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Streamlining a Service Process
Optimising Two-way Information Sharing in Product Development
Case Origin by Ocean

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DEGREE THESIS

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Abstract

The objective of this thesis was to advance the commissioner's digital service system and create a workflow that would minimise their investments in offering technical support. The aim was to use service design for improving their customer experience, service system and internal operations, eventually reaching higher efficiency of operations.

This multidisciplinary study combined attributes from the fields of marketing, business development, service design and customer service with biology, chemistry and data processing. The central concepts were value creation, knowledge sharing, data-driven collaboration and productisation. The commissioner had been building an algae-based business ecosystem by processing biomass into sustainable ingredients of food, cosmetic and pharmaceutical products. Customers had been invited to the process as co-development partners, ideally providing test material and supplying test data.

The research questions were answered by using qualitative research methods and service design tools. They included for example literature research, interviews and benchmarking, as well as creating a stakeholder map, a customer journey map and a value proposition canvas. The results showed that customers primarily valued receiving detailed information, high-quality products and beyond-the-expectations service. Access to Alchemy, the commissioner's business intelligence solution, was considered to be at the heart of the service concept.

The analysis performed according to the Multilevel Service Design model resulted in a Service Experience Blueprint that presents the refined customer service process with development suggestions for the service system. Encouraging customers to perform operations in the digital channels could increase the amount of self-service and the data mining could create new information for the use of all parties. Transformation of data into information and knowledge would require customers to participate stronger in the co-enrichment of the data storage. Incentives for reciprocal information sharing could include, for example, wider access to more detailed data, better service or lower prices.

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Language: English
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Table of contents

1 Introduction

The subject of this thesis, streamlining a service process of a company selling Baltic Sea-based raw materials, originates partly in professional work history within marketing and business development, and partly in personal interest towards supporting sustainability and raising environmental awareness, especially concerning the Baltic Sea. The thesis studies a business that refines natural organisms into building blocks of industrial-sized product development processes, and aims at creating an efficient service process for their industrial customers.

While the altruistic motive behind this business lies in preventing further eutrophication of the Baltic Sea, the business model for the operations drives on bioeconomy or "green growth", in other words selling micro-organisms that are extracted from Baltic Sea biomass.

The initial problem and its solution lie in the biomass itself. In the traditional photosynthesis process plants use sunlight, water and carbon dioxide in order to grow and reproduce, and on the side, they produce glucose and release oxygen. In the sea there are organisms – mainly various algae – that use also inorganic nutrients, such as nitrogen, phosphorous and calcium, and convert them into organic compounds, such as carbohydrates, proteins, vitamins and fatty acids.

However, the natural equilibrium may be disturbed and the normal photosynthesis process become accelerated. Eutrophication means a body of water becomes excessively loaded with nutrients that set off a chain reaction by stimulating the disproportional growth of algae. This results in oxygen deficiency when the algae dies and the decomposing plant matter settles on the seabed. It releases substantial amounts of carbon dioxide, which lowers the seawater pH. This process of acidification slows down fish growth and depletes the spectrum of species living in the Baltic Sea. (Helcom, 2018.)

Solutions already exist for decreasing the nutrient load in the waters. The most effective method is simply keeping nutrients from entering the waterways in the first place, for example by reducing fertilisation of fields and enhancing wastewater treatment. As this is not always possible, nutrients may be biofiltrated, that is, taken in or used up by other organisms which are then removed from the water. (Schpigel & Neori, 2007.)

Algae readily absorb nutrients and carbon dioxide and it makes sense to let them do their magic and then collect them away from the water, thus preventing CO_2 being released back into the waters and atmosphere. The biomass may then be processed and micro-organisms extracted to be utilised in for instance the food industry. (Schpigel & Neori, 2007.)

Recycling the biomass-bound nutrients and end products of photosynthesis is becoming a more popular business as the natural resources of the Earth are running dry and alternative solutions need to be sought. In addition to having rational reasoning behind the business, using biomass to purify our waters also appeals to emotion – people living by the Baltic Sea are eager to support measures that add the recreational value of this delicate body of water. (personal communication, Mikael Westerlund, 21.10.2020.)

In order to make the extracting and refining biomass a profitable line of business, any company needs to develop a competitive edge for its products and processes. This thesis studies the optimisation and productisation of a service model when trading biomass-derived raw materials.

The hypothesis of the thesis lies in ease of interaction. The market with demand and supply already exist, but the product and the process need to be no-brainers, in other words, as easy to use as possible. For a customer it is always more convenient to use tried and tested materials, methods and processes, unless a new service or product makes it considerably easier to arrive at the same – or better – end result. If the service model is lucrative, customers will adopt it. Service design methods help define what "lucrative" consists of.

2 Commissioner and Product

Biorefining means working biomass, sidestreams or waste into bioenergy and other bio-based products. A study about bioeconomy in the Nordic countries (Lange, Björnsdottir & Brandt, 2016) stated, that the biorefinery product assortment is wide-ranging. Biofuels and specialty chemicals were being produced in biggest volumes, while the top three market categories for the products were health and pharma, food and biofuels. (Lange et al., 2016, 180, 185)

The commissioner is a biorefinery that grows and collects biomass from the Baltic Sea, and refines it into natural ingredients that may be used as thickeners, emulsifiers or stabilisers. These may be used in numerous fields of business, for example in beverage, food, cosmetics, fertiliser or pharmaceutical industries, as well as in the construction business and in hygiene and cleaning products. (Origin by Ocean, 2021)

Origin by Ocean has developed two lines of utilising biomass: one is collecting and refining cyanobacteria, that is, an organism considered a microalgae, and the other is growing, collecting and refining bladderwrack, which in turn is a form of macro algae. The bladderwrack track is of interest in this thesis, as it is the more mature business line of the two and the application process is already being developed in cooperation with business partners.

Figure 1 (left). Bluegreen algae, cyanobacteria.

Figure 2 (right). Brown algae, bladderwrack.

The commercial product is alginate, which is usually extracted from cell walls of brown seaweed, in this case specifically bladderwrack. The components of seaweed can increase the viscosity, adhesion and porosity of the end product or give it different decorative features. Alginate is a highly biocompatible polymer that may be used as a salt or an acidic solution. Its price varies according to its quality, which is judged by its purity and density. High-quality substances may have double the price of low-quality alginate. There are over 200 variations of alginates being manufactured and it has numerous applications, largely due to its rather low cost, low toxicity and ease of gelation. (Lee & Mooney, 2012.)

The case study of this thesis is the use of alginate as a thickener in industrial use. According to Westerlund, one of the owners of Origin by Ocean, competing products in the food industry include gelatin, carrageenan and various cellulose-based derivatives. Due to their names either supporting unpleasant, even toxic, associations or indicating their animal origin, these products come far behind alginate in the sustainability image contest. Competition exists mainly at both ends of the size continuum: The majority of alginate is produced in Asia by big multinational corporations, but often with out-dated processes and machinery, which makes the end products of poor quality and therefore of low price. At the other end there are SMEs concentrating on new processes and new products, and aiming at higher prices. (Personal communication, Mikael Westerlund, 21.10.2020.)

Origin by Ocean aims at positioning their product in the high end of the market by producing high quality alginate and by using a process that preserves up to 40% of all valuable substances in the raw material, as it is possible to isolate as much as five other valuable substances from the residue (personal communication, Mikael Westerlund, 21.10.2020). They aim at sharing a common vision with their customers about unloading the climate burden by creating and using sustainable biomaterials.

The size of the global alginate market was estimated at 409 million USD in 2020 and expected to reach 529 million USD by 2025. Growing demand is partly due to regulatory agencies, for example the European Commission, demanding safer ingredients in the food and beverage industries, and partly to alginate being the safest natural food additive available. Population growth increases the need for food production globally. Additionally, from the ideological perspective, people's preference for plant-based health and wellness products is on the rise. (Market Data Forecast, 2020.)

Due to increase of demand, Origin by Ocean plans to grow. They aim at doubling their personnel from the current numbers in two years, and having their first factories up and running well before the end of the decade. The company's registered trademark will cover all phases of the process from biomass production to refining the ingredients into products and applications. (Personal communication, Mikael Westerlund, 21.10.2020.)
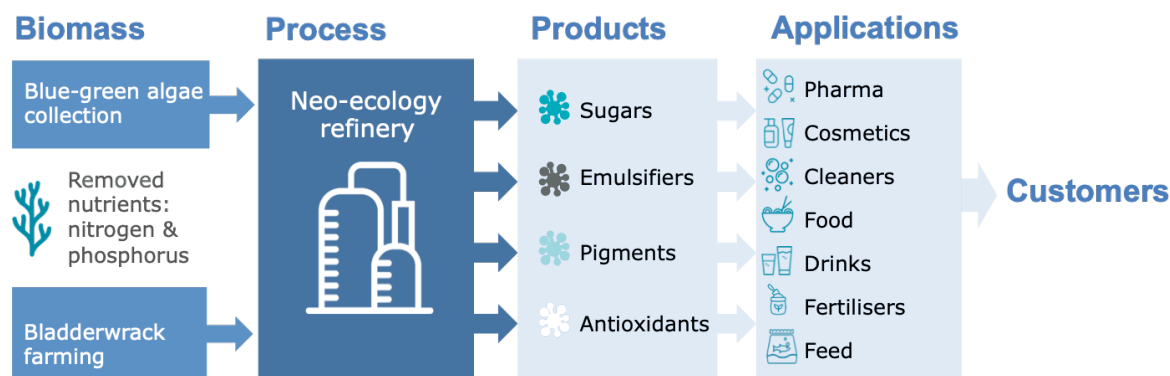
Figure 3. Products and applications of biomass. (Origin by Ocean presentation material, 2020)

3   Aim of the Study

The aim is to analyse and explain how the commissioner can improve their competitive edge with service design: How to develop their digital service system by increasing automation and self-service?

Following from the umbrella aim, a secondary aim is to use productisation for minimising – or even eliminating – the need for man-hours in technical support. Productisation is about crystallising the value of service by describing and standardising its content (Härkönen, Haapasalo & Hänninen, 2015, 66; Parantainen, 2007, 38). Could productisation be of help in creating workflows that steer customers to digital channels?

Customer insight is sought directly from development departments of companies that have signed a letter of intent with the commissioner. A common platform for transferring product-based information between the commissioner and their customers is the Alchemy.cloud service, which will provide hard data of business transactions. Co-developing product development processes with customers will help both parties take their business on a higher level, although stress is primarily on the commissioner. The goal is to arrive at a detailed workflow description that streamlines the customer interaction process and minimises the need for technical support personnel with Origin by Ocean.

4   Research Questions

Derived from the subject and aims of the study, improving the service system around alginate business, the main research question is:

How can a digital service system best serve the commissioner and their customers?

Supporting questions answer customer-based and service-based themes:

What kind of elements can be digitalised in this service process?

How can co-development be utilised in sharing data?

These questions will be examined within the defined frame of reference and against the chosen theoretical background. Results to the questions and development ideas based on them will be presented in chapter 8 and discussed in chapter 9.

5   Frame of Reference

The frame of reference consists of customer-specific and supplier-specific themes, as well as of common interests: Creating value by means of co-development is of importance for both parties, although they have somewhat different drivers behind their aspirations. Supplier data is combined with customer data, and service design tools are used in aspiring towards a standardised service flow and unvarying product.

Value creation

Co-development

Customer: CX, consumer needs, product development

Company: ideology, product

Data: workflow

Service Design: process and methods
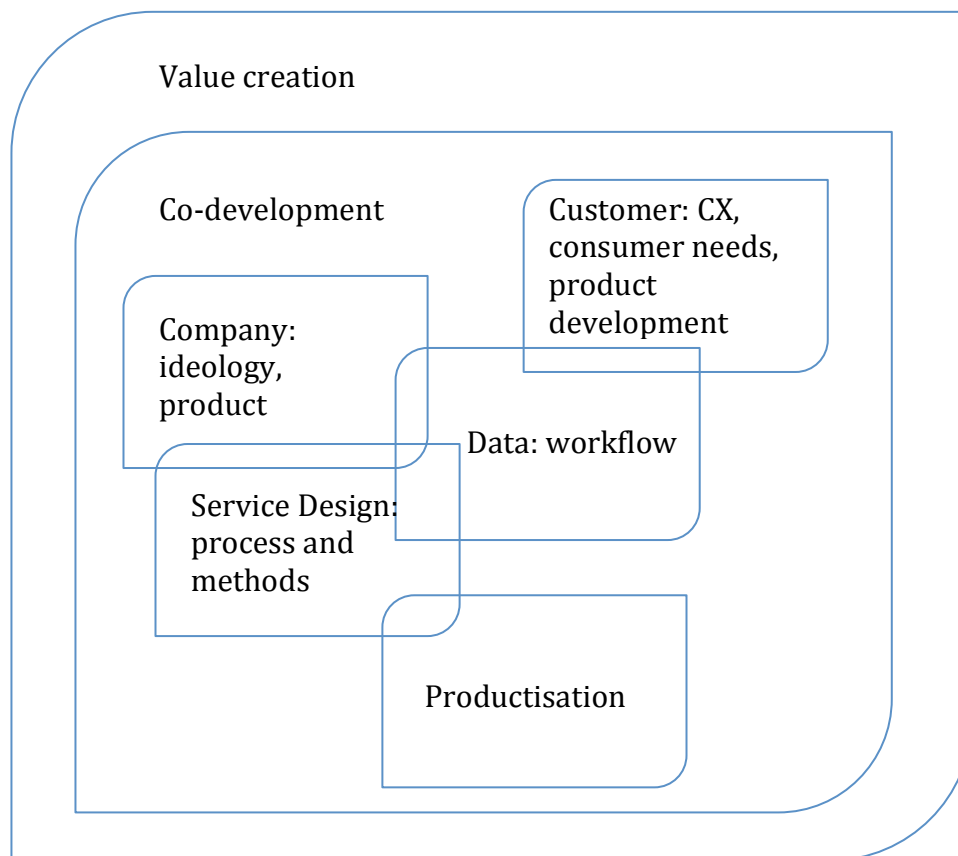
Productisation

Figure 4. Frame of reference for the study.

In the following, the terms are introduced briefly. The broader concepts of value, data-driven collaboration, co-development, service design and productisation will be dealt with in more detail in chapter 6, "Theoretical background".

The company was founded around the idea of combining an environmental problem, the eutrophication of the Baltic Sea, with a sustainable business solution, that is, removing nutrients from the waters with the help of algae. The extracts of algae mass can be utilised in various fields of industry. The business itself is based on farming, collecting, extracting, analysing and selling alginate. The product, alginate, is isolated from bladderwrack and used in diverse industrial processes. It has many uses in many forms, as well as several competing extracts within the same fields of business. Extracting alginate from bladderwrack requires expertise in chemistry, suitable technological knowledge and a scalable process for the upcoming factories. (Origin by Ocean, 2021.)

Customers of the commissioner use alginate in their own product development processes, aiming at improving their products and processes, and thereby also increasing the demand of their products and, further on, revenue from sales.

Customer experience (CX) in this thesis is restricted to include only the experiences of business partners. The end-users or consumers of alginate-containing products are not included as customers in this study. In research literature customer experience has been described for example as the product of interaction between an organisation and a customer during all points of contact, and during their entire relationship. Good customer experiences match customer expectations and meet three criteria: They are useful (deliver value), usable (make it easy to spot and engage with the value), and enjoyable (emotionally engaging so that people want to use them). (Manning, 2010.) Therefore, the testing, buying and using of alginate should consequently be weaved into a continuum that the customers find a useful, usable and enjoyable practice.

Ideologies of both parties, the commissioner and their customers, meet at the demand for sustainability. Market drivers for bio-based products vary from resource utilisation to meeting climate change challenges. Consumer demand for more natural products with low carbon footprints has emerged as a preference for biolabelled products. Particularly the home care sector has been quick to adapt to this need. Innovations of new products, product mixes, formulations, packaging and distribution have been developed to meet greener practices and responsibility mandates. Bio-based alternatives are substituting conventional ingredients as additives, emulsifiers, thickeners, preservatives and emollients. (Rajagopal, 2014, 159-163, 214-217.)

Collecting and crunching **data** plays a crucial part in connecting alginate, the commissioner and their customers. "Alchemy" is a cloud software provider that offers chemicals companies tailored platforms for processing and storing digital laboratory data. The platform, Alchemy.cloud, is designed to support product development and improve service delivery. Origin by Ocean has their own "version" of the platform for interacting with their customers. From digital laboratory notebooks to product specifications and utilising pre-defined workflows, the platform is used for mutual development work with customers.

The service process of the commissioner is planned to be carried out as widely as possible on the Alchemy platform in the future. Analytics information and measurement results of the commissioner and their customers will be entered to the system, thus further defining the reliability and validity of shared information. Eventually, a webshop will be integrated to Alchemy through a financial management system, so that customers may screen what is available, place their orders and give feedback of the product or service. (Personal communication, Mari Granström, 21.10.2020.)

Service design has an array of definitions and has initiated a heap of schools with different emphases from human-centred design to maturity models. Service design might be defined, for example, as "*the activity of planning and organizing people, infrastructure, communication and material components of a service in order to improve its quality and the interaction between the service provider and its users*" (Lazier, 2016). Another definition describes it as follows: "*The main objective of service design is to resolve customer-related challenges, but balance them with business drivers and the organisation's capabilities*" (Reason, Løvlie & Flu, 2016, 2-4). Put in a simpler way, service design may be used in developing business by utilizing customer needs and preferences.

The commissioner's organisation needs to stand out from competition by creating **value** for their customers. This is achieved by offering a high-quality product as well as a service process that is easy and effective for the partners to use and supports their development work with compatible data. Service design tools are used to arrive at a win-win situation, where customer needs meet business needs. Therefore, value-creation together with partners is in the heart of the project.

6   Theoretical Background

This study utilises methods and tools of service design in the attempt of finding out how to create value with the help of automation, digitalisation and productisation of both the physical product and the service, and how to do it together with the customers.

6.1   Service Design

According to Stickdorn and Schneider (2010, 28), service design is used to "*innovate or improve services making them more useful, usable and effective*". Later on, Stickdorn

further defined this by laying particular stress on solving the right problem(s): First investigate the needs of the customer by exploring the "how" and the "why" of opportunities, and then iterate on research and prototypes, using visual aids whenever possible (Stickdorn, Lawrence, Hormess & Schneider, 2018, 14-15).

The latest principles, or "theses" of Stickdorn et al., present service design as being human-centred, collaborative, iterative, sequential, real and holistic. This means experiencing services through the eyes of all the affected people, including all stakeholders and backstage actions, experimenting with options, visualizing the service as a sequence of interrelated actions, anchored in reality, and considering the entire environment of the service. (Stickdorn et al., 2018, 25-27.)

Morelli, de Götzen and Simeone add on this by distinguishing two principal tracks for service design. The first one stems from interaction design and focuses on user experience and frontstage actions, highlighting the importance of the interface between a service provider and its customers. The second path originates from marketing and management, and focuses on service as a process, highlighting the backstage actions in an organisation. (Morelli, de Götzen & Simeone, 2021, 10.)

As well as views and schools, different trends emerge within service design. Reason, Løvlie and Flu (2016, 2-4) present three trends that add to the relevance of service design. Firstly, the economic trend stresses value in services. Maturing economies tend to move away from manufacturing goods towards producing higher-margin services with new qualities. Secondly, the social trend of increasing customer expectations has been teaching service providers to move from one-size-fits-all-thinking towards exceeding customer expectations, in other words, giving consumers, employees and citizens more than just what happens to be produced. Thirdly, the growth of all things digital inevitably changes services. The digital revolution is little by little replacing human expertise with technology, which requires service design tools for a reversal, or for "humanising" technology and making technology services easier and more intuitive to navigate.

This study uses service design as means of arriving at a service that is useful, usable and enjoyable to use, and preferably manages to exceed customer expectations. The focus is

more on the service-as-a-process take as the commissioner's service system and its development is under the magnifying glass.

6.2 Value Creation

Value creation may be studied from several viewpoints, including the components, functions and meanings of value. Value has been defined for instance as growth, opportunity for premium pricing, or as increasing trust and comfort (Grönroos & Ravald, 2009, 20). It has also bee described as an addition to a person's well-being compared to an earlier situation, often in the form of an increased cash flow, income or prosperity, and value creation as "the generation of some kind of gain from trade, other transaction, investment or relationship" (Windsor, 2017, 76). Value is therefore perceived in the process of *using* any goods or services, shifting the focus from tangible process outputs to interaction between value creation parties (Sangiorgi, 2012, 97).

In their Theories of the Firm, Kraaijenbrink and Spender (2011, 2-3) claim, that organisations have differing views on how to create value. While some may focus on cost reduction or standardisation, others believe in the power of collaboration between individuals. They also argue, that different approaches to value creation may involve different value creation activities in organisations. An organisation that focuses on creating demand for new types of value, may be more prone to invest their resources in marketing and sales, whereas another organisation that concentrates on making profitable make-or-buy decisions may want to engage in purchasing and production activities. (Kraaijenbrink & Spender, 2011, 4-5.)

Further on, Kraaijenbrink and Spender quote Bowman and Ambrosini, as they comment on the distinction between "perceived use value" and "exchange value". Subjective value identified by customers may differ from the concrete price of a product or a service – use value of it may or may not be perceived to meet the price that was paid. (Kraaijenbrink & Spender 2011, 4.)

As use value is a subjectively recognized attribute, the resources and products of a company do not carry value in themselves. They need to be perceived as valuable, and as such, may carry a different value to different people. Therefore, value creation does not exist without specifying for whom the value is indicated. (Kraaijenbrink & Spender, 2011,

4.) The abovementioned "exchange value" is determined by markets, that is, by demand and supply, and at least one of the participants should be better off after the exchange (Windsor, 2017, 77).

Depending on the perspective, value may be created for shareholders or stakeholders, and stand for different things for different groups. Traditionally primary stakeholders are 1) customers who expect products and services, 2) employees who expect compensation for their labour and 3) owners who expect return on their investment, at the same time being members of the other group, shareholders. (Windsor, 2017, 80-83.)

Kraaijenbrink and Spender also make a distinction between supply of value and demand for value. Within the supply dimension, value may either be seen as an inherent property of assets that needs to be discovered, or it may be actively created by the organisation. Likewise, within the demand dimension, there is a more passive and a more active interpretation of how value is formed. Can value be predicted by discovering an unfulfilled need, or is demand simply created? (Kraaijenbrink & Spender, 2011, 2-3.)

Morelli, de Götzen and Simeone (2021) offer yet another view on value creation. They look at it from three aspects: as interaction, as an infrastructure and as a systemic institution. When service is considered as interaction, value is co-created with partners or customers. (Morelli et al., 2021, 15-16.) Service as an infrastructure implies, that services are *organised as an open-ended support for the value co-creation process"*, and service as a systemic institution includes both, the value co-creation process and the supporting infrastructure (Morelli et al., 2021, 21-23).

Morelli et al. further argue, that if the value creation scope depends on the customer – their presence and actions – then everything outside that should be considered as optional or alternative outcomes. Ideation, technical development, content design and other actions taken up by the service provider are mere enablers, and should not be considered as value creation processes of their own. (Morelli et al., 2021, 21.)

They also claim, that if value is specified by the customer alone, the result of the process cannot be described unaltered and in detail. Blueprints present possible ways to proceed, but the service provider cannot have complete control over how much and what kind of value is produced. (Morelli et al., 2021, 21-22.)

Considering value creation as an open-ended context agrees with this study: Blueprints, canvases and maps are plans, and only outline the possible directions and options that are perhaps realised in the commissioner's interaction with customers and partners.

6.2.1 Functions of Value

The functions of value have been defined for instance by Pereira (in Business Model Analyst, 2020), who argues, that value may be perceived through a selection of features. *Newness* satisfies a need that the customer was possibly not even aware of, and hence improvements made to the characteristics and/or overall performance of an already existing product might create new value. *Price* is an element of value as it represents the chosen service as cheaper or more expensive than the other ones. Price is also heavily connected to the abovementioned use value and exchange value.

As self-expression and individualization have gained space in marketing, *personalization* could be a way of communicating customer values and interests. Some buyers accept a higher price to have access to their "personal brand". Yet some customers show *loyalty to a brand* and believe the brand lends them its status; they may feel superior by supporting a brand, that they choose to highlight from the crowd of "ordinary" brands. (Pereira, 2020.)

Cost reduction is based on offering an improved customer experience by cutting customer costs, for example by offering simplified versions of products. *Risk reduction* reaches customers who seek peace of mind with their purchase. The lower the risk of purchase, the higher the value perceived. Furthermore, making products and services available to new customer segments is defined as *accessibility*, while convenience or *usability* involves making products more fitting, easy and intuitive to use. (Pereira, 2020.)

In the case of the commissioner, the elements of newness, price, personalisation, accessibility and usability can be seen to apply to the company, their product or their service process. Alginate is a new, multifunctional raw material and has been made accessible to a wide variety of producers. The commissioner aims at the high end of the price continuum, as they are able to offer high quality raw material, the possibility of modifying their product according to customer needs, and the possibility of letting customers use their data.

Cost reduction for both parties, the commissioner and their customers, may be realised through a longer chain of events: Having more comprehensive and compatible data helps achieve faster analyses which, in turn, helps in being able to do more efficient product development. Automated tasks and phases may lead leaner, more standardised processes and to easier business transactions.

6.2.2 Elements of Value

Some of the Pereira's abovementioned features of value overlap with the Bain & Company's "Elements of Value" (Almquist, Senior & Bloch, 2016). This model, in turn, has its origins in Maslow's "hierarchy of needs" – where achieving motivational elements (or fulfilling maslowian needs) happens when an individual moves from basic needs towards more complex ones.

Almquist, Senior and Bloch argue, that businesses should look at their list of 30 or 40 "building blocks of value" and experiment with combining these elements, in order to improve their performance. Results could be seen in greater customer loyalty and willingness to try a new brand, consequently leading to growth of revenue. The importance and relevance of elements varies according to for instance situation, culture and industry, but the quality of a product or service always seems to be number one and no other element can make up for underperforming in quality. Other critical elements vary according to industry, for example in food and beverage industry sensory appeal comes a close second. (Almquist et al., 2016, 46-53.)

When developing their business, companies should first identify where their customers observe strengths and weaknesses and secondly rank the most important elements in their industry. Comparing how they as a company measure up on crucial elements in regard to their competitors helps them see which elements or features to improve and when to add new ones. (Almquist et al., 2016, 53.)

The Elements of Value Pyramid

Products and services deliver fundamental elements of value that address four kinds of needs: functional, emotional, life changing, and social impact. In general, the more elements provided, the greater customers' loyalty and the higher the company's sustained revenue growth.

SOCIAL IMPACT

Self-transcendence

LIFE CHANGING

Provides hope | Self-actualization

Motivation | Heirloom | Affiliation/belonging

EMOTIONAL

Reduces anxiety | Rewards me | Nostalgia | Design/aesthetics | Badge value

Wellness | Therapeutic value | Fun/entertainment | Attractiveness | Provides access

FUNCTIONAL

Saves time | Simplifies | Makes money | Reduces risk | Organizes | Integrates | Connects

Reduces effort | Avoids hassles | Reduces cost | Quality | Variety | Sensory appeal | Informs

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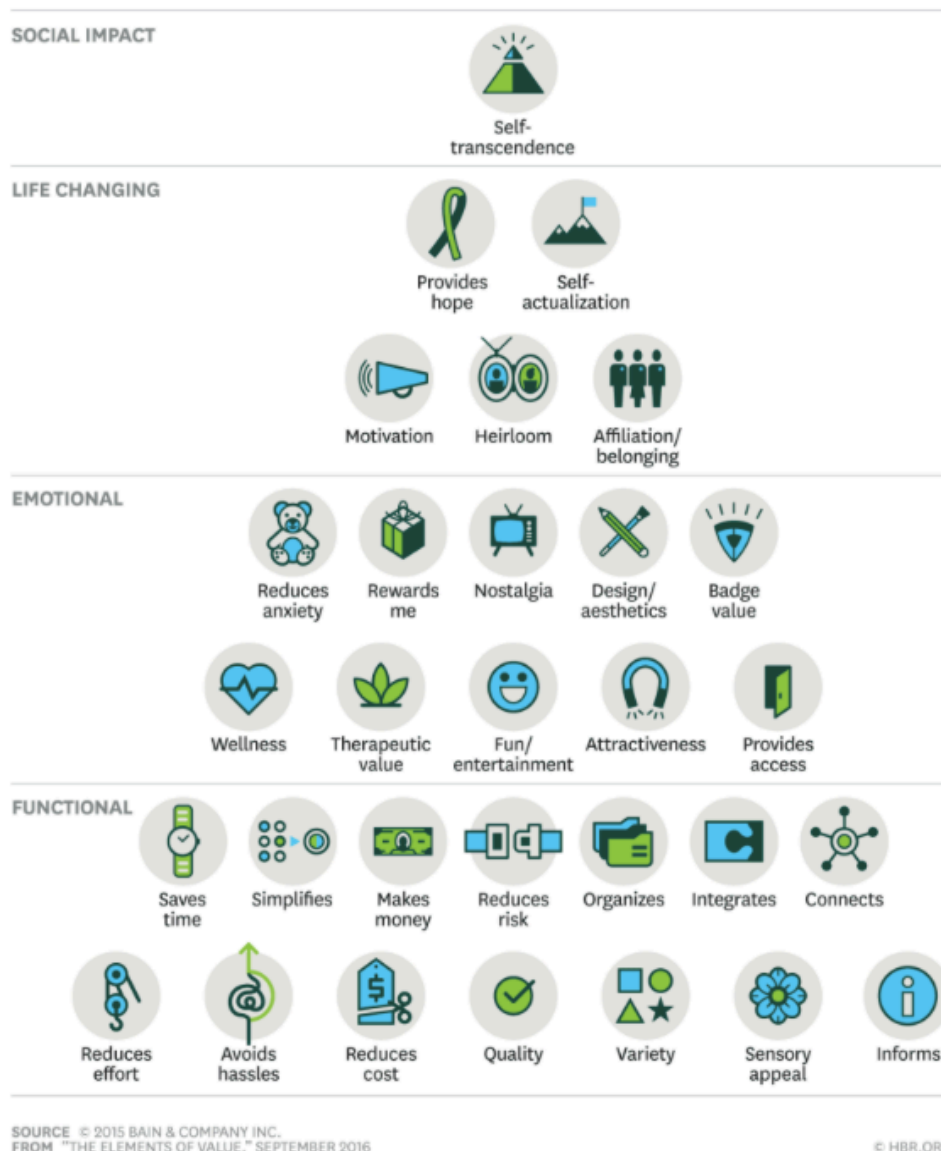FROM "THE ELEMENTS OF VALUE," SEPTEMBER 2016

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Figure 5. The Elements of Value (Almquist et al., 2016).

In this study, the Customer Journey Map based on customer interviews was used for identifying critical success factors of the business relationship and service. The identified elements of value perceived by the customers are discussed in chapters 7.3.3 and 7.3.4.

6.3 Co-development

Co-development as a term is used interchangeably with for example co-creation, co-design, co-production, co-operation, collaboration, (customer) involvement, engagement and participation, with slight differences in undertones and frequencies (Oertzen, Odekerken, Brax & Mager, 2018, 11).

Definitions of co-development include descriptions such as *"to develop something by working with (...) others"* or *"to develop (something) jointly",* and statements describe it as an activity that involves more than one party in a collaborating, commercial act, and suggest that these parties share both the development risk and the commercialization rewards. (Merriam-Webster, 2021; Current Partnering, 2021.) The definitions of positive co-development outcomes range from personal to pragmatic; from added knowledge and skills to developing new services and to producing higher quality (Oertzen et al., 2018, 21-26).

Oinonen looks at co-development as a process of joining resources in a way that both parties act as resource providers and resource users. The "customer end" is rewarded with a solution that meets their needs and the "supplier end" achieves the ever-valuable buyer perception of the development work. (Oinonen, 2016, 26)

McColl-Kennedy, Cheung and Ferrier also discard the traditional, unidirectional producer-to-customer view. They describe their approach as "a broader, more dynamic, multi-party perspective, where individuals influence other individuals, and who are in turn influenced by others in an evolving ecosystem" (McColl-Kennedy et al, 2015, 6). Their central insight is, that all actors experience the reality differently: It all depends on how people look at the world and how they perceive their own roles in it. The focus is on people's interaction with each other, not on the concepts of buying and selling. (McColl-Kennedy et al., 2015, 6-8.)

Ahrweiler and Keane (2013) look at interaction by defining what innovation networks are and how they are formed. Their starting point is, that innovation builds on creativity, and subsequently innovations generate knowledge. Collaborative innovation adds on creativity by bringing to play individuals with different educational, disciplinary or professional backgrounds with their different life experiences. Innovation networks, in

essence, consist of people, groups and organisations, and the relations and links between them. (Ahrweiler & Keane, 2013, 2-4, 9.)

The forming of the network depends for example on what kind of participants, partners, shared expertise and financial resources are available, what kind of roles are occupied and in what kind of processes. The participants' former experience of collaboration processes and their outcomes specifies people's eagerness to take up similar ventures. (Ahrweiler & Keane, 2013, 13-15.)

Companies tend to choose either vertical or horizontal collaboration forms, namely co-operate with complementing companies or with companies on the same level. The choice is made based on their motives for establishing a co-operation and on their partners' position in the network value chain – market penetration and organic growth require different strategies. Furthermore, even simple factors, such as company size, play a role in choosing a partner and committing to mutual enterprises. (Costa, Soares & Pinho de Sousa, 2016, 6-7.)

Ahrweiler and Keane quote Powell et al. (2005) in presenting different attraction and attachment logics for creating collaboration networks. "Accumulative advantage" describes a situation where the most connected organisations draw in new or more partners, while "experience-guided strategy" implies that the organisation prefers their previous partners. "Homophily" is a strategy where operators of the same type get selected as collaborators, and finally in "multiplexity" the widest range of partners attract each another. (Ahrweiler & Keane, 2013, 14.)

Möller and Svahn (2003) agree on this: In order to be an appealing actor in a network a company needs to have an attractive vision and control resources or capabilities – such as knowledge – that are considered important by the network (Möller & Svahn, 2003, 22).

Bearing in mind, that the degree of co-working is not defined, the commissioner could be interpreted to fall into the category "multiplexity" and moving towards "accumulative advantage". As it stands, their raw material attracts a wide variety of operators in different fields of business from food production to chemical industry solutions. As they

are getting noticed not only as a start-up, but also more extensively among the biomass refining business, they are attracting more and bigger partners and stakeholder groups.

Companies may take up inter-organisational collaborative ventures simply in order to keep up with competition. In collaboration, though, input from two or more organisations may cause uncertainty about the needed actions, relevant workflows and their proper order, as well as the result of the process. (Müller, Ostern, Koljada, Grunert, Rosemann & Küpper, 2021, 65044.) Hence, trust between development parties is of great importance and information sharing increases mutual commitment.

Möller and Svahn support this. They claim that there are three different ways that lead to learning new things: 1) one's own experimentation, which is the so-called "learning by doing", 2) accepting other people's advice and following their example, or 3) jointly learning with other actors, utilising one another's resources. The third method, sharing knowledge and forming new constructs, supports group identity, which in turn enforces more sharing and learning together. (Möller & Svahn, 2003, 8, 17.)

Successful collaborative ventures therefore generally tend to invest in sharing information, not in withholding information or competing with their partners (Costa et al., 2016, 9). Trust issues stretch from the simple performing of manual tasks to utilising data and software, and from assuring confidentiality to assessing reliability and performance (Müller et al., 2021, 65052).

When customers are involved in the co-development process, they may serve as informants about customer needs, testers of new products and services, or as sources of feedback on current offerings. Common methods for discovering this kind of intelligence are typical service design tools, for instance questionnaires, interviews, observations and workshops. (Oinonen, 2016, 46-48, 58-59.)

While co-creation or co-development may refer to both the (service) process and the (service) product, researchers agree on the positive effects of co-development. It may help reduce costs, enhance the effectiveness of the development process at hand, improve the quality and distinctiveness of products and services, and shorten the time to market for new products and services. (Oinonen, 2016, 22; Oertzen et al., 2018, 642.)

As for the commissioner, co-development at this point is done with process development in mind, while for their customers it mostly means investments in product development.

6.4 Data-driven Collaboration

Data makes the world go around. Today, in the digital age, the most influential organisations are the ones that own or have access to the most useful data. Furthermore, the organisations that prefer to form their decisions on data are more likely to innovate and discover new service offerings that help them succeed, because analysing and combining data creates new insights, which in turn allow organisations to optimise their resources and their services. What ultimately makes organisations succeed is the ability to learn and act faster than their competition. They need to respond to changing situations fast, and be prepared to change course just as fast, should data indicate that kind of need. (Walia, 2020.)

However, data in itself is not enough, but needs to be refined into connections and meanings. The Data-Information-Knowledge-Wisdom (DIKW) hierarchy, also referred to as the "Knowledge pyramid", was introduced by Jennifer Rowley in 2007. Rowley summarises the pyramid as follows:

> *"Wisdom is the ability to increase effectiveness. Intelligence is the ability to increase efficiency. Knowledge is know-how, and is what makes possible the transformation of information into instructions. Information provides answers to who, what, where and when questions. Data are defined as symbols that represent properties of objects, events and their environment. They are the products of observation."*

<div align="right">(Rowley in Baskarada & Koronios; 2013, 6-7.)</div>

Rowley's description draws attention to the fact that data, information, knowledge and wisdom are, in essence, not meaningful as themselves, but necessarily build on each other.

The DIKW terms, their definitions and examples of them are presented in the table below – data, information and knowledge being of principal interest in this study.

Table 1. Definitions of data, Information, Knowledge and Wisdom.

Term	Definition	Example
Data	Data are physical signs. They have no meaning because they reside outside of a human mind.	Characters in a book. Bits in computer memory. Street signs.
Information	Information (or meaning) emerges through cognitive processing of data.	Reading a book. Watching a movie.
Knowledge	Knowledge constitutes a person's beliefs which have been socially judged to be true.	The Sun is at the centre of our solar system.
Wisdom	Wisdom constitutes a person's normative judgements which have been socially judged to be desirable.	We should reduce carbon emissions.

(Baskarada & Koronios, 2013, 13)

Baskarada and Koronios quote Aamodt and Nygård (1995) in stating, that data is mere patterns with no meaning, while information is data *with* meaning and context, which is decoded data. For example, a pin code may be considered as a mere sequence of numbers, but also as an access code for instance to a building, a system or a private conversation. Knowledge is information that has been composed on basis of personal interpretations. As a synthesis of a person's mind, knowledge is therefore a subjective, individual product. (Baskarada & Koronios; 2013, 7-8.)

In order to make use of data and refine it into information and knowledge, one needs to understand how to process, measure and analyse it, and choose the appropriate tools for it. Large amounts of data and information are required to counterbalance lack of previous knowledge and experience. This is evident especially in new situations, such as entering a new market area. Data, information and knowledge may then be utilised in developing business strategies or activities. (Costa, Soares & Pinho de Sousa, 2016, 8; Durcevik, 2019.)

The following framework is an adaptation of the conceptual model of Mandinach, Honey and Light (2006, 7). It illustrates how data is refined into knowledge. The collected data may come in from various sources, for example data warehouses, the internet, audio files or printed materials. It is then organised, analysed, summarised, synthesised and

prioritised for use, transforming data into information and then into knowledge. An additional arrow could be drawn from "prioritise" to a line of actions from making a decision to implementing an action and collecting feedback of its impact. Ideally, the arrow would then be connected back to the starting point in the bottom left corner, to "collect".
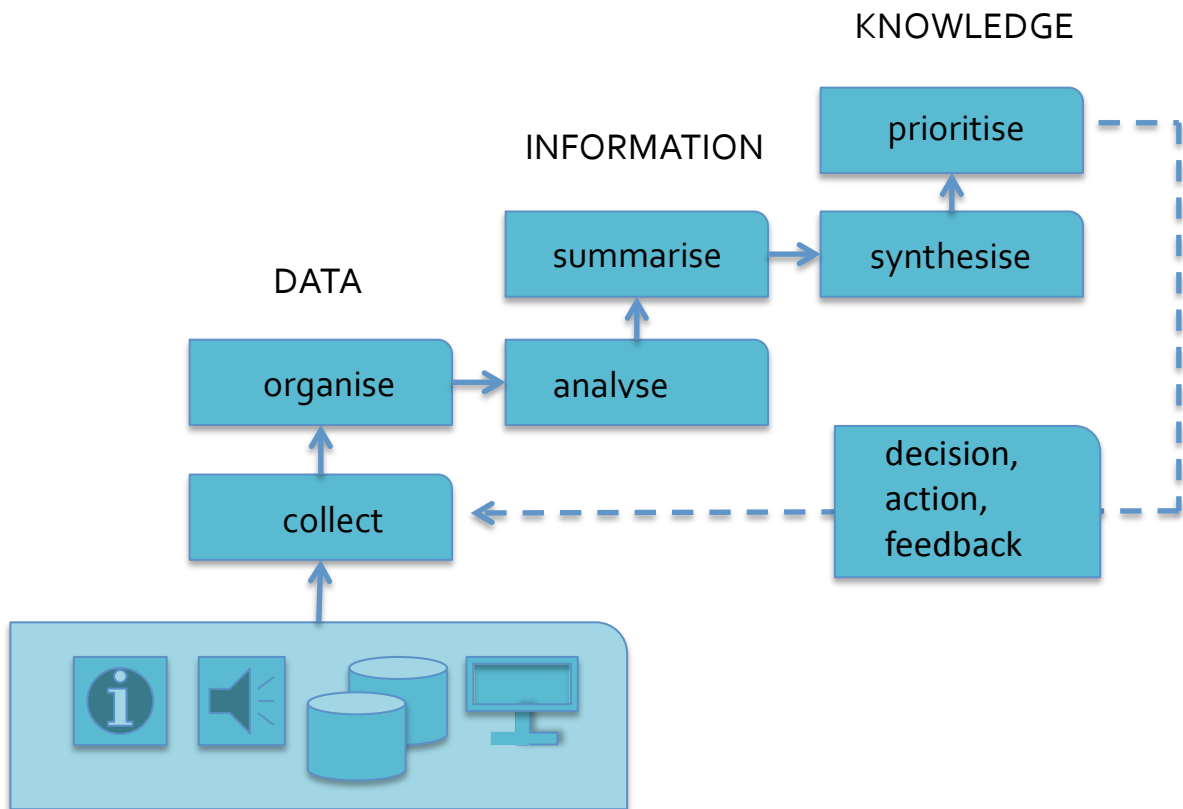
Figure 6. Data-driven decision-making *(adaptation of the conceptual model of Mandinach, Honey and Light, 2006, 7).*

Apart from the data-information-knowledge approach, business development based on utilising data may be looked at from a wider perspective. Data-driven decision-making (DDDM, or data-*based* decision-making, DBDM) is about collecting data, analysing it into information and basing decisions on insights derived from this information. DDDM is built on the very hypothesis that (best) decisions are supported by (good) data, not by intuition, observation or guesswork. (Marr, 4; Okwechime, Edgar, Magnaghi & Veglianti, 2021, 40.)

Data-driven decision-making is often mentioned in connection with "big data", namely collections of vast amounts of data. However, bigger is not automatically better. Volume is one ingredient in making more informed decisions, but others are also needed. (Okwechime et al., 2021, 42.)

Utilisation of data includes the data itself (for example volume, variety, quality), the handling processes (acquiring, integrating data) and data managing (privacy, security, ownership). The figure below illustrates in more detail the different factors that affect handling of data. (Sivarajah, Kamal, Irani & Weerakkody, 2016, 265-266.) In co-development ventures the management of data, particularly the issues of sharing, analysing and owning data, are important aspects to agree upon before concrete projects are kicked off.
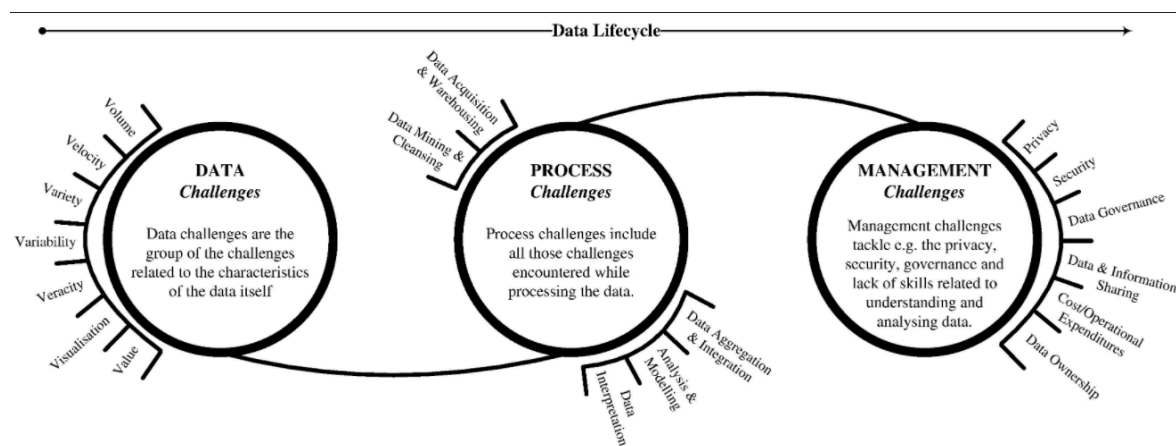
Figure 7. Classification of data handling challenges. (Sivarajah et al., 2016, 265)

6.5 Productisation

Productisation, in short, is about standardising the elements of an offering, and multiplying and bundling something in order to make the combination easier to sell or adopt. More elaborate definitions of productisation each emphasise different aspects of the process or its elements. Suominen, Kantola and Tuominen (2009, 10) lay stress on demand, by outlining productisation as a standardised process, during which the original idea is enhanced into high-quality commercial services (or goods) that are usable in the market.

Leoni, in turn, advances the idea of decomposing the service process into its smallest components. These components are then cultivated into modules that may be combined

with each other to create a service. She states, that the aim of productisation is fulfilling customer needs by improving the quality and efficiency of service. (Leoni, 2015, 9.)

Wirtz, Fritze, Jaakkola, Gelbrich and Hartley (2020, 8) highlight the aspect of services as strictly circumscribed products. They debate, that service productisation could be described as *"a process of transforming variable, ad-hoc services and service products into concrete, well-defined service products through specific approaches and tools"*.

While it can be seen, that some authors stress customer satisfaction, some knowledge transformation and yet others the identification of different elements, most agree on productisation being about tangibility and standardisation. This can be observed from the examples below.

Table 2. Descriptions, definitions and key dimensions of service productisation.

Authors	Descriptions and Definitions	Key Dimensions
Elia, Gnoni, & Tornese (2019)	• A main objective of service productization is to increase customer satisfaction and perceived value of the offering. This is achieved through standardizing the service offering and adding tangible products and components.	• Standardization • Tangibilization
Harkonen, Tolonen, & Haapasalo (2017)	• Successful productization results in a service product that can be sold, delivered and invoiced. A company can have a number of service products that form a product family of services. • Productization also leads to the systematizing and tangibilizing of the service offering and related processes, while creating a level of formalization. Formalization in this context may entail the standardization of service components and processes.	• 'Tradable' units of service • Family of service products • Systematization • Tangibilization • Formalization • Standardization
Valtakoski, & Järvi (2016)	• Service productization is a process of knowledge transformation along two dimensions: from tacit to explicit, codified knowledge, and from individual employee knowledge to organizational knowledge. • A successfully productized service is ready to be replicated throughout the organization.	• Replicability • Knowledge codification • Knowledge transfer from tacit to explicit • Knowledge transfer from individual employees to the organization
Andreini et al. (2015)	• Productization suggests moving from a service-dominant to a good-dominant logic, aiming at objectivizing, standardizing, and packaging services. • The good-dominant logic approach introduces manufacturing tenets into the world of services, transforming intangible offerings into more objectified proposals.	• Objectivization • Standardization • Packaging
Harkonen, Haapasalo, & Hanninen (2015)	• Productization is the process of analyzing a need, defining and combining suitable elements, tangible and intangible, into a product-like object that is standardized, repeatable and comprehendible. • Productization activities cover those for a product to be ready commercially, so it can be produced, delivered, sold, purchased, and used.	• Identification of customer need • Creation of a product-like object • Combination of product elements • Standardization • Comprehensibility • Creation of 'commercially ready' units of service
Nagy (2013)	• Productization refers to the activity where service companies provide more product-like solutions through systemization of their components.	• Solutions • Systemization • Modularization (components)

(Wirtz et al., 2020, 9)

Tangibility is most clearly manifested through branding. Giving the service product a name, a symbol or a particular design and a well-defined content makes it more concrete and distinguishes it from other services. (Wirtz et al., 2020, 11-18, 25-26.)

A standardised service includes addressing specific customer needs, acting according to pre-determined specifications, bundling valuable modules and replicating the service

performance as unaltered as possible. Standardisation of a service process is commonly executed by developing repeatable components that may be combined in various ways and used in various projects. (Wirtz et al., 2020, 19.)

The central role of standardisation has been challenged by Tuominen, Järvi, Lehtonen, Valtanen & Martisuo (2015). According to them, productisation is not about slavishly repeating unaltered processes or producing mere bulk services, but about creating a functional balance between standardisation and customisation, in other words reducing the customisation of services to an appropriate level, and crystallising the values that the service offers. (Tuominen et al., 2015, 8-10.)

Between producers and users of a service, common understanding of its value is created on two levels, the external and the internal. External productisation means describing the components of a service that are visible for the customers. Typical outcomes are service descriptions and sales materials. Internal productisation is done by describing the phases, responsibilities and ways of working in service production. (Tuominen et al., 2015, 5.)

Service blueprinting, a common tool in service design projects, is one of the tools that is often used in visualising the service processes in detail, showing the chronological sequences of the service (Wirtz et al., 2020, 24). A service blueprint is a swimlane diagram that includes both aspects of a service product: the internal production of a service (backstage action), and its external representations experienced by a customer (frontstage actions) (Stickdorn et al., 2018, 54-55).

Physical evidence of intangible service products might in the case of Origin by Ocean include for example electronic messages or access to their data warehouse.

7   Process and Methods

The project plan of this thesis proceeded from gathering understanding of the business environment to defining the research questions and deciding on methodology. Further on, the project moved from summarising findings to ideating solutions. In the delivery phase a prototype was produced and feedback was collected of it.

A healthy proportion of information was acquired through literary sources, interviews and explanatory discussions with both the commissioner and their customers. Additionally, the initially planned workshops were not realised, but the primary means of working turned out to be emails, phone calls and individual working with the canvases. This allowed the interviewees and commentators to come back to the point and complement their answers also after the actual interview or discussion. Having time to process the questions possibly gave room for broader answers and deeper analysis than a one-off workshop or ideation meeting would have been able to give.

Discover, Define 9-11/2020
- Literature review, theoretical background, methodology choices
- 1 st seminar

Develop 12/2020-8/2021
- Interviews, maps and canvases
- Feedback from commissioner
- 2nd seminar

Deliver 7-11/2021
- Concept, collecting feedback from commissioner & customers
- Thesis finalisation
- 3rd seminar

Figure 8. Project timeline.

The project timeline was somewhat delayed from the original plan. However, this did not affect the results, as there were no time-critical elements under research and the situation in the commissioner company or their customers did not significantly change during this period.

7.1 Multilevel Service Design

The empirical part of the study is an adaptation of the Multilevel Service Design (MSD) model by Patricio, Fisk, e Cuncha and Constantine (2011). Multilevel Service Design is an interdisciplinary method for designing the service offering at three different levels: 1) the company's service concept, 2) the company's service system and 3) the service encounter. A service concept explains the benefits a customer receives when using the

service. While companies nowadays produce and deliver their service on several fronts instead of only employing one or two interaction points, a service is essentially a system of services, which consists of frontstage and backstage actions; traditional face-to-face encounters, customer self-service and technology-aided multichannel parts through which customers navigate to complete their tasks. (Patricio et al., 2011, 181-182.)

The MSD multilevel approach provides a holistic view to the service experience. The forming of a service concept starts with understanding what "value" consists of and how customers experience value. Sometimes services are created in collaboration with partners from other organisations, which brings to play a larger amount of customer experiences and expectations for value creation. (Patricio et al., 2011, 185, 196.)

The creation of value was discussed in this work in chapter 6.2, and it was stated, that value emerges when a service is being consumed, in other words a customer weighs their expectations of benefits to be gained with their experience of the interaction: Does supply meet demand, and is use value equal or bigger than the paid price?

Blueprints and process charts outline the possible scenarios of interaction, including the service system, within which the service is being produced (Patricio et al., 2011, 186). Patricio et al. suggest that the service system should offer customers different interfaces for completing each task and they call these encounters "touchpoints". Their idea of a Service Experience Blueprint (SEB) is a diagram that represents the actions of all participants at all phases and touchpoints, both frontstage and backstage – very much like in the general service blueprint description, originally presented by Shostack in 1984. (Patricio et al., 2011, 185-194.) Additionally, Patricio and Fisk's Customer Value Constellation (2012, 194) corresponds to the traditional concepts of stakeholder mapping and presenting stakeholder relationships in matrix form.
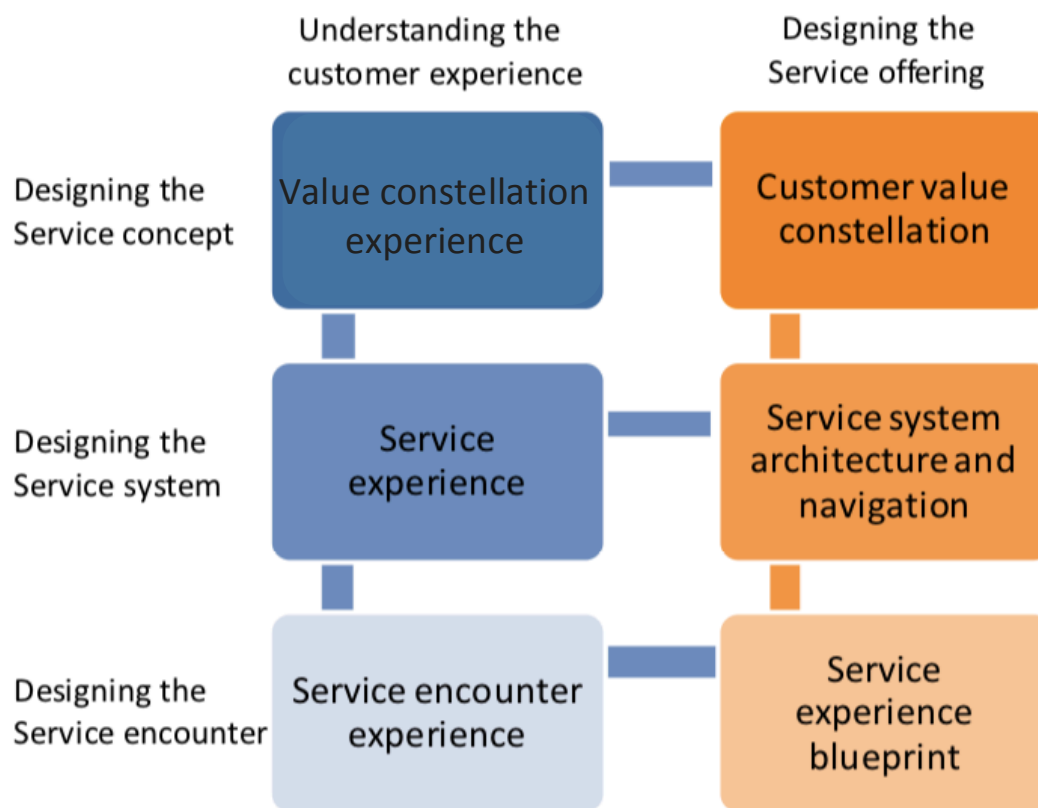
Figure 9. Multilevel Service Design model (adaptation of Patrício et al., 2011, 183).

The service concept of the commissioner consists of the benefits their product and service offer (and are expected to offer), as well as the information that is created in the customer and partner network. This was studied with the help of a Customer Journey Map and a Value Proposition Canvas.

According to Patricio and Fisk, a service system *"may include service interfaces, support processes, people, physical evidence, and their interconnections"* (2012, 191). The commissioner's current service system includes self-service via Alchemy.cloud platform and person-to-person interaction via a sales representative or a technical support person. Other channels offered for touchpoints are the company website and social media accounts in LinkedIn and Twitter, exhibitions and fairs, emails, phone calls and physical deliveries of alginate. The aim is to substitute at least some of the human labour-heavy channels with automated ones: messages, follow-ups and workflows.

The commissioner's service encounter is presented in the Service Experience Blueprint. The aim was, to a highest possible degree, find out how to replace the man-hours of technical support with either automated communication or self-service in Alchemy, in order to a) externally offer customers quicker service, and to b) internally direct human labour towards more profitable tasks. Additional architectural changes to the service system evolved during the research process.

The process of arriving at an improved service encounter and the methods that were used are described in the following chapters (7.2–7.4.3). Due to the setting of research questions, it was natural, that the emphasis is on the service system level. Results of the design process are assessed in chapter 8.

7.2   Brief and Definition of Problem

The starting point of this study was based on the organisation's goals, in regard to their plans of strong growth. As many representatives of prospects, customers and partners as possible were to be involved in the design, attempting to make it a co-development process.

Preliminary research consisted of literature reviews, stakeholder mapping and interviewing the owners of Origin by Ocean. Interviews with customers recorded their experiences of current services, as well as reported their expectations and preferences concerning the service being formed.

After the pain points were defined, ideation and development was kicked-off, followed by modifications to the service process description. The preliminary scope, some definitions and initial plans needed revising and complementing during the process. The Multilevel Service Design model served as a guideline in setting goals, analysing outcomes and making changes.

		LITERATURE, BRIEF, MAPPING
		INTERVIEWS (INT. & EXT.)
		CUSTOMER JOURNEY
		ANALYSIS, PRIORITISING
		IDEATION, VARIABLES
		SERVICE EXPERIENCE BLUEPRINT, PROTOTYPE
		ONLINE FEEDBACK
		FURTHER DEVELOPMENT
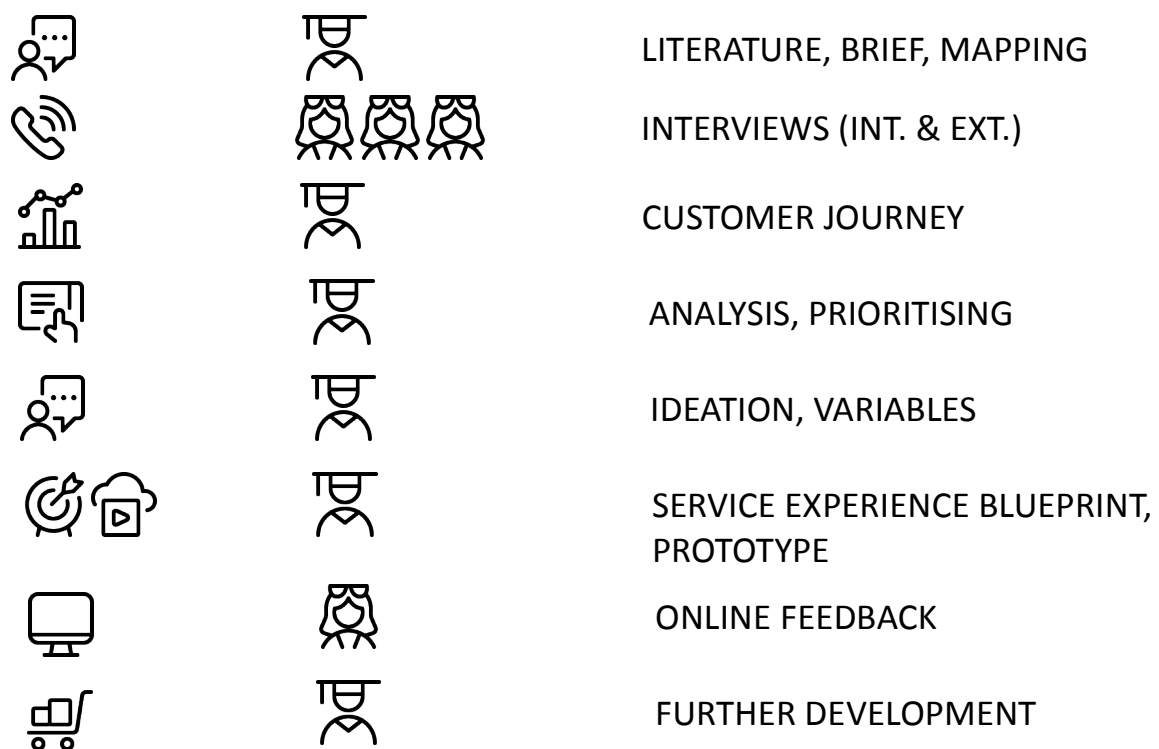
Figure 10. Research Process.

Initially, information about the business of the commissioner, their products and services was acquired via their website and LinkedIn postings. The needs and aims of the organisation were specified in teleconferences and live meetings with the two owners of the company. Other resources for the research project included the commissioner's specialists, as well as their partners and suppliers. The key external target groups were customers with LOIs (letters of intent) and the supplier of the data platform.

The main aim of the research was to analyse and describe how the commissioner can optimise their customer service process and improve their customer experience through co-development.

The scope of the research was first defined by means of drawing a mindmap, a moodboard and a stakeholder map.

7.2.1 Mindmap

Mindmaps are diagrams that represent connections between ideas, things and concepts. They are used for analysing information and visualising relationships. (Curedale, 2013, 56-57.) Structuring the already existing knowledge helps in forming the big picture, and

identifying future opportunities helps in exploring possible development areas (Kumar, 2013, 207).

The initial mindmap based on received information from the commissioner represents the operational environment of Origin by Ocean, and is presented in the following:
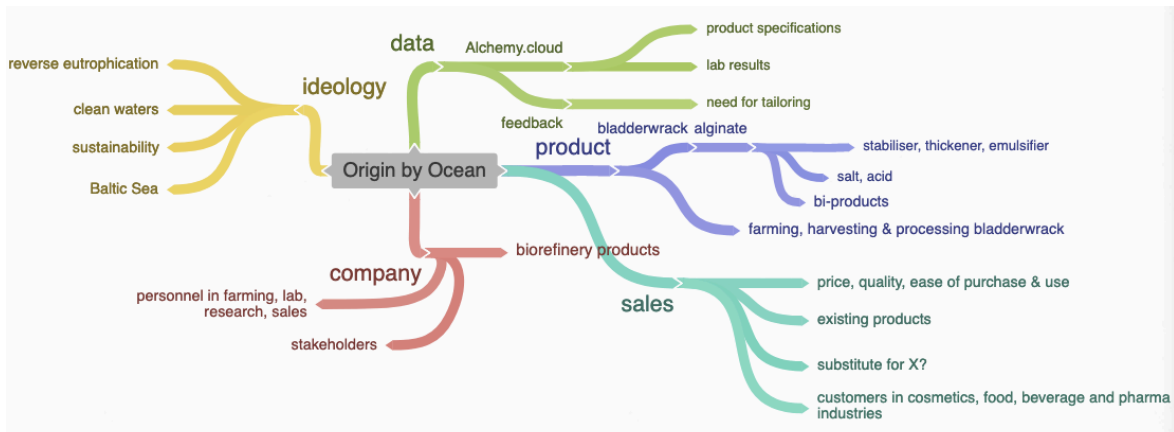
Figure 11. Mindmap 1.

An elaborated mindmap was drawn at a later phase, when understanding of the company and their business had become deeper, the theory base of the study had been decided and the tools had been chosen. The basis for mindmap #2 was to answer the classic questions "who-what-why-where-how".
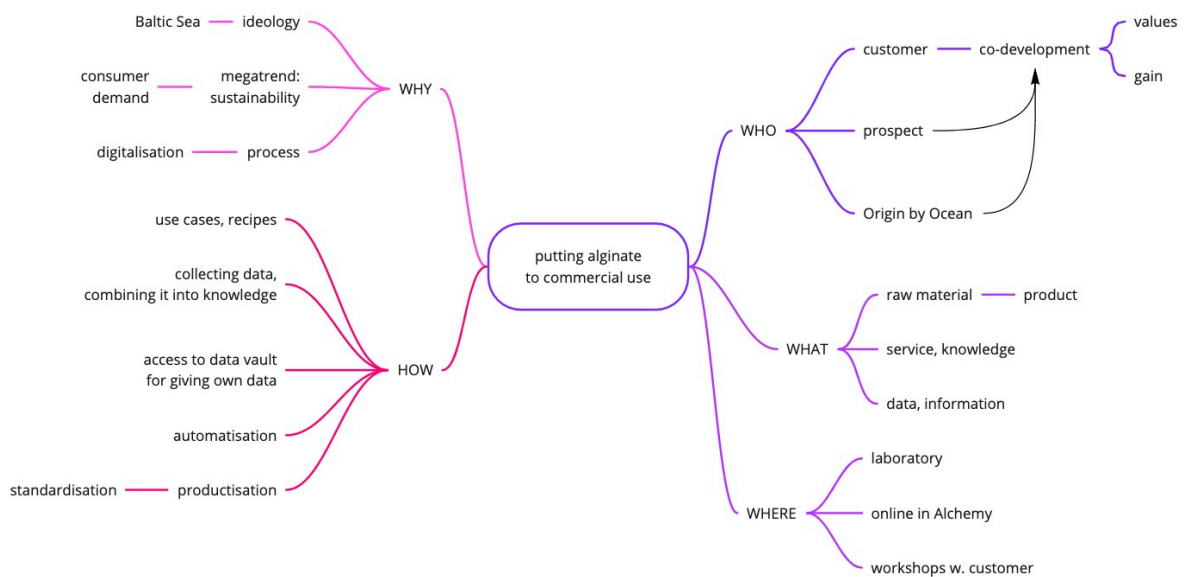
Figure 12. Mindmap 2.

7.2.2 Moodboard

Moodboards are most often collections of pictures, images, text and other objects that are connected with a particular theme, and they are created for presenting ideas in a visual form. They may also be made for example of video clips or textile samples. A moodboard may be of help when trying to work out how to arrive at a concept or how to summarise an idea, collect feedback or provoke discussion. (Stickdorn et al., 2018, 239.)

Moodboards are particularly useful when the elements of imagination or atmosphere are being conveyed into physical objects. The objects are arranged so that a unified look and feel becomes clear to the audience. In its physical form a moodboard looks like a collage that contains anything that helps form a creative decision for any aspect of the project, such as colour, texture, composition, lighting, typography, style, era, video samples, shapes or any images that inspire an idea. The canvas serves as a visual tool to quickly inform others of the overall "feel" of the concept or design idea. (Curedale, 2013, 71.)
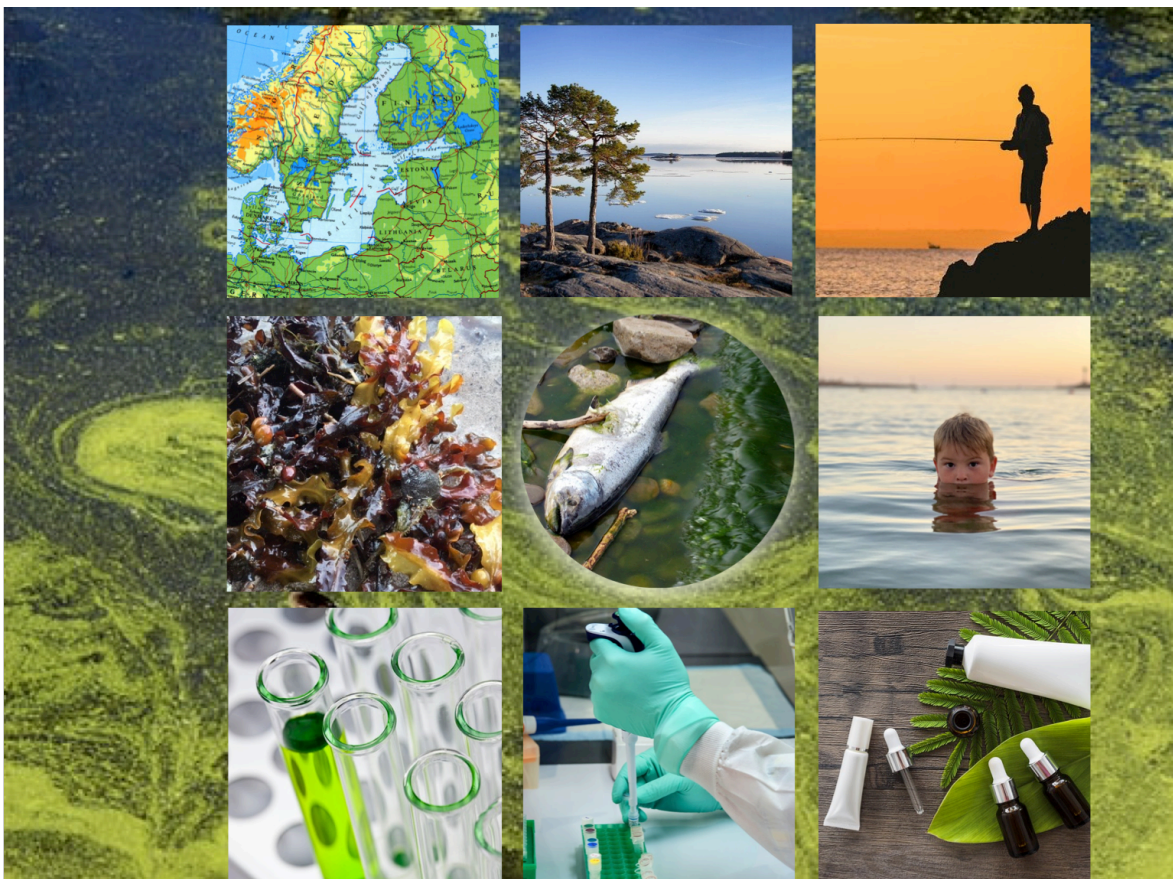
Figure 13. Moodboard.

The Origin by Ocean mindmap displays use values of the Baltic Sea environment, effects of eutrophication and the biorefinery end products that are co-developed with customers. In a later phase, it was used as an attachment, when feedback of the modified Customer Journey Map was collected. The idea was to remind the respondents of the shared ideological background.

7.2.3 Stakeholder Map

Stakeholders are all persons and organisations that are affected by a project, product, service or company: They may include for instance customers, shareholders, company management, employees, co-operation partners, end-users, competitors, suppliers, distributors, insurance or financing institutions, or a community (Kumar, 2013, 261).

Regarding the scope of this study, the following stakeholder groups were identified:

ORIGIN BY OCEAN

employees

investors

advisors, consultants

SUPPLIERS & PRODUCERS

fisheries, windpark operators

logistics, equipment manufacturers, IT platform

CUSTOMERS

current & potential:
food, beverage, cosmetics,
feed, pharmaceuticals

CONSUMERS

SIDESTREAM PARTNERS

biogas, animal feed & fertiliser producers

tourism operators

COMPETITORS

corporations, start-ups

substitute products

AUTHORITIES   **MEDIA**

Figure 14. Stakeholder Map.

The commissioner's internal stakeholders are their employees, owners and investors, as well as their impressive advisory board. The "Suppliers and producers" category encompasses operators that either supply tools for working, such as IT systems or laboratory equipment, or provide means of production; actual bladderwrack or the waters for growing and harvesting bladderwrack. Producers that are able to use the less valuable seaweed masses are sidestream partners. If the experience tourism starts taking shape on a big scale, bladderwrack farms could become tourist attractions for adventurous action travellers and the tourism operators could be included in the sidestream partner group.

Present customers and prospects include producers from different fields of businesses, from food to pharmaceuticals and from cosmetics to detergents. These producers' end products are sold to consumers, including individual people and industrial use. Competitors – regardless of their size – produce raw materials that are either animal-based or synthetic, or plant-based, like alginate.

"Authorities" include organisations connected with licensing, regulation and legislature. "Media" covers both owned and earned media. Owned media is self-produced information for example on company website or an update on the company's social media account, such as LinkedIn or Instagram. Earned media refers to reportings for example in newspapers, tv, radio, events or other external parties' social media accounts.

Stakeholder mapping is a technique for assessing what kind of effects different stakeholders groups may have on the organization. In doing this, their value should be considered: How does money or materials, or intangible assets such as information, services, loyalty or goodwill, affect the relationship? These power and interest levels could then be diagrammed in a matrix in order to identify and prioritise stakeholders and select the appropriate engagement mechanisms with them. (Curedale, 2013, 234-237; Stickdorn et al., 2018, 58-60.)

Presently, services of suppliers and producers reach the commissioner, and further along also their competitors and customers, who in turn serve their end-users, that is, consumers. Money moves between consumers, customers, Origin by Ocean and their partners. Data is shared between Origin by Ocean and its customers, while information moves in nearly all directions between all parties. As consumers demand more natural,

bio-based products, customers and sidestream partners exceedingly demand products and experiences from Origin by Ocean, who, in turn, demand raw materials and services from their partners and suppliers.

Kujala, Lehtimäki and Freeman present a different view into the stakeholder ecosystem: Stakeholder Value Creation (SVC). Instead of the more widely used value dimensions of for example customer value, economic value, stakeholder utility factors or stakeholder capabilities, Kujala et al. focus on stakeholder relationships, that is, on how to bring different stakeholder expectations and interests together. The SVC model emphasises three attributes of value in creating these relationships: 1) joint interests, 2) ability to collaborate and 3) trust. (Kujala, Lehtimäki & Freeman, 2019, 130-132.)
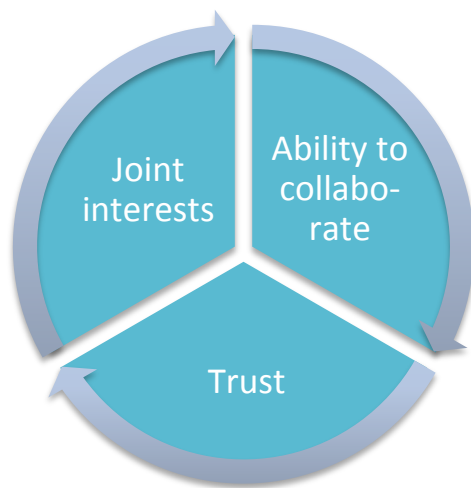
Figure 15. Stakeholder Value Creation model. (Kujala, Lehtimäki & Freeman, 2019, 132)

Joint interests are created through shared experiences and mutual objectives. The ability to collaborate means that both parties aim at advancing their own interests, at the same time making a commitment to joint interests. Trust is built out of successful collaboration. (Kujala et al., 2019, 132-134.)

> *"Stakeholders who trust an organisation are willing to share information because they know it will not be used against their interests." (Harrison in Kujala et al., 2109, 132)*

The commissioner and their customers and partners share common objectives about promoting sustainability, they share information with each other and create processes

that support collaboration. They're willing to develop their businesses on common ground, thus creating strong relationships instead of mere transaction-based exchanges. Data, information, knowledge, materials, services, connections and revenue are offered and acquired, exchanged and traded between key stakeholders. Operational processes are being developed, for example refinery and productisation by the commissioner and testing and production by their customers.

7.3   Gaining Understanding

Following the typical discover-define-develop-deliver process continuum of service design (for example Stickdorn et al., 2010, 111), the study turned "outward" in the phase of gathering information. During this phase understanding was sought of needs and aims of target group(s), competing products and services, as well as of the competitive edge of the company.

The gathering of customer insights, and later combining them with the commissioner's business drivers, was carried out by interviews and experience mapping. They were further elaborated in discussions with stakeholders and in planning sessions with the commissioner. Affinity diagramming was used for clustering the observations. Affinity diagramming is a method, where details are grouped together according to their similarity (Martin & Hanington, 2018, 3).

The starting point for forming an understanding of the entire process was visualising it from the commissioner's point of view. This "internal service blueprint" showed how the commissioner looks at the process.

Next, the commissioner's hopes and plans of how to change the process were marked in the table: customer goals and actions, touchpoints and supplier actions and goals. Particular attention was paid to touchpoints, namely to action steps in service systems and interaction channels, as one of the goals was to replace all possible labour-heavy phases with digitalised services.
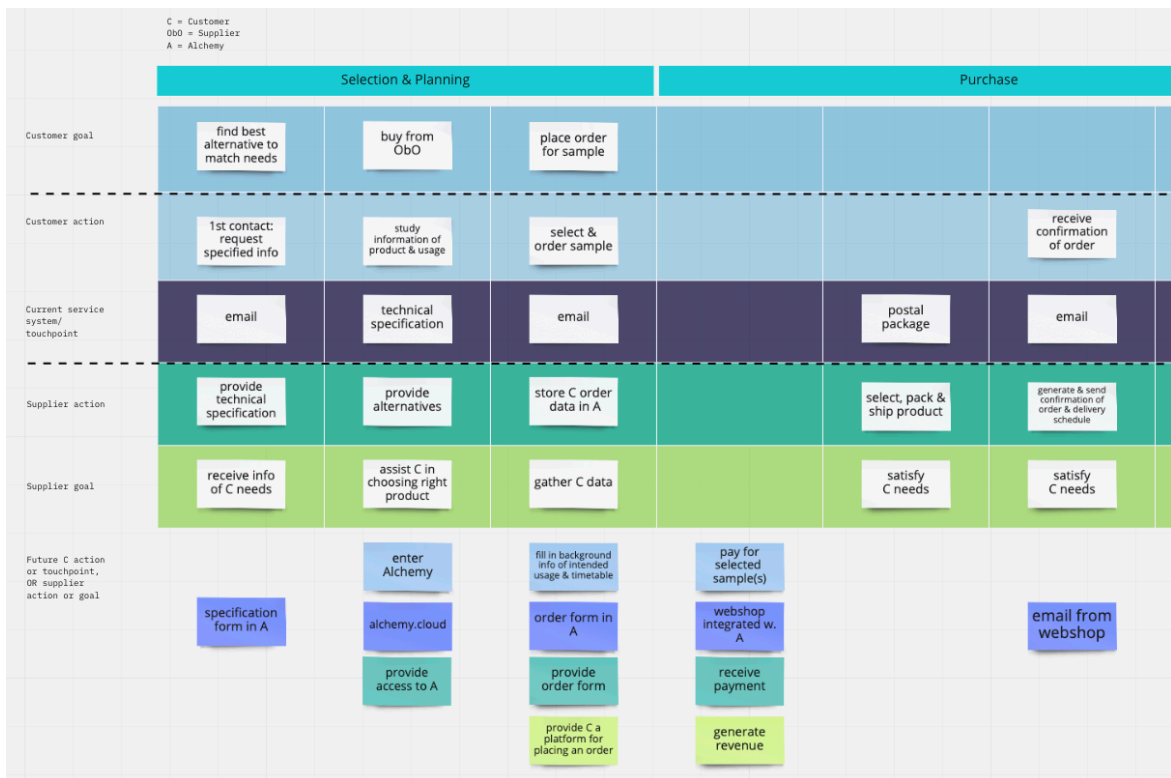
Figure 16. Sample of internal service blueprint.

The phases that at this point stood out as possible development actions were integrating a webshop to Alchemy, offering contributive information to customers, and getting feedback from customers. The entire internal service blueprint with comments for development is presented in Appendix 1.

7.3.1 Interview

Interviews are typically conducted with relevant stakeholders or experts in order to understand different perspectives on a specific subject. These interviews may help researchers learn more about particular expectations, experiences, products, services, goods, operations, processes and concerns, and also about a person's attitude, problems, needs, ideas and environment. The expected outputs include text, audio, photos, videos and other recordings. (Stickdorn et al., 2018, 122.)

Interviews may be structured or unstructured, in other words either have a list of specific, unaltered questions, or contain a list of topics to be covered during the interview (Curedale, 2013, 188-189). In this study, three commissioner representatives were interviewed several times between June 2020 and August 2021. These were semi-

structured interviews: The researcher had a list of questions, but allowed speech to flow freely (Appendix 4).

Additionally, semi-structured interviews were conducted with five customers over the telephone between February and July 2021. The interviewed persons were employees, middle management and top management of two different companies. Company A is a manufacturer of chemical industry solutions. Their business areas cover construction, industrial adhesives and fireproofing, professional hygiene and consumer goods. Their motivation in testing alginate has been heavily influenced by consumer preferences, which has formed their business strategy: They want to significantly increase the usage of renewable raw materials in their products and look into plant-based alternatives. Depending on the business area, a desired outcome of using a raw material might be softer washing water, or the thick consistency or increased washing power of the end product.

Company B manufactures frozen food products for professional kitchens. Their business idea is to produce homemade-tasting food on a big scale. They use natural ingredients and classic recipes and want their products to be associated with traditional "grandma's kitchen". Hence, the desire to avoid artificial stabilisers and especially phosphate in preparing meat products got them interested in alginate. The sales and marketing director of the company originally heard of alginate and Origin by Ocean from a mutual stakeholder.

The interviewer had a list of questions (Appendix 5), but conversation was let to flow freely. The questions aimed at getting answers for forming a customer journey map and finding out customer appreciations and the features that customers valued in the process. Three of the interviewed persons represented product development, one procurement and one sales and marketing.

Complementing information was acquired from the Origin by Ocean's contact person at the Alchemy.cloud platform. These interviews took place in February and October 2021. Additionally, three people from different fields of businesses were interviewed for getting cross-professional benchmarks: A chef, an accountant and a commercial film producer.

Interviewees from company A highlighted the importance of three aspects; the quality of data available, the quality of the product itself and the quality of service received. The initial motivation behind their interest in using alginate was tied to environmental values. The supplier, namely the commissioner, was able to offer "a green alternative"; domestically produced organic raw material with a story that supports sustainability.

The company A representatives were unanimous about the importance of getting very detailed information of any raw material, very early on in the process. A simple listing of the available materials on a producer's website was considered to be far from sufficient, and any supplier's website should contain extensive technical data about the product, its features and examples of use cases, as well as about its behaviour in different contexts. A producer, who was able to present comparison data from testing their product against a competitor's product, had a clear advantage in getting chosen as a supplier.

A good-quality sample that performed well in laboratory tests followed by a good-quality product that was delivered according to mutual agreement was considered essential for industrial product development and large-scale production.

At this phase, company B was a prospect, interested in testing a new raw material in their products. Their goal was to create new recipes for new products that would meet their customers' expectations as well as their own standards. The company B representative stressed the importance of the commissioner's know-how about alginate, their willingness to share their knowledge and their effort in running tests for recipes. The company B interviewee was highly positive about the idea of sharing their test results with other actors, even competitors, in order to develop the entire field of business forward.

The Alchemy contact person emphasised, that all data stored in Alchemy is relational, which means it can be combined to create the necessary reports and charts. Data – or "records" –can contain single value fields, tables, images or whatever Origin by Ocean needs for capturing information. Any combinations of any records are possible to form. (Personal communication, Milica Popov, 29.3.2021)

The data is also divided into different access levels, controlled by Origin by Ocean business owners. These features could be utilised in personalised customer service, for

example by granting larger user rights for the more profitable or important customers, as well as communicating this possibility to the customers as an achieved advantage. (Personal communication, Milica Popov, 29.3.2021)

7.3.2 Benchmark

Benchmarking is a technique for measuring one's own processes, outputs and results against those of other departments, organisations or industries. Comparison is often sought from world-class organisations. The goal is to identify the best methods and practices that help produce and deliver superior performance. (Curedale, 2013, 49.)

Benchmarks were sought from three different fields of business: accounting, food product development for consumers and directing of advertising films. The hypothesis behind this approach was, that the interviewees would offer different views to creating value and would appreciate different kinds of values.

The semi-structured interviews of one accountant, one chef and one film producer took place between June and August 2021. The interviewees naturally used different use cases as references, but were unanimous about the importance of finding detailed, reliable information. This result was in contrast to the initial hypothesis on proving differences between the different fields of business.

The interviewees considered one's own existing wide knowledge of the subject as essential. Complementing one's professional competence with new information was done by googling, reading trade literature, following or trying out competitor solutions, following discussions in the social media and discussing with peers.

The interviewees also agreed on the importance of knowing and considering their target groups, when developing and delivering their services. For example when creating a food recipe for consumers, the chef checked the local food store selections, so that the ingredients would not be too difficult to find (personal communication, chef, 14.6.2021). The accountant directly asked fiscal authorities for a preliminary ruling to save their customer's time (personal communication, accountant, 11.6.2021). The ad film producer consulted their customer about the end-product audiences; for example a manufacturer

of heavy machinery might deliver information about their customer, an inter-Nordic construction group (personal communication, producer, 20.6.2021).

The most important motivational values for the interviewed persons in their respective cases were functional ones: saving time and money, minimising risks, as well as connecting service system operators in the efforts of developing their performance. The interviewees considered close contacts with existing structures and operators within their businesses valuable, but considered them rather as means to an end and not a goal in itself. Through familiar operators they had quick access to information, be it about features, efficiency, availability, price range, process or progress.

7.3.3   Customer Journey Map

Customer journey is the process of customers making different points of contact with a product/service via all offered channels until they have performed the target action. Unlike process descriptions, customer journeys record what customers do and the interactions they have. (Curedale, 2013, 119; Reason et al., 2016, 166-168.)

Customer Journey Mapping (CJM) is a method of storytelling in a visual form, used for demonstrating the timeline and the quality of contacts a customer has with a particular product or service. The story visualises positive and negative customer responses. (Curedale, 2013, 119)

CJMs are used to better understand customer needs and pain points: What customers go through and what motivates them as they use a specific product or a service. CMJs help discover the most effective channels and touchpoints of interaction. The aim is to be able to create outstanding first impressions and deliver seamless, satisfying experiences to the customer. (Stickdorn et al., 2018, 44-46; Richardson, 2010, Visual Paradigm, 2019.)

After the interviews two Customer Journey Maps were drawn, one for product development and one for procurement. As representatives of product development outnumbered procurement representatives, the CJM of product development got chosen for a closer study. (Appendix 2)

Following the Multilevel Service Design model, it could be possible to identify from the CJMs what value consists of and at which points it is co-created with the customers:

Which are the touchpoints that are most feasible for optimising the service system towards a less labour-heavy one?

During the customer interviews, expressed appreciations were asked and noted. The Elements of Value Pyramid by Bain & Company (in 6.2.) was used as a frame of reference. The phases of service experience that got the most mentions of different values were

1. receive info of supplier tests, make changes to process

2. negotiate price and availability

3. receive technical data, and

4. receive raw material,

in respective order. However, most stress was laid on receiving detailed technical data (3), receiving high-quality raw material (4) and getting superior service (1) – again, in respective order.

When asked for priorities, customers and suppliers had differing views of the most important qualities. The commissioner stressed the features of the product itself – a safe, domestic and sustainably produced raw material of consistent quality – and offering information of how to use Alchemy, and how to use the product as correctly as possible.

Figure 17. Customer and supplier (= commissioner) priorities.

7.3.4   Value Proposition Canvas

According to Pereira (2021), a Value Proposition Canvas (VPC) is a tool that is used for finding out if a product or a service is indeed arranged according to the customer's values and needs. The Value Proposition Canvas was developed by Dr. Alexander Osterwalder and published in 2008. It works as a framework to confirm there is a fit between a product and its market. VPCs may be used for refining an existing product or service, or for developing a new product or service from scratch.

In this study, a VPC was created to validate the idea of a service concept presented in the Multilevel Service Design model. The initial idea was, that the service concept of the commissioner consists of the benefits their product and service offer (and are expected to offer), as well as the information that is created in the customer and partner network. A Value Proposition Canvas was used to complement the results of value mapping. The mechanics of how value is perceived was described in 6.2, and the identified elements of value were presented in 7.3.3.

A Value Proposition Canvas is formed around two parts: customer profile and the product or service provider's value proposition. Customer profile includes a) gains, b) pains and c) customer jobs. Gains are considered to be benefits the customer expects or even needs, things that are likely to increase the probability of the customer accepting the value offer. Pains are the negative experiences and emotions the customer goes through in the process or acquiring or using the product or service. Customer jobs are the tasks customers are trying to accomplish, the needs they wish to satisfy and the problems they wish to solve. (Pereira, 2021)

A value map of a product or service provider includes a) gain creators, b) pain relievers and c) the actual products and services. Gain creators explain how the product or service creates advantages for the customer. Pain relievers give a description of how the product/service eases out customer pains. Products and services of a company are the answer to creating gain and relieving pain. (Pereira, 2021)

In the figure the service provider's value proposition is presented on far left under "Products & Services" and it aims at fulfilling the needs of the customer – presented on the far right under "Job-To-Be-Done".

The basis of this figure was the Customer Journey Map, where pains, gains and jobs-to-be-done were expressed (listed on the right). Possible pain relievers, gain creators and products and services (shown on the left) were expressed in customer interviews and in discussions with the commissioner.
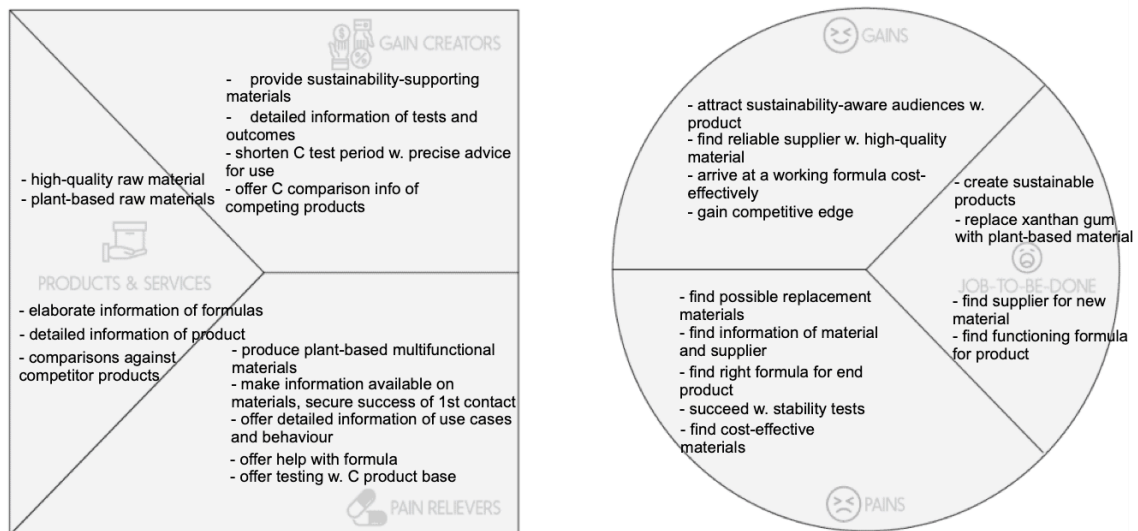
Figure 18. Value Proposition Canvas (cccording to Pereira's model, 2021).

According to the VPC, customer needs consist of being able to meet their consumers' expectations of sustainable products, finding reliable suppliers for plant-based raw materials and doing cost-effective product development.

At the other end, customer needs are met with tangible products and beyond-the-expectations service. The value Origin by Ocean offers their customers consists of being able to deliver a high-quality product as well as comprehensive information on its features and uses. The true value of the service concept culminates on business intelligence: The commissioner offers access to data that their customers can refine into a competitive edge by speeding up their own development processes.

7.4 Ideation and Prototyping with the Service Experience Blueprint

Ideation followed the description phase: The view was to be broadened by ranking critical features as well as defining alternative channels and ways of operating for customers with different needs. The principal aim was to find touchpoints where

automation and self-service might be increased or time consuming person-to-person interaction decreased.

At this point, the commissioner had reviewed the Customer Journey Map where the possible phases of interaction that involved real-time face-to-face (or virtual) meetings had been substituted with digital interaction channels. The commissioner commented on the map and gave further comments on the process, needed actions and important values.

The re-drawn Customer Journey Map served as a prototype of the new, more digital service process. It was presented to the interviewed customers online in Miro, to test how the customers would receive the development ideas. Three persons gave their comments on the map, which were then transferred to the Service Experience Blueprint.

According to Patricio et al. (2011, 185-194), a Service Experience Blueprint (SEB) is an illustration of all actions of all participants at all phases and all touchpoints of a service encounter. It demonstrates who does what, when and at which point, as well as makes it easier to point out the possible uncertainties and barriers that keep the customer from moving onward along the service process (Richardson, 2010).

A few major touchpoints already stood out from the first SEB draft, such as

- satisfying customer needs about getting very detailed information early on (data-channel-system dependent)

- providing high-quality samples of a bio-based raw material (product-based), and

- offering application laboratory services, that is, testing against competitors' products (service-bound).

Some of these touchpoints were already under development, such as producing a separate web page with a technical specification and use cases for alginate. Also, in order to increase trust and advance the chance of customers opening links sent to their email, a smaller adjustment was under way: The Alchemy logo would be replaced with the Origin by Ocean logo, thus letting customers better associate the database directly with their business partner.

Regarding productisation of alginate, some improvement measures were already planned. Tangible features were under development, such as refining and standardising the purity of product and transforming it from gel form into a powder and thus better meeting customer quality expectations, as well as offering the product in a consistent form.

The Service Experience Blueprint draft was finished in minute detail and all points of development possibilities were marked on the chart (Appendix 3). Questions, suggestions and notes from the commissioner and customers were included as well, and these will be discussed in chapter 8.4, "Development Ideas".

8 Results

The goals of this study were to 1) support the commissioner's business development by streamlining their digital service system by increasing the use of digital channels, and 2) create a workflow description that would minimise man-hours of technical support in the customer interaction process. The finalised Service Experience Blueprint showed that, at least in theory, all other phases of the process could be digitalised, apart from the actual laboratory tests and sending the physical supplier's product or customer's product base as a postal package. Face-to-face meetings at sales visits and exhibition stands may naturally also be transferred to digital channels, as the pandemic era of 2020-2021 proved.

While customers did appreciate their access to data and information, they also valued access to knowledge, in other words, human interaction. Therefore, at least some person-to-person contacts should remain, at the minimum as phone calls, if not anything else.

The research questions were defined as follows:

1. How can a digital service system best serve the commissionerand their customers?

2. What kind of elements can be digitalised in this service process?

3. How can co-development be utilised in sharing data?

Results of the study and answers to the abovementioned questions will be explained in the following sub-sections. Suggestions for developing the service system and open questions will be dealt with in chapter 8.4, "Development Ideas".

8.1 How Can a Digital Service System Best Serve the Commissioner and Their Customers?

Digitalising all possible phases and contents initially requires massive specifications concerning the needed data items, as well as their combinations, use rules and threshold indicators. Later on, purified, compatible data would be easier to work with and easier to integrate into other systems. Some modes of communication, although digital in form (meetings, emails), would necessarily remain labour-heavy, as they required responses from a human being.

The components of the commissioner's service process are pictured below. Elements marked with red colour show the parts that cannot be digitalised or omitted.
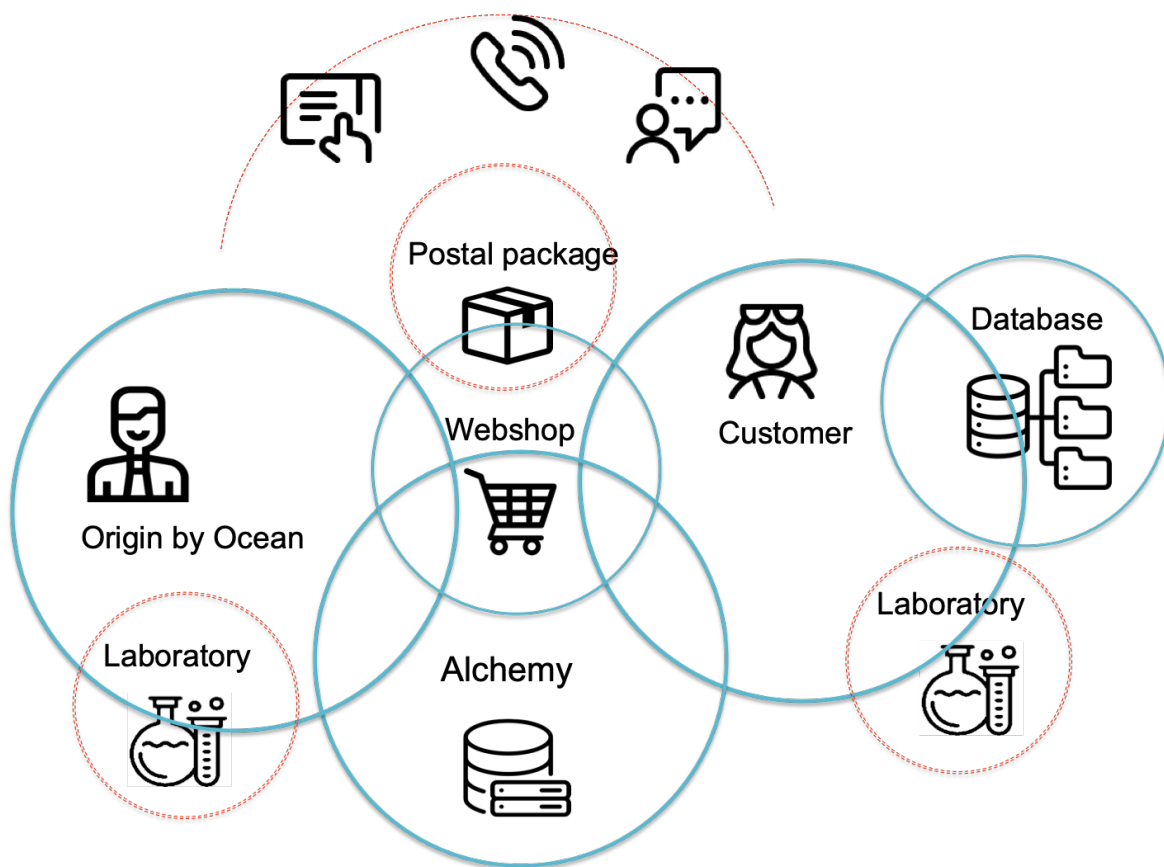
Figure 19. Components of the service process.

The service offering of the commissioner was outlined through the Multilevel Service Design model. Firstly, the service concept was defined by producing a Customer Service Map (CJM) and a Value Proposition Canvas (VPC). From the CJM it became evident, that customers valued receiving detailed information, high-quality products and beyond-the-expectations service. The VPC was used to complement these findings. Value of commissioner's service concept was considered to culminate in their business intelligence solution that lets customers mine data for their development needs.

Secondly, the usage of the service system was examined. The commissioner's system was a mixture of digital and analogue channels, the predominant touchpoints landing in analogue channels. The commissioner wanted to significantly increase the role of digital channels by transferring communication to their website and to their data mining and data storing platform Alchemy.

The role of commissioner's website proved to be crucial in the pre-purchase phases of the interaction process. Customers stated, that a visually pleasing, informative and easy-to-use website was very important for initiating the first contact. A simple list of raw materials for sale was not considered to be enough, but the website should give information about the products, their classification, safety and technical features, as well as about their positive qualities and even possible downsides. A general description of benefits and use cases, perhaps even a background story, might be more likely to entice an inquiry for additional information, than scanty facts. Being able to give an estimate of the price range and delivery volumes were also important details in order to be considered an alternative supplier.

Customers suggested separate subpages for each single product, downloadable technical data sheets of them and even results of the commissioner's products being tested against their competitors' products.

Attention should also be paid to the "pre-website" behaviour of customers. Therefore, the website content needs to be optimised with relevant search terms and phrases for the customer to find the website in the first place. This calls for benchmarking, exhaustive listing of search phrases and testing of effective combinations, which could be outsourced to an expert organisation.

Integrations to other systems increase the volume of digital services. In the future, a webshop will support self-service and help collect data of customers and their preferences. Uploading data from and downloading it to customer data warehouses requires the data to be pure and compatible – classifications and combinations need to match both their origin and destination. Again, this calls for a separate development project, perhaps with an outsourced partner.

Both the commissioner and their customers mentioned email as a practical method of communication. The commissioner mostly wanted to use it in a unidirectional way, as means of triggering actions – sending automated messages and responses to customer inquiries. The customers, however, preferred to engage in conversation or get answers to their inquiries via email. To some extent it appeared to be a learned pattern and a matter of convenience, rather than a strict requirement.

The role of Alchemy will be discussed in detail under the second research question.

The third level of Multilevel Service Design model to be examined was the service encounter experience. The aim was to find out how to replace a maximum amount of man-hours in technical support with automation and "self-service" in Alchemy.

The visualisation of the service encounter presented a continuum of goals, actions, touchpoints and notes. Notes included actions to be taken and questions to be answered, and these will be presented in more detail in chapter 8.4, Development Ideas. As a result, it was clear, that all other phases of the interaction process could be directed to digital channels, apart from running laboratory tests and sending the raw material (or customer's product base) in the mail. However, this is a theoretical arrangement and leaves a few question marks in the air: What kind of incentives might make the customers want to give their data to the supplier? How could customers be guided away from sending email and into using Alchemy in stead?

Good customer experience was defined as a useful, usable and enjoyable service. To improve the experience by matching service with customer expectations and needs would therefore require 1) delivering value through the service, 2) making that service easy to engage with, and 3) presenting it as emotionally appealing. In this respect, value and service were the key concepts to examine.

In connection with defining the elements of value it was stated that nothing makes up for poor quality in a product. However, during the research it was discovered, that the stress of importance shifts from one component of value to another during the process. In the pre-purchase phases (awareness, consideration) what was crucial for the customer was being provided with information, while later on, customers were more concerned with the purity and behaviour of the raw material, that is, physical attributes of the product. Further on, negotiations about price and availability became the primary interest.

On one hand, customers stressed the importance of the quality and amount of data, as well as the high quality and availability of the raw material itself. On the other hand, they valued service but used the term very broadly. "Service", for them, covered the delivery of raw material, providing data, transforming data into information, combining information with acquired knowledge and applying that knowledge in joint ventures to create new products either *for* or *with* customers. Above all, the commissioner running tests at their own expense – combining alginate with their customer's product base or replacing another raw material in the product formula – was considered a particularly valuable service form. Close contact with the commissioner's representatives provided a sense of emotional security and at the same time made the service easy to use, as help was always available.

The majority of comments, ideas and wishes given in the Service Experience Blueprint were connected particularly to the early stages of the interaction process, implying that attention and resources should be allocated to the beginning of the process. Being able to offer large amounts of highly detailed and deeply analysed information was a key component of value for customers. By meeting this demand the commissioner can profile themselves as a serious, trustworthy supplier of high-quality products and, most importantly, ignite the producers' interest in the first place; be included in the consideration group and get selected for a supplier of a sample.

Generating revenue out of the alginate business requires succeeding in every pre-purchase phase from presenting information to serving well and delivering the wanted material. It also requires being able to support re-orders: Having standard, high-quality material available at a reasonable price, in convenient form and in useful package sizes.

8.2   What Kind of Elements Can Be Digitalised in This Service Process?

The aim of the study was to develop the digital service system by increasing the level of self-service in the interaction process with customers. Enhancing the customers' possibilities of using self-service was seen as a way of transferring efforts away from time-consuming person-to-person consultancy.

It has already been stated before, that all other phases of the process but laboratory tests and sending parcels could, in theory, be digitalised by directing customers towards using the company website, email or Alchemy. Customers said they would appreciate a more informative website that presented detailed information about different products. They also noted, that emails and telephone calls are still very functional means of communication, and should not be totally omitted. Furthermore, they suggested a chat channel to be added to the website for quick inquiries and check-ups.

A dominant piece of the commissioner's digital service system is going to be Alchemy, a platform that stores and combines customer data and information about inquiries, sent samples, completed purchases, used recipes and received feedbacks. It also contains the commissioner's own base and test data, making it possible for verified users to view the results of individual tests. In Alchemy users may see, comment or edit data, depending on their access rights. Ready-to-use summaries can be built for example of how a raw material behaves, how an end product behaves and how any behaviour changes when components or concentrations change.

Technical data sheets may be available for anyone on the website and only present anonymous cases, while Alchemy contains the data of individual customers and only these customers are allowed to view that data. Customers themselves considered the opportunity for data mining very valuable. They ranked having access to "a data vault" as one of the best motivators to use Alchemy and one of the most valued elements of doing business with the commissioner. On a more concrete level they appreciated direct links to meaningful records or summaries, simply for easiness of use: There was no need to remember login credentials or passwords.

The collecting, analysing and synthesising data requires not only good-quality data, but also effective handling processes and clear-cut rules for managing data. The

uninterrupted flow of data from one programme or system to another requires well-defined units, integrations and priorities: What is gathered? What is shared? In what form does it need to be? Who owns the data?

In Alchemy data is stored and combined as single units, tables, figures and records. Owner of data, the commissioner, may grant access to it and define the appropriate level of access. This would allow them to valuate data and information in a more detailed manner: Having maximum-wide access would require a deep co-development relationship and mutual contributions to the database from the customer. By contrast, having limited user rights might feed the customer's curiosity and serve as an incentive for them to aim at a higher level of sharing. A webshop will be integrated to Alchemy and the financial administration system, to make customers stay on the digital path that the commissioner may follow.

One of the interviewees posed a question concerning the concrete usage of Alchemy: Do all customers know how to use Alchemy effectively? A platform such as Alchemy needs to be intuitive and easy-to-use, otherwise users may settle for inadequate information, or become frustrated enough to simply leave the service. It is therefore worth ensuring, that users have easy access to instructions, training or a helpdesk. Currently help is available from Alchemy's Knowledge Centre, in the form of How-To instructions. All users may contact their Customer Success Manager, who will help them, give additional training or answer any questions. All of these, however, require making an extra effort, and do not compensate for an intuitive system.

8.3 How Can Co-development Be Utilised in Sharing Data?

If it is accepted that value creation is the result of an interactive process, in which a resource (such as a service) is being consumed by a customer, it is therefore accepted that customers are co-creators of value. When discussing the attributes of stakeholder value creation (in chapter 7.2.3, "Stakeholder Map") it was suggested that joint interests, trust and the ability to collaborate are needed, in order to successfully bring stakeholder interests together.

It is therefore important to find the incentives for co-development and define the roles, goals, limitations and ownership issues in mutual ventures. The commissioner's

incentives largely lie in accumulating their knowledge of alginate use through customer cases. Similarly, customers aspire to advance their own product development by learning from others – through access to the commissioner's database and knowledge. Testing and experimenting together strengthens mutual trust and helps both parties in moving from mere data sharing towards knowledge sharing.

Some of the customers wanted to emphasise the importance of the commissioner agreeing to work with their customer's product base. Origin by Ocean offers their customers and co-development partners an exclusive service where they run tests with alginate and a particular product base, in order to find the best-suited solution for the end product. This method, "application laboratory", is only offered by very few suppliers, as it is time-consuming and costly. It was estimated that only one out of ten suppliers offered this kind of service.

For their application lab operations the commissioner needs the recipe of the customer's product base. They then run tests in their own lab and report back to the customer, eventually arriving at a working formula that can be produced by the customer, as well. However, this only happens in collaboration networks, between partners that trust each other. Conservative companies prefer to keep their business secrets to themselves. In these cases the supplier more or less has to guess the recipe and proceed with a trial and error method, asking for affirmations or additional information per telephone, email or virtual meetings. This prolongs the formula-finding process and thereby also the customer's product development process.

Within the bioeconomy business there has long been an identified need for support centres. These test sites could advance the cooperation between biorefineries by offering them piloting facilities and information for instance on markets, research, funding and regulation. (Lange et al., 2016, 200.) Furthermore, such testing facilities could be used for customer work, as well: More effective results could be generated in networks than when a single company worked with a single customer.

Quite like willingness to share information, the stage and speed of digitalisation varies considerably between organisations. Although some are comfortable with working in a fully digital environment, others still hesitate and rely on more conservative measures, for example face-to-face meetings and printed documents. Additionally, the entire

working culture may be unidirectional: Customers are not used to reporting to their suppliers, which means that lack of feedback affects product development of both parties. Lack of feedback might originate from the customer being either very or at least tolerably content with the product, or being displeased but reluctant to do anything about it.

Supporting re-order of same raw material or advancing cross-buying, in other words acquiring other raw materials from the same supplier, requires successful actions on many fronts. Regular and timely check-ups on customer actions might be of help, as large companies have a wide spectrum of development projects on-going all the time and order dozens of raw materials on a weekly basis for their tests. Some of the samples may simply end up lying around in the warehouse, waiting for their turn in the laboratory. No contact from the customer or their lack of feedback is therefore not necessarily a sign of disappointment, but often merely a matter of prioritising projects.

Creating a system that rewards customers for giving feedback is therefore of great importance. It could eventually be executed as an automated part of the digital service process.

8.4 Development Ideas

The commissioner's service offering for their customers covers the delivering of information, products and human interaction, all of which fit under the broad interpretation of a "service process".

Improvements to the process were suggested both by the commissioner themselves and their customers. They are recorded in the final Service Experience Blueprint, under title "Modify process / N.B." (Appendix 3). An example of the modification needs or open questions is below. Green comments are needs or plans, yellow ones are questions yet to be solved.
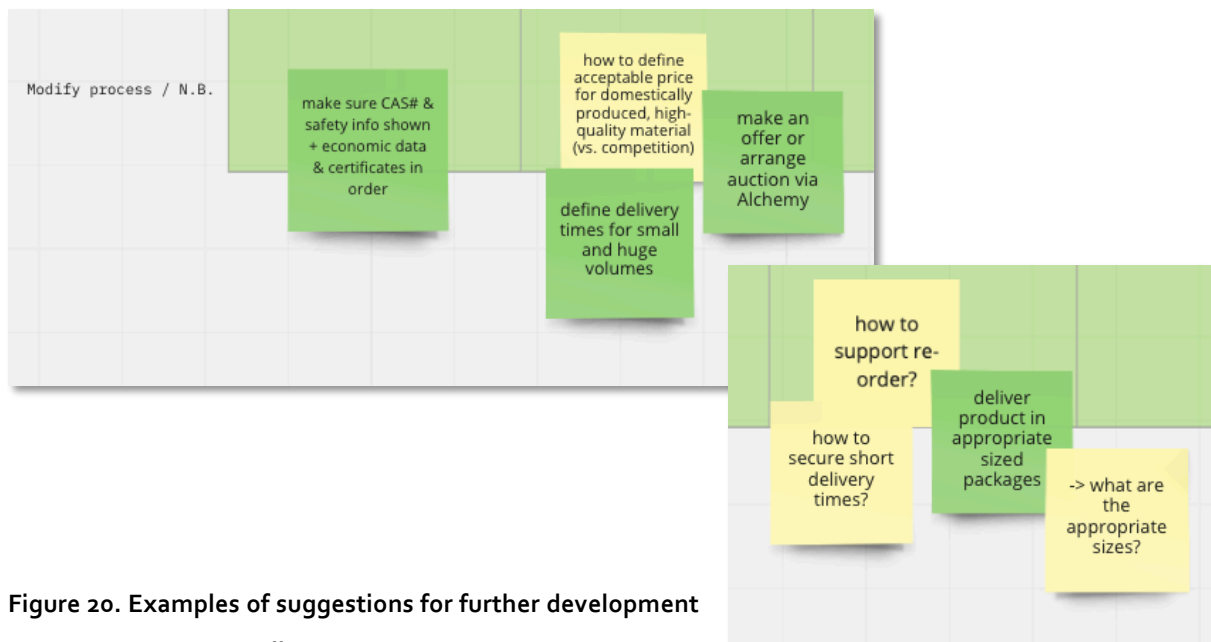
Figure 20. Examples of suggestions for further development measures. (See Appendix 3)

In order to be included in the consideration group of suppliers, the commissioner needs to consider several issues, ranging from the first contact to ensuring a re-order. In the following, development ideas for future use are presented. The possible execution of ideas naturally need to be prioritised, as executing them all at once would be neither possible nor sensible. Furthermore, the outcomes of the eventually executed development ideas should be tested and assessed, before taking up new projects.

Future starting point: Awareness precedes actions. Could for example direct marketing, search engine marketing, public relations or word-of-mouth marketing through social media channels be used to reach prospects already before the current first phase of the service process?

Website: Deliver an easy-on-the-eye website that contains thorough information on products and services. Define key search terms or phrases and optimise webpages accordingly, in order to appear in the desired web search results. Consult product development, purchasing professionals, customers and other stakeholders and check competitor webpages about the suitable search terms. Outsource website building and optimisation to adequate expert organisations.

Data items: Define the data to be collected and their classification concerning for instance product, sample, recipe and customer. Find out also the needed form of

outgoing data. Define use cases and data needed for each. Define access rights per company and per user. Outsource data cleaning and possible integrations to an expert organisation/a consultant.

ECHA: CAS number is the chemical identification number for any raw material, and www.echa.europa.eu is a search engine that includes all chemical suppliers in Europe. Ensure that products are listed in the ECHA, and that the CAS numbers for products listed in the ECHA portal are mentioned on the website.

Branding: The CAS number and the chemical name of a material are yet not enough to create a distinctive product, but a trade name or a marketing name is needed. The commissioner is considering moving from basic "alginate" to "Nauvu", and thus evoking the image of the Finnish archipelago as the origin of their renewable raw material. A marketing name is one way of adding tangibility to the product and getting noticed.

Sustainability: Include the environmental aspects of operations, such as domestic production, low carbon print, renewable materials and their contribution in the process of customers applying (and receiving) labels of approval for their environmentally friendly end products. All-natural, phosphate-free raw materials are of interest particularly in food production, but also in the production of pharmaceuticals and cosmetics.

Downloads: Define the needed detail level for the downloadable specification, that is, the technical and behavioural data of the product. If necessary, copy details of customers' or competitors' specifications for own specifications, and produce and present specification sheets accordingly on the website.

Once the service process has been initiated and the business relationship is established, the customer's attention shifts to the product, the entire service system and the quality and nature of service.

Alchemy: Make sure customers know what Alchemy is and how it is used effectively. Ensure it is intuitive and informative to use, offer training, video tutorials or other instructions, perhaps even access to a helpdesk. Scale access to assistance according to profitability or importance – best customers get more help or quicker service.

When customers download a technical data sheet from the website, they receive a link with access to Alchemy. Occasionally that link remains unopened, due to the customer obeying strict company information security instructions, having insufficient skills in handling digital information, or out of sheer oblivion. In order to tackle this, Alchemy could be used – and to some extent is already being used – for timing reminders. An email should be generated at regular intervals, containing a short message that both gives an incentive to open the link and reassures of its safe usage. Additionally, the Alchemy logo in the link is to be replaced with Origin by Ocean's logo, creating an association with a more familiar, and therefore also safer, operator.

Webshop: Build a webshop and integrate it to Alchemy. Define the information and assistance that are needed for finding the right raw material, placing and delivering an order, collecting and giving feedback, as well as supporting marketing and re-orders.

Return box: Include a paid postal return package with every sample or product order: Customers may send their product base to the supplier for analysis of failure reasons and for finding solution suggestions, but only reciprocally: Require providing the product recipe in Alchemy (See "Application laboratory" below).

Reciprocity: Create an incentive for companies to share their own insights and test data between Alchemy users. Define the owners of data and results of co-development. Pay attention to needed level of confidentiality in giving away information. What do customers give in return? Make customer contributions a requirement for access to data, for example by marketing an upgrade of user rights.

Feedback: Make giving feedback an automated part of the digital process and create an incentive for it. For giving feedback customers might acquire themselves a future benefit, for example a discount, advanced technical support or access to a recipe vault or other additional data.

Lack of feedback could be minimised in Alchemy by scheduling automated points of contacting the customer; either sending a reminder of arrived goods or sending additional info. Reminders could be formed into advice and tips about the newest test results, recipes, common success or failure factors with alginate, and news about alginate or the biorefinery business. A reminder could be directed to the supplier

themselves, as well, encouraging them into giving the customer a call or undertaking some other manual procedure. The goal is to shorten the time needed for customer laboratory tests by eliminating as many mistakes as possible in advance. Offering business field-specific use case information for the customer also reduces the need for resorting to technical support personnel's advice over the telephone.

When messages are sent to customers, they should serve a purpose. Reminders obviously are intended to remind the customer of the existence of the commissioner and their product, but at the same time they serve as enticers. In case a sample has been forgotten about, it is in both parties' interest to initiate its stability tests in the customer lab. The natural points for sending reminders would be after the first contact with a prospect, after the customer has received their sample, during the customer's three-month-long stability tests and after the purchase, as an act of aftermarketing or cross-selling when introducing some other sustainable raw material.

Currently the commissioner's feedback form is of the "all-or-nothing" model, namely answers are not registered unless one fills in every box and ends the survey by sending it. Unambiguous questions with ready-made answer alternatives or an assessment scale to choose from might entice the customer to even write additional information in the free text boxes.

Contact and help: Offer customers the option of doing business with an expert instead of digital channels, but give it a price. Helpdesk and application laboratory services could be included in a service package of a certain level. Alternatives to digital channels could be exclusive: Offer only one labour-heavy mode of contact per package and price additional modules of help or consultancy separately.

Optimise delivery: Define the two-to-three best-suited packaging sizes that customers prefer for the product, in order to be able to standardise production and pricing. Aim at short delivery times to maintain competitive edge over other European suppliers – use detailed and timely information, intuitive and automated order processes. Develop supplier relationships to minimise supply chain length. Connect raw material suppliers, sidestream producers and other co-operation partners to Alchemy, to ensure uninterrupted, multi-directional data flow.

Productisation: Developing well-defined components that may be combined in different ways is in the essence of service productisation. Turn intangibles into tangibles: Give all products names, background stories and designed packages, use a standardised service workflow or define the modules that make up an entity that has a price. Aim at offering at least two different price levels. Create expectations with marketing materials and meet the expectations with precision and high quality.

As it stands, the commissioner's customers and co-development partners are from very different fields of businesses with their specific requirements and expectations. Acquiring several customers within the same business line could substantially help in moving from tailored workflows towards more standardised procedures and products.

Application laboratory: The application laboratory services are a very valuable addition to the commissioner's service offering for their prospects and customers. To make it less time and labour consuming, and to eliminate guesswork the commissioner could only offer this service for producers that provide a recipe for their product base. A softer method for nudging the customer into giving their recipe would be communicating the advantages of the commissioner testing with the recipe. They might be able to prove how much faster a product development process would be, if the recipe for the product base – or a sample of the actual product base – was included.

Communicating application laboratory services as an independent module of their service offering and by putting a price on it, the commissioner could turn this exceptional competitive advantage into an income source in the future.

The abovementioned development ideas cover the commissioner–customer interaction process from awareness to repeat purchases. The least amount of ideas or questions concerned the analogue use phases where raw material or product base is being shipped, or where the customer or the commissioner is running their laboratory tests. When a refined idea is put into practice, its performance should be measured and assessed before taking up the next development venture, so that the effects could be traced down to the right measures.

9 Discussion and Summary

Part of the inspiration for this thesis came from the researcher's professional background in marketing, customer service and business development. The idea of enhancing a service model to better meet the needs and expectations of customers was already familiar and felt like an exciting challenge. On the other hand it was the commissioner's business idea and the philosophy behind it that was appealing. Creating sustainable business out of renewable materials and hence contributing to improvements in the state of the Baltic Sea felt like an important issue and complied with the researcher's own values.

An additional reason to proceed with the chosen company in the chosen business was the ambition to combine several different doctrines and use "harder" sciences to complement the "softer" ones. This was done by adding biology, chemistry and data processing to the framework of service design and marketing.

The aim of this work was to improve the commissioner's competitive edge by using service design methods to develop the existing service system. The desired end product was a description of their service process, streamlined in a way that the usage of self-service and automation in digital channels would decrease the need for time-consuming operations, such as lengthy phone calls and email threads, as well personal assistance regarding technical support.

The aim was investigated through three research questions:

- How can a digital service system best serve the commissioner and their customers?

- What kind of elements can be digitalised in the service process?

- How can co-development be utilised in sharing data?

The aim was met with a Service Experience Blueprint that presented a new process continuum with suggestions for further development.

Research was done by reviewing background literature and by applying service design. A central method in this research was interviewing various stakeholders: the

commissioner, their customers and suppliers, as well as representatives of totally different fields of business. This was done to gain a view as broad as possible, and hence be able to assess the importance of various values that affect customers' interest towards a supplier and their service.

Interviews served both as the basis for building a common understanding and as the source for development ideas. Commenting and giving further development suggestions were done on digital platforms (Miro), in emails and phone discussions.

The results of the study showed that, on one hand, the amount and accessibility of information, and, on the other hand, the reciprocity of information sharing were of crucial importance in utilising the digital service system.

Customers regarded service-mindedness, know-how and information sharing in general as the most important factors of the co-operation process, the form and the channels of the process being of less importance. Access to information should be easy and deep, and include even comparative information of other ventures and/or with other partners.

This was reflected in the comments to the enhanced Service Experience Blueprint, where the early stages of the interaction process received the most mentions and suggestions. It is fundamentally important for the commissioner to pay attention to this, particularly when they are trying to attract new customers and be included in their consideration group. In order to be able to continue their new or existing relationship with a customer, the commissioner needs to ensure they have adequate supplies of high-quality raw materials and are willing to apply their know-how for the favour of their customers.

The commissioner stressed the importance of directing operations to digital channels, and this was shown to be possible in nearly all phases of the process. Commissioner and customer data is stored in the Alchemy platform and processed into digital information. Customers welcomed the possibility for data mining in Alchemy, but expected the system to be easy to use. The other form of co-operation the customers valued highly was having access to application laboratory services.

The commissioner faces two challenges trying to meet these needs: 1) Finding the incentives for customers to make their own contributions to the Alchemy data vault, and

2) limiting the time-consuming application laboratory services to the most profitable cases.

The idea of productisation might offer the needed solution. Designing service modules that can be bundled together into service packages creates leeway for cascading prices, and the possibility of prioritising access and attention. For example, a customer that contributes with an X amount of feedback or own data, or shares the costs for application lab testing could be granted with access to Y level of information.

The development ideas that came up were derived from the Service Experience Blueprint. Comments from customers and the commissioner were refined into suggestions by the researcher. The development suggestions varied from investing in increasing awareness and enhancing the contents of company website to making Alchemy inviting to use, digitising service process steps and using productisation as means of profitable pricing.

Touchpoints that could be entirely automated include sending the physical product per post or messages triggered by actions in Alchemy. Points of self-service include downloading technical data sheets, filling in forms and queries in Alchemy and using the webshop.

9.1 Evaluation

Introductory material about the biorefinery business was freely available, and the elements in the frame of reference were broad enough to find material of. Within the theoretical background the concept of value posed a challenge with its many dimensions, and "co-development" turned out to be a surprisingly unpopular term in the source literature.

Research questions did evolve during the study, as the initial questions proved to be too broad to be answered in a Master's thesis. The need to set limitations to the scope of the study was a challenge throughout the work. For example, the chosen Multilevel Service Design model was far too extensive an approach for this study, as it required the analysis of three different levels of the service offering.

The study process proceeded straightforwardly during the phases of forming the theoretical background and defining the methods and tools to be used. The ideation and prototyping phases, however, proved to be more challenging. The commissioner's views were readily available, but other informants, namely prospects and customers, were so few that it somewhat restricted the use of methods. Furthermore, the dominant pandemic situation prevented having live meetings or using any kind of observation as a method.

Instead of quantitative research this study applied qualitative methods. Small samples and modified research methods affected the validity of the study. In order to arrive at a standardised information sharing process that would be applicable in old and new ventures alike, or independent from the customer's field of business, far more proof of their preferred ways of working would be needed. Additionally, methods such as voting and surveys require large numbers of respondents. Therefore, the conclusions are not of general applicability, but customer-dependent and commissioner-specific.

It was identified that value is often "use value". When value is formed through using *both* a product and a service, it is difficult to separate one from the other: Alginate alone does not boost customers' business and nor does plain data, however excessively they would be available. Putting a price tag on the worth of something is tricky, as price may contain several different elements of value, for instance reduced effort, risk, development time and labour costs, or increased knowledge, income and usability.

In this sense, separating the physical product from the development service might be of help. A standardised form, size and price of an alginate unit sold could be defined and negotiated, if needed. Similarly, the price for any sold units of knowhow services – high level of access to data, application lab testing, workshops, technical support or helpdesk – could be defined and negotiated. The possibilities for marketing and up-selling would be expanded, as bundling of service packages and pricing them wisely but attractively became easier.

The customer's appreciations regarding use value shifted from one component to another during the interaction process. Consequently, marketing of alginate, information and application services could be optimised by stressing the corresponding benefits. Having easy access to advanced data and information, making cost savings in

product development or gaining competitive edge by being able to offer consumers a unique product are all values well worth advertising.

9.2 Suggestions for Further Research

The scope of this study was limited to the examination of the service system and on finding touchpoints that would decrease man-hours in technical support. The development of digital touchpoints, however, remained on a superficial level, as none of the concrete development suggestions could be implemented during the research and consequently no actual user experiences were gathered of them. Therefore, it would be both interesting and useful to follow, how well any of these suggestions worked, if put into practice.

From the marketing perspective an intriguing case study would involve measuring the effects of customer experience on business value. How do marketing expenses affect the level of awareness or company turnover? How many contacts more could the commissioner establish through their investments in automated emails with use case tips? Is high customer satisfaction a sign of high revenue? Does system development affect profitability positively, negatively or not at all? Answering these questions would call for a comparative study, where the KPI's were defined and the process was illustrated in detail. Moreover, the undertaken development actions, that is, changes, would be described and implemented, and performance re-measured.

Likewise, productisation of commissioner's service could be further examined by developing diverse service packages and measuring their performance against each other. Which are the elements that can or cannot be left out, what is missing and what is the right price for each package? As the concept of "service" in this study carried a rather broad meaning for the customers, it remained ambiguous, what sort of service customers were referring to, when they assessed the value of received service. In a deeper investigation it should be clearly defined what is meant with service – a human being applying their knowledge on solving a problem or a company granting access to data?

A research project engaging co-development partners that are in some way similar or comparable with one another might help in driving service productisation forward. For

example, customers from only one field of business or only companies of a certain size would be more likely to share the same type of backgrounds, processes and aspirations. This kind of study was perhaps better capable of finding out how much the product development process could be speeded up, if the same amount of data, information and knowledge were shared unidirectionally, bilaterally or to a maximum degree. This would, however, call for a large sample of carefully selected collaboration partners willing to trust each other, and therefore, too, be beyond the scope of a Master's degree thesis.

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List of Figures

List of Tables

Appendices

Appendix 1. Internal Service Blueprint

INTERNAL SERVICE BLUEPRINT

C = Customer
ObO = Supplier
A = Alchemy

	Selection & Planning			Purchase					Use / test						Feedback & repeat business		
Customer goal	find best alternative to match needs	buy from ObO	place order for sample						do product development w. sample		report a problem				advance own product development		advance own product development
Customer action	1st contact: request specified info	study information of product & usage	select & order sample		receive confirmation of order	receive product		use/test product		receive tips for product development	receive new sample	receive new suggestion for formula	test development ideas		re-order
Current service system/ touchpoint	email/phone call	technical specification	email/phone call		postal package	email	postal package	customer laboratory	email		email	postal package	email			
Supplier action	provide technical specification	provide alternatives	store C order data in A		select, pack & ship product	generate & send confirmation of order & delivery schedule				check situation w. C every 3 weeks	send tips for formula	send new sample			
Supplier goal	receive info of C needs	assist C in choosing right product	gather C data		satisfy C needs	satisfy C needs			C engagement, reduce need for technical support						

Future C action or touchpoint, OR supplier action or goal:

		enter Alchemy	fill in background info of intended usage & timetable	pay for selected sample(s)		email from webshop			form in A		fill in feedback form	contribute to database for future needs	specification form in A
specification form in A	alchemy.cloud	order form in A	webshop integrated w. A				send link to hidden blog ie. tips/ or email with secured attachment	serve solution suggestions		feedback form in A	feedback form in A	how to support re-order?
	provide access to A	provide order form	receive payment		provide instructions for use	help C succeed, create engagement	help C succeed, create engagement		ask for feedback	receive feedback form, store data in A		
		provide C a platform for placing an order	generate revenue						gather user data	customer incentive?		
									incentive?! Access to technical support experts? Access to further recipies?			

Appendix 2. Customer Journey Map

CUSTOMER JOURNEY: PRODUCT DEVELOPMENT

	Seeking information				Testing							Decision making		
Customer goal	satisfy consumer needs by acquiring the Nordic Swan label	find a renewable bio-based raw material	find info					do product development w. sample	receive help w. formula or function		receive help w. formula or function	find bio-based replacement for xanthan gum		
Customer action	product development (PD) searches info on advantages & use cases of raw material	request additional info of features & advantages	receive technical data	assess pros & cons	decide on using new raw material	(procurement requests a sample)	receive raw material	run stablity tests	inform supplier of a problem w. feature or outcome	send supplier produt base for supplier tests	receive info of supplier tests, make changes to process	choose best alternative of tested materials	inform procurement of approval	add alginate to list of raw materials
Service system/ touchpoint	www	email	email		email		postal package	laboratory	email/ phone	postal package	email	laboratory	email	customer database
Customer experience 😃🙂😐☹️😣	curious	interested	interested	reflective	relieved	expectant	expectant	curious	stressed	excited	excited	satisfied	satisfied	delighted
Note!	must have an appealing website	a list of ingredients not enough / meet requirements w. detailed info of attributes	general description of benefits & use cases	must have particular attribute, e.g. water softening / advantage: info of testing against competing materials			check on customer: remind of sample	assess & note material: appearance, PH, solubility, density, impurities, weight, consumption, package size / search additional info online, refine recipe		supplier offers to test in own lab with product base		apply & acquire the Nordic Swan label		

Appendix 3. Service Experience Blueprint
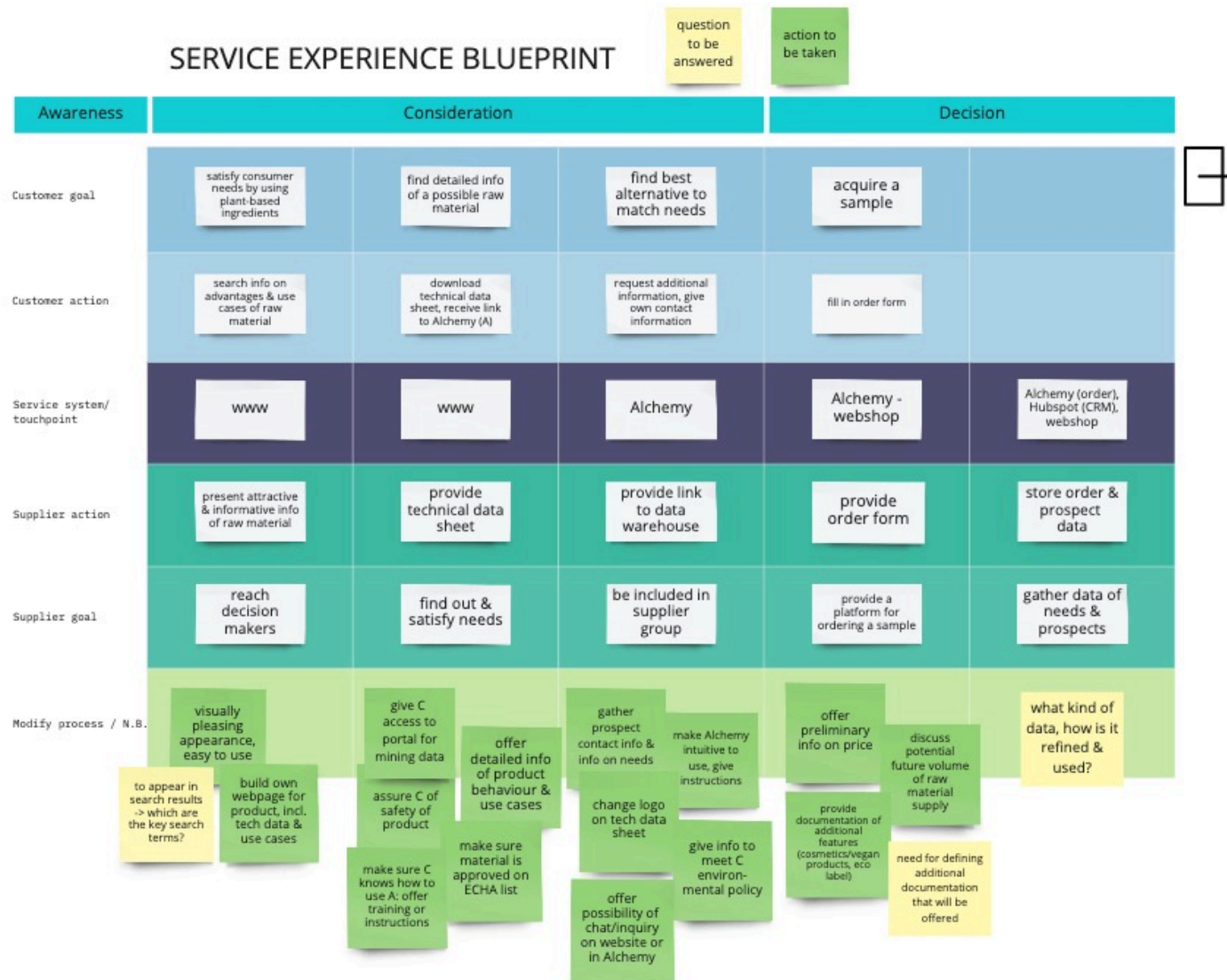
SERVICE EXPERIENCE BLUEPRINT

question to be answered

action to be taken

	Awareness	Consideration			Decision	
Customer goal	satisfy consumer needs by using plant-based ingredients	find detailed info of a possible raw material	find best alternative to match needs	acquire a sample		
Customer action	search info on advantages & use cases of raw material	download technical data sheet, receive link to Alchemy (A)	request additional information, give own contact information	fill in order form		
Service system/ touchpoint	www	www	Alchemy	Alchemy - webshop	Alchemy (order), Hubspot (CRM), webshop	
Supplier action	present attractive & informative info of raw material	provide technical data sheet	provide link to data warehouse	provide order form	store order & prospect data	
Supplier goal	reach decision makers	find out & satisfy needs	be included in supplier group	provide a platform for ordering a sample	gather data of needs & prospects	
Modify process / N.B.	visually pleasing appearance, easy to use; to appear in search results -> which are the key search terms?; build own webpage for product, incl. tech data & use cases	give C access to portal for mining data; offer detailed info of product behaviour & use cases; assure C of safety of product; make sure C knows how to use A: offer training or instructions; make sure material is approved on ECHA list	gather prospect contact info & info on needs; change logo on tech data sheet; offer possibility of chat/inquiry on website or in Alchemy; make Alchemy intuitive to use, give instructions; give info to meet C environ-mental policy	offer preliminary info on price; provide documentation of additional features (cosmetics/vegan products, eco label); discuss potential future volume of raw material supply; need for defining additional documentation that will be offered	what kind of data, how is it refined & used?	

SERVICE EXPERIENCE BLUEPRINT

Legend:
- question to be answered
- action to be taken

	Delivery		Use / test			
Customer goal			do product development w. sample			
Customer action	receive confirmation of order	receive product	run stability tests	receive check-up & use tips from supplier	search additional info, refine recipe	enter test results in Alchemy
Service system/ touchpoint	email from webshop	postal package	customer laboratory	Alchemy	Alchemy	Alchemy
Supplier action	generate & send confirmation of order & delivery schedule	select, pack & ship product				
Supplier goal	satisfy needs, support trust	serve well, top expectations		help C succeed: to understand how to use product		gather data of needs & prospects
Modify process / N.B.	give instructions on how to use Alchemy	include return box; give instructions on how to use the product	include link to technical data sheet; develop product: form (gel ->powder), name, packaging consistent quality; check situation every X weeks, reduce need for tech support	check situation, give tips of new test results, recipes, common success factors		what is the incentive?; allow partial filling of form, offer Y/N typ of questions

everything OK -> proceed to "place order"

SERVICE EXPERIENCE BLUEPRINT

Legend:
- question to be answered (yellow)
- action to be taken (green)

Use / test

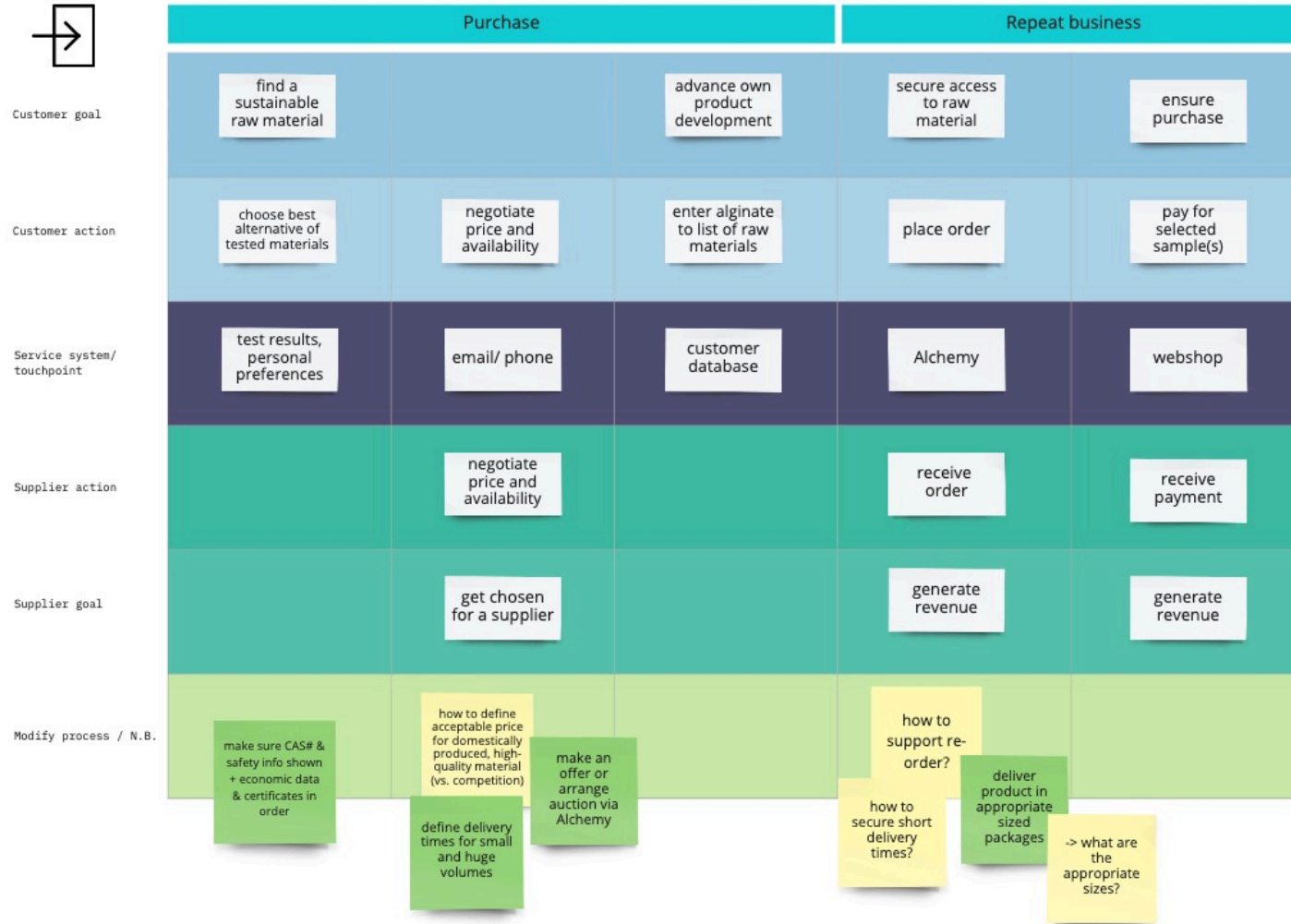|	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6
Customer goal	report a problem	receive help w. formula or function		receive help w. formula or function	advance own product development	contribute to database for future needs
Customer action	inform supplier of a problem w. feature or outcome	send supplier produt base for supplier tests		download info of supplier tests, make changes to process	test development ideas	enter test results
Service system / touchpoint	fill in problem report in A, use return box	postal package	supplier laboratory	Alchemy	customer laboratory	Alchemy
Supplier action	offer to test w. recipe, request a sample of product base	receive sample of product base	test, isolate possible solutions	analyse problem, enter results in A share link to A		store data
Supplier goal	gather user data, reduce need for tech support	gather user data, reduce need for tech support		help C succeed, create engagement		reduce future need for technical support
Modify process / N.B.	customers used to email, how to entice use of Alchemy?			offer knowledge of how material behaves in diff. conditions/ formulas		what is the incentive? / allow attaching documents, e.g. photos & tables

SERVICE EXPERIENCE BLUEPRINT

Legend:
- question to be answered (yellow note)
- action to be taken (green note)

	Purchase			Repeat business	
Customer goal	find a sustainable raw material		advance own product development	secure access to raw material	ensure purchase
Customer action	choose best alternative of tested materials	negotiate price and availability	enter alginate to list of raw materials	place order	pay for selected sample(s)
Service system/ touchpoint	test results, personal preferences	email/ phone	customer database	Alchemy	webshop
Supplier action		negotiate price and availability		receive order	receive payment
Supplier goal		get chosen for a supplier		generate revenue	generate revenue
Modify process / N.B.	make sure CAS# & safety info shown + economic data & certificates in order	how to define acceptable price for domestically produced, high-quality material (vs. competition); make an offer or arrange auction via Alchemy; define delivery times for small and huge volumes		how to support re-order?; how to secure short delivery times?; deliver product in appropriate sized packages; -> what are the appropriate sizes?	

Appendix 4. Interview questions for the commissioner representatives

Miksi asiakkaalle tarjotaan alginaattia? Mihin tarpeeseen se sopii?

Mitä etuja raaka-aineella on verrattuna vastaavalla tavalla toimiviin vaihtoehtoihin?

Minkälaista ja minkä tasoista/syvyistä tietoa kysytään ja missä vaiheessa prosessia?

Mitkä kanavat ovat vaivattomimpia/nopeimpia tiedon jakamiseen?

Palveluprosessi:

- Mistä prosessi alkaa?
- Kuvaa prosessin kulku omin sanoin
- Mitkä ovat ilmeiset päätöksentekopisteet/valinnan paikat?

Mitkä ovat arvoa tuottavat asiat tuotteessa tai palvelussa?

Miten priorisoit kriittiset tekijät? (Esim. top3 tärkeimmät tekijät onnistuneessa prosessissa)

Mitä prosessista puuttuu, tai mitä toivoisit vielä kehitettävän sujuvammaksi?

Appendix 5. Interview questions for customers

Miksi olette kiinnostuneita alginaatin käyttämisestä raaka-aineena?

Mihin tarpeeseen käytätte alginaattia?

Mikä sai teidät kiinnostumaan tästä vaihtoehdosta?

Mitä ja minkälaista tietoa haluatte/tarvitsette ja missä vaiheessa yhteistyöprosessia?

Prosessi:

- Mistä prosessi alkaa?
- Kuvatkaa omin sanoin prosessin kulku
- Mitkä ovat ilmeisimmät päätöksentekopisteet tai valinnan paikat?

Mitä kanavaa/kanavia käytätte mieluiten yhteydenpitoon ja tiedonvaihtoon toimittajan kanssa?

Mikä tuotteessa tai palvelussa on teille arvokasta?

Mitkä tekijät ovat kriittisiä, jotta yhteistyö toimittajan kanssa tuntuu onnistuneelta?

Muita huomioita yhteistyöstä, tuotteesta, palvelusta tai prosessista?