Google Search & LInkedIn.	If CDO is assigned then full points are awarded (include source). If the company has a similar function then argue why points should be awarded including sources. Maximum awarded points then is only half	6.3%		
3.2. Developed Digital Vision	Check on the company website, in news items and their annual report for a vision on digital.	Awarding points is largely up to intepretation, however, mentioning the importance of social, mobile, client interaction, integrating channels, changing customer expectations, do give an indication that there is a realisation of the importance of digital. Argue why points should be awarded.	6.3%		
3.3. Formed Strategic Alliance to adapt to changing market	Check whether the company has formed a strategic alliance with a company to adapt to the changing market. E.g. being able to provide energy producing solutions (PV-panels) or variable charging schemes for Electric Vehicles.	In order to award points the explanation should provide an explanation of the alliance including source.	6.3%		
3.4. Formed Strategic Alliance to enter new markets	Check whether the company has formed a strategic alliance with a company to enter new markets. E.g. provide Smart Home solutions	In order to award points the explanation should provide an explanation of the alliance including source.	6.3%		

4. New Business Activities	**This section provides insights in to what extend, and in which directions the company is expanding its business to cope with the changing market.**		**25.0%**	**0.0%**	
4.1. Distribution-level Energy Storage solutions	Check whether the company provides or develops energy storage solutions on a district/neighborhood level. Not included in question is consumer energy storage solutions.	In order to award points the explanation should provide an explanation of the product/development/solution including source. Search for possible product or developments on company website, google search, news items & annual report. If the company develops or provides a solutions then award full points.	3.1%		
4.2. Distrubution-level Energy generation solutions	Check whether the company provides or develops energy generation solutions on a district/neighborhood level. Not included in question is consumer energy generation solutions.	In order to award points the explanation should provide an explanation of the product/development/solution including source. Search for possible product or developments on company website, google search, news items & annual report. If the company develops or provides a solutions then award full points.	3.1%		
4.3. Decentralised energy storage solutions	Check whether the company provides or develops energy storage solutions on a consumer-level. Not included in this question are neighborhood/district energy storage solutions.	In order to award points the explanation should provide an explanation of the product/development/solution including source. Search for possible product or developments on company website, google search, news items & annual report. If the company develops or provides a solutions then award full points.	3.1%		
4.4. Decentralised energy generation solutions	Check whether the company provides or develops energy generation solutions on a consumer-level. Not included in this question are neighborhood/district energy generation solutions.	In order to award points the explanation should provide an explanation of the product/development/solution including source. Search for possible product or developments on company website, google search, news items & annual report. If the company develops or provides a solutions then award full points.	3.1%		
4.5. Plug-in Electric Vehicles Solutions	Check whether the company provides or develops plug-in Electric Vehicle solutions. E.g. Variable Charging Speed, charging contract, home charging system, Car-as-a-battery.	In order to award points the explanation should provide an explanation of the product/development/solution including source. Search for possible product or developments on company website, google search, news	3.1%		

		items & annual report. If the company develops or provides a solutions then award full points.			
4.6. Home automation	Check whether the company provides or develops home automation solutions, capable of managing/controlling integration non-energie related products (eg smart appliances such as fridges, lighting, smart plugs etc) in their system	In order to award points the explanation should provide an explanation of the product/development/solution including source. Search for possible product or developments on company website, google search, news items & annual report. If the company develops or provides a solutions then award full points.	3.1%		
4.7. Smart appliances	Check whether the company provides or develops smart appliances. E.g. Philips Hue, Smart plugs, Smart lighting, Smart washing machines.	In order to award points the explanation should provide an explanation of the product/development/solution including source. Search for possible product or developments on company website, google search, news items & annual report. If the company develops or provides a solutions then award full points.	3.1%		
4.8. Energy saving solutions on a Data-driven basis for Do It Yourself	Check whether the company provides or develops solutions to save energy based on data or analytics for Do It Yourself.	In order to award points the explanation should provide an explanation of the product/development/solution including source. Search for possible product or developments on company website, google search, news items & annual report. If the company develops or provides a solutions then award full points.	3.1%		

Appendix E Data Capability Assessment

This appendix presents the data of the capability assessment per company. This appendix was first mentioned on page 52 of the MSc project research report.

1. Company 1

Digital Sales 21%

Capability / Sub-Capability	Score	Explanation
1. Sales Channels	**7%**	**0**
1.1. Have Video Call	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
1.2. Chat Online	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
1.3. Direct Mail	1	It is possible to send an email via a form via the company website. Response in 5 workdays. It is not possible to send an email via the main app. Therefore half of the points are awarded
1.4. Direct Call	1	It is possible to call directly from the main mobile app. However it is not possible to call directly via the website. Therefore half of the points are awarded
1.5. Call me back option	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
1.6. Responsive Design	1	The company website respons well to resizing. Although the mobile app's design interface is sophisticated, the app does not respond to turning of the screen. Therefore half of the points are awarded.
1.7. Smart Channel: Responsive Website	0	There are no search suggestions/completion on the company website. Therefore no points are awarded.
2. Sales Process	**6%**	**0**
2.1. Personal switch savings direct available	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
2.2. Cross-selling: Smart suggestions based on order	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
2.3. Automated system till contract in mail/home address	1	It is only possible to order a contract completely automated via the company website. Not in another manner (Facebook, external website, mobile app). Therefore half of the points are awarded
3. Omni-Channel Sales	**8%**	**0**
3.1. Channel Integration	1	The company website does remember the last visit, which can be seen when you filled in an energy check on www.Company 1.nl/kies-uw-stroom-en-gas/. The company does not allow you to complete various steps of the sales process via different channels. Therefore half of the points are awarded
3.2. Channel Independence	0	Deals & offers on the website are not presented on Twitter, Facebook or Mobile app, therefore no points are awarded
3.3. Channel Engagement	1	The company website is inconsequent between formal and informal language. The main app uses formal language, and Facebook & Twitter use informal language. Therefore it can be concluded that the company is not consistent in their language-style. However the company does use a consistent layout, which is expressed by the same color-scheme and same banner, videos etc. All combined half of the points can be awarded.
3.4. Social log in	0	The company does not allow you to log in via a social medium like Facebook, Twitter or Googleplus, nor are there suggestions found that the company is developing this in the near future. Therefore no points are awarded

Digital Service 58%

0

Capability / Sub-Capability	Score	Explanation
1. Reachability	**6%**	**0**

1.1. Direct call	1	It is possible to call directly from the main mobile app. However it is not possible to call directly via the website. Therefore half of the points are awarded
1.2. Direct mail	1	It is possible to send an email via a form via the company website. Response in 5 workdays. It is not possible to send an email via the main app. Therefore half of the points are awarded
1.3. Direct chat	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
1.4. Call me back option	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
1.5. Facebook	2	It is possible to contact Company 1 via Facebook for service related questions, therefore all points are awarded
1.6. Twitter	2	It is possible to contact Company 1 via Twitter for service related questions, therefore all points are awarded
1.7. Push messages mobile	0	It is not possible to set push messages via the mobile app. It is neither possible to set push messages via the company website. Therefore no points are awarded
1.8. WhatsApp	2	It is possible to contact the company directly via whatsapp, therefore all points are awarded
1.9. Linked-in	0	It is not possible to reach the company directly via LinkedIn, therefore no points are awarded
1.10. Video Chat/support	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
2. Smart Home services	**11%**	**0**
2.1. Smart thermostaat	2	The company provides XX, a smart thermostat, therefore all points are awarded
2.2. E-Safety	2	The company provides Smart smoke alarms which can be integrated with XX. Therefore all points are awarded
2.3. Remote access	1	Although Remote Access is available via the XX Mobile App, it is not available via the company website. Therefore half of the points are awarded
2.4. Time-based routines	1	This is only possible via the XX Mobile App, therefore half of the points are awarded
3. E-vehicle services	**8%**	**0**
3.1. E-vehicle charging subscription	1	It is only possible to conclude an e-vehicle charging contract via another system . Therefore half of the points are awarded
3.2. Change Electricity E-vehicle pass contract	0	It is not possible to change the e-vehicle contract. Therefore no points are awarded
3.3. Variable charging schemes	2	Via the developments with Tesla, it is possible to set variable charging schemes for the Tesla S model. See: http://nieuws.Company 1.nl/tesla-van-henk-laadt-als-stroomprijs-het-gunstigst-is therefore all points are awarded
3.4. User login	2	This is possible via both the company website as via the mobile app (Mijn Laden Company 1 & https://mijnelektrischladen.Company 1.nl/login Although due to lack of user log in details this could not actually be assessed. Therefore all points are awarded
3.5. See current Charging status	1	Since it is possible (with a Tesla S in combination with Company 1) to turn on/off charging, logically it is possible to see the charging status, this is possible via mobile. Therefore half of the points are awarded
3.6. Insight in charged kWh	2	The app and website claim it is possible to have insights in the total charged kWh. Therefore all points are awarded. https://www.Company 1.nl/grootzakelijk/elektrisch-laden/#elektrisch-laden
3.7.Search for nearby charging stations	0	It is only possible to search via the mobile app. Moreover it is only possible to search based on location. Therefore no points are awarded.
3.8. Search results options	1	This could not be checked via the company website, however the mobile app Mijn Laden Company 1, shows: 1. Adress, 2. Distance, 3. Availability, 4. open location in google maps. Therefore half of the points are awarded.
4. Customer Data	**7%**	**0**
4.1. Report Change of home	1	This is only possible via the company website via "verhuizing doorgeven". It is not possible via the mobile app. Therefore half of the points are awarded

4.2. Change billing address	1	This is only possible via the company website. It is not possible via the mobile app. Therefore half of the points are awarded	
4.3. Change bank account number	1	This is only possible via the company website. It is not possible via the mobile app. Therefore half of the points are awarded	
4.4. Change Name	2	This is possible both via the company website as via the main mobile app (Mijn Company 1). Therefore all points are awarded	
4.5. See contract data	0	This is not available via the mobile app and via the company website is only the kind of product available. Therefore no points are awarded.	
4.6. Alter preference of contact	1	This is only possible via the company website. It is not possible via the mobile app. Therefore half of the points are awarded	
5. Omni-Channel Support	**9%**		**0**
5.1. All support in 1 place per channel	1	Whereas the Facebook & Twitter can handle all kinds of questions, it is only possible to call/whatsapp via mobile. Also there are several websites and apps for different products. Since service is in one place for Facebook & Twitter, half of the points are awarded	
5.2. Channel Consistency	0	The available services are not aligned. Most services are only available via the company website. Therefore no points are awarded	
5.3. Social Media Response: Facebook	2	The company responses within the hour on average (according to Facebook statistics). Moreover, given the visible responses they actually try to help customers when needed. Therefore all points are awarded	
5.4. Social Media Response: Twitter	2	The company responses within the hour on average (scrolling through the first 20 Tweets and the reactions). Moreover, given the visible responses they actually try to help customers when needed. Therefore all points are awarded	
6. E-insights	**9%**		**0**
6.1. Current use	1	The current use is available via the XX app, although this could not be assessed and thus is based on the company information on XX. However this is not available via the company website. Therefore half of the points are awarded	
6.2. Daily use	2	The daily use is available via the XX mobile app, although this could not be assessed and thus is based on the company information on XX. The daily use is also available via the company website if you have a smart meter installed. Therefore all points are awarded	
6.3. Use this period	2	This is available for both the company website as the main mobile app if a smart meter is installed. Therefore all points are awarded	
6.4. Historical use	2	This is available for both the company website as the main mobile app. Therefore all points are awarded	
6.5. Compare use with similar households	0	It is only possible to compare based on postal code averages. There no points are awarded	
6.6. Suggestions to save energy based on data	1	This is only available via the XX mobile app. Although this is information based on the company information on XX. Therefore half of the points are awarded	
6.7. Gamification to save energy / alter behavior	0	The search did not reveal any kind of gamification to save energy via either the company website of the mobile app. Therefore no points are awarded	
6.8. Pre-made graphs	2	Both the company website as the mobile app have pre-made graphs to display energy related data. Therefore all points are awarded	
7. Payments	**8%**		**0**
7.1. Pay bills	1	It is only possible to pay bills directly via the company website, not via the mobile app. Therefore half of the points are awarded	
7.2. Billing history	2	This is possible via both the company website as via the mobile app .Therefore all points are awarded	
7.3. Direct customer support bills	0	This is not available, neither via the company website, nor via the mobile app. Therefore no points are awarded	
7.4. Year overview, understandable & easily visible	1	The year overview is available via the website and is understandable. The year overview is available for download via the mobile app, but it is not understably visualised. Therefore half of the points are awarded.	
7.5. Insight in Calculation periodic payment	1	This is only available via the company website, it has its on tab. This is not available via the mobile app. Therefore half of the points are awarded	
7.6. Projected annual year-end payment	1	This is possible when a smart meter is installed via the company website. However, it is not available via the main mobile app. Therefore half of the points are awarded	

7.7. Adjust budget bill plan	2	This is possible via both the company website as via the mobile app .Therefore all points are awarded
7.8. Overview open/fulfilled bills	1	This is only available via the company website, it has its on tab. This is not available via the mobile app. Therefore half of the points are awarded

Digital Strategy

57% 0

Capability / Sub-Capability	Score	Explanation
1. Trend awareness	**21.4%**	0
1.1. Awareness Changing Customer Expectations	2	Source Company 1 Jaarverslag 2014 page 7. "Mensen gaan producten en diensten op een andere manier gebruiken" and "Mensen regelen steeds meer zelf"
1.2. Awareness changing market	2	Source Company 1 Jaarverslag 2014 page 7.
1.3. Smart Home / Connected Home	2	Source Company 1 Jaarverslag 2014 page 7, page 13, page 29
1.4. Distribution-level Storage	2	Source Company 1 Jaarverlsag 2014 indirect: pages 7-13, direct: page 10, batterij gebruik in hawaii wat ook een rol gaat spelen in west-europa, source Company 1 corporate brochure, page 5
1.5. Distributed renewable generation	2	Source Company 1 Jaarverslag 2014 page 7. & Page 12
1.6. Plug-in Electric Vehicles	2	Source Company 1 Jaarverslag 2014 page 7. "Nederlandse automobilisten hebben de electrische auto ontdekt"
1.7. Micro-grid operation	0	not found in public sources. Therefore no points are awarded.
2. Recognition Digital	**4.2%**	0
2.1. Disruptive Nature “Social”	2	Source Company 1 Jaarverlsag 2014 page 22 "Via Twitter, Facebook en andere kanalen zijn 88.000 berichten over Company 1 verschenen" and "We hebben een webcareteam dat vragen behandelt via deze kanalen"
2.2. Disruptive Nature “Analytics”	0	not found in public sources. Therefore no points are awarded.
2.3. Disruptive Nature “Mobile”	0	not found in public sources. Therefore no points are awarded.
2.4. Acknowledge importance Customer Experience Design	0	not found in public sources. Therefore no points are awarded.
2.5. Acknowledge importance Increased User Interaction	0	not found in public sources. Therefore no points are awarded.
2.6. Acknowledge importance of Omni-channel	0	resulting from analysis on corporate website, annual report & news, I could not sense a specific awareness around omni-channel
3. Strategy	**12.5%**	0
3.1. Assigned CDO	0	At least not mentioned or available on information via corporate website, linkedin search or annual report
3.2. Developed Digital Vision	0	there is no specific mentioning of digital in their vision on their website & annual report
3.3. Formed Strategic Alliance to adapt to changing market	2	Newsitem on LinkedIn/Company 1, cooperation with Peeks, demand/supply-based pricing
3.4. Formed Strategic Alliance to enter new markets	2	Newsitem on www.nu.nl Company 1 & Tesla develop variable E-vehicle Charging.
4. New Business Activities	**18.8%**	0
4.1. Distribution-level Energy Storage solutions	0	Public sources did not reveal activities in Distribution-level Energy Storage Solutions. However in their year report 2014 they did acknowledge the importance of decentral energy generation and storage solutions. Therefore no points are awarded
4.2. Distrubution-level Energy generation solutions	0	Public sources did not reveal activities in Distribution-level Energy Genergation Solutions. However in their year report 2014 they did acknowledge the importance of decentral energy generation and storage solutions. Therefore no points are awarded
4.3. Decentralised energy storage solutions	2	Company 1 will start with selling home-batteries source: http://www.nu.nl/gadgets/4178778/Company 1-gaat-thuis-accu-van-tesla-verkopen.html
4.4. Decentralised energy generation solutions	2	PV-collectors can be bought directly from the company website. Therefore all points are awarded
4.5. Plug-in Electric Vehicles Solutions	2	Newsitem on www.nu.nl Company 1 & Tesla develop variable E-vehicle Charging. In combination with Tesla.

4.6. Home automation	2	They developed XX, which is also capable of connecting smart plugs and a smoke alarm, so therefore all points are awarded. https://www.Company 1.nl/xx-thermostaat
4.7. Smart appliances	2	Philips Hue and Smart plugs are available via the company webshop. Therefore all points are awarded
4.8. Energy saving solutions on a Data-driven basis for Do It Yourself	2	Newsitem on LinkedIn/Company 1, cooperation with Peeks, demand/supply-based pricing. Therefore all points are awarded

2. Company 2

Digital Sales

38%

Capability / Sub-Capability	Score	Explanation
1. Sales Channels	**5%**	**0**
1.1. Have Video Call	0	This is not possible via the company website. Therefore no points
1.2. Chat Online	0	This is not possible via the company website. Therefore no points
1.3. Direct Mail	1	It is possible to send a direct mail via a form on the company website so half of the points are awarded
1.4. Direct Call	0	This is not possible via the company website. Therefore no points
1.5. Call me back option	0	This is not possible via the company website. Therefore no points
1.6. Responsive Design	1	The website does respond well to resizing of the screen, the website even changes to a mobile optimized form when made really small. therefore half of the point are awarded
1.7. Smart Channel: Responsive Website	0	The company website does not have a search completion, therefore no points are awarded
2. Sales Process	**17%**	**0**
2.1. Personal switch savings direct available	2	The company website is able to compare your new costs with either your current contract if you have a contract with Oxxio.
2.2. Cross-selling: Smart suggestions based on order	0	The company does not any suggestions to add other products based on your order. Therefore no points are awarded
2.3. Automated system till contract in mail/home adress	1	One can only conclude a contract via the company website that is fully automated untill it is in your (e-)mailbox, however a contract can only be concluded via the company website, therefore only have of the points are awarded
3. Omni-Channel Sales	**17%**	**0**
3.1. Channel Integration	1	The company website does remember your last visit, by means of pre-filled orders. The company does not allow you to complete various steps of the sales process via different channels. Therefore half of the points are awarded
3.2. Channel Independence	1	The slogan used on the website can be found on Facebook & Twitter as well. "Tablet cadeau? Hebben we niet. Scherp tarief? Hebben we wel." But on the website they also state that sustainable energie is just 1,50 extra. This cannot be found on Facebook & Twitter. Altogether, since they do present their main selling slogan on Facebook & Twitter as well, half of the points are awarded.
3.3. Channel Engagement	2	The company website, Twitter, Facebook & LinkedIn show a consistent layout. Although the style could be optimised for LinkedIn. Moreover, the company does use a consistent language styl throughout the channels; throughout the channels the company uses an informal language. Therefore all points are awarded.
3.4. Social log in	0	The company does not allow you to log in via a social medium like Facebook, Twitter or Googleplus, nor are there suggestions found that the company is developing this in the near future. Therefore no points are awarded

Digital Service

23%

Company 2 has no mobile app.

Capability / Sub-Capability	Score	Explanation
1. Reachability	**4%**	**0**
1.1. Direct call	0	This is not possible via the company website. Therefore no point are awarded
1.2. Direct mail	1	It is possible to send a direct mail via a form on the company website. Therefore half of the points are awarded
1.3. Direct chat	0	It is not possible to have a direct chat with an employee via the company website, therefore no points are awarded
1.4. Call me back option	0	This is not possible via the company website. Therefore no point are awarded
1.5. Facebook	2	This is possible via www.facebook.com/essent Therefore all points are awarded
1.6. Twitter	2	This is possible via www.twitter.com/Essent Therefore all points are awarded
1.7. Push messages mobile	0	It is not possible to set push notification for mobile via the company website.
1.8. WhatsApp	0	This is not possible. Therefore no point are awarded

1.9. Linked-in	0	This is not possible	
1.10. Video Chat/support	0	This is not possible via the company website nor via the main app	
2. Smart Home services	**0%**		**0**
2.1. Smart thermostaat	0	The company has no smart thermostat or similar product available, nor they are signs that they are developing one. Therefore no points are awarded	
2.2. E-Safety	0	The company has no E-safety product available. Therefore no points are awarded	
2.3. Remote access	-1	Because of the absence of a smart meter system this is not applicable.	
2.4. Time-based routines	-1	Because of the absence of a smart meter system this is not applicable.	
3. E-vehicle services	**0%**		**0**
3.1. E-vehicle charging subscription	0	The company does not provide a E-vehicle charging subscription. Therefore no points are awarded.	
3.2. Change Electricity E-vehicle pass contract	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable	
3.3. Variable charging schemes	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable	
3.4. User login	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable	
3.5. See current Charging status	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable	
3.6. Insight in charged kWh	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable	
3.7.Search for nearby charging stations	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable	
3.8. Search results options	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable	
4. Customer Data	**5%**		**0**
4.1. Report Change of home	1	This is possible via the company website. Therefore half of the points are awarded	
4.2. Change billing address	1	This is possible via the company website. Therefore half of the points are awarded	
4.3. Change bank account number	1	This is possible via the company website. Therefore half of the points are awarded	
4.4. Change Name	0	This is not possible via the company website. Therefore no point are awarded	
4.5. See contract data	1	This is possible via the company website. Therefore half of the points are awarded	
4.6. Alter preference of contact	0	This is not possible via the company website. Therefore no point are awarded	
5. Omni-Channel Support	**11%**		**0**
5.1. All support in 1 place per channel	1	The company has 1 Facebook & Twitter whereas questions can be posed. Moreover there is 1 company website containing all services. However since the company does not have a mobile app only have of the points are awarded.	
5.2. Channel Consistency	1	The company has a consistent customer support via Facebook & Twitter and the company website has included all services. For some support they refer to Twitter or Facebook and the company does not have a mobile app for support. Therefore only half of the points are awarded.	
5.3. Social Media Response: Facebook	2	The company responses within the hour on average (according to Facebook statistics). Moreover, given the visible responses they actually try to help customers when needed.	
5.4. Social Media Response: Twitter	2	The company responses within the hour on average (scrolling through the first 20 Tweets and the reactions). Moreover, given the visible responses they actually try to help customers when needed.	
6. E-insights	**0%**		**0**

6.1. Current use	0	Currently this is not available via the website, however the company states that it is developing E-insight at the moment (7/1/2016). Therefore no points can be awarded yet.
6.2. Daily use	0	Currently this is not available via the website, however the company states that it is developing E-insight at the moment (7/1/2016). Therefore no points can be awarded yet.
6.3. Use this period	0	Currently this is not available via the website, however the company states that it is developing E-insight at the moment (7/1/2016). Therefore no points can be awarded yet.
6.4. Historical use	0	Currently this is not available via the website, however the company states that it is developing E-insight at the moment (7/1/2016). Therefore no points can be awarded yet.
6.5. Compare use with similar households	0	Currently this is not available via the website, however the company states that it is developing E-insight at the moment (7/1/2016). Therefore no points can be awarded yet.
6.6. Suggestions to save energy based on data	0	Currently this is not available via the website, however the company states that it is developing E-insight at the moment (7/1/2016). Therefore no points can be awarded yet.
6.7. Gamification to save energy / alter behavior	0	Currently this is not available via the website, however the company states that it is developing E-insight at the moment (7/1/2016). Therefore no points can be awarded yet.
6.8. Pre-made graphs	0	Currently this is not available via the website, however the company states that it is developing E-insight at the moment (7/1/2016). Therefore no points can be awarded yet.
7. Payments	**4%**	**0**
7.1. Pay bills	0	This is not possible via the company website. Therefore no point are awarded
7.2. Billing history	1	The billing history is directly available via the company website. Therefore half of the points are awarded
7.3. Direct customer support bills	0	It is not possible to have direct customer support for billing. There are only FAQ's listed. Therefore no points are awarded
7.4. Year overview, understandable & easily visible	0	The available year overview is a direct copy of the letter. It is not made visible or easily understandable by the company website. Therefore no points are awarded
7.5. Insight in Calculation periodic payment	1	The calculation of the periodic payment is available via the company website and is clear and easily understandable. Therefore half of the points are awarded
7.6. Projected annual year-end payment	0	This is not possible via the company website. Therefore no point are awarded
7.7. Adjust budget bill plan	1	It is possible to change your monthly payment via the company website. Therefore half of the points are awarded.
7.8. Overview open/fulfilled bills	1	The company website has an overview of pay and unpaid bills. Therefore half of the points are awarded.

Digital Strategy

40% 0

Capability / Sub-Capability	Score	Explanation
1. Trend awareness	**25.0%**	0
1.1. Awareness Changing Customer Expectations	2	Throughout the XX MVO verslag 2013, especially page 6. & XX Corporate Responsibility report 2014 section customer page 53 &54
1.2. Awareness changing market	2	Throughout the XX MVO verslag 2013 & XX Corporate Responsibility report 2014 section customer page 53
1.3. Smart Home / Connected Home	2	XX MVO verslag 2013 page 31: Energy saving product like remote controlled smart thermostates & XX Corporate Responsibility Report 2014 page 56
1.4. Distribution-level Storage	2	Based on: XX MVO verslag 2013 page 40. XX developed and tested a storage system for PV energy.
1.5. Distributed renewable generation	2	Based on: XX MVO verslag 2013 page 4. PV panels as product, also notficiation of distributed renewable generation in the XX corporate responsibility report 2014
1.6. Plug-in Electric Vehicles	2	Based on: XX MVO verslag 2013 page 40. Speed charging electrical vehicles developed in cooperation with the municipality of Amsterdam. Although they concluded it is not growing fast at the time, in their Corporate Responsibility

		report of 2014 they acknowledge the increasing market for e-vehicles and they have extended their services in that area accordingly
1.7. Micro-grid operation	2	not literally named, but in XX MVO jaarverslag 2013 page 41 they described a test-run wherein decentralised produced energy and subsequently supply and demand is locally optimised by sharing with direct neighbours. In essence this is the start of microgrids. Moreover, XX participated in a local optimization test, https://www.XX.nl/content/overessent/actueel/archief/2015/flexibel-omgaan-met-energie-levert-geld-op.html
2. Recognition Digital	**8.3%**	0
2.1. Disruptive Nature "Social"	0	they developed possibilities towards "social", e.g. XX MVO verslag 2013 page 35. "Online Klantenforum" can be logged on via Social (Facebook or Twitter) However this is not available for energiedirect.nl therefore no points are awarded
2.2. Disruptive Nature "Analytics"	2	XX is working on building analyses to give customers insights and possibilities to reduce their energy consumption. Based on XX corporate responsibility report page 55 & 56
2.3. Disruptive Nature "Mobile"	2	in their MVO verslag 2013 page 35 XX acknowledges the importance of making services available on mobile.
2.4. Acknowledge importance Customer Experience Design	0	not found via the sources listed in the explanation
2.5. Acknowledge importance Increased User Interaction	0	not found via the sources listed in the explanation
2.6. Acknowledge importance of Omni-channel	0	not found via the sources listed in the explanation
3. Strategy	**0.0%**	0
3.1. Assigned CDO	0	not assigned, at least it is not mentioned via new items, company reports, linkedin, websites.
3.2. Developed Digital Vision	0	No clear vision on digital and its impact. Although the company acknowledge in their XX annual report 2014 changing behaviour and customer expectations. Therefore no points are awarded
3.3. Formed Strategic Alliance to adapt to changing market	0	XX Cooperation with X is a clear example of a strategic alliance to adapt to changing markets. See www.xx.nl/x however, this does not hold for energieDirect.nl
3.4. Formed Strategic Alliance to enter new markets	0	XX Cooperation with Renault to promote e-vehicles in Amsterdam, see http://www.nu.nl/duurzaam/2541488/renault-en-XX-sluiten-deal-elektrische-auto.html However, this does not hold for XX
4. New Business Activities	**6.3%**	0
4.1. Distribution-level Energy Storage solutions	0	Not found in a direct manner. Althoug the XX Our Responsibility report 2014 page 54 speaks about developing inteligent storage technologies. But district/neighbourhood level is not mentioned. Therefore no points are awarded
4.2. Distrubution-level Energy generation solutions	0	Based on: https://www.XX.nl/content/overXX/actueel/archief/2014/zonnecentrale-voetbalstadion-euroborg-uitgebreid.html XX & 1miljoenwat cooperated in building an PV generation field on the Groningen Euroborg. Crowdfunded and therewith owned by customers. It provides electricity for 70 households. However, XX was not included in this deal, nor does it mention this via their own channels. Therefore no points are awarded
4.3. Decentralised energy storage solutions	2	Based on: XX MVO verslag 2013 page 40. XX developed and tested a storage system for PV energy.
4.4. Decentralised energy generation solutions	0	Source: XX MVO verslag 2013 page 4, XX launched a product named "spaarpanelen" which enables customers to buy complete PV panel packages. This product is not included in XX's activities
4.5. Plug-in Electric Vehicles Solutions	0	XX & Renault decided to stimulate electric cars by combining efforts: source: http://www.nu.nl/duurzaam/2541488/renault-en-XX-sluiten-deal-elektrische-auto.html & http://www.nu.nl/auto/2544114/overeenkomst-laadpunten-renault-en-XX.html However, XX has no part in this
4.6. Home automation	0	Although XX cooperates with XX https://www.XX.nl/content/particulier/speciaal_voor_klanten/september2014/openingsverhaal1.html This does not include XX, nor does the company any other smart system. Therefore no points are awarded

4.7. Smart appliances	0	not found via the sources listed in the explanation
4.8. Energy saving solutions on a Data-driven basis for Do It Yourself	2	XX is working on building analyses to give customers insights and possibilities to reduce their energy consumption. Based on XX corporate responsibility report page 55

3. Company 3

Digital Sales

14%

Capability / Sub-Capability	Score	Explanation
1. Sales Channels	**5%**	**0**
1.1. Have Video Call	0	It is not possible to have a video call via the company website or main app.
1.2. Chat Online	0	It is not possible to chat online via the company website or main app.
1.3. Direct Mail	1	It is possible to send a direct mail via a form on the company website, however it is not possible to send a direct mail via the main app
1.4. Direct Call	0	It is not possible to have a direct call via the company website or main app.
1.5. Call me back option	0	It is not possible to have an employee call you back via the company website or main app.
1.6. Responsive Design	1	Although the website does not respond well to resizing of the screen, the main app does respond well to turning of the screen so therefore half of the point are awarded
1.7. Smart Channel: Responsive Website	0	There are no search suggestions/completion on the company website. Therefore no points are awarded.
2. Sales Process	**6%**	**0**
2.1. Personal switch savings direct available	0	The company website nor main app displays your savings for a new energy contract based on average-use to your situation or based on your current contract
2.2. Cross-selling: Smart suggestions based on order	0	There are no suggestions based on an order
2.3. Automated system till contract in mail/home adress	1	One can only conclude a contract via the company website that is fully automated untill it is in your (e-)mailbox, therefore only have of the points are awarded
3. Omni-Channel Sales	**4%**	**0**
3.1. Channel Integration	0	The company website does not remember your last visit, neither does the company allow you to complete various steps of the sales process via different channels. Therefore no points are awarded
3.2. Channel Independence	0	Offers that are on the website cannot be found on either the company facebook page, company twitter account nor the mobile app.
3.3. Channel Engagement	1	The company website, main app, Twitter, Facebook & LinkedIn show a consistent layout. Although the style could be optimised for LinkedIn. The company does not use a consistent language styl throughout the channels, on the company website & main app it uses "u"-style, whereas on facebook & Twitter the company uses "jij/je"-style. Altogether, half of the points are awarded.
3.4. Social log in	0	The company does not allow you to log in via a social medium like Facebook, Twitter or Googleplus, nor are there suggestions found that the company is developing this in the near future. Therefore no points are awarded

Digital Service

57%

0

Capability / Sub-Capability	Score	Explanation
1. Reachability	**4%**	**0**
1.1. Direct call	0	This is not possible via the company website nor via the main app
1.2. Direct mail	1	This is only possible via a form on the website. The form is linked to your account, meaning possible integration of service with account details. Via mobile app not possible to send a direct mail.
1.3. Direct chat	0	Not possible to have a direct chat with an employee via website or mobile app.
1.4. Call me back option	0	This option is not available via the mobile app or company website
1.5. Facebook	2	This is possible via www.facebook.com/Company 3 Therefore all points are awarded
1.6. Twitter	2	This is possible via www.twitter.com/Company 3 Therefore all points are awarded

1.7. Push messages mobile	0	This is not possible via the main app 'verbruiksmanager' nor via the company website.
1.8. WhatsApp	0	It is not found possible to send WhatsApp messages to the company
1.9. Linked-in	0	This is not possible
1.10. Video Chat/support	0	This is not possible via the company website nor via the main app
2. Smart Home services	**14%**	**0**
2.1. Smart thermostaat	2	The company provides Nest as an option, which can help you remotely control, give insights in temperature and energy usage. Also does the company have a e-thermostat to control temperature remotely.
2.2. E-Safety	2	Via its relation with Google's Nest it can provide a safety camera that can connect with Nest. See: https://nest.com/camera/meet-nest-cam/ therefore all points are awarded
2.3. Remote access	2	It is possible both via the company website as via the mobile app 'E-thermostaat' or Nest mobile App to control individual components remotely
2.4. Time-based routines	2	Nest learns your routines, whereas the Company 3 E-thermostat has a sensor included noticing your absense. Moreover you can set a weekly schedule.
3. E-vehicle services	**6%**	**0**
3.1. E-vehicle charging subscription	1	It is only possible to have an Company 3 Laadpas via a different system. And cannot be integrated yet.
3.2. Change Electricity E-vehicle pass contract	0	There is only 1 type of contract available.
3.3. Variable charging schemes	0	The company provides no varying charging scheme based on wholesale prices or available time.
3.4. User login	2	It is possible to log-in via both company website as the mobile app E-rijden
3.5. See current Charging status	0	although it could not be assessed directly, the app nor the company website claims the possibility
3.6. Insight in charged kWh	2	This is claimed to be available via the company electric charging website, https://www.mijnelektrischrijden.nl/login.php, or via the mobile app E-rijden.
3.7.Search for nearby charging stations	1	It cannot be assessed for the company website. So no points awarded for the company website. Via mobile the search options include: 1. Normal charge speed and/or speed charging. 2. 5 plug-types. 3. the search also includes charging stations of other companies. Although not all stations are included. 4. Although it does not seem to completely work, the app tries to check the availability of a charge station. Based on this half of the points are awarded.
3.8. Search results options	1	It cannot be assessed for the company website. So no points awarded for the company website. Via mobile the search results include: 1. Adress 2. Distance 4 open location in Google Maps. 5 Show route. Based on this half of the points are awarded since 4 out of 5 options are available for mobile app
4. Customer Data	**6%**	**0**
4.1. Report Change of home	1	This is only possible via the company website
4.2. Change billing address	1	This is only possible via the company website
4.3. Change bank account number	1	This is only possible via the company website
4.4. Change Name	0	This is not possible either via the company website nor via the mobile app
4.5. See contract data	1	It is not possible to see any contract data via the mobile app. The company website does show the length of the contract as well as the type of contract and the starting date. Therefore half of the points are awarded
4.6. Alter preference of contact	1	This is only possible via the company website
5. Omni-Channel Support	**9%**	**0**
5.1. All support in 1 place per channel	1	Whereas there is only 1 facebook and 1 twitter providing support. There are several company mobile apps, 1. Verbruiksmanager: for periodic payments and periodic use. 2. E-rijden (E-charging related activities) 3. E-thermostaat 4. E-inzicht. Moreover, the company website has support for solar panels and gas/electricity in one place, but E-charging related services are on another website. Altogether, service is only truly in 1 place for Twiter & Facebook, therefore half of the points are awarded.

5.2. Channel Consistency	0	The available services are not aligned. Most services are only availabe via the company website.
5.3. Social Media Response: Facebook	2	The company responses within the hour on average (according to Facebook statistics). Moreover, given the visible responses they actually try to help customers when needed.
5.4. Social Media Response: Twitter	2	The company responses within the hour on average (scrolling through the first 20 Tweets and the reactions). Moreover, given the visible responses they actually try to help customers when needed.
6. E-insights	**10%**	**0**
6.1. Current use	0	It is not possible to see the current use via the company website. This could be possible via www.e-thermostaat.nl but this could not be assessed. Via the App E-inzicht it should be possible to see the current use however, this could not be assessed. Altogether, since there is nothing on the website and mobile app claiming it is possible to see the current use no points are awarded
6.2. Daily use	2	This is possible both via the e-thermostat as via Google's Nest. Although it could not be assessed, both claim this is possible both via the website (www.nest.com, www.e-thermostaat.nl) and via mobile app (E-thermostaat & Nest App)
6.3. Use this period	2	If the user fills in the current meter points or has a smart meter then this is available both on the main mobile app as via the company website
6.4. Historical use	2	This is available both via the company website as via the main mobile app
6.5. Compare use with similar households	2	This is available both via the company website as via the main mobile app
6.6. Suggestions to save energy based on data	1	The mobile app links to the company website, which has a questionnaire which provides suggestions to save energy. Therefore only half of the points are awarded, since it is only available via the company website
6.7. Gamification to save energy / alter behavior	0	There is no sign of gamification to save energy, neither on the company website, nor on the mobile app
6.8. Pre-made graphs	2	Both the company website as the main mobile app have pre-made cost and energy related graphs
7. Payments	**8%**	**0**
7.1. Pay bills	1	Although it is not possible via the mobile app, it is possible to pay bills directly via FinBox and the mobile website. Therefore half of the points are awarded
7.2. Billing history	1	This is available via the company website, but not via the mobile app. Therefore half of the points are awarded
7.3. Direct customer support bills	0	Via the mobile app this is not available, via the company website this is not available, on a different webpage however there is a link available, it is just not integrated directly on the financial page. Therefore no points are awarded.
7.4. Year overview, understandable & easily visible	1	The year overview is only understandable available via the company website. Even a digital copy of the 'eindafrekening' is directly available. Via the mobile app this is not possible. Therefore half of the points are awarded.
7.5. Insight in Calculation periodic payment	1	This is available via the company website, but not via the mobile app. Therefore half of the points are awarded
7.6. Projected annual year-end payment	2	This is available both via the company website as via the main mobile app.
7.7. Adjust budget bill plan	2	This is possible both via the company website as via the main mobile app
7.8. Overview open/fulfilled bills	1	This is available via the company website, but not via the mobile app. Therefore half of the points are awarded

Digital Strategy

69% 0

Capability / Sub-Capability	Score	Explanation
1. Trend awareness	**25.0%**	0
1.1. Awareness Changing Customer Expectations	2	Throughout the Company 3 MVO verslag 2013, especially page 6. & XX Corporate Responsibility report 2014 section customer page 53 &54
1.2. Awareness changing market	2	Throughout the Company 3 MVO verslag 2013 & XX Corporate Responsibility report 2014 section customer page 53

1.3. Smart Home / Connected Home	2	Company 3 MVO verslag 2013 page 31: Energy saving product like remote controlled smart thermostates & XX Corporate Responsibility Report 2014 page 56
1.4. Distribution-level Storage	2	Based on: Company 3 MVO verslag 2013 page 40. XX developed and tested a storage system for PV energy.
1.5. Distributed renewable generation	2	Based on: Company 3 MVO verslag 2013 page 4. PV panels as product
1.6. Plug-in Electric Vehicles	2	Based on: Company 3 MVO verslag 2013 page 40. Speed charging electrical vehicles developed in cooperation with the municipality of Amsterdam. Although they concluded it is not growing fast at the time, in their Corporate Responsibility report of 2014 they acknowledge the increasing market for e-vehicles and they have extended their services in that area accordingly
1.7. Micro-grid operation	2	not literally named, but in Company 3 MVO jaarverslag 2013 page 41 they described a test-run wherein decentralised produced energy and subsequently supply and demand is locally optimised by sharing with direct neighbours. In essence this is the start of microgrids. Moreover, Company 3 participated in a local optimization test, https://www.Company 3.nl/content/overCompany 3/actueel/archief/2015/flexibel-omgaan-met-energie-levert-geld-op.html
2. Recognition Digital	**12.5%**	0
2.1. Disruptive Nature “Social”	2	they developed possibilities towards "social", e.g. Company 3 MVO verslag 2013 page 35. "Online Klantenforum" can be logged on via Social (Facebook or Twitter)
2.2. Disruptive Nature “Analytics”	2	XX is working on building analyses to give customers insights and possibilities to reduce their energy consumption. Based on XX corporate responsibility report page 55 & 56
2.3. Disruptive Nature “Mobile”	2	in their MVO verslag 2013 page 35 Company 3 acknowledges the importance of making services available on mobile.
2.4. Acknowledge importance Customer Experience Design	0	not found via the sources listed in the explanation
2.5. Acknowledge importance Increased User Interaction	0	not found via the sources listed in the explanation
2.6. Acknowledge importance of Omni-channel	0	not found via the sources listed in the explanation
3. Strategy	**12.5%**	0
3.1. Assigned CDO	0	not assigned, at least it is not mentioned via new items, company reports, linkedin, websites.
3.2. Developed Digital Vision	0	No clear vision on digital and its impact. Although the company acknowledge in their XX annual report 2014 changing behaviour and customer expectations. Therefore no points are awarded
3.3. Formed Strategic Alliance to adapt to changing market	2	Cooperation with Google's Nest is a clear example of a strategic alliance to adapt to changing markets. See www.Company 3.nl/nest
3.4. Formed Strategic Alliance to enter new markets	2	Cooperation with Renault to promote e-vehicles in Amsterdam, see http://www.nu.nl/duurzaam/2541488/renault-en-Company 3-sluiten-deal-elektrische-auto.html
4. New Business Activities	**18.8%**	0
4.1. Distribution-level Energy Storage solutions	0	Not found in a direct manner. Althoug the XX Our Responsibility report 2014 page 54 speaks about developinginteligent storage technologies. But district/neighborhood level is not mentioned. Therefore no points are awarded
4.2. Distrubution-level Energy generation solutions	2	Based on: https://www.Company 3.nl/content/overCompany 3/actueel/archief/2014/zonnecentrale-voetbalstadion-euroborg-uitgebreid.html Company 3 & 1miljoenwat cooperated in building an PV generation field on the Groningen Euroborg. Crowdfunded and therewith owned by customers. It provides electricity for 70 households.
4.3. Decentralised energy storage solutions	2	Based on: Company 3 MVO verslag 2013 page 40. XX developed and tested a storage system for PV energy.
4.4. Decentralised energy generation solutions	2	Source: Company 3 MVO verslag 2013 page 4, Company 3 launched a product named "spaarpanelen" which enables customers to buy complete PV panel packages.

4.5. Plug-in Electric Vehicles Solutions	2	Company 3 & Renault decided to stimulate electric cars by combining efforts: source: http://www.nu.nl/duurzaam/2541488/renault-en-Company 3-sluiten-deal-elektrische-auto.html & http://www.nu.nl/auto/2544114/overeenkomst-laadpunten-renault-en-Company 3.html
4.6. Home automation	2	They cooperate with XX, which is able to integrate various products like smoke alarms and cameras. https://www.Company 3.nl/content/particulier/speciaal_voor_klanten/september2014/openingsverhaal1.html
4.7. Smart appliances	0	not found via the sources listed in the explanation
4.8. Energy saving solutions on a Data-driven basis for Do It Yourself	2	XX is working on building analyses to give customers insights and possibilities to reduce their energy consumption. Based on XX corporate responsibility report page 55

4. Company 4

Digital Sales 10%

Capability / Sub-Capability	Score	Explanation
1. Sales Channels	**5%**	**0**
1.1. Have Video Call	0	It is not possible to have a video call via the company website, nor via the mobile app. Therefore no points are awarded.
1.2. Chat Online	1	This is possible via the company website http://www.Company 4.nl/thuis/nl/klantenservice/contact.html However not via the mobile app. Therefore half of the points are awarded
1.3. Direct Mail	1	This is only possible via the company website via a form. Therefore half of the points are awarded
1.4. Direct Call	0	This is not possible, neither via the company website, nor via the main app. Therefore no points are awarded
1.5. Call me back option	0	This is not possible, neither via the company website, nor via the main app. Therefore no points are awarded
1.6. Responsive Design	0	The company website does not respond to resizing. Also the main mobile app does not respond to turning. Therefore no points are awarded
1.7. Smart Channel: Responsive Website	0	The company website does not have a search completion, therefore no points are awarded
2. Sales Process	**6%**	**0**
2.1. Personal switch savings direct available	0	The company website does not display possible savings based on either averages or situation specific. Therefore no points are awarded
2.2. Cross-selling: Smart suggestions based on order	0	The company does not provide suggestions based on your order. Therefore no points are awarded
2.3. Automated system till contract in mail/home adress	1	The sales proces is completely automated via the company website. However it is not possible to complete the sales process via another sales channel (FB, secundairy website, mobile app) Therefore half of the points are awarded.
3. Omni-Channel Sales	**0%**	**0**
3.1. Channel Integration	0	The company website does not remember your last visit, neither does the company allow you to complete various steps of the sales process via different channels. Therefore no points are awarded
3.2. Channel Independence	0	January 6th, 2016, Company 4 Benelux has the 'WervelstormWeken' on their company website. However there is no notice of this on Facebook, Twitter or LinkedIn. Therefore it can be concluded that deals and offers are not presented on all channels. Therefore no points are awarded
3.3. Channel Engagement	0	Although the color scheme does look consistent, the headers differ between channels. Also, the company website and mobile app use formal language, whereas the LinkedIn, Facebook & Twitter use informal language. Both in general and person specific. Overall the lay-out and language-style is inconsistent so no points are awarded

3.4. Social log in	0	The company does not allow you to log in via a social medium like Facebook, Twitter or Googleplus, nor are there suggestions found that the company is developing this in the near future. Therefore no points are awarded

Digital Service

35%

NOTE: Since it was not possible to acquire log-in details for the xx App no assessed analysis can be made accordingly. The review of digital capabilities can be slightly pessimistic

Capability / Sub-Capability	Score	Explanation
1. Reachability	**5%**	**0**
1.1. Direct call	0	This is not possible via the company website nor via the main app
1.2. Direct mail	1	It is possible to send an email via a form via the company website. Response in 5 workdays. It is not possible to assess the main app. Therefore half of the points are awarded
1.3. Direct chat	1	Via the company website while not logged in, chat is possible, within the menu when logged in, it is not. It is not possible to assess the main mobile app. Therefore half of the points are awarded
1.4. Call me back option	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
1.5. Facebook	2	It is possible to contact Company 4 Benelux via Facebook for service related questions, therefore all points are awarded
1.6. Twitter	2	It is possible to contact Company 4 Benelux via Twitter for service related questions, therefore all points are awarded
1.7. Push messages mobile	1	The EnergieAssistent supposedly is able to set push messages via the app. For the company website, this is not possible. Therefore half of the points are awarded
1.8. WhatsApp	0	This is not possible. Therefore no points are awarded
1.9. Linked-in	0	It is not possible to pose service related questions via linkedIn. Therefore no points are awarded
1.10. Video Chat/support	0	It is not possible to have a video chat. Therefore no points are awarded.
2. Smart Home services	**11%**	**0**
2.1. Smart thermostaat	2	The company does provide a smart thermostaat named EnergieAssistent which allows remote control and visibility of energy use. Therefore all points are awarded
2.2. E-Safety	0	The company does not provide safety related products or services. Therefore no points are awarded
2.3. Remote access	2	Although it could not be assessed, the company website claims it is possible via both the company website and the mobile app. Therefore all points are awarded
2.4. Time-based routines	2	Although it could not be assessed, the company website claims it is possible via both the company website and the mobile app. Therefore all points are awarded
3. E-vehicle services	**0%**	**0**
3.1. E-vehicle charging subscription	0	It is not possible to conclude an e-vehicle charging contract. Therefore no points are awarded

3.2. Change Electricity E-vehicle pass contract	-1	It is not possible to change an e-vehicle charging contract. Therefore no points are awarded	
3.3. Variable charging schemes	-1	Not applicable	
3.4. User login	-1	Company 4 Benelux has no app for charging e-vehicles related services, however there is a danish app available.	
3.5. See current Charging status	-1	Not applicable	
3.6. Insight in charged kWh	-1	Not applicable	
3.7.Search for nearby charging stations	-1	Not applicable	
3.8. Search results options	-1	Not applicable	
4. Customer Data	**4%**		**0**
4.1. Report Change of home	1	Although it is not possible via the mobile app, it is possible via the company website. Therefore half of the points are awarded	
4.2. Change billing address	1	Although it is not possible via the mobile app, it is possible via the company website. Therefore half of the points are awarded	
4.3. Change bank account number	1	Although it is not possible via the mobile app, it is possible via the company website. Therefore half of the points are awarded	
4.4. Change Name	0	It is not possible to change this, nor via the company website, nor via the mobile app. Therefore no points are awarded	
4.5. See contract data	0	Although it is not possible via the mobile app, it is possible via the company website. It is possible to see the Contract type and the end date of the contract. However it is not possible to see the start date and the total length of the contract. Therefore no points are awarded	
4.6. Alter preference of contact	0	It is not possible to change this, nor via the company website, nor via the mobile app. Therefore no points are awarded	
5. Omni-Channel Support	**9%**		**0**
5.1. All support in 1 place per channel	1	Although the Facebook & Twitter are available for all support. The company website consists of several sub pages making it unclear. In addition, for non-smart meter users, there is no available mobile app support. All in all, 2 channels show consistency, therefore half of the points are awarded	
5.2. Channel Consistency	0	There was no consistency across channel. Therefore no points are awarded	
5.3. Social Media Response: Facebook	2	The company responses within the hour on average (according to Facebook statistics). Moreover, given the visible responses they actually try to help customers when needed.	
5.4. Social Media Response: Twitter	2	The company responses within the hour on average (scrolling through the first 20 Tweets and the reactions). Moreover, given the visible responses they actually try to help customers when needed.	
6. E-insights	**4%**		**0**
6.1. Current use	2	This should be available if one uses the EnergieAssistent. This holds for both mobile and company website. Therefore all points are awarded	
6.2. Daily use	2	This should be available if one uses the EnergieAssistent. This holds for both mobile and company website. Therefore all points are awarded	
6.3. Use this period	0	This is not available, not via the company website, nor via the mobile app. Therefore no points are awarded.	

6.4. Historical use	0	This is not available, not via the company website, nor via the mobile app. Therefore no points are awarded.
6.5. Compare use with similar households	0	This is not available, not via the company website, nor via the mobile app. Therefore no points are awarded.
6.6. Suggestions to save energy based on data	0	This is not available, not via the company website, nor via the mobile app. Therefore no points are awarded.
6.7. Gamification to save energy / alter behavior	0	This is not available, not via the company website, nor via the mobile app. Therefore no points are awarded.
6.8. Pre-made graphs	1	This is not available via the company website. If the EnergieAssistent is installed, then some data is made visible via pre-made graphs. Therefore half of the points are awarded.
7. Payments	**3%**	**0**
7.1. Pay bills	0	It is not possible to pay bills, neither via the company website, nor via the mobile app. Therefore no points are awarded
7.2. Billing history	1	This is available via the company website, but not via the app. Therefore half of the points are awarded
7.3. Direct customer support bills	0	Via the company website only FAQ's are directly available, no direct number or e-mail form. So no points are awarded.
7.4. Year overview, understandable & easily visible	0	There is only a copy of the year overview available. However no easy visible graphs via the company website. Therefore no points are awarded
7.5. Insight in Calculation periodic payment	0	This is not available, not via the company website, nor via the mobile app. Therefore no points are awarded.
7.6. Projected annual year-end payment	0	This is not available, not via the company website, nor via the mobile app. Therefore no points are awarded.
7.7. Adjust budget bill plan	1	This is available via the company website, but not via the app. Therefore half of the points are awarded
7.8. Overview open/fulfilled bills	1	This is available via the company website, but not via the app. Therefore half of the points are awarded

Digital Strategy

69% 0

Capability / Sub-Capability	Score	Explanation
1. Trend awareness	**21.4%**	0
1.1. Awareness Changing Customer Expectations	2	See COMPANY 4 Annual report page 5. "Customers' increasing desire for innovative , individually tailored energy solutions" Also: MVO verslag Company 4 2014 page 3: "Behoefen van eindgebruikers worden steeds complexer"
1.2. Awareness changing market	2	See https://energieassistent.Company 4.nl/energie-assistent-support/#energie-assistent-klantenservice "Company 4 wil energie als een smart service aanbieden en daarmee het leven makkelijker, efficienter en comfortabeler maken" See also Company 4's MVO report 2014 page 14: "our customers will invest more and more in products and services and this is a chance for us to deliver and sell these products and services"

1.3. Smart Home / Connected Home	2	The company developed its EnergieAssistent and delivers smart plugs via the webshop. Therefore it can be concluded that they are well aware of the importance of Smart Home/ Connected Home
1.4. Distribution-level Storage	0	The company does not specifically stresses the importance of Distribution-level Storage. Therefore no points are awarded.
1.5. Distributed renewable generation	2	The company's MVO report 2014 page 3 states the increasing need of consumers to produce energy beside just being a consumer. Moreover, on page 14 the company states that the changing market boosts new products such as collective PV systems.
1.6. Plug-in Electric Vehicles	2	In the company's MVO report 2014 page 25 the company mentioned the possibility of importance of smart charging of electrical vehicles.
1.7. Micro-grid operation	2	In the company's MVO report 2014 page 25, Company 4 states the importance of grid operation on a local level and optimizing grid systems with help of PHEVs to optimize local demand and supply.
2. Recognition Digital	**8.3%**	0
2.1. Disruptive Nature "Social"	2	The Company 4 MVO report 2014 page 15 and page 25 states the important role of social media in service, information, customer satisfaction.
2.2. Disruptive Nature "Analytics"	2	The company's MVO report 2014 page 4 states the importance of the enormous amounts of data and the information that provides to improve services in the near future. Accompanied by the increasing digitization of the society in general and energy related aspects in specific. See also page 14: "Products and services on the basis of data and internet are on the rise"
2.3. Disruptive Nature "Mobile"	0	The notion of mobile is not specifically mentioned in the assessed public sources.
2.4. Acknowledge importance Customer Experience Design	0	The company MVO report and Annual report do not specifically acknowledge the importance of Customer Experience Design or Channel Integration, Usability or related topics. Therefore no points can be awarded
2.5. Acknowledge importance Increased User Interaction	0	Although the Company 4 MVO verslag 2014 discusses the importance of customer centricity and social media, it does not state the importance of increased user interaction. Therefore no points are awarded.
2.6. Acknowledge importance of Omni-channel	0	Although the Company 4 MVO verslag 2014 stresses the importance of changing customer needs, digitization and social media, they do not acknowledge Omni-channel. Therfore no points are awarded
3. Strategy	**18.8%**	0
3.1. Assigned CDO	0	Not assigned according to public sources
3.2. Developed Digital Vision	2	Both the 2014th Company 4 annual report as the MVO verslag 2014 continiously talk about the digitization of our society, the influence of social media and the importance for the business. This shows the company is aware of the impact of digital on a strategic level. Therefore all points are awarded
3.3. Formed Strategic Alliance to adapt to changing market	2	The company adapt to the changing market of consumers becoming increasingly prosumers by cooperating with Sungevity and Solar Premium to deliver PV panel systems to customers. Source: MVO report E.0n 2014 page 33
3.4. Formed Strategic Alliance to enter new markets	2	The company developed its EnergieAssistent and delivers smart plugs via the webshop.
4. New Business Activities	**20.3%**	0

4.1. Distribution-level Energy Storage solutions	2	Company 4 invested in Greensmith, an Energy Storage company that has already produced the sinlge largest battery storage system (as of December 21st, 2015 according to: http://cleantechnica.com/2015/12/21/energy-storage-means-never-say-youre-sorry-says-greensmith/
4.2. Distrubution-level Energy generation solutions	2	In the company's MVO report 2014 page 33 they announced the collective energy generation solution near the municipality of Tynaarlo. A collective sale of 180 PV panels for surrounding postal codes. Also see: http://licht-op-eindhoven.nl/portfolio-items/eindhovens-beste-energieleverancier/ Therefore all points are awarded
4.3. Decentralised energy storage solutions	0	No specific activities towards consumer decentralized energy storage solutions have been found in public sources
4.4. Decentralised energy generation solutions	2	The company adapt to the changing market of consumers becoming increasingly prosumers by cooperating with Sungevity and Solar Premium to deliver PV panel systems to customers. Source: MVO report E.0n 2014 page 33
4.5. Plug-in Electric Vehicles Solutions	1	No specific activities towards consumer plug-in E-vehicle Solutions have been found. Although the company does have a charging contract and has charging stations for commercial use. Therefore half of the points are awarded.
4.6. Home automation	2	The company developed its EnergieAssistent and develops data-services. Also, as http://www.Company 4.com/en/about-us/innovation/projects.html#Customer_Solutions states: they focuse on developing smart home systems that meet customers'needs on cost, comfort and convenience. Moreover, the system is able to integrate smart plugs. Therefore all points are awarded. See: https://energieassistent.Company 4.nl/energie-assistent-mogelijkheden/#slimme-stekker
4.7. Smart appliances	2	The company sells smart plugs with the ENergieAssistent. https://energieassistent.Company 4.nl/energie-assistent-mogelijkheden/
4.8. Energy saving solutions on a Data-driven basis for Do It Yourself	2	Company 4 invested in Bidgely, a company that offers cloud-based, real-time applications that enable customers to better manage their energy usage. See also: http://www.Company 4.com/en/about-us/innovation/strategic-co-investments.html

5. Company 5

Digital Sales

23% 0

Capability / Sub-Capability	Score	Explanation
1. Sales Channels	**5%**	**0**
1.1. Have Video Call	0	It is not possible to have a video call, neither via the company website nor via the main mobile app
1.2. Chat Online	0	It is not possible to chat online, neither via the company website nor via the main mobile app
1.3. Direct Mail	1	It is possible to send a direct mail via a form on the company website, this is however not possible via the mobile app. Therefore half of the points are awarded
1.4. Direct Call	0	It is not possible to have a direct call, neither via the company website nor via the main mobile app
1.5. Call me back option	0	This is not available via the company website, nor via the main mobile app.
1.6. Responsive Design	1	Although the main app responds well to tillting of the screen, the company website does not respond to resizing. Therefore only half of the points are awarded. Note: the mobile website does respond well to tillting of the screen.
1.7. Smart Channel: Responsive Website	0	There are no search suggestions/completion on the company website. Therefore no points are awarded.
2. Sales Process	**6%**	**0**
2.1. Personal switch savings direct available	0	Although you can fill in your details to get a detailed offer, you cannot compare your switch savings with other firms or current contract. Therefore no points are awarded
2.2. Cross-selling: Smart suggestions based on order	0	Although the company has new innovative products, live PV-panels for rent. They do not suggest to add this during the sales process. Neither do they promote to add XX. Therefore no points are awarded
2.3. Automated system till contract in mail/home adress	1	It is only possible to conclude an automated contract via the company website, therefore only half of the points are awarded
3. Omni-Channel Sales	**13%**	**0**
3.1. Channel Integration	1	The company website does remember your last visit, by means of pre-filled orders. The company does not allow you to complete various steps of the sales process via different channels. Therefore half of the points are awarded
3.2. Channel Independence	0	The deals and offers that are on the website are not present on their facebook or Twitter, Therefore no points can be awarded
3.3. Channel Engagement	2	The company website, Twitter, Facebook & LinkedIn show a consistent layout. Although the style could be optimised for LinkedIn. Moreover, the company does use a consistent language styl throughout the channels; throughout the channels the company uses an informal language. Therefore all points are awarded.
3.4. Social log in	0	The company does not allow you to log in via a social medium like Facebook, Twitter or Googleplus, nor are there suggestions found that the company is developing this in the near future. Therefore no points are awarded

Digital Service

31% 0

Capability / Sub-Capability	Score	Explanation
1. Reachability	**5%**	**0**
1.1. Direct call	0	It is not possible to have a direct call via the company website or main app. Therefore no points are awarded. Note: the mobile website does provide a direct call possibility
1.2. Direct mail	1	It is only possible to send a direct mail via the company website. Therefore half of the points are awarded
1.3. Direct chat	0	It is not possible to have a direct chat with a company employee via the company website or mobile app. Therefore no points are awarded. Note: the company does use WhatsApp
1.4. Call me back option	0	The company website and the main app do not provide the possibility to call back. Therefore no points are awarded
1.5. Facebook	2	It is possible to use Facebook for service related questions.
1.6. Twitter	2	It is possible to use Twitter for service related questions
1.7. Push messages mobile	0	It is not possible to set push messages to mobile. Therefore no points can be awarded
1.8. WhatsApp	2	It is possible to have a whatsApp conversation with an employee. Therefore all points are awarded
1.9. Linked-in	0	Although the company has a linkedIn, it is not possible to contact the company for service related questions. Therefore no points are awarded
1.10. Video Chat/support	0	It is not possible to have video chat support. Therefore no points are awarded
2. Smart Home services	**7%**	**0**
2.1. Smart thermostaat	2	The company has developed XX, a smart thermostate, in cooperation with Plugwise. See: www.xxx.com. Therefore all points are awarded
2.2. E-Safety	0	The company does not provide E-safety related product or services
2.3. Remote access	1	The company provides the possibility to control the xx Thermostaat remotely via an app. This is not available via a website. Therefore half of the points are awarded. Note: According to: https://forum.Company 5.nl/xx-35/kun-xx-via-computer-bedienen-inzien-540 it is possible to control it via a webapplication, however this is not provided by the company and therefore no points are awarded for it.
2.4. Time-based routines	1	It is possible to set time based routines via the xx App. Therefore half of the points are awarded. According to: https://forum.Company 5.nl/xx-35/kun-xx-via-computer-bedienen-inzien-540 it is possible to set time based routines via a webapplication, however this is not provided by the company and therefore no points are awarded for it.
3. E-vehicle services	**0%**	**0**
3.1. E-vehicle charging subscription	0	The company does not provide a E-vehicle charging subscription. Therefore no points are awarded.
3.2. Change Electricity E-vehicle pass contract	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable

3.3. Variable charging schemes	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
3.4. User login	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
3.5. See current Charging status	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
3.6. Insight in charged kWh	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
3.7.Search for nearby charging stations	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
3.8. Search results options	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
4. Customer Data	**6%**	**0**
4.1. Report Change of home	1	This is only possible via the company website. Therefore half of the points are awarded.
4.2. Change billing address	1	This is only possible via the company website. Therefore half of the points are awarded.
4.3. Change bank account number	1	This is only possible via the company website. Therefore half of the points are awarded.
4.4. Change Name	0	This is not possible via the company website and the mobile app
4.5. See contract data	1	This is only possible via the company website. Therefore half of the points are awarded.
4.6. Alter preference of contact	1	It is possible to change the preference of contact via the company website. Choice between E-mail or Physical Mail. Therefore half of the points are awarded.
5. Omni-Channel Support	**5%**	**0**
5.1. All support in 1 place per channel	1	Whereas there is only 1 facebook and 1 twitter providing support. There are several company websites for different products (XX, Solar Panels, XX-inzicht. Also, they do not have a mobile app for support. Altogether, service is only truly in 1 place for Twiter & Facebook, therefore half of the points are awarded.
5.2. Channel Consistency	0	The company does not have a mobile app containing support services. Therefore no points are awarded
5.3. Social Media Response: Facebook	1	Although the company responds within the hour on average during working hours, based on the responses, it seems that they fail to provide actual support. Therefore half of the points are awarded
5.4. Social Media Response: Twitter	1	Although the company responds within the hour on average during working hours, based on the responses, it seems that they fail to provide actual support. Therefore half of the points are awarded

6. E-insights	**4%**	**0**
6.1. Current use	1	It is possible to see the current use via the xx app on mobile if a smart meter is installed. However this is not available via the company website. Therefore half of the points are awarded
6.2. Daily use	1	It is possible to see the daily use via the xx app on mobile if a smart meter is installed. However this is not available via the company website. Therefore half of the points are awarded
6.3. Use this period	1	This is available via the company website and via the xx mobile app (only available when a smart meter is installed). Since this is not available for all users via mobile only half of the points are awarded.
6.4. Historical use	1	This is available via the company website and via the xx mobile app (only available when a smart meter is installed). Since this is not available for all users via mobile only half of the points are awarded.
6.5. Compare use with similar households	1	The xx app does provide insights and compares with similar households, however this is not available via the company website, therefore half of the points are awarded
6.6. Suggestions to save energy based on data	0	The company does not provide suggestions to save energy based on data via the company website. However, with XX installed, the xx thermostat has different options to save energy, but this is based on settings, not on actual data. Therefore no points are awarded
6.7. Gamification to save energy / alter behavior	0	There is no gamification to alter behavior found via the company website or xx app. Therefore no points are awarded
6.8. Pre-made graphs	0	There are no pre-made graphs available via the company website and the available graphs via the mobile app xx are only available for smart meter users, therefore no points are awarded
7. Payments	**4%**	**0**
7.1. Pay bills	0	It is not possible to pay bills via the company website nor via the mobile app. Therefore no points are awarded
7.2. Billing history	1	It is possible to see the billing history via the company website, however, this is not available via the company app. Therefore half of the points are awarded
7.3. Direct customer support bills	0	It is not possible to have direct customer support concerning bills via the company website nor via the mobile app. Therefore no points are awarded
7.4. Year overview, understandable & easily visible	0	It is not possible to see the year overview understandable and easily visible via the company website nor via the mobile app. Therefore no points are awarded
7.5. Insight in Calculation periodic payment	1	It is possible to calculate the periodic payment and even change it accordingly via the company website, however, this is not available via the company app. Therefore half of the points are awarded
7.6. Projected annual year-end payment	0	It is not directly available to see the projected annual payment unless you filled in your meter numbers. Therefore no points are awarded
7.7. Adjust budget bill plan	1	It is only possible to adjust your budget bill plan via the company website. Therefore half of the points are awarded
7.8. Overview open/fulfilled bills	1	This is only available via the company website. Therefore half of the points are awarded

Digital Strategy

30% 0

Capability / Sub-Capability	Score	Explanation
1. Trend awareness	**7.1%**	0
1.1. Awareness Changing Customer Expectations	0	This has not been adressed in public sources, therefore no points are awarded
1.2. Awareness changing market	2	The company is aware of changing markets, as they state on http://www.XX-inzicht.nl/ "We believe that the energy company of the future has to offer more than just simply provide energy"
1.3. Smart Home / Connected Home	2	They state that the XX developments are the beginning of Smart Home products they will deliver in the future: https://www.nle.nl/over-ons/onze-missie therefore all points are awarded
1.4. Distribution-level Storage	0	This has not been adressed in public sources, therefore no points are awarded
1.5. Distributed renewable generation	0	This has not been adressed in public sources, therefore no points are awarded
1.6. Plug-in Electric Vehicles	0	This has not been adressed in public sources, therefore no points are awarded
1.7. Micro-grid operation	0	This has not been adressed in public sources, therefore no points are awarded
2. Recognition Digital	**4.2%**	0
2.1. Disruptive Nature “Social”	2	They see the disruptive nature of social, and are well aware of the effects of social & internet on their market. See: https://www.linkedin.com/pulse/van-prijsvechter-tot-digitale-klantknuffelaar-carin-vreede Therefore all points are awarded
2.2. Disruptive Nature “Analytics”	0	This has not been adressed in public sources, therefore no points are awarded
2.3. Disruptive Nature “Mobile”	0	This has not been adressed in public sources, therefore no points are awarded
2.4. Acknowledge importance Customer Experience Design	0	This has not been adressed in public sources, therefore no points are awarded
2.5. Acknowledge importance Increased User Interaction	0	This has not been adressed in public sources, therefore no points are awarded
2.6. Acknowledge importance of Omni-channel	0	This has not been adressed in public sources, therefore no points are awarded
3. Strategy	**12.5%**	0
3.1. Assigned CDO	0	According to the used open sources, the company has not installed a Chief Digital Officer
3.2. Developed Digital Vision	0	The company does recognise social media as important but a clear vision on digital e.g. how it is going to shape the future is not expressed. Therefore no points are awarded
3.3. Formed Strategic Alliance to adapt to changing market	2	They cooperate with Return on Energy to sell PV-panels, see: https://www.Company 5.nl/producten/zonnepanelen/koop and a cooperation with Sunrise to lease PV-panels, see: https://www.zonerbij.nl/

		therefore all points are awarded https://www.Company 5.nl/over-ons/blog/nu-ook-te-huur-zonnepanelen
3.4. Formed Strategic Alliance to enter new markets	2	In a cooperation with Plugwise, they developed XX, a smart thermostaat. Www.xx.com Therefore all points are awarded.
4. New Business Activities	**6.3%**	0
4.1. Distribution-level Energy Storage solutions	0	This has not been adressed in public sources, therefore no points are awarded
4.2. Distrubution-level Energy generation solutions	0	This has not been adressed in public sources, therefore no points are awarded
4.3. Decentralised energy storage solutions	0	This has not been adressed in public sources, therefore no points are awarded
4.4. Decentralised energy generation solutions	2	They cooperate with Return on Energy to sell PV-panels, see: https://www.Company 5.nl/producten/zonnepanelen/koop and a cooperation with Sunrise to lease PV-panels, see: https://www.zonerbij.nl/ therefore all points are awarded https://www.Company 5.nl/over-ons/blog/nu-ook-te-huur-zonnepanelen
4.5. Plug-in Electric Vehicles Solutions	0	This has not been adressed in public sources, therefore no points are awarded
4.6. Home automation	0	In a cooperation with Plugwise, they developed xx, a smart thermostaat. Www.whoisXX.com But, XX is not able to integrate any smart appliances at this moment. And new developments are not officially announced. Therefore no points are awarded.
4.7. Smart appliances	2	Since they see their xx smart thermostat as a first product in a serie of smart products, combined with their innovation team and cooperation with plugwise, it can be concluded that the company develops activities towards smart appliances. Therefore all points are awarded
4.8. Energy saving solutions on a Data-driven basis for Do It Yourself	0	This has not been addressed in public sources, therefore no points are awarded

6. Company 6

Digital Sales

14% 0

Capability / Sub-Capability	Score	Explanation
1. Sales Channels	**5%**	**0**
1.1. Have Video Call	0	This is not possible via the company website, nor via the main app
1.2. Chat Online	1	This is possible via the company website, but not easy to find. The chat screen just popped up. It is not possible via the main app. There half of the score is awarded.
1.3. Direct Mail	1	Although it is not possible via the main app. It is possible via the company website. When logged in the form has pre-filled details. Therefore half of the points are awarded.
1.4. Direct Call	0	This is not possible via the company website, nor via the main app when not logged in (when you are logged in it is possible)
1.5. Call me back option	0	This is not possible via the company website, nor via the main app
1.6. Responsive Design	0	Both the company website and the mobile app do not respond well to resizing cq turning the screen
1.7. Smart Channel: Responsive Website	0	There are no search suggestions/completion on the company website. Therefore no points are awarded.
2. Sales Process	**6%**	**0**
2.1. Personal switch savings direct available	0	This is not possible via the company website
2.2. Cross-selling: Smart suggestions based on order	0	There are no suggestions during the sales process to buy additional products
2.3. Automated system till contract in mail/home adress	1	The sales process can only be completed via the company website. Not via another digital channel. Therefore half of the points are awarded
3. Omni-Channel Sales	**4%**	**0**
3.1. Channel Integration	0	The company website does not remember your last visit, neither does the company allow you to complete various steps of the sales process via different channels. Therefore no points are awarded
3.2. Channel Independence	0	Deals & offers on the website are not presented on Twitter, Facebook or Mobile app, therefore no points are awarded
3.3. Channel Engagement	1	Considering the lay-out, the company website and mobile app show a clear purple/blue scheme, whereas linkedin/twitter/facebook use a purple/yellow scheme. Moreover, the banner used on Twitter/Facebook/LinkedIn is not used on the company website. Concerning language, the website and linkedin use formal language, whereas Facebook, Twitter and mobile app use an informal language. All in all, the overal style look similar despite the difference in used colors. Therefore half of the points are awarded.
3.4. Social log in	0	The company does not allow you to log in via a social medium like Facebook, Twitter or Googleplus, nor are there suggestions found that the company is developing this in the near future. Therefore no points are awarded

Digital Service

50% 0

Capability / Sub-Capability	Score	Explanation
1. Reachability	**6%**	**0**
1.1. Direct call	1	This is only possible via the mobile app, not via the company website. Therefore half of the points are awarded
1.2. Direct mail	1	This is only possible via the company website, not via the mobile app. Therefore half of the points are awarded
1.3. Direct chat	1	Only possible via the company website. Not easy to find, the suggestion just popped up during search on contact possibilities. On a second search it did not pop up. Altogether half of the points are awarded.
1.4. Call me back option	0	This is not available via the company website, nor via the mobile app
1.5. Facebook	2	It is possible to contact Company 6 via Facebook for service related questions, therefore all points are awarded
1.6. Twitter	2	It is possible to contact Company 6 via Twitter for service related questions, therefore all points are awarded
1.7. Push messages mobile	1	it is possible via mobile to warn you to fill in the meter values via mijn Company 6 app. The Company 6 Laadpunten app can warn you on several instances. E.g. a new chargepoint near your house. However it is not possible to set a push message via the company website. Therefore half of the points are awarded
1.8. WhatsApp	0	It is not found possible to send WhatsApp messages to the company
1.9. Linked-in	0	This is not possible
1.10. Video Chat/support	0	This is not possible via the company website nor via the main app
2. Smart Home services	**4%**	**0**
2.1. Smart thermostaat	0	The company does not provide smart thermostaat related services, nor does it develop a smart thermostaat. Therefore no points are awarded
2.2. E-Safety	2	Company 6 has an alliance with Feenstra services to incorporate/deliver security/safety systems
2.3. Remote access	0	This is not available via the company website, nor via the mobile app
2.4. Time-based routines	0	This is not available via the company website, nor via the mobile app
3. E-vehicle services	**4%**	**0**
3.1. E-vehicle charging subscription	1	It is only possible to conclude an electrical vehicle charging subscription via another system. Therefore half of the points are awarded. https://www.Company 6.nl/ev/openbaar-laden.jsp
3.2. Change Electricity E-vehicle pass contract	0	It is not possible to change the contract, there is only 1 contract available. Therefore no points are awarded.
3.3. Variable charging schemes	0	This is not availabe. Therefore no points are awarded
3.4. User login	1	This is required for the company e-vehicle website: www.Company 6.nl/ev/mijnoplaadpunt . For the mobile app: Company 6 Laadpunten, there is no possibility to log in. Altogether half of the points can be awarded.
3.5. See current Charging status	0	This is not available via the company e-vehicle website, nor via the mijn laadpunten app. Therefore no points.

3.6. Insight in charged kWh	1	This should be available via the e-vehicle website. Www.Company 6.nl/ev/mijnoplaadpunt , although not actually assessed. It is not possible via the Company 6 Laadpunten app. Therefore half of the points are awarded.
3.7.Search for nearby charging stations	1	Because of the requirement for the website to log in, this could not be assessed and it is not claimed by the company website that this is available via the website. However for the mobile app it is possible to search for charging stations based on 1. Charge kW. 2. Plug type. 3 Charging stations not owned by the company. 4 availability. Therefore half of the points are awarded.
3.8. Search results options	1	Because of the requirement for the website to log in, this could not be assessed and it is not claimed by the company website that this is available via the website. However for the mobile app it is possible to see 1. Adress 2. Distance. 3 Availability, 4. open route/location in google maps. Therefore half of the points are awarded.
4. Customer Data	**10%**	**0**
4.1. Report Change of home	1	This is possible via the company webiste, however it is not possible via the main app. Therefore half of the points are awarded.
4.2. Change billing address	2	This is possible via the company webisite and via the main app. Therefore all points are awarded
4.3. Change bank account number	2	This is possible via the company webisite and via the main app. Therefore all points are awarded
4.4. Change Name	0	This is not possible, neither via the company website, nor via the main app
4.5. See contract data	1	Via the company website it is possible to see the contract length and kind of contract. The start date of the contract is not available. Via the mobile app the contract length is available as well as the kind of contract. For both channels hold that the start date of the contract is not available. Half of the points are awarded for the specifications that are available for mobile and website.
4.6. Alter preference of contact	2	This is possible via the company website and via the main app. Choose between physical mail or online. Therefore all points are awarded
5. Omni-Channel Support	**11%**	**0**
5.1. All support in 1 place per channel	1	The company has support for Facebook and Twitter in one place. The website has 2 distinct places for electricity and e-vehicle support. The mobile app only has support for electricity. Therefore half of the points are awarded
5.2. Channel Consistency	1	Although the information the app and website provide are merely consistent. The means of support is not. Also both the app and the website lack many services as flowing from the other service related aspects. Therefore half of the points are awarded.
5.3. Social Media Response: Facebook	2	The company responses within the hour on average (according to Facebook statistics). Moreover, given the visible responses they actually try to help customers when needed.
5.4. Social Media Response: Twitter	2	The company responses within the hour on average (scrolling through the first 20 Tweets and the reactions). Moreover, given the visible responses they actually try to help customers when needed.
6. E-insights	**8%**	**0**

6.1. Current use	0	This is not possible, neither via the company website, nor via the main app. Therefore no points are awarded
6.2. Daily use	0	This is not possible, neither via the company website, nor via the main app. Therefore no points are awarded
6.3. Use this period	2	This is available, both via the company website as via the main app if the smart meter is installed. Therefore all points are awarded
6.4. Historical use	2	This is available, both via the company website as via the main app. Therefore all points are awarded
6.5. Compare use with similar households	2	This is available, both via the company website as via the main app. Therefore all points are awarded
6.6. Suggestions to save energy based on data	1	This is available via the company website if you fill in the required data. Via the app this is not available. Therefore half of the points are awarded
6.7. Gamification to save energy / alter behavior	0	This is not possible, neither via the company website, nor via the main app. Therefore no points are awarded
6.8. Pre-made graphs	2	This is available, both via the company website as via the main app. Therefore all points are awarded
7. Payments	**8%**	**0**
7.1. Pay bills	0	This is not possible, neither via the company website, nor via the main app. Therefore no points are awarded
7.2. Billing history	2	This is available, both via the company website as via the main app. Therefore all points are awarded
7.3. Direct customer support bills	0	This is not possible, neither via the company website, nor via the main app. Therefore no points are awarded
7.4. Year overview, understandable & easily visible	1	The year overview is only available via the company website. Therefore half of the points are awarded
7.5. Insight in Calculation periodic payment	1	This is available via the company webiste. Although it should be available via the main app via 'verbruiksmanager' this extension does not operate on two instances (16/12/2015 & 5/1/2016) Therefore half of the points are awarded
7.6. Projected annual year-end payment	1	This is available via the company website if you fill in the required data. Via the app this is not available. Therefore half of the points are awarded
7.7. Adjust budget bill plan	2	This is available, both via the company website as via the main app. Therefore all points are awarded
7.8. Overview open/fulfilled bills	2	This is available, both via the company website as via the main app. Therefore all points are awarded

Digital Strategy 40% 0

Capability / Sub-Capability	Score	Explanation
1. Trend awareness	**17.9%**	0
1.1. Awareness Changing Customer Expectations	2	From the annual report: They do report on changing customers expectations, customers want increasingly install their own energy solutions. They recognise the opportunity source: annual report 2014 page 4.
1.2. Awareness changing market	2	From the annual report: The changing market they see is only towards a more sustainable energy producer/provider, so reducing carbon footprint and renewable energy. full points are rewarded because of recognition of smart home solutions & energy advisory services
1.3. Smart Home / Connected Home	2	Mentioned in their annual report on page 5: Examples of new offers are Smart Home Solutions
1.4. Distribution-level Storage	0	not mentioned in the annual report nor on the company website or news items
1.5. Distributed renewable generation	2	regional production is mentioned, especially heating and large scale solar panels (RAI & ArenA)
1.6. Plug-in Electric Vehicles	2	Mentioned in their annual report 'meet customer expectation on Electric vehicle charging station and solutions
1.7. Micro-grid operation	0	not mentioned in the annual report nor on the company website or news items
2. Recognition Digital	**0.0%**	0
2.1. Disruptive Nature “Social”	0	not mentioned in the annual report nor on the company website or news items
2.2. Disruptive Nature “Analytics”	0	not mentioned in the annual report nor on the company website or news items
2.3. Disruptive Nature “Mobile”	0	not mentioned in the annual report nor on the company website or news items
2.4. Acknowledge importance Customer Experience Design	0	not mentioned in the annual report nor on the company website or news items
2.5. Acknowledge importance Increased User Interaction	0	not mentioned in the annual report nor on the company website or news items
2.6. Acknowledge importance of Omni-channel	0	not mentioned in the annual report nor on the company website or news items
3. Strategy	**12.5%**	0
3.1. Assigned CDO	0	Not assigned as far as the annual report, Company 6.nl & linkedIn show
3.2. Developed Digital Vision	0	There is no vision on digital in the annual report
3.3. Formed Strategic Alliance to adapt to changing market	2	cooperation with Coolblue to sell thermostates https://www.Company 6.nl/energie-besparen/thermostaatcheck/
3.4. Formed Strategic Alliance to enter new markets	2	based on N.V. Company 6 Energy Annual Report 2014 page 8: 'An example is the cooperation with Schipholtaxi to provide green electricity for their 96 electric taxis and to install several charging stations'
4. New Business Activities	**9.4%**	0
4.1. Distribution-level Energy Storage solutions	0	not found in public sources. Therefore no points are awarded.

4.2. Distrubution-level Energy generation solutions	0	not found in public sources. Therefore no points are awarded.
4.3. Decentralised energy storage solutions	0	not found in public sources. Therefore no points are awarded.
4.4. Decentralised energy generation solutions	2	An energy production roof, in cooperation with Stafier B.V. source: http://www.Company 6.com/nieuws/nieuws/2015/start-proefproject-Company 6-energiedak/ also: Cooperation between Company 6 & Feenstra on solar panels. Www.Company 6.nl/duurzame-energie/
4.5. Plug-in Electric Vehicles Solutions	2	E-mobility record, 1 million charged kilometers, annual report 2014 page 3
4.6. Home automation	0	not found in public sources. Therefore no points are awarded.
4.7. Smart appliances	2	Cooperation with Feenstra on Home Security www.Company 6.nl/feenstra
4.8. Energy saving solutions on a Data-driven basis for Do It Yourself	0	not found in public sources. Therefore no points are awarded.

7. Company 7

Digital Sales

20% 0

Capability / Sub-Capability	Score	Explanation
1. Sales Channels	**7%**	**0**
1.1. Have Video Call	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
1.2. Chat Online	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
1.3. Direct Mail	1	It is possible to send an email via a form via the company website. It is not possible to send an email via the main app. Therefore half of the points are awarded
1.4. Direct Call	1	It is possible to call directly from the main mobile app. However it is not possible to call directly via the website. Therefore half of the points are awarded
1.5. Call me back option	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
1.6. Responsive Design	1	The company website respons well to resizing. Although the mobile app's design interface is sophisticated, the app does not respond to turning of the screen. Therefore half of the points are awarded.
1.7. Smart Channel: Responsive Website	0	The website has no search function, thus search completion is not available,. However, to assess the responsiveness of the website, nothing else was noticed so no points are awarded
2. Sales Process	**0%**	**0**
2.1. Personal switch savings direct available	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
2.2. Cross-selling: Smart suggestions based on order	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
2.3. Automated system till contract in mail/home adress	0	It is only possible to order a contracvia the company website and not in another manner (Facebook, external website, mobile app). Moreover, the it takes three workdays to confirm the contract by e-mail. Therefore, it can be concluded that this is not an automated process and thus, no points can be awarded.
3. Omni-Channel Sales	**13%**	**0**
3.1. Channel Integration	1	The company website does remember the last visit, which can be seen when you filled in an offer on www.Company 7.nl. The company does not allow you to complete various steps of the sales process via different channels. Therefore half of the points are awarded.
3.2. Channel Independence	1	Deals & offers on the website are not presented on the Mobile app. However, all deals and offers can be found on their Facebook page and via @Company 7, although not via @Company 7_webcare. Altogether, half of the points are awarded
3.3. Channel Engagement	1	Although the company is consistent with informal language throughout the channels, the layout is not completely consistent. Every channel has a

		different banner. So the layout is not consistent. Therefore only half of the points are awarded
3.4. Social log in	0	The company does not allow you to log in via a social medium like Facebook, Twitter or Googleplus, nor are there suggestions found that the company is developing this in the near future. Therefore no points are awarded

Digital Service

33% 0

Capability / Sub-Capability	Score	Explanation
1. Reachability	**5%**	**0**
1.1. Direct call	1	It is possible to call directly from the main mobile app. However it is not possible to call directly via the website. Therefore half of the points are awarded
1.2. Direct mail	1	It is possible to send an email via a form via the company website. It is not possible to send an email via the main app. Therefore half of the points are awarded
1.3. Direct chat	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
1.4. Call me back option	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
1.5. Facebook	2	It is possible to contact Company 7 via Facebook for service related questions, therefore all points are awarded
1.6. Twitter	2	It is possible to contact Company 7 via Twitter for service related questions, therefore all points are awarded
1.7. Push messages mobile	1	Not possible via the company website. However, the mobile app allows you to set push messages on or off, although you cannot manage what kind of push messages you receive. Altogether, half of the points are awarded
1.8. WhatsApp	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
1.9. Linked-in	0	This is not possible, therefore no points are awarded
1.10. Video Chat/support	0	Not possible via the company website, nor via the main app. Therefore no points are awarded
2. Smart Home services	**4%**	**0**
2.1. Smart thermostaat	2	The company provides its EnergieMonitor for free to customers, herewith they have insight in energy usage (gas/electricity). Therefore all points are awarded
2.2. E-Safety	0	The company does not provide any E-safety related products or services. Therefore no points are awarded.
2.3. Remote access	0	This is not possible via the EnergieMonitor. Therefore no points are awarded.
2.4. Time-based routines	0	This is not possible via the EnergieMonitor. Therefore no points are awarded.
3. E-vehicle services	**0%**	**0**
3.1. E-vehicle charging subscription	0	The company does not provide a E-vehicle charging subscription. Therefore no points are awarded.

3.2. Change Electricity E-vehicle pass contract	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
3.3. Variable charging schemes	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
3.4. User login	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
3.5. See current Charging status	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
3.6. Insight in charged kWh	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
3.7.Search for nearby charging stations	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
3.8. Search results options	-1	Since the company does not provide an E-vehicle charging subscription nor does it have an e-vehicle related app. Therefore this question is not applicable
4. Customer Data	**4%**	**0**
4.1. Report Change of home	1	This is only possible via the company website. Therefore half of the points are awarded.
4.2. Change billing address	1	This is only possible via the company website. Therefore half of the points are awarded.
4.3. Change bank account number	0	This is not possible via the company website and the mobile app
4.4. Change Name	0	This is not possible via the company website and the mobile app
4.5. See contract data	1	It is possible to see the contract data via the website (including kind of contract, start date, length). However, this is not available via the company main app. Therefore half of the points are awarded.
4.6. Alter preference of contact	0	This is not possible via the company website and the mobile app
5. Omni-Channel Support	**9%**	**0**
5.1. All support in 1 place per channel	1	Although the company has one mobile app which has integrated both its EnergieMonitor functionalities and its general services, and this also holds for the company website. The company does have 2 twitter accounts (@Company 7 & @Company 7_webcare). One is used for promotions and the other for services, but practically, both can be adressed for service related inquiries. To contradict, the company has one facebook page. Altogether, since 3 channels provide support in 1 place, half of the points are awarded
5.2. Channel Consistency	0	The available services are not aligned. Most services are only availabe via the company website. Therefore no points are awarded
5.3. Social Media Response: Facebook	2	The company responses within the hour on average (according to Facebook statistics). Moreover, given the visible responses they actually try to help customers when needed. Therefore all points are awarded

5.4. Social Media Response: Twitter	2	The company responses within the hour on average (scrolling through the first 20 Tweets and the reactions). Moreover, given the visible responses they actually try to help customers when needed. Therefore all points are awarded
6. E-insights	**10%**	**0**
6.1. Current use	2	This is available via the mobile app. This is also available via the company website if you have a smart meter installed and with the free provided EnergieMonitor. Therefore all points are awarded
6.2. Daily use	2	This is available via the mobile app. This is also available via the company website if you have a smart meter installed and with the free provided EnergieMonitor. Therefore all points are awarded
6.3. Use this period	2	This is available via the mobile app. This is also available via the company website if you have a smart meter installed and with the free provided EnergieMonitor. Therefore all points are awarded
6.4. Historical use	2	This is available via the mobile app. This is also available via the company website if you have a smart meter installed and with the free provided EnergieMonitor. Therefore all points are awarded
6.5. Compare use with similar households	1	This is only available via the company website. Therefore half of the points are awarded
6.6. Suggestions to save energy based on data	0	This is not available via the company website or in the mobile app. Therefore no points are awarded.
6.7. Gamification to save energy / alter behavior	0	This is not available via the company website or in the mobile app. Therefore no points are awarded.
6.8. Pre-made graphs	2	This is available via the mobile app. This is also available via the company website if you have a smart meter installed and with the free provided EnergieMonitor. Therefore all points are awarded
7. Payments	**2%**	**0**
7.1. Pay bills	0	This is not available via the company website or in the mobile app. Therefore no points are awarded.
7.2. Billing history	1	This is only available via the company website. Therefore half of the points are awarded.
7.3. Direct customer support bills	0	This is not available via the company website or in the mobile app. Therefore no points are awarded.
7.4. Year overview, understandable & easily visible	1	This is only available via the company website. Well explained overview with visualizations available via 'nota'. Therefore half of the points are awarded
7.5. Insight in Calculation periodic payment	0	This is not available via the company website or in the mobile app. Therefore no points are awarded.
7.6. Projected annual year-end payment	0	This is not available via the company website or in the mobile app. Therefore no points are awarded.
7.7. Adjust budget bill plan	0	This is not available via the company website or in the mobile app. You have to call customer support for this. Therefore no points are awarded.
7.8. Overview open/fulfilled bills	0	This is not available via the company website or in the mobile app. Therefore no points are awarded.

0

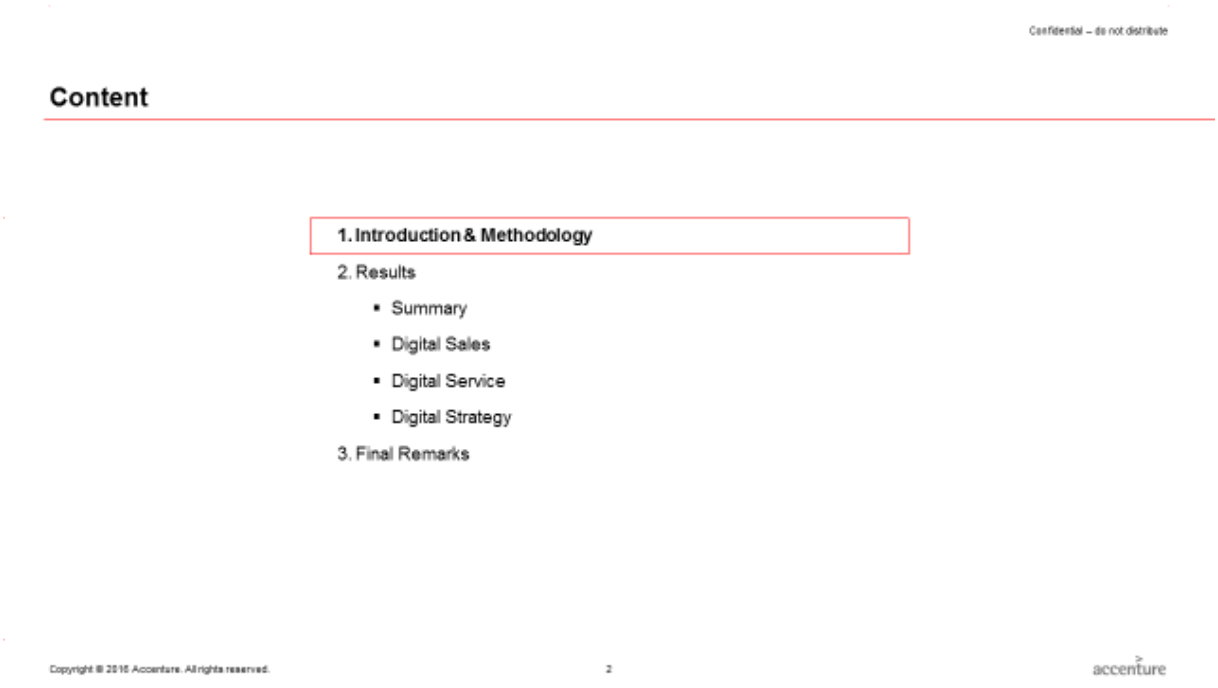
Digital Strategy 39% 0

Capability / Sub-Capability	Score	Explanation
1. Trend awareness	**14.3%**	0
1.1. Awareness Changing Customer Expectations	0	not found in public sources. Therefore no points are awarded.
1.2. Awareness changing market	0	not found in public sources. Therefore no points are awarded.
1.3. Smart Home / Connected Home	2	Since they have developed their EnergieMonitor it can be concluded that they are aware of smart/connected home. Therefore all points are awarded
1.4. Distribution-level Storage	2	Since they report the development of the Tesla Powerwall (see: https://www.Company 7.nl/updates/bericht/1220/powerwall-accu-aan-je-muur-Company 7) They recognize decentralised energy storage. Therefore all points are awarded
1.5. Distributed renewable generation	2	They have started consumer cooperation for PV-panels in a football stadium. Moreover, they have cooperated in a local solar park in Brabant. See: https://www.Company 7.nl/updates/bericht/1141/eerste-collectieve-zonnepark-in-brabant-een-feit therefore all points are awarded
1.6. Plug-in Electric Vehicles	2	They provide E-vehicle charging stations with a discount in cooperation with The New Motion. https://www.Company 7.nl/slim-met-energie therefore all points are awarded
1.7. Micro-grid operation	0	Although the company has started a test with variable energy prices (wholesale prices based on supply/demand and a service fee) https://www.Company 7.nl/updates/bericht/1261/veh-en-Company 7-starten-proef-met-slimme-metercontract, there was no mentioning of local grid optimization. Therefore no points are awarded
2. Recognition Digital	**0.0%**	0
2.1. Disruptive Nature “Social”	0	not found in public sources. Therefore no points are awarded.
2.2. Disruptive Nature “Analytics”	0	not found in public sources. Therefore no points are awarded.
2.3. Disruptive Nature “Mobile”	0	not found in public sources. Therefore no points are awarded.
2.4. Acknowledge importance Customer Experience Design	0	not found in public sources. Therefore no points are awarded.
2.5. Acknowledge importance Increased User Interaction	0	not found in public sources. Therefore no points are awarded.
2.6. Acknowledge importance of Omni-channel	0	not found in public sources. Therefore no points are awarded.
3. Strategy	**12.5%**	0
3.1. Assigned CDO	0	According to public sources, a CDO has not been installed yet. Therefore no points are awarded
3.2. Developed Digital Vision	0	The company has not developed a vision on digital of any kind. Therefore no points are awarded
3.3. Formed Strategic Alliance to adapt to changing market	2	The company works with Alliander and Vereniging Eigen Huis in the Slimme Energie Service- project, which aims to provide energy based on realtime (1hour) wholesale prices, on a service fee structure. See: https://www.Company 7.nl/updates/bericht/1261/veh-en-Company 7-starten-proef-met-slimme-metercontract Therefore all points are awarded

3.4. Formed Strategic Alliance to enter new markets	2	Cooperation with The New Motion to provide E-charging stations at a discount. https://www.Company 7.nl/slim-met-energie. Therefore all points are awarded
4. New Business Activities	**12.5%**	0
4.1. Distribution-level Energy Storage solutions	0	Any activities related to this could not be found in public sources. Therefore no points are awarded
4.2. Distrubution-level Energy generation solutions	2	It is possible to buy PV-panels via Company 7. Therefore all points are awarded https://www.Company 7.nl/slim-met-energie
4.3. Decentralised energy storage solutions	0	Any activities related to this could not be found in public sources. Therefore no points are awarded
4.4. Decentralised energy generation solutions	2	They provide their customers to invest in a cooperation to produce energy in solar and wind parks. https://www.Company 7.nl/windtegoed https://www.Company 7.nl/updates/bericht/1260/wordt-dit-jouw-windmolen https://www.Company 7.nl/updates/bericht/1230/stadion-fc-volendam-krijgt-zonnepanelen-door-crowdfundingsactie Therefore all points are awarded
4.5. Plug-in Electric Vehicles Solutions	2	They provide E-vehicle charging stations with a discount in cooperation with The New Motion. https://www.Company 7.nl/slim-met-energie therefore all points are awarded
4.6. Home automation	2	Unofficial sources state that BeNext is developing a smart home system/application/service for Company 7. Given the company's activities this is well possible. The only official clue in this direction is that Company 7 is named under links of BeNext (http://www.benext.eu/links/) Most definitely, the company will provide the Company 7 app with the possibility to incoporate smart appliances in their energiemonitor. Based on this all points are awarded.
4.7. Smart appliances	0	Any activities related to this could not be found in public sources. Therefore no points are awarded
4.8. Energy saving solutions on a Data-driven basis for Do It Yourself	0	Any activities related to this could not be found in public sources. Therefore no points are awarded

Appendix F Presentation for evaluation interviews

This appendix presents the presentation that was given in the evaluation. This appendix was first mentioned on page 52 of the report. The slides that contained company specific results of the study are excluded.



1. Introduction & Methodology

Confidential – do not distribute

As an example, Nike embraced Digital to re-invent their business model from a sports clothing company to the athlete's Digital service provider

Introduction to Digital

Source: https://secure-nikeplus.nike.com/plus/

1

accenture

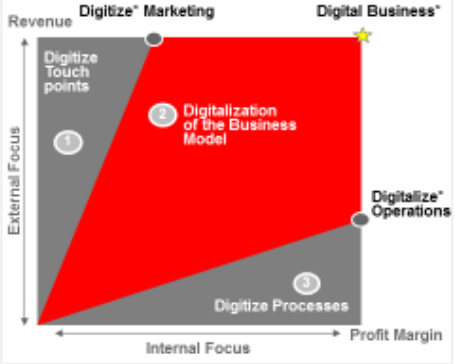
1. Introduction & Methodology

Confidential – do not distribute

Digital is the harnessing of digital technologies to create new products, services, and customer experiences

Introduction to Digital

Digitalize Business models



What is digital?

1. Focusing only on digitizing touch points increases revenue but drives margins down as digitally generated transaction revenue cannot cover legacy back office process costs

2. A balanced focus allows the business to target business outcomes. This combines the increased value from digital touch points as well as the lower costs of digitized processes. Digital business models enable new products and the ability to target new customer segments

3. While focusing on digitizing processes will improve profit margin, the resulting excess capacity raises demands on digital marketing and touch point investments as firms need top-line revenue to turn capacity into cash

	*Accenture definition (summary)
Digital Business	(noun) an organization that incorporates digital technology to create revenue and results via innovative strategies, products, processes and experiences.
Digitize	(verb) applying technology to resources. A digitally enabled sales force is an example of incremental digital improvement.
Digitalize	(verb) the process for turning digitized resources into new sources of revenue, growth and operational results that generate a premium to your business.

Source: Digital maturity industry assessment according to Gartner 2013

4

accenture

1. Introduction & Methodology

Confidential – do not distribute

The purpose of this research initiative is to assess Digital maturity of Utility Retail companies, to enable client discussions (in The Netherlands) to accelerate Digital adoption

Research Proposal

Situation

- Digital technologies such as Cloud, Analytics, Mobile, Social and (Industrial) Internet of Things (IoT) have a huge disruptive impact on all our clients, including electricity retailers in the Utility industry
- Digital provides clear opportunities to expand Accenture Strategy's footprint in this industry. This is also the ambition of Technology Strategy Netherlands

Complication

- While disruptive impact and strategic nature of Digital is clear in other industries (e.g. Financial Services, High Tech), the impact and status of Utility Retail companies in The Netherlands is unknown.
- Within the Netherlands, research on the digital maturity in the insurance industry successfully enabled client discussions and provided valuable insights in the digital adoption within the insurance industry

Research Objective

- **Provide valuable insights in the Digital Maturity of Utility Retail companies, to enable client discussions on accelerating Digital adoption to address their specific C-level priorities (typically cost reduction AND revenue growth)**

5

accenture

1. Introduction & Methodology

Confidential – do not distribute

Over 80% of the utility retail market in The Netherlands is covered by the three companies from the pre-privatized era, but new entrants enlarge their piece of the pie year-on-year

Market & Industry Scope

Utility Retail Industry in The Netherlands

1. The Big Three are losing market share:
   Although the **Big Three** still hold over **80%** of the market, their market share is **decreasing every year**
2. Increasing number of household switched energy provider
   13% of the NL **households** switched energy provider **in 2014**,
3. Price is the main driver for switching
   ACM research showed the **main driver** to switch energy provider is **price**
4. Margins on electricity retail are declining
   Wind & Solar energy combined with a stagnating energy consumption growth **pressurize profitability**

Intra-Industry Scope

Utility Retail Clients:
Focus on **B2C utility retail clients** in **The Netherlands** with more than **50.000 customers** → Top 5-7 companies

The seven most interesting companies are:

- The three *largest incumbents*: **Nuon, Essent, Eneco**
- Two *price-fighters*: **EnergieDirect.nl, NLEnergie**
- Three major *European Utility* companies: **E.on, Nuon, Essent**
- One *non-profit green energy* retailer: **Qurrent**

Source: Autoriteit Consument & Markt, https://www.acm.nl/nl/download/publicatie/?id=14218

6

accenture

Using an outside-in fact-based capability assessment ensures a solid research basis

Methodology

Step 1. Digital Capability Framework

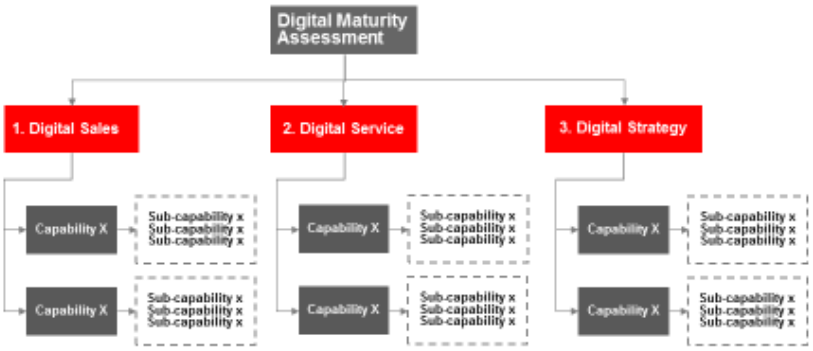
1. External Digital Maturity: Focus on the ***External* Digital Maturity** increases the data availability and decreases liabilities
2. Fact-based capability assessment
   Assess on key **digital capabilities** to ensure factual data-driven analysis via an **outside-in approach**
3. Mutually Exclusive and Collectively Exhaustive
   Include Accenture **PoV's**, **pre-industry analysis**, and **subject matter experts Interviews** to iteratively construct an overview of **key digital capabilities**

Step 2. Digital Maturity Assessment

1. Based on public sources: Used sources include corporate responsibility reports, annual reports, company websites, mobile applications, news-websites, Google and social media
2. Subject Matter Expert Interviews: Five Accenture experts from **Business Strategy**, **Digital** & **Technology Strategy** are interviewed
3. Built on three main pillars: Aligned with Accenture's widely accepted Digital Index research, the framework is built **Digital Sales**, **Digital Service**, and **Digital Strategy**

To ensure a rigid and reproducible analysis, the three main pillars are broken down into 14 capabilities including 87 fact-based questions

Methodology



Fact-based Questions

Example questions on a sub-capability level are:

"Check whether offers on the company website are also promoted via mobile, Twitter & Facebook" **Omni-channel** – Channel Independence

"Check whether the company provides project end-year payments based on actual data and periodic payments" **Payments** – Project annual year-end payment

Content

1. Introduction & Methodology
2. Results
   - **Summary**
   - Digital Sales
   - Digital Service
   - Digital Strategy
3. Final Remarks

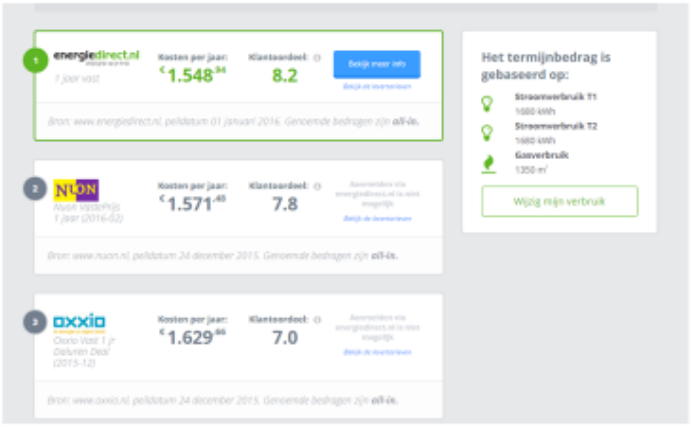
Content

1. Introduction & Methodology
2. Results
   - Summary
   - **Digital Sales**
   - Digital Service
   - Digital Strategy
3. Final Remarks

Best practices in Digital Sales for utility retail include..

Best Practices

EnergieDirect – Switch savings compared with other companies



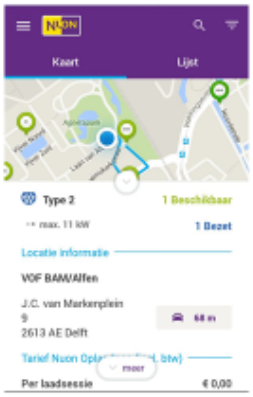
Content

Best practices in Digital Service for utility retail includes..

Best Practices

Nuon – Laadpunten Mobile App

Rated 3,5+ in Google App Store*



Source: Nuon Laadpunten Mobile App, www.essent.nl (February 5th, 2016)

Essent – E-Thermostat + Mobile App

Rated 4+ in iOS Store

Content

Best practices in Digital Strategy for utility retail include …

Best Practices

'Energiebedrijven moeten op zoek naar nieuwe verdienmodellen. Klanten besparen steeds meer op hun energieverbruik en tegelijk is er een overcapaciteit bij producenten, waardoor onze marges flinterdun zijn. De traditionele energielevering zoals we die al zo lang kennen, loopt op zijn einde. In plaats daarvan moeten we andere manieren vinden om onze waardestromen, onze resultaten, op niveau te houden. Dat kan alleen door te innoveren.' Essent CEO, Erwin van Laethem, September 27 2014 www.mt.nl

Eneco wil (ooit) energie gaan verkopen volgens het telecom-model, zegt commercieel directeur Erik van Engelen. September 25 2014 www.mt.nl

"De Autoriteit Consument & Markt (ACM) heeft het nieuwe bedrijf Powerpeers vergunningen verleend voor de levering van stroom en gas aan kleinverbruikers. Powerpeers is opgericht door Vattenfall en wordt naast Nuon in de markt gezet als platform voor groene, lokale energie die gebruikers met elkaar kunnen delen" January 21 2016 www.Energeia.nl

Content

Touchpoints to address for Go-to-Market: Add industry best practices, compare industry to Digital Sales/Service specialists, build client value propositions UNDER CONSTRUCTION

Next steps

- Add industry best practices across Digital Sales, Service, and Strategy provide a food-for-thought for client discussions
- Intra industry comparison to address Digital leaders and identify key digital capabilities for success
- Build **client value propositions** to accelerate Digital Adoption
- Construct Go-to-Market Business cases including: transition path, investments, time, organizational change, benefits, ROI, long-term strategic advantages, market disruption
- **Gearing up for change** **Energize the Future**

Want to know more? Reach out to the team..

Accenture Team

Berend de Jong
Managing Director Technology Strategy

Accenture
Gustav Mahlerplein 90
1082 MA Amsterdam
Berend.de.Jong@accenture.com
Tel. +316 10 812 712

Peter de Wit
Manager Technology Strategy

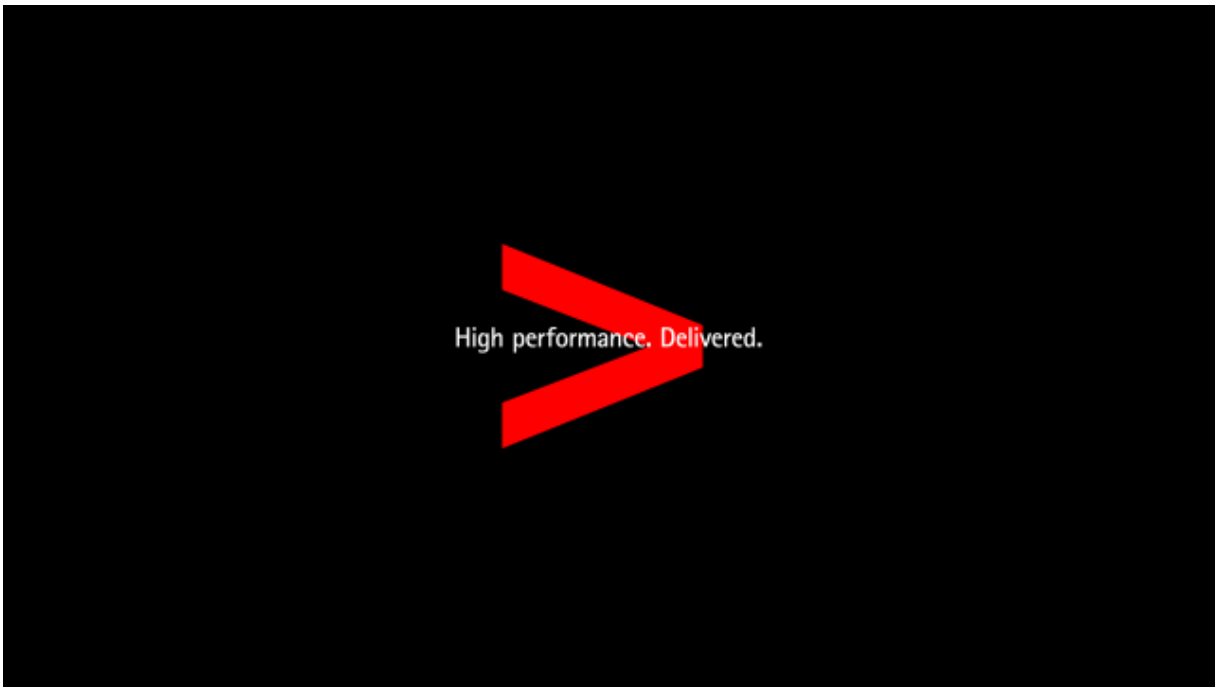
Accenture
Gustav Mahlerplein 90
1082 MA Amsterdam
Peter.de.Wit@accenture.com
Tel. +316 52 387 901

Ben Stones
Manager Technology Strategy

Accenture
Gustav Mahlerplein 90
1082 MA Amsterdam
Ben.Stones@accenture.com
Tel. +316 11 367 621

Kjell Meershoek
IT Strategy Analyst

Accenture
Gustav Mahlerplein 90
1082 MA Amsterdam
Kjell.meershoek@accenture.com
Tel. +316 14 100 088


High performance. Delivered.

Appendix G Evaluation interviews

This appendix holds the five benchmark evaluation interviews. Input for the interviews was Appendix E & Appendix F. The interviewees were asked to discuss the relevance of the benchmark and to address suggestions for improvement. In general the interviewees were complimentuous on the extensiveness of the results and the factual basis of the benchmark. Moreover, they were eager to use the results for future projects. Lastly, they all stated that the benchmark is relevant and reflects the current state of the industry. This appendix is first mentioned on page 52 of the report.

***Business entity* (function)**	**Date**
IT Strategy	08/01/2016
Manager	10:30-12:00
Technology Strategy	13/01/2016
Manager	16:00-18:00
Business Strategy	14/01/2016
Senior Manager	16:30-17:00
Technology Strategy	15/01/2016
Managing Director	17:00-18:30
Business Strategy	20/01/2016
Senior Manager	16:00-17:00