

LUT UNIVERSITY  
School of Business and Management  
Degree in Business Administration  
Master's Programme in Strategy, Innovation and Sustainability (MSIS)

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# **INFLUENCE OF MEGATRENDS ON CARDBOARD PACKAGING INDUSTRY IN FINLAND**

Master's Thesis 2018

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## ABSTRACT

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**Title:** Influence of megatrends on cardboard packaging industry in Finland  
**Faculty:** School of Business and Management  
**Degree programme:** Strategy, Innovation and Sustainability  
**Year of completion:** 2018  
**Master's Thesis:** LUT University  
90 pages, 20 figures and 3 attachments  
**Examiners:** Professor Kaisu Puumalainen  
Associate Professor Anni Tuppuru  
**Keywords:** Megatrends, cardboard packaging, packaging industry, consumption trends, expert survey

This study discusses megatrends (MG), consumption trends and cardboard packaging industry in Finland with an objective to incite discussion over MGs current and future influence by 2030. The theoretical research introduces packaging, the Finnish industry of cardboard packaging and short-lists megatrends to context.

The research process was inductive with 13 semi-structured interviewees, where participants did not know the research question. Based on interview findings, a survey was conducted with 19 responses. The purpose of the survey was to consolidate the interview findings and learn more by exposing the research question. The empirical sampling invited Finnish consumption experts to participate. Through the inductive approach, the research built an interactive theory and empirical research.

The research found that the most relevant MGs in 2017-2018 were seen to be 'climate change and environmental challenges' as well as 'competition over natural resources'. The 2030 MG expectations continued to emphasize 'climate change and environmental challenges' and found 'digitalization and technological development' to be equally relevant.

The consumption experts saw the influence of consumption trends and phenomena additionally relevant to the cardboard packaging industry. The most considerable of trends and phenomena of consumption in 2017-2018 were seen to be 'Health and wellbeing', 'Individuality' and 'Fragmenting markets'. The most relevant trends and phenomena are expected to change by 2030 to be 'Services replacing ownership', 'Ecological consumption' and 'Automatization and robotics'.

In conclusion of literature and empirical findings, the Finnish cardboard packaging industry may be able to respond well to both MGs and the trends and phenomena of consumption. The industry's strength of customer-centricity and innovative consideration, particularly towards the environmental, works well with the increasingly environmentally aware consumers. Another strength of cardboard packaging industry is its participation in the Forest Cluster of Finland, which has internationally a good reputation of fast as well as flexible service and has been known to collaborate.

## TIIVISTELMÄ

<b>Tekijä:</b>	Tiina-Maria Niemi
<b>Tutkielman nimi:</b>	Megatrendien vaikutukset kartonkipakkausteollisuuteen Suomessa
<b>Tiedkunta:</b>	Kauppätieteellinen tiedekunta
<b>Maisterin ohjelma:</b>	Master of Strategy, Innovation and Sustainability
<b>Vuosi:</b>	2018
<b>Pro gradu -tutkielma:</b>	LUT-Yliopisto 90 sivua, 20 taulukkoa ja 3 liitettä
<b>Tarkastajat:</b>	Professor Kaisu Puumalainen Associate Professor Anni Tuppara
<b>Avainsanat</b>	Megatrendit, kartonkipakkaukset, kartonkipakkausteollisuus, kulutuksen trendit, asiantuntijatutkimus

Tämä tutkimus käsittelee megatrendejä, kulutuksen trendejä ja niiden vaikutuksia suomalaisen kartonkipakkausteollisuuteen aikavälillä 2017-2030. Tutkimuksen teoriaosassa tarkastellaan pakkaamista yleisesti, kartonkipakkausalaa Suomessa, sekä megatrendejä tässä kontekstissa.

Tutkimuksen lähestymistapa oli induktiivinen: aluksi haastateltiin 13 suomalaista kulutuskäyttäytymisen asiantuntijaa kertomatta tutkimuskysymystä ja näiden löydöksiä perusteella laadittiin kysely, johon vastasi 19 asiantuntijaa. Kyselyn tarkoitus oli tuoda haastattelun löydöksiä yhteen ja oppia lisää kertomalla vastaajille tutkimuskysymys. Induktiivinen tutkimusmenetelmä loi interaktiivisen yhteyden teorian ja empiiristen löydöksiä välille.

Tutkimus totesi seuraavien megatrendien olevan merkittävimpiä kartonkipaketointi-alalle Suomessa 2017-2018: 'ilmastonmuutos ja ympäristöhaasteet' sekä 'luonnonvaroista kilpailu'. Vuonna 2030 merkityksellisimpien megatrendien odotetaan olevan 'digitalisaatio ja teknologinen kehitys', sekä 'ilmastonmuutos ja ympäristöhaasteet'.

Kulutuskäyttäytymisen asiantuntijat näkivät kulutuksen trendien ja ilmiöiden olevan merkityksellisiä suomalaiselle kartonkipakkausteollisuudelle. He näkivät merkittävimpien kulutuksen trendien ja ilmiöiden olevan "Terveys ja hyvinvointi", "Yksilöllisyys" ja "Hajanaiset markkinat". Näiden trendien odotetaan muuttuvan vuoteen 2030 mennessä painottamaan "Palveluita, jotka korvaavat omistamista", "Ekologista kulutusta" ja "Automaatiota sekä robotiikkaa".

Kirjallisuuden ja empiiristen havaintojen perusteella voi vetää johtopäätöksen, että suomalaisen kartonkipakkausteollisuuden pitäisi kyetä reagoimaan suhteellisen hyvin megatrendeille, sekä kulutuksen trendeille ja ilmiöille. Kartonkipakkausteollisuuden vahvuudet ovat asiakaslähtöisyys ja innovatiivinen näkökulma, etenkin ympäristö-asioissa, joka saattaa toimia hyvin ympäristötietoisempien kuluttajien kanssa. Vahvuuksiin kuuluu myös osallisuus suomalaisen metsäteollisuuden kokonaisuuteen, jolla on kansainvälisesti hyvä maine nopeasta sekä joustavasta palvelusta, ja jossa perinteisesti tehdään yhteistyötä.

## **ACKNOWLEDGEMENTS**

I've learnt a lot during my thesis and my studies. I am grateful to have had the chance to study in the master's degree program of Strategy, Innovation and Sustainability management at LUT. Submission of this thesis is thrilling but marks the end of an era. I would like to express my gratitude to everyone who have supported me during my studies and while I've been writing the master's thesis.

First, I would like to thank my significant other, family and friends for being there and believing in me. You've been an invaluable source of inspiration and drive!

Second, I would like to express my gratitude to my supervisors, associate professor Anni Tuppuru and professor Kaisu Puumalainen. Thank you for your patience, support and advice.

Thank you for standing by my side.

Vaasa, 26.11.2018

Tiina-Maria Niemi

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## LIST OF ABBREVIATIONS

B2B	Business to business
B2C	Business to consumer
EEA	European Environmental Agency
LOHAS	A consumer segment with a Lifestyle of Health and Sustainability
MG	Megatrend
RQ	Research question
SOER	European Environment State and out look report (2015)
Q	Question in either an interview or the survey

# 1 INTRODUCTION

## 1.1 Background of the study

Today's fast paced world is constantly a subject to change. Change is seen in different manners and can be difficult to predict. From an industrial perspective, change and the different forms it can be viewed through can be both an opportunity or a threat. This research focusses on how this change is apparent through megatrends, referred to as MG. How do they influence the cardboard packaging industry in Finland and what can the industry expect from them in the future? One definition of MGs is "*large-scale, high impact and often interdependent social, economic, political, environmental or technological changes*" (EEA 2015, 5). MGs represent the indirect influence that consumers and trends of B2C consumption have to cardboard packaging industry that is typically a B2B industry.

Forest industry in Finland plays a significant role. Finland's forest area is approximately 75% of the Finnish land surface, depending on which publication and calculation method is used. The Finnish forest industry has a significant impact on Finnish employment, GDP, export industry and to consumers' everyday lives through multiple touchpoints. (Suomen Metsäyhdistys ry 2014) To mention a few examples, the Finnish forest industry is represented through wood as a common construction material, a source of bioenergy, in people's recreational time-use, or in their everyday encounters with products bought and delivered in cardboard packaging.

Forest industry in Finland has had wide ranging previous research conducted by numerous authors, institutions and companies along the years. The existing forest related researches provide a wide range of information, to which this research wants to add by inciting discussion on how B2C consumption's megatrends influence the cardboard packaging industry.

This research connects the megatrends to the Finnish cardboard packaging industry and the Finnish consumers by creating a base-line understanding of MGs through a research conducted by the European Environmental Agency, referred to as EEA (2015), and introducing the Finnish cardboard packaging industry and packaging's functions (Järvi-Kääriäinen, Ollila 2007; Leppänen et al. 2000). The research continues by discussing megatrends in the context of Finland, forest industry and packaging (Finnish Forest Industries 2017a) to compose a tailor-made listing of MGs for the context of this research,

as well as connecting the current and 2030 Finnish consumption expertise through input from Finnish B2C consumption experts. The research connects the primary data from the experts to secondary data of desk research and discusses the findings. The research has inductive methods, which allow it the benefit of researching with an explorative purpose (Saunders, Lewis et al. 2012).

Previous research has discussed megatrends' impact to packaging industry. A highly relevant example of this is a research article written on European-level MGs' influence, focused on creating a base for further discussion by "*mapping and analysing general trends and drivers in society [...] to highlight potential future demands, opportunities and threats for packaging*" (Olsmats, Kaivo-oja 2014). Compared to the Olsmats and Kaivo-oja's (2014) research, the differentiation in this research is its focus to cardboard packaging, to Finland and differentiating with its MG listing, though Olsmats and Kaivo-oja (2014) have been an influential benchmark and a source to this research.

Researches published by the Finnish forest industry are also establishing the background for this research and participate in building a relevant list of MGs for cardboard packaging industry (Finnish Forest Industries 2017a). Other relevant literature publications connect MGs to the Finnish forest industries in a wide view (Hänninen, et al. 2013, 675-677), discuss the Finnish strengths seen in forest (Finnish Forest Industry 2017b) and innovations (Finnish Packaging Association 2018a). There is also existing future research of packaging industry (Leppänen-Turkula, Meristö et al. 2000) and of expected influential consumer segments (Korhonen 2018), as well as research regarding packaging functions and where they are expected to develop to (Järvi-Kääriäinen and Ollila 2007).

The influence of MGs to packaging is indirect and lacks information on its full impact, which is the discussion that this research aims to participate in and incite. The parties that are connected to cardboard packaging, start from woodland owners to wood processing companies, from packers to printers and those involved in packaging for wholesale purposes as well as those involved with direct consumer packages (Olsmats 2002, 43). These parties generally operate individually and don't share information with each other due to competition, but if consumption trend and MG information would flow from 'up-stream' parties of the cardboard packaging, i.e. retailers or packers, to producers, it would create a bullwhip effects in the supply chains. This would require transparency between the relevant parties, but the information flow and transparency could help the packaging industry to develop comprehensively (Viskari 2008). Bottlenecks in value chains, glitches in developing

or responding to market demands could be facilitated by information and transparency and predicted in investments of industry. (Kalinainen 2015)

## **1.2 Research questions**

The research questions, also referred to as RQs in-text, of this thesis focus on how megatrends' influence the cardboard packaging industry in Finland.

Main research question:

- How do megatrends influence the cardboard packaging industry in Finland?

Sub questions:

- What are the megatrends that are relevant to the cardboard packaging industry in Finland currently?
- How and with what implications are those megatrends expected to develop by 2030?

The research of megatrends was conducted with Finnish B2C consumption experts inductively. In practice this means that explorative interviews were conducted with consumption experts, based on which a survey was built, while the literature research was ongoing according to the directions of the empirical findings. This means that the empirical research was not deductively based up on a predefined literature. The consumption experts have given input in two separate phases. First through an interview and secondly through an online questionnaire, which was based on the interviews' results. The research regarding the cardboard packaging industry in Finland was conducted with secondary data from packaging and forest union's publications, articles relating to the cardboard and/or packaging industry.

## **1.3 Objectives**

The intention of this research is to gather wide ranging knowledge of consumption and of megatrends' influence on consumption from a large group of consumption experts in universities, research institutions and consultancies. The gathered information and knowledge is applied to the RQs that are based on previous research results and publications from the cardboard packaging industry in Finland, as well as using international material for wider views and benchmarking. It should be noted that that the intention of this research is not to reach a consensus or to create new theory, but to incite discussion and compile findings.

The objective of this thesis is to research the indirect influence of consumers, phenomena, megatrends and trends in B2C consumption to the B2B cardboard packaging industry in Finland. Through the inductive research findings, megatrends showed to be the most efficient way to literature-wise present the consumers' B2C influence currently and its speculated future influence. The research aims to add to the academic discourse by listing the most relevant MGs in the industrial context of cardboard packaging industry in Finland and in the timespan of the current and the 2030.

#### **1.4 Limitations**

This thesis excludes regulatory impacts that may influence the industry, even though they are briefly mentioned as influencers. Equally exclusions cover comparisons of cardboard opposed to other material options or cardboard materials' proposition comparisons to product properties, i.e. how different cardboard packaging solutions are restricted by primary products' characters of e.g. liquidity and/or acidity. Packaging's value chain or its B2B buyers are not a part of the research either.

Regarding statistics and figures of cardboard packaging consumption, one should be aware that statistics on such secondary forms of consumption vary according to agendas of those publishing them, due to which such figures are not prominently presented in this research. Institutions, companies and unions publish figures about packaging and about cardboard consumption however, depending up on the source and the agenda for the publication, packaging may be considered partially or fully a part of the primary product, different forms of packaging may not be differentiated, or different types of measurements may be used according to which give the most desirable end-statics for the publisher's need. In this context, the word agenda refers to the intentions of the publisher, as the publisher may be a packaging union or an environmental protection group, hence statistics' publications should be read carefully with attention to the source, its validity and context. In terms of this research, statistics about cardboard packaging's costs, environmental impacts or yearly production amounts, etc. are not prominently displayed for this exact reason.

What should be also noted is that this research does not go into details with generally known and accepted information, such as what is climate change, scarcity of resources or why plastic packaging is associated with e.g. increased micro-plastic in oceans and pollution.

## **1.5 Structure of the study and research framework**

The structure of the thesis framework is described in figure 1, whereas the structure of the research process is described in figure 2. These two differ amongst each other, due to the nature of the research being inductive, but in combination, they give a holistic perspective onto the framework and the practical execution of research methodology.

As described in figure 1, the research framework starts by presenting packaging, megatrends, the cardboard packaging industry in Finland and then the existing literature combining the earlier mentioned. The literature brings the three above-mentioned together in sub-chapter 2.4, adding literature that combines megatrends and cardboard packaging industry, as well as distilling a megatrend-listing of all presented MG perspectives. At the end of the literature research is sub-chapter 2.5 giving a short summary combining the main findings.

In terms of the empirical part of the research, interviews were conducted with a panel of 13 Finnish consumption experts, after which the material was compiled, analysed and an online questionnaire was sent to the same sample group of 26 consumption experts that were originally contacted for the first-round interviews, of which 19 responded to the survey. All respondents were Finnish consumption experts from universities, research institutes and consulting. Both the interviews and the questionnaire were confidential with only descriptive statistics of interviewees and survey respondents collected. Those descriptive statistics are presented in chapter 3 with the rest of the methodology. Additionally, the methodology chapter further describes the interview and survey methodologies individually, as well as the validity and reliability of this research.

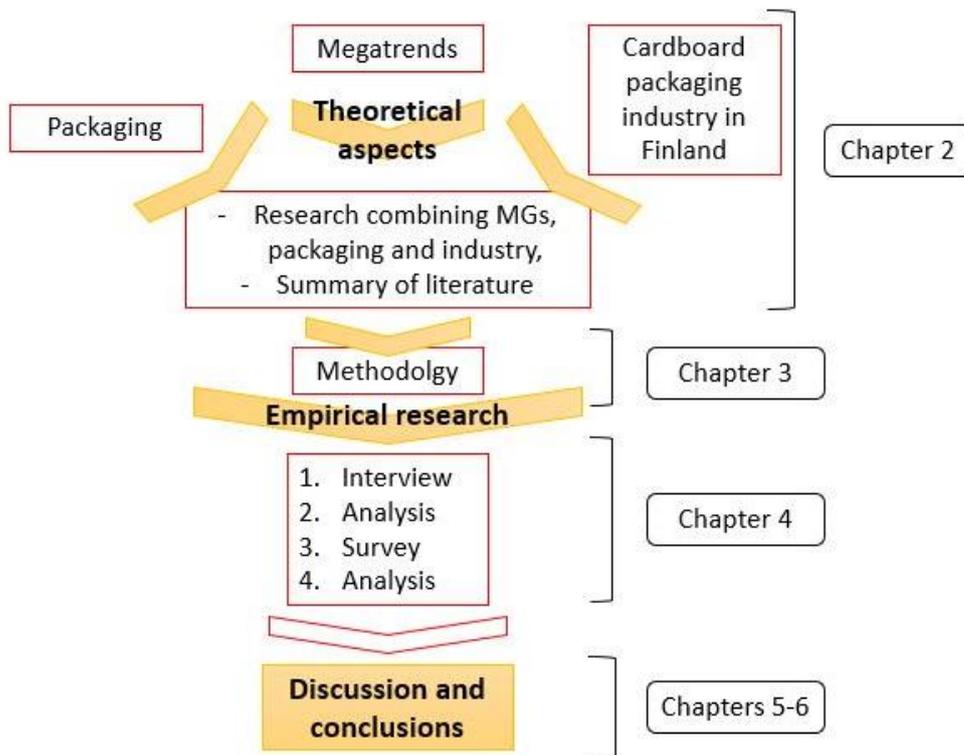


Figure 1. Structure of thesis framework.

Findings of the interviews and the survey questionnaire can be found in the chapter 4 and the interview questions as well as the survey questionnaire can be found in appendixes. The findings are combined to the literature in the chapter 5 and concluded in chapter 6.

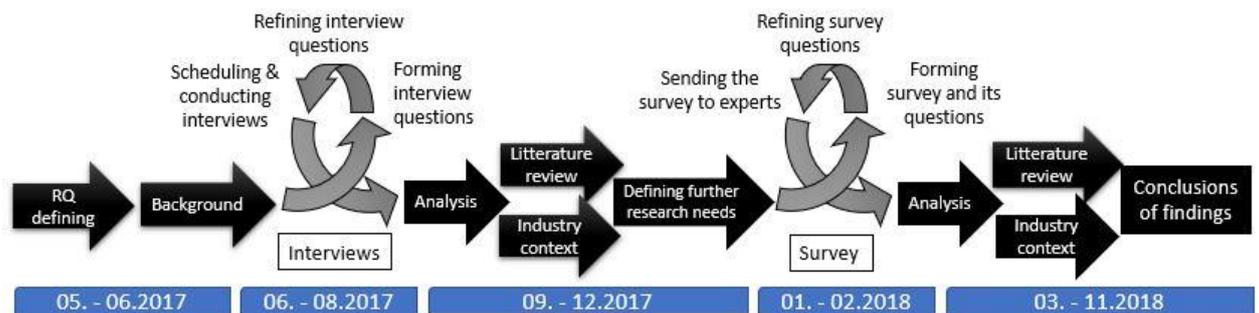


Figure 2. Research process of this thesis

## 2 LITERATURE REVIEW

The literature review of this thesis is composed of four main elements: an introduction of packaging (2.1), megatrends and its related concepts (2.2), a discussion on the aspects of the cardboard packaging industry in Finland (2.3) and followed by a sub-chapter where the previous three elements are combined with additional input from researches that combine elements of megatrends and packaging industries (2.4). The literature review goes over the above-mentioned topics in that order, ending with a brief summary (2.5).

### 2.1 Packaging

This sub-chapter introduces base-line functions of packaging, how packaging delivers value and briefly how packaging's performance can be measured. Packaging has various material options as well as functions provided for different product requirements and it often has a long distance to travel before reaching a consumer's door step, after which the packaging still has another journey to continue towards disposal, reuse or recycling.

#### 2.1.1 What are the functions of packaging

The term packaging has a lot inside it. There are portion and multi-packs of products' packaging for consumers, which are forms of primary packaging. Secondary packaging is retail packaging for shops, where there are multiple portions or multi-packs for consumers; before which there is often tertiary packaging on e.g. pallets, which are a common form of end-products leaving the factories towards wholesalers. Additionally, when there are multiple producers that contribute to an end-product, it means that there is packaging bringing together goods to be processed before the end-product is ready to be forwarded to wholesalers. (Järvi-Kääriäinen and Ollila 2007, 9-12)

Association of Packaging Technology and Research, a Finnish research organization and consultancy, has written a book discussing what is a functional packaging (Järvi-Kääriäinen et al 2007). According to their research, the primary purposes of packaging are to:

1. Protect the product,
2. Enabling and adjusting to packaging demands and modern lines in factories,
3. Fulfill international logistics requirements,
4. Marketing and product information sharing,
5. Providing ease of use for the consumer,
6. Straining the environment minimally. (Järvi-Kääriäinen et al 2007, 11-12)

What the Association of Packaging Technology and Research defines as an optimally functioning packaging is:

- Protects the product from its environment,
- Protects the environment from the product,
- Retains the qualities of the packaged product,
- Enables efficient production and distribution,
- Improves hygiene,
- Increases the consumer's/user's safety,
- Markets the product and the company's brand,
- Describes the product, the packaging and their usage,
- Increases the ease of use,
- Decreases product wastage,
- Is reusable or recyclable,
- Follows the principles of sustainability,
- Is affordable. (Järvi-Kääriäinen et al 2007, 12)

The above description of packaging's basic and optimal functions are backed up by a case study of Finnish Packaging. The case study noted that usability, visual perspectives and quality associations of packaging have a particularly high impacts on consumers' purchasing decisions. (Finnish Packaging Association 2017b)

To depict the chain of packaging and the actors' involved, presented in figure 5 is the supply chain connected to the traditional packaging industry (Olsmats 2002). It should be noted that the supply chain figure leaves room for discussion on reliability, based on whether the industry has changed since 2002 when the figure was researched and drawn. However, to introduce the basics of packaging's supply chain the figure is easy to follow and clear.

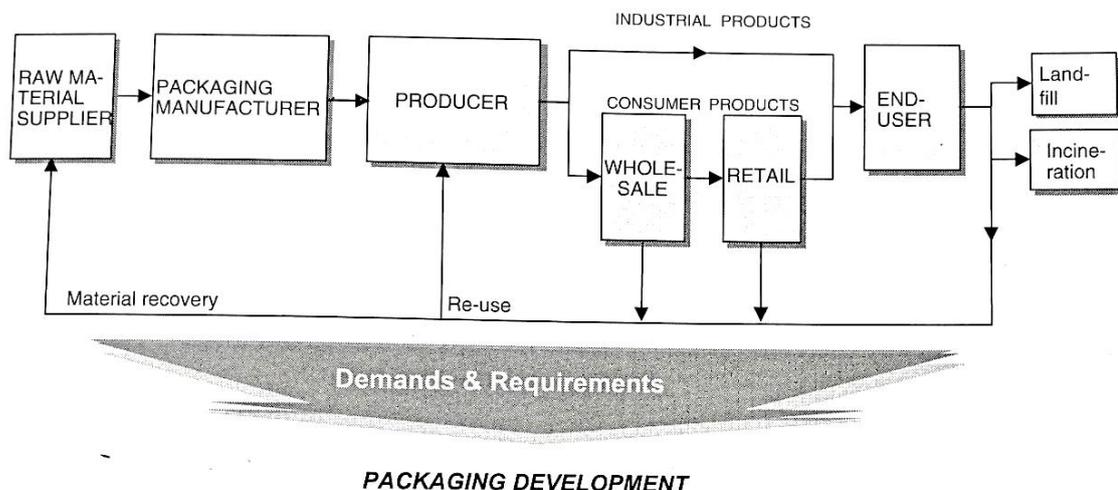


Figure 3. Traditional supply chain of packaging industry (Olsmats 2002, 43)

To depict the functions of packaging better from consumer perspectives, the demands of different demographic audiences could also be covered, as done previously by Olsmats (2002) for example. However, for the purpose of this research it is redundant, though analyzing consumer trends and their audiences in detail could advance future research on packaging.

The impact of packaging to consumer's purchasing choice is particularly strong during the first purchase. A packaging's outlook creates expectations and can make a product stand out from a shelf. After the initial purchase of a product, the impact of packaging reduces, as the product is already tested by the consumer, who is henceforth likelier to renew their purchasing decision based on their experience of the primary product. (Solala 2018)

To conclude this sub-chapter, it can be noted that packaging can bring competitive advantage to initial product sales particularly, can influence consumer perceptions and an optimal packaging can bring added value to a product beyond a packaging's basic functions. Product development is possible to be done in combination with packaging, to assist value addition, as a bad package can ruin a good product, though a good package cannot save a bad product. (Olsmats 2002, 156-157; Solala 2018; Järvi-Kääriäinen and Ollila 2007, 9-12)

### 2.1.2 Measuring the performance of packaging

The requirements of a product largely define the functions and needs regarding its packaging. As such, depending on the needs there are multiple functions for packaging. Figure 6, by Olsmats in 2003, creates a holistic packaging performance measuring tool to measure value creation and efficiency.

Criteria	Supplier	Transportation distribution and wholesale	Retail	Consumer
Machinability	X			
Product protection	X	X	X	X
Flow information	X	X	X	
Volume and weight efficiency	X	X	X	
Right amount and size		X	X	X
Handleability		X	X	X
Other value-adding properties	X			X
Product information				X
Selling capability			X	X
Safety			X	
Reduced use of resources	X			
Minimal use of hazardous substance	X			X
Minimal amount of waste			X	X
Packaging costs	X			

Figure 4. Criteria for the packaging scorecard (Olsmats 2003, 10)

The scorecard introduces different characteristics and requirements that packaging has and fulfils in its different stages of life cycle, as well as demonstrates different parties that

packaging travels through. Olsmats measurement scorecard was built based on a “*research of functional criteria of packaging and the theories of balanced scorecard*” (2003, 1). It works by selecting the relevant measures, the relevant participants and giving points on a scale from 0 to 4 as described below, based up on which weights are given to the categories and an average packaging score is calculated. This is not the only way to measure packaging’s performance, but for the purpose of introducing the ability to measure packaging’s performance Olsmats’ (2003) scorecard was selected as a straightforward example.

- 0 - not applicable for the package.
- 1 - not approved.
- 2 - approved.
- 3 - well approved.
- 4 - met excellently. (Olsmats 2003)

*Figure 5. Measuring scale of Olsmats’ packaging scorecard (2003)*

As Olsmats created the scorecard in 2003, it should be noted that this leaves room for discussion on the industry’s change since then and how reliable the scorecard is still in 2018. For example, if the scorecard was created today again, relevant characteristics could include recycling properties and reuse properties for returned items of online shopping, however such could be simply added to the list of relevant criteria to be evaluated and be given a weight according to the importance of the criteria in the case company, hence the principle of the packaging scorecard should still be valid.

## **2.2 Megatrends and related concepts**

This sub-chapter introduces definitions to megatrends and concepts that are connected to it, as well as the megatrends of European Environmental Agency, EEA. The megatrends are defined according to EEA, which is further complimented with MG definitions from other researches that connect MGs’ influence on industries; giving additional value and context to define MGs, as there is no consensus on MGs definition.

### **2.2.1 Definitions and concepts connected to megatrends**

Megatrends can be defined in multiple ways however; the definitions are overlapping each other in one way or another. The definition used in EEA’s publication, which is the base-line source of megatrends for this research, is that MGs are “*large-scale, high impact and often interdependent social, economic, political, environmental or technological changes*” (EEA 2015, 5).

Another definition (Rohner, Biswas 2018, 1) is that MGs are formed through chains of events or observed phenomena that come to create “*momentum in a particular direction and some level of durability*”. This definition is from a research estimating megatrends’ influence on water industry. As there are multiple definitions for MGs, establishing similarity and coherence in the definitions brings certainty to the current-ness of the definition and its suitability to the context. These definitions build a concept of MGs that is current and relevant to the B2B industries researching B2C megatrends and sourced specifically from the European context.

The original source of megatrends’ discussion in academic literature is from 1982, where MGs were introduced in context of trying to predict development (Naisbitt 1982). After this, megatrends have become a further topic of research and have established themselves in both past and current academic literature.

Previous to Naisbitt, there had been discussion of trends in general and a notable part of that discussion has been about **weak signals**, which are warnings, events and developments that aren’t able to give an accurate estimation of their impact yet, because the signals are still too incomplete or “weak” (Ansoff 1975, 23-24), which have hence forth been influencing academic and strategic management discourse. As summarized by von Groddeck, Schwarz (2013, 29) “*dealing with trends is usually based on the assumption that discontinuities do not appear without warning. These warning signs can be described as weak signals*”. However, von Groddeck and Schwarz (2013, 30) go further by noting how “*megatrends are completely different from trends, lasting longer, having a stronger influence, and being less predictable*”. Von Groddeck and Schwarz (2013, 35) associate MGs and trends also to have the potential to be **empty signifiers**, which refer to MGs or trends being “*so overcharged with meaning that they become meaningless*”. Further they state that “*discussion of empty signifiers has emphasized that megatrends or poorly understood trends involve tremendous risk. Trends are complex and unpredictable phenomena that are [...] likely to have countertrends*”. (von Groddeck, Schwarz 2013, 35-36)

The list of common variables in future researches is: trends, MGs, wild cards, weak signals, strong signals and drivers, though not all these are relevant for this research, but as they form a comprehensive perspective together, the definitions of these future related research variables become relevant. The relationships between these terms are complex and theoretically easier to differentiate than in practice. **Trends** and **megatrends** share common characteristics but differ greatly in both scale and probability. Weak signals are early signals

that provide information and **wild cards** are the phenomena that have higher uncertainty and may or may not come to pass. *“Future phenomena with a low probability and a minor impact are meaningless noise. When the probability rises significantly, phenomena with a minor impact can be called trends. Phenomena with major impacts are either weak signals or megatrends; weak signals have a low probability and megatrends have a high probability of realization”* (Holopainen, Toivonen 2012, 200). **Strong signals** are *“easily visible and computable issues”*, differentiated from trends and megatrends by probability. (Holopainen, Toivonen 2012, 201) However, it should be noted that none of the definitions are unambiguous amongst academic literature.

The lastly variable of future research is driving forces, i.e. **drivers**, referring to *“phenomena affecting a whole society or societies”*, forcing change (Holopainen, Toivonen 2012, 201). Drivers are directing decision making on a *“conscious or unconscious level, and they are often related to attitudes and values”*, influencing *“the present whereas trends or weak signals can give directions for the future development.”* (Holopainen, Toivonen 2012, 201)

In terms of this research and the relevancy of different variables; megatrends are the focus, based on the inductive research findings and due to the limited scope of this research. However, megatrends were not the only relevant concept found. Trends and drivers were also seen to emerge in empirical results. Due to the explorative and inductive nature of research, the research did not deductively and descriptively pursue to define and measure weak or strong signals, empty signifiers, nor wild cards. Retrospectively, the research could have done so, potentially through a survey, further processing the empirical findings of this research asking the experts to connect their expertise and earlier input to define weak and strong signals, empty signifiers, as well as the wild cards, and to place this in to the industrial context. However, due to the defined scope of the research and time limitations of the researcher, these were not pursued, but future research could consider pursuing them.

### **2.2.2 Introduction of megatrends**

The introductory megatrends' listing in this research is composed based up on a report written by EEA, the European Environment Agency (2015) The EEA listing is further benchmarked with other relevant researches using megatrends to discuss how consumer trends and changes in consumption come to affect industries, particularly focusing on researches of packaging and forest industry. Through the benchmarking a more relevant list of megatrends is composed.

The above-mentioned European Environment Agency (EEA 2015, 3-5) report on megatrends is called *The European Environment state and outlook (SOER) assessment of global megatrends*, which discusses current and expected impacts of megatrends by breaking each megatrend apart to its drivers, trends and implications. This research chooses to follow the report layout of SOER, by briefly listing each megatrend here with their drivers, trends and implications. One should keep in mind that the SOER has chosen not to define weak signals, strong signals, empty signifiers or wild cards, which this research also has chosen to not define further.

The SOER report introduces 11 megatrends and then applies EEA's perspectives onto them through implication discussion. One should keep in mind that there is no one commonly or academically accepted listing of megatrends, rather MGs and their listings are influenced according to the publishing institutions, their sources and perspectives, which is why this research reaffirms the most relevant listing of MGs for itself in sub-chapter 2.4.

In the case of the SOER report, the purpose of the report is to analyse the wide base of global megatrends, to specify how they're relevant to the European perspective, after which to discuss their environmental impacts (EEA 2015, 3). For the purposes of this report, EEA's further environmental analysis of SOER is left out, but SOER is of value as a source, due to the report being relatively recent, its scope extending to 2030 (similarly to this research), its background of collecting megatrend data through European countries' statistical agencies, as well as SOER's discussion of global megatrends yet focus them onto the European-context.

SOER report "*provides a comprehensive assessment of the European environment's state, trends and prospects, and places it in a global context*" (EEA 2015, 3), and is composed to discuss implications for the time gap of 2015-2020. The report is based on "*objective, reliable and comparable*" information from EEA internally and from the European Environment Information and Observation Network (Eionet), both of which converge information widely from 39 European countries. (EEA 2015, 3)

To establish and pinpoint the megatrends' relevancy to the research area; Finland, and to have the expertise to evaluate the influence level of megatrends, the consumption experts are the source of primary data. Hence, strengthening the findings with relevancy of connecting the megatrends to the pragmatic topic of this research; how megatrends influence the cardboard packaging industry in Finland. Additionally, this study covers perspectives of MG researches focused on the Finnish forest industry and on the European packaging

industry; composing a new short-list of the most relevant megatrends based on the combination of these three megatrend-listing.

The following EEA perspective of megatrends sets a base line understanding of MGs, followed by Finnish cardboard packaging industry introduction, discussion of their trends and of existing literature connecting the industry to megatrends, which all lead to a short-listing of the most relevant MGs in sub-chapter 2.4. Theory and empirical data are combined in discussions chapter 5. The interviews for the research were conducted in a loosely structured manner without letting the interviewee know the research question, as not to let that knowledge influence their responses. As such, the interview findings reflect this by having discussion of topics that go beyond the cardboard or packaging industry, onto e.g. energy and food industries, which are currently heavily influenced by megatrends, but which are not of primary influence on cardboard packaging industry.

Figures 3 and 4 introduce the 11 megatrends of the EEA. The MGs are listed in the first column, their drivers in the second column, trends in the third and the last column lists briefly EEA's estimated implications of the megatrend. One should keep in mind that megatrends have commonalities and influence each other, as well as to understand that not all of them are equally relevant to this research, even though they are here introduced side-by-side.

In terms of approaches to MGs, the European Environment Agency (2015) lists two main response possibilities, shaping the global change or adapting to the global trends. Both choices require investments and have positive as well as negative characteristics. **Shaping global change** refers to finding opportunities proactively to mitigate risks and managing to create opportunities through e.g. foreign aid programs to educate, to help in disaster areas and to decrease poverty, while forging international cooperation and decreasing “*environmental pressure and facilitating trade*” (EEA 2015, 13). The other option of **adapting to global trends** refers to “*anticipating and avoiding harm by increasing the resilience of social, environmental and economic systems*”, which would mean in practice to restructure, restore and correct according to the MGs' impacts reactively, while exploiting situations with economic potential in innovations or scalability of new solutions responding to the MGs' global impacts. (EEA 2015, 13)

<b>MEGA-TRENDS</b>	<b>Drivers:</b>	<b>Trends:</b>	<b>Implications:</b>
<b>Diverging global population trends</b>	Uneven development of fertility and mortality; unevenly distributed economic development, education and access to services.	Global population growth; changing age structures and shifting migration patterns of people.	Increased environmental pressure; economic impacts to expanding work-forces; and both negative and positive effects of social cohesion.
<b>Towards a more urban world</b>	Continuous industrialization of developing worlds; increased agricultural mechanization and environmental change.	Population migration to urban areas.	Increased levels of human development; imbalance of resource and energy consumption; overcrowded and congested cities with growing prices of living; increased pressure on infrastructure; stress to ensure food and clean water supplies; decrease of biodiversity's.
<b>Changing disease burdens and risks of pandemics</b>	Environmental degradation; climate change; increased urbanization, mobility and migration of population.	Influence of lifestyle choices; and healthcare inequalities.	Costs related to ageing population are to increase; and costs of inaction to healthcare threats far outweigh the costs of action.
<b>Accelerating technological change</b>	Communication, collaboration, access to information; mass acceptance of technology; increasing middle-class; urbanization; increasing scarcity of resources; and rising levels of education.	Cycles of technology-induced societal and economic change; biotechnology.	Difficulty in governing matters or genes; a difficulty to balance opportunities, risks, threats and the level of unknown.
<b>Continued economic growth?</b>	The interconnected capital forms of 1. human knowledge, skills and health, 2. social norms of trust and institutions, 3. manufactured machinery and infrastructure, 4. natural resources and ecosystems.	Spread of global growth; and decelerating growth.	Poverty alleviation in developing regions; managing inequality and environmental degradation; increasing GDP's.

Figure 6. Megatrend chart according to EEA MG listing, part 1/2 (2015)

<b>MEGA-TRENDS</b>	<b>Drivers:</b>	<b>Trends:</b>	<b>Implications:</b>
<b>Increasingly multipolar world</b>	Structural convergence and the factors affecting it.	Declining dominance of advanced economies; new trade and investments.	Economic risks and opportunities for developed regions; new actors and new challenges in global governance.
<b>Intensified global competition for resources</b>	Technological advances; growing population and innovation.	Intensifying global demand; uncertain access to critical resources; identifying & innovating alternative resource streams.	Insecure access to resources and price volatility; potentially resulting in increased innovation and technological development.
<b>Growing pressure on ecosystems</b>	Growth of population, consumption and economy; need for food and bioenergy; competition for land and water.	Decline of terrestrial biodiversity and marine ecosystems; decrease of forestry, drylands and wetlands.	Loss of ecosystem services; reduced climate change mitigation potential and adaptive capacity; unequal distribution of impacts.
<b>Increasingly severe consequences of climate change</b>	Growth of population, consumption and economy.	Increased and increasing temperature; arctic ice-caps decreasing, sea-level rising, sea temperature increasing and changes in precipitation.	Natural ecosystems and their services face significant risk; human wellbeing & economic activities develop unequally and may slow down.
<b>Increasing environmental pollution</b>	Growth of population, economic development and increased need for food & energy.	Release of pollutants to aquatic systems, soils and air pollution.	Threat to biodiversity, ecosystem, agriculture and food provision.
<b>Diversifying approaches to governance</b>	New challenges for establishing governance; changing technologies, and values of populations.	Intergovernmental collaboration; influence of non-state actors and hybrid approaches.	Dispersion of authority with a lack of coordination and competitiveness between the authorities. Rise of technology and information access may either empower and increase democracy or reduce its legitimacy and accountability of decision-making.

Figure 7. Megatrend chart according to EEA MG listing, part 2/2 (2015)

These summarizing figures 3 and 4, are of EEA's megatrend-listing creating a base line for this research. The MGs are further analyzed in sub-chapter 2.4 with the MG listings combination, as well as concluded in text in sub-chapter 2.5 summary of literature findings and discussed in context of empirical findings in chapter 5. Chapter 6 concludes all findings and answers the RQs of this research directly.

## **2.3 Cardboard packaging industry in Finland**

This sub-chapter gives introduction to the Finnish cardboard packaging industry, describes the industry in its contextual setting of forest and packaging industries, gives general figures of packaging industry in Finland and discusses innovation with its drivers. Previous future research of the industry is also prominently displayed at the end of the sub-chapter.

### **2.3.1 Finnish cardboard packaging industry in its context**

This sub-chapter introduces basic figures of the Finnish cardboard packaging, - packaging and - forest industries with mentions of packaging's demand expectation. In terms of the cardboard packaging industry's size in Finland, there are multiple perspective that can depict it. The setting of the industry is in forest and in packaging industry. The forest industry is the source of approximately 1/5<sup>th</sup> of all products exported from Finland in 2012. At that time the majority of the products were paper-based, yet this is expected to change to contain progressively more cardboard-based products. In the long-term the Finnish forest industry expects their main products of export to be bioeconomy based on innovations and for example new biomaterials. (Hänninen, Katila, Västilä 2013, 675-677; Finnish Forest Industries 2016)

Figures 8, 9 and 10 introduce the comparative sales/demand of different packaging materials. The figures originate from the Finnish Packaging Association, who has released the data in their own Pakkaus-magazine. They have differentiated the types of packaging as fiber-based, plastic, metal, glass and wood packaging. Fiber based packaging covers cardboard packaging in this statistic. (Säilä 2017)

While reading the packaging statistic, the reader should keep in mind that the Finnish Association of Packaging is a packaging union, hence their statistics would likely differ from those of e.g. an environmental protection group, if an organization as such would be publishing statistics on packaging consumption. The reasoning behind this statement is that the motivation behind an environmental group could be to bring attention to, potentially in their opinion, an extensive usage of packaging. Whereas the Finnish Association of Packaging would be likelier to bring attention to the positive aspects of e.g. how packaging can reduce food waste or how packaging material can be taken advantage of later on in the chain of disposal, like they did in their website in 2017 (Säilä 2017).

## Manufacturing of packaging products in Finland 2007-2016 (1000€)

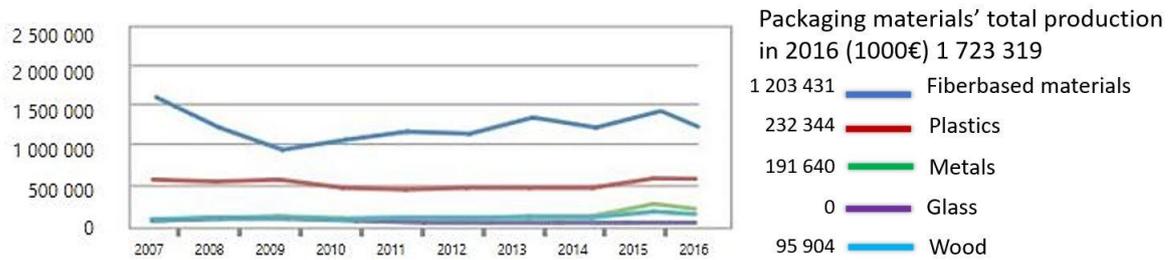


Figure 8. Finnish Packaging Association's (2018c, 37) statistic of packaging products' manufacturing during 2006-2017

As can be seen from the above figure 8, the packaging industry in Finland is considerable in size and cardboard packaging, i.e. fiber-based packaging as titled by the Finnish Packaging Association, is the most produced material choice. Equally, cardboard packaging has had the most variations within the industry figures, when compared to the steadier lines of the other material options. To further understand the statistics and their implications, the figure 9 shows export figures. (Finnish Packaging Association 2018c, 37)

## Finnish export of packaging products 2007 – 2016 (1000€)

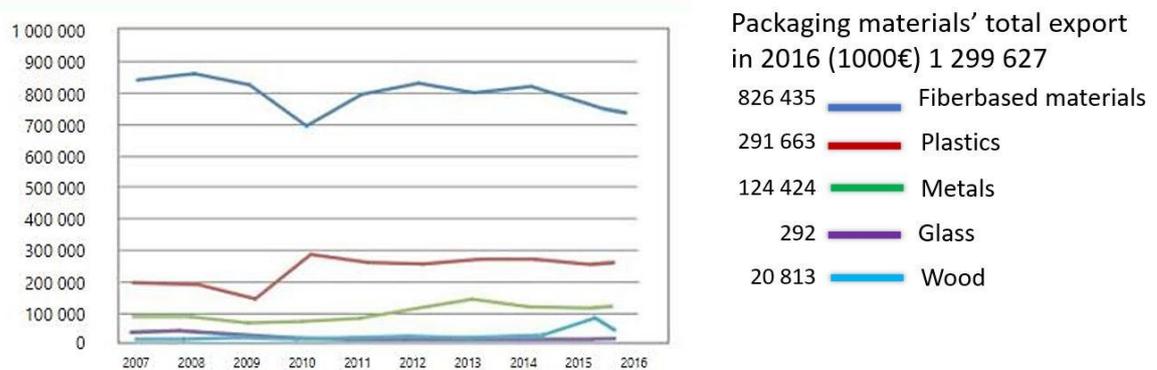


Figure 9. Finnish Packaging Association's (2018c, 37) statistic of packaging products' export figures during 2006-2017

As seen when comparing the amounts of fiber based-materials', it is visible from figure 8 and figure 9 that the international export of cardboard packaging has steadily accounted for over half, if not 2/3rds, of the cardboard production, i.e. fiber-based materials end destinations.

Figure 10 discusses the import figures of packaging products, showing that fiber-based materials are also being imported but in an amount that is approximately a fourth of what is being simultaneously exported from Finland, or approximately a fifth / a sixth of what is being produced locally.

When comparing the other materials' figures, plastic seems to be a growing material choice through importing, though its domestic production and export have been steady. Metal has been declining in its import, yet it is somewhat stable in its export and production amounts. Glass production in Finland is none existent, however there is import of it and even some export of it, which does present the question of what exactly is being exported. Possible explanations for the glass export are e.g. processing the glass packaging in Finland, or recycled glass being exported to be end-processed elsewhere. The last material presented in the Finnish Packaging Association's statistic is wood, which exports approximately 20% of its production abroad and while importing approximately 15% from abroad.

### Packaging products' import to Finland 2007 – 2016 (1000€)

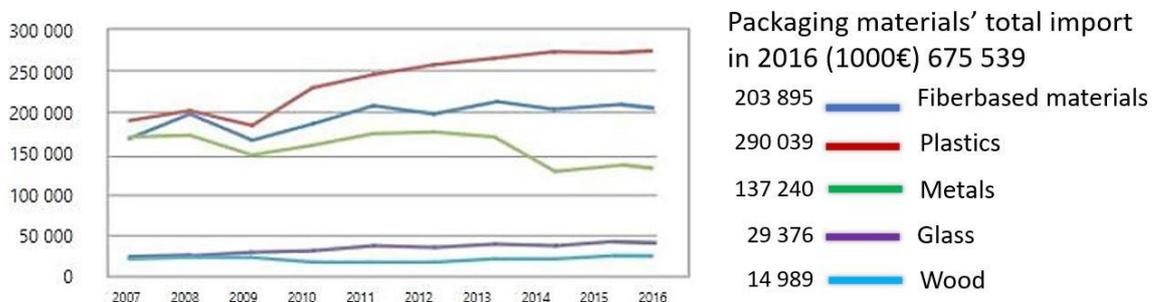


Figure 10. Finnish Packaging Association's (2018c, 37) statistic of packaging products' import figures during 2006-2017

Based on the figures introducing the Finnish packaging industry, it can be concluded that cardboard or fiber-based packaging are the most used materials choices, and its industry has had ups and downs amongst the years. Plastic is the second most relevant packaging material based up these statistics.

In terms of packaging volume that is moving in the Finnish markets, Posti; the Finnish Post has stated that they carried over 37 million packages in 2017, which is 9% growth compared to 2016 and this is expected to grow further in upcoming years. In addition to the 37 million packages, Posti clarifies that there are a lot of online shops that send their products as bigger letters as well. The online shops' packages' share of Posti's total packages amount has increased 15% from last year and is also expected to keep growing. Posti is the biggest Finnish package deliverer, hence their figures of packages in transit and online shops' growth are relevant and indicative. Through Posti's figures, the growth of online shopping and the increased demand for packages can be seen. (Finnish Packaging Association 2018d)

### 2.3.2 Distribution of packaging and its costs amongst the Finnish industries

Different industries have different needs requiring packaging. To distinguish which industries, have the biggest need for packaging and how this is reflected to the prices of primary products; figure 11 compiles the Finnish Packaging Association's statistics detailing, which industries in Finland consume the most packaging and how it is reflected in their products' end-costs. Figure 11 lists the 3 biggest industries.

The biggest industry using packaging was the 'production of foods and drinks', using 50,9% of total packaging's produced in Finland. The #2<sup>nd</sup> industry was 'production of paper and cardboard materials', consuming 17,4% of the total packaging produced in Finland. The #3<sup>rd</sup> biggest industry using packaging was the 'production of chemicals and chemical products' with 7,4%, after which the rest of the industries had packaging consumption figures considerably below 5%, hence not listed here. Notably, the biggest industry consuming packaging is a consumer-based industry, after which B2B industries are represented. (Finnish Packaging Association 2018c, 36-37)

In terms of how much does packaging influence the end-prices of primary products, the third column of figure 11 lists how big is the influence through a percentage representing the costs of packaging. The industry consuming the most packaging: the 'production of foods and drinks', has in average 5,9% of their end-prices correlated to packaging costs, which is the highest impact that packaging has in any industry. In comparison, the average of Finnish industries packaging costs is 1,0% of the product's end-price. (Finnish Packaging Association 2018c, 36-37)

Top 3 Finnish industries consuming packaging	Industries' consumption % of total packaging produced in Finland	Packaging's influence on product's end-price
#1. Production of food and drinks	50,9%	5,9%
#2. Production of paper and cardboard materials	17,4%	1,0%
#3. Production of chemicals and chemical products	7,4%	1,2%

Figure 11. Finnish industries' usage percentages of packaging from the complete packaging amount produced nationally (Finnish Packaging Association 2018c, 36-37)

### **2.3.3 Innovation, drivers and prospects of the Finnish cardboard packaging – and forest industries**

This sub-chapter introduces examples of innovation, its drivers, and industry perspectives; giving a brief introduction to potential future directions of the Finnish cardboard, packaging and/or forest industries.

Innovativeness in packaging or cardboard packaging industries is difficult to measure, equally as the innovativeness of any industry is difficult to measure or to benchmark, but examples of innovations and competition victories have been noted in the industry's trend barometer (figure 13) and seen on media, which is relevant considering the importance that media has to influence its audience. For example, in 2018 there were four Finnish packaging solutions that were recognized with an international award by the World Packaging Organization 'World Star' in 2018. Of the four winning packages, 3 were cardboard-based. The packaging's that were rewarded had innovations regarding child safety, biodegradable packaging, invented new production methods and usages for traditional materials, as well as decreased the amount of packaging and waste produced. (Finnish Packaging Association 2017f)

As another example of innovation in the connected industries, one material that the Finnish Association of Packaging connects to multiple innovations is corrugated cardboard. Corrugated cardboard is over a 100-year-old innovation, yet there have been found new ways of production for it, new ways to utilize recycled goods as raw material and new usages for it that are being created to this day. (Finnish Packaging Association 2017a; Mäntylä 2018)

Regarding corrugated cardboard or the above-mentioned examples of innovativeness in packaging, there are reappearing characteristics that bring value in these innovations: customer-centricity, environmental consideration and redesigning traditional solutions to be able to serve better the needs of today (Nikunen 2018).

Besides examples of innovation in the packaging and cardboard industries, their surrounding wider context of the Finnish forest industries has also new solutions developed to e.g. use mixture of different materials and new production methods. An un-packaging related examples of innovation within forest industry are creating cling film from cellulose (Mäntylä 2018; Finnish Packaging Association 2017e), creating cellulose based bags to replace plastic bags (Mäntylä 2018; Nikunen 2017) and re-innovating cardboard cups to be fully biodegradable (Mäntylä 2018). Examples of innovation merging packaging and forest industries are e.g. a melting cosmetics container produced from wood dust (Mäntylä 2018;

Finnish Packaging Association 2017d; Nikunen 2017). Innovations within either packaging or forest industries in Finland, yet not connected to both of them, can be found as well. For example, a cellulose based woven textile thread as a competitor to cotton based fabric (Aalto University 2018), or a package paint to protect the primary product better (Finnish Packaging Association 2018a ).

Drivers the innovations can be found for example in European legislation, which demands a decrease in plastic waste, demands societies to enable an increase in its recycling infrastructure and consumers who have become more aware of waste problems connected to plastic and microplastic in nature. The plastic waste recycling targets set by European Union, are currently 22,5% and are being doubled to 50% of plastic waste that needs to reach the recycling bins by 2025. European Union demands the producers to take responsibility within this process, which gives incentive to improve package. Redesigning packages is not to just fulfill the European Union's requirements, but also involves re-designing packaging to fulfill the needs of the whole supply chain and its stakeholders continuously better. This process involves considering alternative packaging materials too, which can potentially increase the interest and the market for new packaging solutions. (Mäntylä 2018; Finnish Packaging Association 2017c)

As mentioned above, consumers' increasing awareness is a driver, as is the demand of societies to enable plastics' increased recycling possibilities. These can be seen in the emerging industry of plastic circular economy opportunities however, this emergence doesn't go hand in hand with an automatic execution of technology and infrastructure that is now becoming available and would enable increased plastic recycling, neither does their emergence go hand in hand with consumer awareness to demand for it. As such, alternative materials to plastic for packages are increasing in demand, even though plastic's properties in packaging can be unparallel compared to its competitors, according to the Finnish Packaging Association. (V. Korhonen 2018; Weiström 2018)

To conclude, no industry is stale without change, and the packaging industry reflects change through e.g. adjusting according to regulations, creating new service offerings by collaborations with organizations and authorities, as well as by allowing itself to be highly connected and steered by the industries' it packages the primary products for.

Politically uncertain future expectations and expected decline in global financial situation is influencing the forest industry negatively at the moment. For example, Finnish forest industry sees the trade restriction to Russian, the increasing amount of trade between China

and US, and the trade negotiations of Brexit as highly volatile, yet impactful to the prospects of forest industry, bringing uncertainty. (Finnish Forest Industry 2017b)

However, it is equally notable that despite the uncertainty, there has been growth. The Finnish forest industry lists cardboard packaging as an example where investments have been made to increase production amounts by 9% from 2016 to 2017. This growth was due to an increase of packaging demand according to a publication of the Finnish forest industries in 2017, but the same publication does also note the uncertainties regarding the continuation of growth. (Finnish Forest Industry 2017b)

The Finnish forest industries see their current and long-term strengths to focus around increasing customer-centricity, and the ability to provide sustainable / renewable resources in e.g. energy production. It should be also noted that they view EU legislation to be an important driver and restrictor in their ability to showcase their strengths. The legislation and consistent politics need to be in key roles for bio- and circular economy's growth, equally as it needs to enable the usage of wood as a renewable resource. (Finnish Forest Industry 2017b)

#### **2.3.4 Previous research on the future of packaging and LOHAS consumer segment**

This sub-chapter's focus is on presenting a previous future research of packaging industries and on discussing of a research on LOHAS consumer segment. The sub-chapter is divided in two parts for clarity and ease of reading. The first part delves into a packaging related research discussing of the industry prospects in 2020 (Leppänen-Turkula et al. 2000) and to another future research with views for the industry's prospects in 2050 (Järvi-Kääriäinen and Ollila 2007). After this the second part discusses of Finnish future researches, which combine packaging industry and LOHAS consumers; Lifestyle of Health and Sustainability-consumers. LOHAS consumers are expected to be pioneering and highly influential consumers to the packaging industry in the future (Korhonen 2018; Huhtanen 2011).

The future researches give perspectives on how the packaging industry's development expectation have been seen and how they are seen currently. Additionally, the future researches are used to benchmark this research's intention to equally discuss of packaging industry's potential future developments.

## **Part 1. Future research of packaging in 2020 and of packaging in 2050**

A research called Packaging 2020 was written in 2000, discussing trends and creating scenarios for the packaging industry in 2020. The research defined the main functions of packaging in year 2000 and what they expected to stay relevant in 2020. Their findings resolved to have and keep the following functions of packaging the most relevant: enabling logistics functions (a), product safety (b), protecting the products (c), being a tool of marketing (d) and a source of information (e). Further the research drew up 6 major scenarios, listed below, that it concluded to be highly relevant and relatively probable in terms of future scenarios that may come to affect the packaging industry in Finland. (Leppänen-Turkula et al. 2000, 1)

1. Growth in crisis,
2. EU strongly steering,
3. Sustainable development,
4. Technology jump in Finland,
5. Global logistics – local nets,
6. Changes in Russia (Leppänen-Turkula et al. 2000, 5-7)

In terms of the content of the Packaging 2020 research, it is previous future research within the packaging industry in Finland and in the context of this study; looking back on its conclusions, they have held relevancy, hence it is briefly discussed within this context to give grounds for discussion and to demonstrate industry changes over a long period of time. Though it should be kept in mind that the Packaging 2020 research was originally written in 2000, hence there have been changes within the industry afterwards and a proverbial ‘pinch of salt’ should be kept in mind. In terms of the above-mentioned scenarios’ importance, the Packaging 2020 research thought that the scenarios 2, 4 and 5 were the ones offering the most potential growth. (Leppänen-Turkula et al. 2000, 5-7)

The research concluded the Finnish packaging industry’s main strengths to be know-how, strong forest industry cluster and the ability to provide fast, flexible and safe services in a so called one-stop shop, with an internationally good reputation and wide product selection with high tech and innovative solutions (Leppänen-Turkula et al. 2000, 11-13). The research drew attention to eight variables which they estimated to have a notable impact onto the Finnish packaging industry’s future. (Leppänen-Turkula et al. 2000, 14-15)

1. Function of packaging,
2. Consumers' consumption selection criteria,
3. Online shopping,
4. Logistics and global transportation,
5. Material development,
6. Finnish companies,
7. Population demographics,
8. Political situation. (Leppänen-Turkula et al. 2000, 14-15)

The Packaging 2020 concluded that there are multiple variables, which cannot be influenced yet have a heavy impact. A part of the impactful variables is unpredictable in their effects, such as Finland's geographical location next to Russia, and the other part has been predictable, such as demographical developments in aging and decreasing household sizes. These variables are notable to the packaging industry in Finland. In addition to the above-mentioned, the research specified the following to be the main variables that were expected to define the packaging industry in the future. (Leppänen-Turkula et al. 2000, 26)

- The role of packaging to consumers and to supply chains,
- Changes to the requirements/needs in packaging, due to e.g. security reasons,
- Changes in industry competition through material development,
- Consumer's consumption criteria and motivations,
- Online shopping with its marketing methods, geographical distribution radius and the role of transportation within it,
- Development of logistics and the operators within it, distribution channels and standardization of transportation. (Leppänen-Turkula et al. 2000, 26)

Packaging 2020 found the drivers of growth in the packaging industry in Finland to be (1.) growth in consumption and (2.) increased internationalization of Finnish industry. They estimated the capacity of the Finnish packaging industry to be sufficient yet expected potential problems to arise from raw material and energy prices increases. (Leppänen-Turkula et al. 2000, 27)

All in all, the Packaging 2020 highlighted the importance of logistics influencing packaging, the products' safety and protection, as well as there being expectations of variations to packaging's functions and consumers' consumption (Leppänen-Turkula et al. 2000, 27).

Furthering the Packaging 2020 industry's future research, the Association of Packaging Technology and Research saw (Järvi-Kääriäinen and Ollila 2007) the relevant and upcoming future scenarios for 2050 to revolve around the below listed expected developments.

- Service society and an increase of online shopping,
- Consumer globalization, segmentation as well as aging,
- Product selection widening with decreased unit sizes in a more global environment,
- Increased attention to sustainability, health awareness and transparency of products, its packaging and processing,
- Packaging development with bioplastics, active and intelligent packages, compound materials and connections to digitalization and hybrid media involvement,
- Transparency with full circle tracking as well as infrastructure and material development enabling reusability, recycling and decreases of waste. (Järvi-Kääriäinen et al 2007, 303)

To conclude the findings from the two above-mentioned future researches of packaging industry, packaging is expected to develop and the external variables regarding the business environment have a heavy influence in the industry. The Packaging 2020 (Leppänen-Turkula et al. 2000) research was correct to predict the scenario where EU regulations may hold a strong sway over the industry, as proven through the forest industry describing regulations to be a driver for them (Mäntylä 2018; Finnish Packaging Association 2017c). Equally, Packaging 2020 was correct list Russian trade as a potentially highly influential scenario, as it was seen to be in the aftermath of Ukrainian crisis. (Leppänen-Turkula et al. 2000)

Further future research of Association of Packaging Technology and Research, confirmed the perspectives of Packaging 2020, bringing up the predictable and unpredictable variables that can have a notable effect to the packaging industry. For example, the common scenario of 2020 and 2050: population aging, is predictable, whereas the expected service society or the development of packaging materials have impacts that are not predictable or transparent to the industry yet. (Järvi-Kääriäinen et al 2007, 302-307; Leppänen-Turkula et al. 2000)

## **Part 2. LOHASPAC**

Another relevant packaging -related future research is LOHASPAC. The research started from an original study in 1990, was redone and finished in 2017, and concluded that a specific consumer segment; LOHAS, Life Style of Health and Sustainability, is of particular importance to the packaging industry. (Korhonen 2018; Huhtanen 2011)

According to the research, currently many consumers have a love-hate relationship to plastic, they can see the pragmatic benefits of it, however that view changes drastically once the packaging is removed and the plastic becomes a negative nuisance. At the end of the 1990's there was a research measuring Finnish consumer's relationship to packaging (Huhtanen 2011) and it was found that a strong trend was ecological packaging, which, at that time, was thought to have a brown and plain outlook. A research concluded in 2017 re-questioned the Finnish consumers' outlook and attitude to packaging. The findings concluded that a growing part of consumers thought that the ecological aspect of packaging was important, yet now their expectation of what an ecological packaging would look like, had changed. The consensus was to expect the packaging to be beautiful as well as ecological. (Korhonen 2018; Huhtanen 2011)

The next step of the research was to define who the new consumer segment were, what typical characteristic they held, and how big they were. The findings of this brought forward the importance of LOHAS consumers in Finland to the local packaging industry. LOHAS is an abbreviation from Lifestyle of Health and Sustainability, and at the time of 2017 it was estimated that 33% of the Finnish consumer segment could be categorized as LOHAS consumers. LOHAS consumers can be categorized as Medium or Heavy LOHAS consumers, both of which think that their daily consumption habits need to reflect their values and want to make conscious choices with their consumption. A typical LOHAS Heavy consumer is well educated, active on social media, and are globally concerned in their thoughts. Whereas LOHAS Medium consumers' concerns lie closer to home in their immediate environment. 10% of Finnish consumers were considered to be in LOHAS Heavy segment and 23% were estimated to be in LOHAS Medium segment. (Korhonen 2018; Huhtanen 2011)

Based on these consumer segment findings, a study called LOHASPAC was launched and covered how LOHAS consumers were steering pioneers in consumption with their guiding values being health and wellbeing, ethical and social responsibility and ecological consideration. The study generalized that plastic packaging was seen to be against LOHAS

values with its potential threats to individuals' health, to the global nature and how it was seen to become the problem of the poorest and most vulnerable demographic geographically. (Korhonen 2018; Huhtanen 2011)

Media's role as the messenger, the platform of discussion and information distribution was seen as heavy. The consumers blame industry for using plastic packaging, yet equally the industry blames consumers for not recycling the packaging properly. The LOHASPAC study emphasized the lacking recycling infrastructure's importance. LOHASPAC compared material properties of plastic packaging, to those of other materials and concluded how plastic had an immense competitive advantage. They discussed how primary products' carbon footprint, e.g. bread's or meat's carbon footprint may be 20 times higher than their plastic packaging's, yet it isn't necessarily viewed from that angle by the consumers, nor is it considered how the plastic packaging reduces food waste and extends the life times for products, which also have a decreasing effect to carbon emissions and wasted resources. LOHASPAC concludes that there is a necessity to find middle ground for consumers and industry to meet and compromise, rather than simply blame each other. (Korhonen 2018; Huhtanen 2011)

#### **2.4 Research combining megatrends, trends and the packaging industries**

This sub-chapter introduces both past and the current debate that combines and covers most of the theoretical characteristics of this research: combines MG listings, introducing Finnish consumption megatrends and Finnish packaging trends for 2018. Regarding this chapter's MG listings, there are two megatrend-listings (Finnish forest industries 2017a; Olsmats and Kaivo-Oja 2014, 1-10) and the third one is a Finnish consumption megatrend-listing (Hiltunen 2017). Of the MG listings, first one is a MG shortlist from the Finnish forest industry (2017a) and the second one is from a MG and packaging research on a European scope (Olsmats, Kaivo-Oja 2014, 1-10). The chapter combines these two MG listings with EEA (2015) listing and draws a converged MG listing.

Amongst existing literature regarding MGs related packaging industry, an important publication is a European packaging industry foresight study published by Carl Olsmats and Jari Kaivo-oja (2014) where they identified several global drivers and packaging industry implications due to global megatrends. Olsmats and Kaivo-oja's research (2014, 1-10) was focused to Europe and in greater detail to Sweden. They based their literature research of megatrends on a 2010 report "*Our future world, an analysis of global trends, shocks and*

*scenarios*” by an Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO).

Olsmats and Kaivo-oja (2014, 1-10) listing of megatrends is presented, after a MG short-list from the Finnish forest industry (Finnish Forest Industries 2017a). A third MG listing in this chapter is from a Finnish consumption’s megatrends perspective (Hiltunen 2017), notably differing from a general MG listing and as such, not a part of the MG listing compilation.

What should be noted that these listings, nor the EEA (2015) listing, are made for the purpose of cardboard packaging industry in Finland, nor are the made by similar authors, institutions or companies, hence representing the differentiating perspectives to megatrends well. However, because of their differing sources and contexts, it is needed to converge them to be able to find how they correlate and build relevancy to the Finnish cardboard packaging industry. The megatrend-listings have described the trends in their chosen order, however no conclusions should be based up the order that they’re listed in and their importance.

Megatrends that the Finnish forest industries (2017a) sees as most relevant as global drivers for change are:

- a. Digitalization, in terms of decreasing demand for paper, due to digitalized information distribution, but increasing demand for cardboard packaging.
- b. Urbanization, and the possibilities that wood as a construction material has, is seen as a megatrend that has immense potential, because wood is renewable, causes considerably less waste and there is a need to build homes for over 3bn of people by 2020 alone.
- c. Competition over natural resources, Forest industry sees immense potential in industrial circular economy application, as well as efficient resource allocation, e.g. as global population grows, so does the need for food and energy, where forest can offer renewable alternatives in e.g. energy production or help in land-use problems by utilizing wood fibres in clothing production, lessening the need for cotton farming, potentially enabling increased food production land-use, etc.
- d. Environmental challenges and environmental reputation, increased consumer awareness has been seen to be reflected in and as a driver of consumer purchasing.
- e. Population growth and its concentration to tightly habituated urban cities and rising standard of living, enable/force change in consumption patterns. The forest industry sees an opportunity with consumers requiring that change to happen towards solutions that ease everyday life. (Finnish Forest Industry 2017a)

Megatrend-listing of Olsmats and Kaivo-oja (2014, 1-10) from a packaging research in Europe:

- a. Population growth,
- b. Population aging,
- c. Globalization,
- d. Urbanization,
- e. Wealth and middle-class growth,
- f. Consumption's growth and reduction of resources,
- g. Increase of inequality,
- h. Climate change and environmental pollution,
- i. Digitalization,
- j. Technological development.

Finnish consumption megatrend-listing of Hiltunen (2017):

- a. Increasing number of pets,
- b. Later age of getting a family,
- c. Perfect-me social media image,
- d. Purchasing power of the masses,
- e. Market fragmentation,
- f. New innovations,
- g. 'Smart' consumers,
- h. Do-it-yourself-consumers,
- i. Philanthropist-consumer,
- j. Mis-information,
- k. Cheap & easy & immediate consumption solutions,
- l. Consumers of fear,
- m. Luxury in daily purchases,
- n. The place of traditions.

There are a lot in common with Olsmats and Kaivo-oja (2014, 1-10) MG listing when compared to the EEA's (2015) MG list, which is understandable, as the character of MGs is not to change rapidly, and the publishing institutions CSIRO and EEA are similarly large-scale governmental bodies. Whereas the consumption MG listing of Hiltunen (2017) is notable different, as she based her MG list with the intention to discuss "*what does a future consumer want: trends and phenomena*" (Hiltunen 2017, 12). Hiltunen focused her research

to MGs' influence on Finnish consumers and she did not research with an equal macro-scale as EEA and CSIRO did, even though Hiltunen does not limit her findings to be applicable to Finland only, though has centred around it.

In comparison to Hiltunen (2017), EEA (2015) or Olsmats and Kaivo-Oja (2014, 1-10), the MG shortlisting of the Finnish Forest Industries (2017a) is brief and specified to the most potential variables that megatrends present to the industry. Furthermore, it should be noted that the context in which the MGs are presented by the Finnish forest industry is a competition where they are looking for innovation and new offerings that could bring forward the Finnish forest industry globally and locally. Other places where the Finnish forest industry and MGs are published has been e.g. in *Metsätieteen Aikakausikirja*; an academic publication by the Finnish Society of Forest Science.

*Metsätieteen Aikakausikirja* has written about MG's influence on the Finnish forest sector, concluding that particularly the MG of 'population growth' increases demand for forestry-related solutions, products and services, bioeconomy and using forest as a raw material in energy production. They note that legislation and uncertain international political views are a source of insecurity, but the growing Asian countries are expected to still bring a somewhat stable demand for forestry-based products, where the Finnish industry sees itself competitive. (Hänninen et al. 2013, 675-677; Viitala, 2014, 213-128). These notes further digest the shortlisting of Finnish forest industries to put the focus on the MG of population growth, which is connected to urbanization, sending domino reactions to competition over natural resources and environmental challenges.

By comparing and combining the MG listings of EEA (2015), Finnish forest industry (2017), and Olsmats and Kaivo-Oja's packaging research (2014); figure 12 is a compilation of MGs main categories. Hiltunen's (2017) Finnish consumption's megatrend-listing is not a part of figure 12 but is included in sub-chapter 2.5 summarising literature findings and in discussion's chapters 5 and conclusions' chapter 6.

<b>CONVERGED MEGATRENDS</b>	<b>EEA (2015)</b>	<b>Finnish Forestry Industries (2017)</b>	<b>Olsmats &amp; Kaivo-Oja (2014)</b>
<b>Population growth</b> (inc. expected demographic consequences of increased ageing, inequality and middle-class' growth)	Diverging global population trends	Population growth	Population growth
	An increasingly multipolar world		Population ageing
			Increase of inequality
			Wealth and middle-class growth
<b>Urbanization</b>	Towards a more urban world	Urbanization	Urbanization
<b>Climate change and environmental challenges</b>	Increasingly severe consequences of climate change	Environmental challenges and - reputation	Climate change and environmental pollution
	Increasing environmental pollution		
	Growing pressure on ecosystems		
<b>Competition over natural resources</b>	Intensified global competition for resources	Competition over natural resources	Consumption's growth and reduction of resources
<b>Digitalization and tech development</b>	Accelerating technological change	Digitalization	Digitalization
			Technological development
Other megatrends	Changing disease burdens and risks of pandemics		Globalization
	Continued economic growth		
	Diversifying approaches to governance		

Figure 12. Convergence of megatrend-listings (EEA 2015; Finnish Forest Industries 2017a; Olsmats and Kaivo-Oja 2014)

Figure 12 is concluding the common and most repeated megatrends in its first column, after which specifying the sources and the exact names of the megatrends in their original context. As the megatrend-listings used to build figure 12 are from EEA, the forest industry and a packaging research; the conclusions should be able to give relevance to the European market, the Finnish market, the forest industry in Finland and the European packaging industry.

In terms of current trends directly related to packaging, the Finnish Packaging Association has partially published a research about trends functioning as drivers in the Finnish packaging industry and published a brief Finnish trend barometer for packaging in 2018.

The findings for trends functioning as drivers bring 5 trends forward: role of packaging to decrease food waste (1), continued increase of online shopping (2), simplified information presented in packaging (3) and sustainability / environmental impact of the package (4) as well as the ability to create consumer trust through packaging (5). ( Nikunen 2018)

The trend barometer of packaging trends for 2018 named the relevant trends and declining trends of that moment, as depicted in figure 13. The barometer was published in February, which is notable due to Valentine's day proximity, as seen in the trends mentioning of valentines packaging and the over packaging of chocolates, yet not mentioning the

packaging of any other holidays. The barometer does not distinguish between the different packaging materials. (Finnish Packaging Association 2018b)

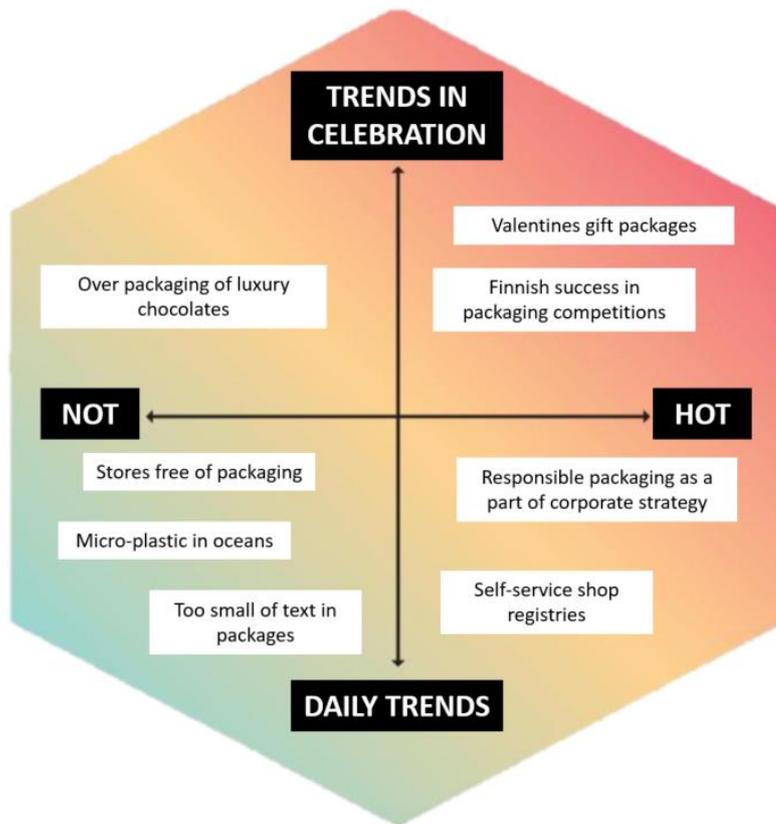


Figure 123. Trends of packaging industry in Finland in Feb 2018 (Finnish Packaging Association 2018b, 6)

Notably both the compiled megatrend listing and the listing of trends acting as drivers share notions of environmental responsibility. Whereas the trend barometer shares a mention of corporate responsibility, which also connects to the earlier mentioned LOHAS customer segment and can be an enabler for environmental responsibility.

## 2.5 Summary of the literature review

Packaging's functions and how it delivers value at current moment, were presented relatively coherently throughout the differing sources of this research. As stated by Olsmats (2002) and Solala (2018), a bad package can ruin a good product, though a good package cannot save a bad product.

There was a consensus on packaging's basic purposes such as protecting a product, enabling logistics and distributing information. Based on which the differing sources and their perspectives brought forward a picture for the future development of the industry that was relatively unified and supported itself from different angles. Highlights and repetition could be seen particularly on the need for future packaging to facilitate consumers' ease of consumption and for environmental consideration of packaging. (Järvi-Kääriäinen and Ollila 2007, 302-307; Leppänen-Turkula et al. 2000, 207) These highlights can be seen to tie to megatrends, LOHAS consumers and already ongoing industry developments or aims.

Megatrends and the connected concepts of trends and drivers have previously been researched in connection to cardboard, packaging and forest industry, linking them to be relevant towards each other. In this case the most relevant megatrends were found to be population growth (1), urbanization (2), climate change and environmental challenges (3), competition over natural resources (4), as well as digitalization and technological development (5). (Finnish forest industries 2017a; Olsmats and Kaivo-oja 2014, 1-10; EEA 2015)

When dissecting which industries use packaging, it is clear to conclude that the B2C industry of food and drink's production is the largest one requiring packaging, consuming 50,9% of all packaging produced in or imported to Finland (Finnish Packaging Association 2018c, 36-37). As the food and drinks industry is a consumer oriented one, the importance is clear for consumer trends, megatrends and consumptions' megatrends.

Cardboard packaging / fiber-based packaging has been the most used material choice in the Finnish packaging industries, however cardboard packaging industry's figures have also been the most volatile of the different packaging materials' industries. The Finnish cardboard packaging industry or the local packaging industry in general are not necessarily growing in the light of statistics from 2016 (Finnish Packaging Association 2018c, 36-37). However, in a show of incoherency, the literature has multiple references stating and expecting the opposite than what statics are showing: predicting growth, recounting investments to the

packaging industry and having a generally positive tone with high expectation for packaging industry growth (Finnish Packaging Association 2018d; Hänninen, et al. 2013, 675-677; Finnish Forest Industries 2016). This leaves room for further research and direct industry consultation to find more information, as the current industry expectation sees paper-production decreasing, yet packaging production increasing in a relatively short-term, which is not visible on statistics at least yet. Long-term expectations see bioeconomy as the main product of forest-related industries through diversification of forest products. Examples of such bioeconomy products are expected to be e.g. new biomaterials and services. (Hänninen, et al. 2013, 675-677; Viitala 2014, 125-128)

The drivers for the debated growth in cardboard packaging industry are particularly tied to European legislation and consumer awareness. In the regards of consumer awareness, the power of media and social media were brought forward, as well as their effect to have created a negative consumer image regarding plastic packaging, and the positive attention they have brought to innovation in the packaging, cardboard packaging as well as forest industries. (Mäntylä 2018; Finnish Packaging Association 2017c; Finnish Packaging Association 2018c, 36-37; Säilä 2017; Korhonen 2018)

Cardboard packaging -, packaging - and forest industries have been linked together through multiple sources, equally as they have been linked regarding the effects that changes in consumption have had on them and is expected to have on them.

The Finnish cardboard packaging - and forest industries have been linked, as parts of the so-called “*forest cluster*” in Finland (Leppänen-Turkula et al. 2000, 11-12). The strengths of the forest cluster have been seen to be in deep know-how, industry collaboration, ability to provide fast and flexible services in a manner of a one-stop shop. The good international reputation of the forest cluster helps the cardboard industry, as they are able to link their expertise and any new innovations to the well-known high tech and wide product selection of the cluster. The individual strengths of the Finnish cardboard industry are especially customer-centricity and environmental consideration, as well as developing their ability to redesign traditional solutions to bring value with new usages cases and by enabling new raw material sources in production. (Leppänen-Turkula et al. 2000, 11-12; Nikunen 2018)

The industries are dealing with uncertain and volatile variables from global politics that can be highly impactful, such as changing global trade treaties (Finnish Forest Industry 2017b, Leppänen-Turkula et al. 2000). As a response, adapting to such global trends (EEA 2015) seems to be the industries reactive choice. However, the alternative response of proactive

approaches to shape global change (EEA 2015) is something that would require further research in collaboration with industries to see how influential or active are the industries.

Previous future research on Finnish cardboard packaging industries concluded the following scenario developments to be the most influential when approaching 2020: EU's steering power, technology's – and global logistics' development, which all are variables that are still displayed in current packaging researches findings (Leppänen-Turkula et al. 2000, 6-7). The most influential developments for 2050 are expected to be centered around globalization, service society, further decreased unit sizes, consumers' attention to sustainability, material development and transparency requirements influencing packaging. Besides these, there are further uncertainties regarding variables such as security and the value-basis on which consumers make purchasing decisions on, etc. Predictability and unpredictability have been a consistent in both current and previous research, for example demographical development is predictable and highly influential, but political developments can be equally influential yet unpredictable. (Järvi-Kääriäinen and Ollila 2007, 302-307; Leppänen-Turkula et al. 2000, 7-10)

Consumer segmentation and the importance of particularly LOHAS consumers; an abbreviation from Lifestyle of Health and Sustainability, has been noted in previous research. LOHAS consumers are expected to develop into pioneering and steering consumers, who demand corporate responsibility and environmental consideration from the packaging industry. Currently 33% of Finnish consumers are categorized as LOHAS, and this number is only expected to grow in time. (Korhonen 2018)

The current trends that act as drivers for packaging development are linked to decreasing food waste (1), an increase in online shopping (2), simplified information in packaging (3) and consideration of the environmental impact packaging, (4) as well as packaging's ability to create consumer trust (5) (Nikunen 2018). These current trend drivers seem to already connect to the megatrends' environmental aspects, as well as to the LOHAS consumers, (Finnish Packaging Association 2018b), leaving room for speculation on what are the next connections going to be. The empirical research with consumption experts further specifies what consumption trends do they expect to be influential in addition to the megatrend listing.

### 3 METHODOLOGY

This chapter describes and explains what methodological and data collection choices have been made for this research. Starting from the holistic research design, presenting descriptive statistics of interviewees and survey participants, after which describing interview methodology and then survey methodology. Lastly a sub-chapter concludes reliability and validity.

#### 3.1 Research design

Research design defines how research questions are answered, clarifies objectives, sources of data, its collection and analysis as well as the constraints. Research design is presented in a so-called “*research onion*” in figure 14, depicting the layers of the study. (Saunders et al. 2009, 107; Yin 2014, 28) This research is a qualitative study with interpretative philosophy, which means that in the study “*researchers need to make sense of the subjective and socially constructed meanings expressed*” (Saunders, Lewis et al. 2012, 163).

The nature of the research is exploratory, which means that the aim has been to gather insight through wide open-ended questions and to discover, define and describe the phenomena accordingly. As typical of exploratory research, the initial scope of the research was wide, yet narrows, as the research progressed. The strength of exploratory research is to be able to proceed from the initially large research area towards specifying and recognizing relevant themes, terms and connected key concepts in relation to the research question. (Saunders et al. 2009, 139-140; Hirsjärvi et al. 2014, 138)

This study used a combination of literature and in-depth expert interviews as a source of information. The interviews were done with loosely structured interview methods, which is typical of exploratory research. Besides the exploratory nature, this research has sought to confirm and further validate its findings with an online survey, hence creating a descriptive secondary nature of this study. (Saunders, Lewis et al. 2012, 171)

The inductive approach of this research is supported in the explorative nature of the research, as the direction is guided and relies on the quality of contributions from interviewees and survey responders. In other words, the initial scope of exploratory research may be wide, yet narrows as the research progresses. The advantage in inductive exploratory research is its flexibility and ability to adjust theory to support the empirical findings, unlike deductive research which searches to confirm theory with empirical research. A correlating weakness

is inductive explorative research's potential oversight of information if the researcher is not aware of wide connected theoretical implications and/or cannot bring them forward as the empirical research is being conducted. (Saunders, Lewis et al. 2016, 145, Eriksson & Kovalainen 2008, 22-23)

The inductive approach means that the *“approach to theory development involves the development of a theory as a result of the observation of empirical data”* (Saunders, Lewis et al. 2016, 718). The research's theoretical background was established and adjusted according to interview findings, which is exactly in line with inductively approached data collection intention to *“explore a phenomenon, identify themes and patterns and create a conceptual framework”* (Saunders, Lewis et al. 2012, 146).

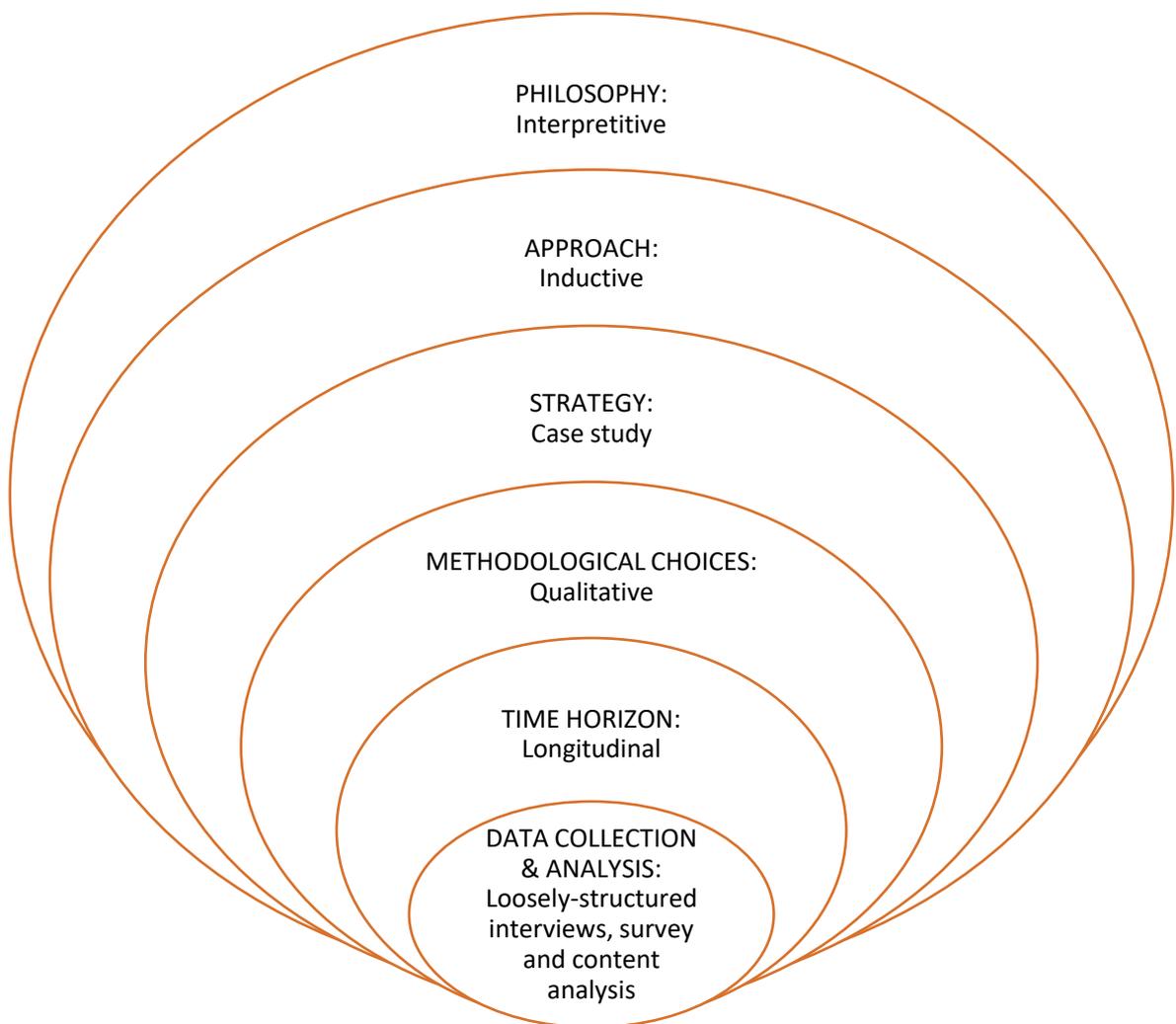


Figure 134. Research design

A negative aspect in the inductive research is that as the theoretical research had not been fully completed before empirical research is launched; it is debatable if the empirical results could have been more in depth, if the researcher would have followed the intricacies of the theory, industry implications and problem points (Saunders, Lewis et al. 2012, 145-146). In this case base research before the interviews covered a wider ground of theory and industry knowledge, which was further researched according to the empirical first-round findings and then completed with the second-round questionnaire and again accordingly added/adjusted theory.

With the explorative nature of this research and loosely structured interviews, the research design would not have allowed the researcher to guide the interviews deductively along the lines of intricate theories. The interview questions were set beforehand according to the research questions and the attached basic theory. The interviews did not contain industry-related questions, as the interviewees did not know the research questions during the interviews to not let that guide their perceptions and answers regarding megatrends and consumption trends.

The methodology with its strengths and weaknesses was already decided from the get go of this research purposefully “*to explore the phenomenon, identify themes and patterns and create a conceptual framework*” (Saunders, Lewis et al. 2012, 171) in an indicative manner. The time horizon of the research is longitudinal, which means that the research could study changes and expected developments of phenomena. (Saunders, Lewis et al. 2012, 190; Yin 2014)

A research strategy refers to a plan to achieve the end-goal of the research, in this case the appropriate strategy for this research is case study. A case study is a context requiring study that researches a phenomenon or a topic in its context. Typically, as in this research equally, case studies highlight the importance of context, though boundaries between phenomena in case studies can be difficult to fully separate, which is a differentiating factor when comparing the research strategy of case studying to experimental studies, where the phenomena needs to be strictly depicted. (Yin 2014; Hirsijärvi 2014, 135-138)

A case study differs from a survey research strategy considerably, and as this research uses also a survey, it is important to note how these two differ. A survey is bound by its variables, where as a case study is not, due to a case study being less structured and oriented for exploratory nature from the get-go. (Saunders, Lewis et al. 2012, 179-180) This research used its survey to confirm interview results and process the findings further, instead of using

a holistic survey research strategy. A longitudinal case study is able to study multiple points in time, through which it can identify phenomena evolution in time. The data for a case study can be collected through different methods, though the research is typically qualitative by nature. (Yin 2014; Hirsijärvi 2014, 135-138)

### 3.2 Interviewees and survey participants

The descriptive statistics of interviewees and questionnaire participants are composed to clarify who have been interviewed and surveyed for the basis of this research. Both rounds of empirical research were conducted anonymously, though all respondents besides one survey participant allowed their basic descriptive information to be collected.

For the first-round empirical research, there were 13 consumption experts interviewed. The second-round questionnaire was answered by 19 consumption experts. For both empirical rounds, the same pool of experts was approached. A list of 25 experts were gathered and approached. All listed experts had relevant working experience in either academia, consulting or researching, based on which they held perspectives of different consumption related expertise. Based on figure 15, it can be concluded that the research participants were generally well experienced in their fields of work.

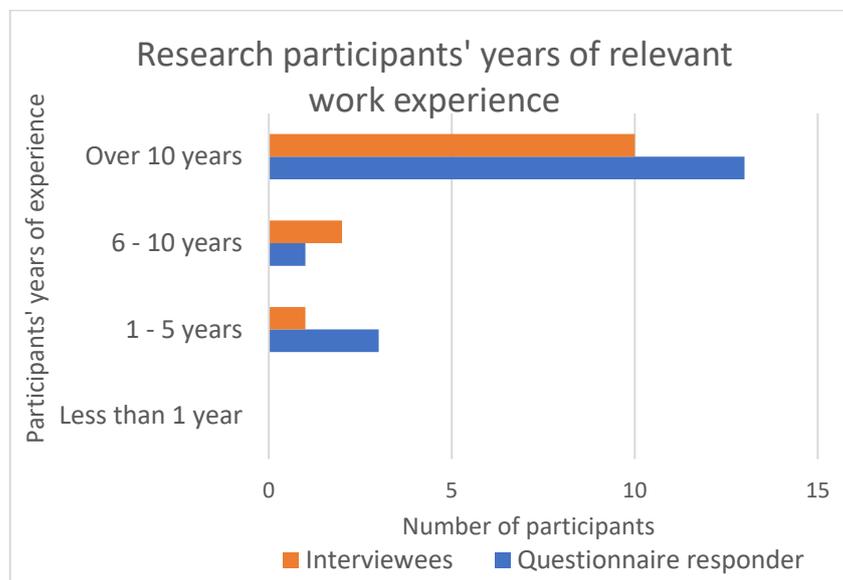


Figure 145. Descriptive statistics of consumption experts' years of relevant work experience.

As the researcher knew who participated on the first-round interviews, it can be confirmed that the perspectives brought forward in the interviews, were evenly distributed geographically and did not give unfair weight of expert views to any single university, consultancy or research institution by interviewing multiple persons from any singular

source. However, the interviews did have a notable number of participants from university, which can be seen in the descriptive statistics as well.

For the second-round, there is no certainty of exactly whom responded to the anonymous survey. The same pool of experts were approached for both the interview and survey. Based on figure 16, it can be seen that a bigger number of researchers took the survey than the amount who agreed to or were reachable to participate to the interviews.



Figure 156. Descriptive statistics of consumption experts' area of working.

Interviews took 57 minutes in average. The interview lengths varied between 25 minutes to 146 minutes and in total all interviews combined came to be 739 minutes, i.e. 12 hours and 19 minutes. The median of interview lengths was 48 minutes.

### 3.3 Methodology of interviews

This sub-chapter discusses the methodology of the interviews. The interviewee sampling selection and the loosely structured data collection technique are discussed in sub-chapter 3.2.1. The analysis of interviewed material is discussed in sub-chapter 3.2.2.

The interview methodology has common characteristics with the survey methodology, yet for understanding of their differences they're presented separately, but kept brief to avoid unnecessary repetition. The similarity is due to a shared sampling group, and because the basis of survey analysis was similar to the interview analysis.

### 3.3.1 Data collection for the interview

The first-round interviewees were approached by phone first, where they gave an informed consent to participate in an interview yet were not aware of the research questions. Informed consent refers to a situation where survey respondents are “*informed about the nature [...] of research to be undertaken and their role within it*” (Saunders et al. 2012, 672). In this case, the respondents agreed to participate in the research according to the description of their role, even though their role required for the interviewees to accept that they did not know the research question or purpose, despite being asked to participate. The interviewees knew that the research was connected to a master’s thesis and that their expertise in consumption was the reason for being interviewed.

The interviewees were not told the research question to make sure that their responses were not guided and not tailored to be simply packaging related. The interview and the inductive nature of the study were purposefully chosen in the beginning of the research to grasp a holistic understanding of megatrends’ and consumption trends’ implications in Finland at that moment (2017-2018) and in the future (2030). The interview questions can be seen in attachment 1 in Finnish and in attachment 2 in English. The interviews were conducted in Finnish.

First-round interviews were loosely structured / semi-structured, which refers to the interviewer reading a certain set of questions but allowing the questions’ order to vary and to be lead beyond the set-questions according to the responses of the interviewees with minimal influence from the interviewer. The loosely structured interviews were non-standardized. (Saunders, et al. 2012, 374-377) The responses were recorded, after which transcribed and analysed, creating the base for the second-round questionnaire.

Loosely structured interviews are unlike structured interviews, where the questions are asked in a predetermined order. Loosely structured interviews allow the interviewees to influence the direction of the interview, as to not lead the respondents, their responses, or influence them by showing the questions or interview themes. In other words, the purpose was for the interview to be explorative, to be guided by the perceptions of the interviewee and “*seek new insights into phenomena, to ask questions, and to assess the phenomena*” (Saunders, et al. 2016, 715).

The sampling of both the interviews and the second-round survey was done through purposive case sampling, which refers to “*non-probability sampling procedure in which the judgement of the researcher is used to select cases that make up the sample*” (Saunders et

al. 2016, 724). The process of sampling was done by the researcher in collaboration with the research's two guiding professors to ensure that the chosen sample group was sufficiently experienced and large as well as broad enough. Generally purposive sampling group is relatively small and is gathered "*on the basis of extreme cases, heterogeneity (maximum variation), homogeneity (maximum similarity), critical cases, theoretical cases or typical cases*" (Saunders et al. 2016, 724).

The interviewed and surveyed experts are consumption experts who were not connected to cardboard, packaging or the forestry industry, hence the value of the empirical findings is in the expertise regarding consumer expectations, megatrends and consumption trends. The second-round questionnaire is structured to find how the expert perspectives are distributed, though it does not push for consensus, because the objective of the research is to incite discussion, rather than to create new theory or consensus.

### **3.3.2 Data analysis for the interviews**

The analysis of interviews was done as an analytic induction, which refers to an "*intensive examination of a strategically selected number of cases so as to empirically establish the causes of a specific phenomenon*" (Saunders, et al. 2012, 574). The purpose of analytic induction is to "*develop an explanation by intensively examining the phenomenon being explored, rather than commencing the search for this by using existing theory*" (Saunders, et al. 2012, 574). In this case the phenomena being explored were megatrends and consumption trends in the context of cardboard packaging industry. The data regarding megatrends and trends of consumption was primary and from consumption expert interviews. Each interview represents a 'case' that analytic induction examines. Analytic induction is typically tested and can be iterated multiple times to increase reliability and distil findings (Saunders, et al. 2012, 574). This research analysed the interview 'cases' individually to identify themes, repetitions and patterns of the interview transcripts, and tested / iterated its findings once through the questionnaire to confirm findings and to find further categories/themes, repetitions and patterns.

## **3.4 Methodology of survey**

This sub-chapter covers the methodology of the survey, separating it according to data collection methods and data analysis. It should be noted that the interview and survey methods have common characteristics. Those shared characteristics that are already

explained in the interview methodology are only mentioned here briefly and their definitions can be found in the interview methodology.

### **3.4.1 Data collection of survey**

The second-round empirical methodology was to use an online survey. The questionnaire of the survey can be found from attachment 3. The sampling for the survey was done anonymously in collaboration with the interviewee sampling through a purposive case sampling. (Saunders et al. 2016, 724)

Survey is a structured method of collecting data from a notable population, and usually refers to a standardized questionnaire, interview or observation form (Hirsjärvi et al. 2014, 193). In this case the selected form of a survey was a questionnaire, which was deemed to be the most appropriate form to examine the experts' expectations, opinions and connect them to both the interview findings and the secondary data of the cardboard packaging industry. Questionnaire was also deemed to create an ease of responding for experts and a possibility to reach more respondents than the interviews were able to. Whereas the choice to use interviewing as the initial choice of first-round empirical data collection facilitated better the explorative aspect of data collection in-depth and was not bound by a more-structured set of survey questions.

The survey asked 9 open-ended questions and one fixed-choice question. The fixed-choice question used a Likert-scale of 1 to 5 to indicate the responders' agreement or disagreement with a statement. The purpose of a Likert-scale fixed-choice question was to gather opinionated data from the experts with a clear rating scale. (Saunders et al. 2009, 378)

The full questionnaire is visible in attachment 3 with its page breaks noted, as the online questionnaire did not display all the questions simultaneously, and the responders could go back to view, switch and edit their responses between the questions and different pages. Before the online questionnaire, the responders had received an email request to participate in the questionnaire and before starting the survey, the respondents could read a brief research description. After the initial invitation to participate in the survey, two reminders were sent with 2 weeks between each of the two. All survey responses were collected between January 9<sup>th</sup> and January 26<sup>th</sup>, 2018.

### **3.4.2 Data analysis of the survey**

The survey used the same method of analytic induction to determine patterns, rules and conclusions from the empirical findings. (Saunders, et al. 2012, 574; Eriksson & Kovalainen 2008, 22-23) Additionally the survey had a possibility to analyze fixed-choice question

responses, through which it could compare current and expected consumption trends with notes on the responses of responder's standard deviation in their answers.

### **3.5 Reliability and validity**

This sub-chapter defines the reliability and the validity of the research. The discussion first covers validity with its different perspectives and then brings forward reliability. While discussing validity and reliability it should be noted that the purpose of the research is not to find generalizable or reliably repeatable findings, but to incite discussion. The end-conclusion of this research also has a sub-chapter which covers limitations and future research possibilities, partially based on the aspects of methodology, reliability and increased validity that future researches could contribute.

The validity of a research can be connected to internal, external and construct validity. These characters of this thesis are covered in the below paragraphs. Validity in general is connected to e.g. how well a research's measurements, evaluations and data collection as well as analysis methods suit to what the RQs want to pursue (Saunders et al. 2009, 156). In qualitative study it is important to note that generally both validity and reliability are connected strongly to quantitative research (Golafshani 2003). In qualitative settings the objective often is to increase understanding regarding social phenomena, which requires the focus of measuring validity to pay attention to e.g. well-chosen research participants and the appropriateness of data (Stenbacka 2001).

Internal validity of a research evaluates causal-effect(s) that are found in a study (Yin 2014, 239). Yet exploratory research and internal validity are not considered to have the strongest relevance, as exploratory research doesn't focus on drawing up a list of relevant factors, based on which differentiating their influences, unlike what explanatory research may well focus on. A more relevant measure of validity for exploratory research is construct validity, which focusses on the research's base/foundation. Construct validity measures how correctly a research has chosen its base-concepts that it grounds its findings to. Choosing correct measurements that are appropriate to answer RQs and objectives. Optimally the measurements would also be used and benchmarked in similar literature too. (Yin 2014, 45-47)

Connected to the inductive research method, this research's construct validity is relatively high, due to theory being able to adjust according to findings. However, the negative aspect

of inductive research is decreasing the construct validity, by questioning if the research findings would have been altered considerably if the theoretical research had been fully completed before empirical research is launched. Potentially the empirical results could have been more in depth (Saunders, Lewis et al. 2012, 145-146). Whereas factors increasing the construct validity of the research are multiple sources of data (1) and the targeted research participants selection to reach wide knowhow on consumption in Finland (2). The research did not have quantitative data or industry participation, which decreases both validity in general, as well as construct validity.

External validity measures how generalizable a study is (Yin 2014, 48). External validity considers how applicable research findings are to other organizations, cases and contexts (Saunders et al. 2009, 158). This research is tied to its industrial context and time, though the findings regarding consumption trends in Finland could be taken out of the industrial context, giving them an increase in external validity, though they are still strongly tied to time. Trends and phenomena in consumption are typically shorter term, whereas megatrends are generally slow to change, but the megatrend findings in this research were tailored to suit the cardboard packaging industry, hence the generalizability of the research is low.

Reliability describes how consistent a research would be if repeated, whether it would result in same findings, irrelevant of factors such as the research setting, the participants and time (Saunders et al. 2009, 156). Considering the earlier mentioned strong ties of this research to industrial context and time, they would be notable obstacles to repeating the same research and being able to gain the same insight. Equally the reliability of findings should be viewed in connection to the empirical research participants. The participants had a heavy representation of academia and research institutions, but lacked industry participants, who could have given further insight and perspective.

Regarding variables that the research increased reliability with, participant bias was paid attention to, as was the influence that the researcher had to reliability. Participant bias refers to whether an interviewee or survey responder brings their holistic and authentic knowhow forward, which may be either intentionally or unconsciously edited, due to e.g. a responder being concerned for repercussions or him/her being close-minded while responding. (Saunders et al. 2009, 156-157) This research tried to reduce participant bias by keeping data anonymous, informing that its usage was purely academic and by not informing the participants of the RQs before or during the interview, as not to lead their responses.

A researcher may influence reliability with their subjectivity, hence to reduce subjectivity's potential effect, the researcher was prepared regarding theoretical background, was familiar with Finnish and English terms discussed to avoid misunderstandings and asked clarifying questions frequently to ensure a common understanding.

The theoretical information behind the research was gathered through books, academic journals, published and peer reviewed scientific articles and online webpages of companies, which vary both in terms of publication years and in terms of their perspectives and levels of subjectivity. This influences the both the reliability and the validity of the research, due to possible questions whether the gathered literature is still relevant and representative, rather than out-dated or opinionated. For example, the decision to use EEA megatrends as the literature introduction to MGs was because of the source's credibility, European context, relatively recent publishing date and report's scope of future being 2030, which was the exact same time frame as in this research. However, cardboard packaging union was also a notable source in literature, yet their industrial position gives speculation onto the level of their objectivity as a source.

## **4 EMPIRICAL FINDINGS**

The empirical findings are presented in the following two chapters. The first-round face-to-face interview findings are presented in sub-chapter 4.1 and the second-round online questionnaire findings are in sub-chapter 4.2. The interview and online questionnaire can be found in the attachments.

### **4.1 Interviews of consumption experts**

The interview findings are presented and summarized in two parts. The interview findings are summarized and transform the most repeated discoveries to questions for the second-round questionnaire to confirm the findings, to connect them to the cardboard and packaging industry, and to allow comparisons as well as to further analyze the findings. The sub-chapter 4.1. presents interview findings is from open-ended question and the sub-chapter 4.1.2. presents the basis for the second-round fixed-choice questionnaire composed through from trends and phenomena that the experts had specified by name during the first round.

#### **4.1.1 Open-ended questions based on interview findings**

The interview asked 11 open-ended questions with three main topics and gathered input with minimal steering of the interviewees to assure that the interviewer wasn't influencing the responses. Equally, the responses weren't guided by experts' perceptions of what mega trends should be connected to the research question, as they were not informed of the research question beforehand, nor were they aware of the totality of what questions would be asked of them as an entity during the interview, as they heard one interview question at a time and did not know the purpose or research questions. The three main topics of questions are below listed and in the following brackets are the question numbers, which asked about each of the topics, the full questions are visible in the attached interview questionnaire.

- a. Current state of consumption focusing on drivers of change, speed and direction of consumption (Q2, Q3),
- b. The consumer's perspective to corporate responsibility and the potential change towards sustainability (Q4, Q5, Q6, Q7),
- c. Consumers and product development (Q8, Q9, Q10).

Besides these three main areas of focus, also the interviewees' background was covered (Q1), and potential silent signals (Q11) were asked about. Based on the findings, the second round focused on the following questions listed. The brackets following the topics are the

numbers of questions connected to the topic. The full questions are visible in attachment 3 and further down the text in sub-chapter 4.2.1 summarizing the questions' findings.

- i. Consumption trends of today vs. consumption trends of 2030 (Q1, Q2, Q3, Q4),
- ii. Consumer's awareness of secondary forms of consumption (Q5, Q6),
- iii. Sustainability development and consumers' attitude and role to it in terms of cardboard packaging and benchmarking comparison to tissue paper (Q6, Q7, Q8),
- iv. Technology and digitalization in the Finnish consumer markets (Q9, Q10).

The first-round questionnaire can be seen in the attachment 1 in Finnish and in attachment 2 the questionnaire is translated to English. The interviews were conducted face to face in Finnish, recorded and transcribed. The second-round questionnaire was in English, and its Q4, which compares and analyzes mega trends specified by name during the interviews were also translated to Finnish in the brackets to ensure that the questionnaire responders would have no translation mistakes in the translated trend terms. The experts were able to answer the second-round questions in Finnish as well, if they so wished and one did do so. The second-round questionnaire is in attachment 3.

The open-ended question results brought forward a diverse picture of today's consumption and expectations of its development, which was the purpose of the interviews, hence the findings at this stage are on a wide scale with no mentions of cardboard and packaging industry. In following text are short conclusions, which are generalizations from the divided views of experts on the three main topics of the interviews, and comments on how these section findings influenced the second-round questionnaire.

**a. Current state of consumption, focusing on drivers of change, speed and direction of consumption**

The current state of consumption was generally seen to be over consuming and to develop to individually cater the consumer, though the majority of experts did not expect consumers to be willing to pay a premium for a product, even if the product was reflective of the consumer. The drivers of change were seen to range from regulations, producers and technology development to consumer trends as well as to the ease of consumption. The speed of change was seen as fast. Price and availability were seen as one of the most relevant variables in consumption, as in e.g. retailers and producers have a lot of power over the selection that consumers have to choose from, hence the presented prices and availability

that the consumers have as options with an ease of consumption define purchasing choices more so, than e.g. consumer trends or preference to sustainability.

The direction where consumption was expected to develop had divided opinions and many themes rose within discussion, such as increasing sustainability, shared – and circular economy, as well as technological developments with disruptive impacts that may not be possible to predict beforehand.

Based on these results, the second-round questionnaire asked the experts to describe and distill their view of today's consumption briefly (Q1), 2030 consumption briefly (Q2) and a third question allowing for a longer description for expectations of 2030 consumption (Q3).

**b. The consumer's perspective to corporate responsibility and the potential change towards sustainability**

Sustainability and corporate responsibility were seen as trends and directions that are relevant for the future, however they were not seen as drivers on their own, even though they were seen to have the possibility to develop to one of the key decision makers in purchasing. Sustainability and responsibility were seen to be developing to become expectations from the consumers side. Education and medias' role in bringing up violations and environmental discussion were seen as key influencers to increase awareness, to keep the attention of the consumers on the matter, as well as to guide the producers and retailers.

However equally, it was pointed out that as back as the in 1980s sustainability, as an influential consumer trend, has been predicted to rise in relevancy, yet the rise has been notable short of its initial expectations, hence a proverbial "*grain of salt*" should be kept in mind when discussing predictions as such again.

The first-round's findings on sustainability and corporate responsibility influenced the second-round questions by asking about secondary forms of consumption (Q5) and of consumers' attitudes to renewable resources (Q6). Additionally, the second-round questions hooked sustainability, responsibility and development to comparing and differentiating the sustainable developments of cardboard packaging and tissue paper (Q7) and asking about the role of consumer in the previously mentioned development for cardboard packaging (Q8.1) and for tissue paper (Q8.2)

### **c. Consumers and product development**

The findings regarding consumers and product development pointed out that user centricity could add value to products, but consumers are not currently a commonly or efficiently used resource in product development, due to e.g. the additional time it would add to the typically slow product development processes. However, technology development and digitalization were noted as particularly influential to the product development process. Another guiding driver was seen to be regulations. Consumer megatrends as themselves or user centricity was not seen as key at the moment, though as earlier mentioned, user centricity was seen to be highly potential and, if incorporated to development process efficiently, it was seen to have the possibility to be able to bring loyalty, innovation and value.

Findings from this section of the interview, influenced the second-round questionnaire (Q8) to ask the experts to specify how they see technology and digitalization to influence the Finnish markets currently and (Q9) in 2030. Additionally, the technological and digital development terms named as influential were added as terms to the (Q4) fixed question of the second-round, though it should be noted that this question's responses was not the only point where terms were added from.

#### **4.1.2 Fixed-choice question based on interview findings**

This sub-chapter presents notes from a list of most repeated trends of consumption that the interviewees named throughout their responses, based on which the second-round survey created a fixed choice question. The listed variables range from megatrends to technologies and so on, the common denominator is that a part of the first-round interviewees found them relevant either currently or by 2030. The purpose of gathering the terms in a fixed-choice question is to gather a consensus of the terms' relevancy from the experts, as well as to have comparable information available.

The fixed-choice question asked the relatively relevance of 16 terms regarding consuming currently and the development of consumption in the future. After the question and its listing of terms, the question continued by asking if there were omissions that the responders noted missing from the list. For example, the following terms of consumption were listed in the fixed choice question:

- ✓ Individuality,
- ✓ Ecological consumption,
- ✓ Health and wellbeing,

- ✓ Services replacing ownership,
- ✓ Sharing economy,
- ✓ Circular economy-based consumption e.g. second life products,
- ✓ Localness, including story telling regarding local production,
- ✓ Fragmenting markets on product level e.g. Fragmenting of a basic product to different products, like milk's or coffee's different qualities,
- ✓ Decreasing importance of ownership.

The above-named trends were mentioned in different sections of the first-round interview and in the questionnaire, they were translated to Finnish (in brackets behind the terms), to ensure that there would be no translation error between what was said in the Finnish interviews and what the responses were in the English questionnaire.

These trends are compared to each other on a Likert-scale of 1 to 5 to measure their relevancy comparatively. The experts were asked to compare their influence today as well as benchmark it for 2030. The findings of this question are presented in sub-chapter 4.2.2, where the dispersal-rate is also connected to the consumption experts' consensus regarding the trends' strength.

## **4.2 Questionnaire of consumption experts**

The questionnaire findings are summarized in this sub-chapter. Each of the questions (10 in total) is presented one at a time generalizing, differentiating and presenting the spread of responses. The findings are presented independently per a question here. The summary of empirical findings in sub-chapter 4.3 concludes the main take-aways briefly and chapter 5 discusses the theory and empirical knowledge gathered in this research. The sub-chapter 4.2.1 introduces open-ended questions and the sub-chapter 4.2.2 introduces the fixed-choice question results with graphs covering the Likert-scaled findings.

### **4.2.1 Open-ended questions' findings**

Each of the questionnaire question has been bolded in text for the benefit of the reader. The findings per a question are brief, but individually presented, including the questionnaire's section for free speech with feedback, noted omissions or further comments, which is the last point of this sub-chapter.

1. How would you describe consumption of today with five words or phrases?

The most used descriptive responses for the question were: growing, yet already excessive, fragmented, digitalized and technology oriented. Consumption is seen as a source of identity for the increasingly aware consumers (value-based decisions: price, ethics, sustainability). Immateriality, services & Access Over Ownership, AOO, are noted as strongly rising trends. Consumption is viewed as unavoidable and mundane with its routines, but with strong notable, differentiated and changing trends particularly in living, travelling and wellbeing. Consumers are viewed as hedonists, who require user-friendliness, and these characteristics are reflected through their consumption.

2. In your perception, which five words or phrases would describe consumption in 2030?

Expectations for consumption have a lot in common with how it is today, however most notably the experts predict consumers becoming more aware & concerned of what increased consumption is doing, and as a result the consumers are expected to try to make more sustainable consumption choices.

The responder pointed out the most prominent rising trends to be AAO, circular - & shared economy, as well as further fragmented consumer markets and the seemingly ever-rising importance of consumption reflecting consumers as individuals.

Lastly the results showed fragmented voices potentially predicting the following characteristics of consumption to be highly influential variables: immaterial consumption, digitalization, fear of over consumption, regulations taking the steering wheel in consumption's development.

What should be kept in mind with these results is that there is no black & white view onto consumption's development. Consumption is going to develop in a multitude of manners with different characteristics that geographically and consumer segment-wise, are likely to come to have varying impacts.

3. Please continue thinking of consumption in the future. Describe what kind of consumption could be in 2030, when taking into account your perception of possible directions of development. (You can consider e.g. what, where, why, who and how consumers consume.)

In the responses of this question, there were a few trends that were strongly repeated and brought forward by the experts:

- The concepts of AOO (Access Over Ownership), circular - and sharing economy were expected to become more and more mass stream. Amongst the comments, sharing economy got the most attention.
- Consumers' believes reflection in their consumption choices is expected to become more visible.
- The majority of experts communicated an expectation for immaterial consumption's growth and connected it to a decrease in general consumption.
- Technological and digital development were seen as the strongest drivers and variables to influence what and how consumption is done.
- To a lesser degree continued urbanization and sustainability aspects were brought forward as influencing variables for consumption.

To balance these strong trends, there were also contradicting voices saying e.g. that consumption won't decrease but that it would either stay steady or continue to grow. Besides the strong trends and their quieter contrasting votes, there were other trends repeated, yet they were not as strongly represented:

- Inequality in consumption is a strong force, in terms of West - East, or developing - developed countries, as well as the inequality to use the finite resources.
- Regulations have the potential to be the driving and shaping force in consumption, potentially in a forcing manner.
- Both increasing localness and global-ness in consumption were discussed, yet locality in consumption had more mentions.

Specified areas of consumption, such as living, transportation and energy, were mentioned to be particularly in the heart of changing consumption. Not necessarily trends in consumption but global changes were also noted by the experts as very relevant to consumptions' development: the age structure of societies grows older, middle class becomes globally bigger and movement of people increases.

5. How do the forms of secondary consumption, e.g., packaging of primary products, influence consumers? What expectations do consumers have regarding their secondary forms' consumption?

The large majority of experts viewed secondary consumption and packaging to be influential, noting that the sustainability of packaging is becoming more important,

somewhat of an expectation, and that the packaging's durability/functionality, ability to distribute information as well as its ease of use were key requirements.

However, there were 3 directly opposing experts (out of 19 experts) saying that the secondary consumption, has little to no relevance, whereas the relevancy was seen by 14 experts who saw varying trends and perspectives onto the influence of secondary consumption. 2 experts chose not to answer the question.

Consumers were concluded to expect a package to withstand transportation well, be aesthetically appealing and to become more intelligent as well as less redundant. Its ability to be recycled was mentioned as important too and none of the previously mentioned trends should compromise the primary function of delivering the product inside.

6. Please describe your perception of how the attitudes towards renewable natural resources will change, and what kind of influence it will have on consuming in 2030?

The reigning consensus for this question was that attitudes will have changed and will continue to change to endorse renewable natural resources. From the responses, only 2 experts commented that in their view the attitudes towards renewable natural resources are and will continue to be stable, otherwise there was an overwhelming consensus of expecting attitudes to endorse renewability in resources. Increasing level of education was seen as driver for this, equally as the climate change's increasing visibility.

Innovators and opinion leaders were expected to be pioneers for the masses to follow, and recycled material options, as well as AOO, shared – and circular economy were seen as likely practical applications endorsing renewable natural resources.

Discussions with industry, consumers and research, as well as industrial innovation and legislation are expected to be in an important role, according to the responses. Information and awareness are seen to be spreading, but renewable or recycled material options are not necessarily selected, even if they are equal to existing unrenovable products.

Resource limitations and scarcity is viewed to be variables that are become more notable. However, consumers' expectations for products are unlikely to be compromise or to decrease, due to renewable products not being equal to oil-based products. Based on this, the experts' expectation is that the renewable options and innovations have great potential, which can be scaled up as they are able to compete more equally with traditional oil-based products, such as plastic. Until then the market shares of renewable products are expected to

be incrementally increasing, rather than directly disrupting the current patterns of consumption.

7. What do you think, will the sustainability development between tissue paper and packaging materials be different? If yes, what do you think drives this difference?

The expectations regarding the differentiation of sustainable development are divided. Approximately half of the responders thought there to be differences, and the other half was equally divided between no differences or "*don't know*", hence the responses leave little room to make conclusions.

The differences that the responders expected were mainly influenced by the perspective that their purposes are different; packaging is a secondary product whereas tissue paper is a primary product, though due to consumption's infrastructure changing further online, packaging was expected to increase more so in demand than the relatively constant demand of tissue paper. Yet, as both of them are recyclable, the expectation for their differentiation were relatively small.

8. How do you see the role of consumers in driving the sustainability development of packaging materials?

The role of consumers is seen by the experts as controversial. They are thought to be relevant by approximately half of the experts, however the degree of how relevant they are varies greatly. Price, convenience and selection ability are variables that greatly direct consumers' role and aren't variables that consumers have much say over, yet for example online shopping is a consuming manner through which consumers directly are able to increase the demand for packaging.

According to the experts, the producers and retailers have a stronger role to define the above-mentioned variables that consumers don't have much say over, though above the industry's decisive variables are regulations, which have also a strong role to define the common rules of the industry. Both the public and industry are listening and trying to influence in the regulations making process, creating a three-way loop of influencing, where it is difficult to say who has the heaviest influence. Media's impact was also noted to have short-term heavy influence if/ when they bring a related topic to the surface of discussion.

In other words, the responses of this question reflect the ambiguity of how unclear it is to say who has been the main driver when it comes to for example decreasing packaging, using recyclable materials, or increasing intelligent packaging options. All in all, the marginal

majority of experts found consumers to be relevant, and particularly for them to be a strength in development if involved through a user-lead product development process.

9. How do you see the role of technology and digitalization in the Finnish consumer markets currently?

The importance of technology and digitalization were highlighted strongly, and the future expectation was for its development to grow in importance in time. Though equally the wide question setting here was commented to negatively influence the responses to become vague and too unspecified to properly respond to.

The different responses brought varying perspectives, for example: value adding innovativeness and the transformative aspects of online shopping were mentioned from multiple perspectives, yet there were attached to divided views on how disruptive the technology and digitalization has been; innovative and transformative, yes, especially on industries like music and financial services, but it was questioned if its innovation was disruptive in the entity of Finnish consumer markets. Equally with the transformative perspective, the environmental consequences of e.g. increased online shopping was brought forward. Technology and digitalization do not equate sustainable consumption, though the potential that both of them still have to transform and disrupt industries is immense according to the experts.

Technology and digitalization are a part of consumers' daily routines. There is a constant motion of change, yet it is slow and in different user demographics, the development of technologies and digitalization can have versatile outlooks, needs and dependencies.

10. Considering the technological development and the continuing digitalizing environment of consuming, how do you see the role of technology and digitalizing in consuming in 2030?

By 2030 the responders expect technology and digitalization to have disrupted retail and consumption from how we currently see it, furthermore there was almost a full consensus to expect technology and digitalization to be still growing and to continue to hold a disruptive role in 2030. However, two of the responders directly disagreed with the consensus, responding with an expectation of declining disruptiveness, or at least a slowdown of technology and digitalization's impact.

Daily consuming habits and purchasing patterns of consumers are expected to be infused with technology and digitalization to the point that it wouldn't be visible, rather incorporated

into consumption's fabric. The basic requirements and needs of people are seen as unlikely to change, but their delivery and consumption may be influenced, though human contact and service is still seen and expected to be as present.

Prices of technology and digital solutions are expected to decline, hence lowering the threshold of implementation. Virtual reality (VR), augmented reality, artificial intelligence, robotics and automation were mentioned by name as technological and digital solutions that the responders mentioned to expect to become incorporated to consumption. The role of customer experience was thought to become more emphasized as well.

Free speech for feedback, notes of omissions and further comments:

The feedback was brief, but positive and considered the research thought provoking, though it did note that the research had some questions which were hard to comprehend, partially due to a wide question setting. Lastly there was a comment that in the future this kind of research with consumption and its development in the core, could benefit to be connected to de-growth research.

#### 4.2.2 Fixed questions' findings

The fixed-choice question (Q4) of the survey listed “*phenomena that may be relevant in terms of the development of consuming and consumption in the future*“ that the interviewees had mentioned during the first-round interview. Below the fixed-choice question was an

<b>Consumption phenomena listed in Q4:</b>
Individuality
Ecological consumption
Health and wellbeing
Services replacing ownership
Sharing economy
Circular economy
Hedonistic consumption
Virtual reality (VR)
Localness
Fragmenting markets
Gamification
Community involvement
Aesthetic character of consumption
Decreasing importance of ownership
Automatization & robotics
Favouring bio-based materials

open field (Q4b) allowing room for comments and asking if there were phenomena that the responders noted to be absent, these comments and notes of omissions are presented at the end of this sub-chapter.

*Figure 167. Consumption phenomena as listed in Q 14 of the online survey.*

Figures 18, 19 and 20 describe the listed trends in today's consumption environment (figure 18), experts' estimation of the trends' development by 2030 (figure 19) and a chart that directly compares the two previous findings (figure 20). The figure 18 and 19 show the standard deviation of the experts' ratings per a trend, which gives either strength to the trend's prediction, or gives reason to consider further research. As the figures 18-20 have some the trend names written only partially, the full trend names are displayed in figure 17, and in attachment 3 with the full questionnaire.

Based on the figure 18 findings, and in the order of notability, the strongest current (2017) consumption phenomena, all scoring above 3,5/5, are listed below with their Likert scale scores in brackets behind them.

1. Health and wellbeing (4,05),
2. Individuality (4,00),
3. Hedonistic consumption (3,89),
4. Fragmenting markets (3,63),
5. Localness (3,53).

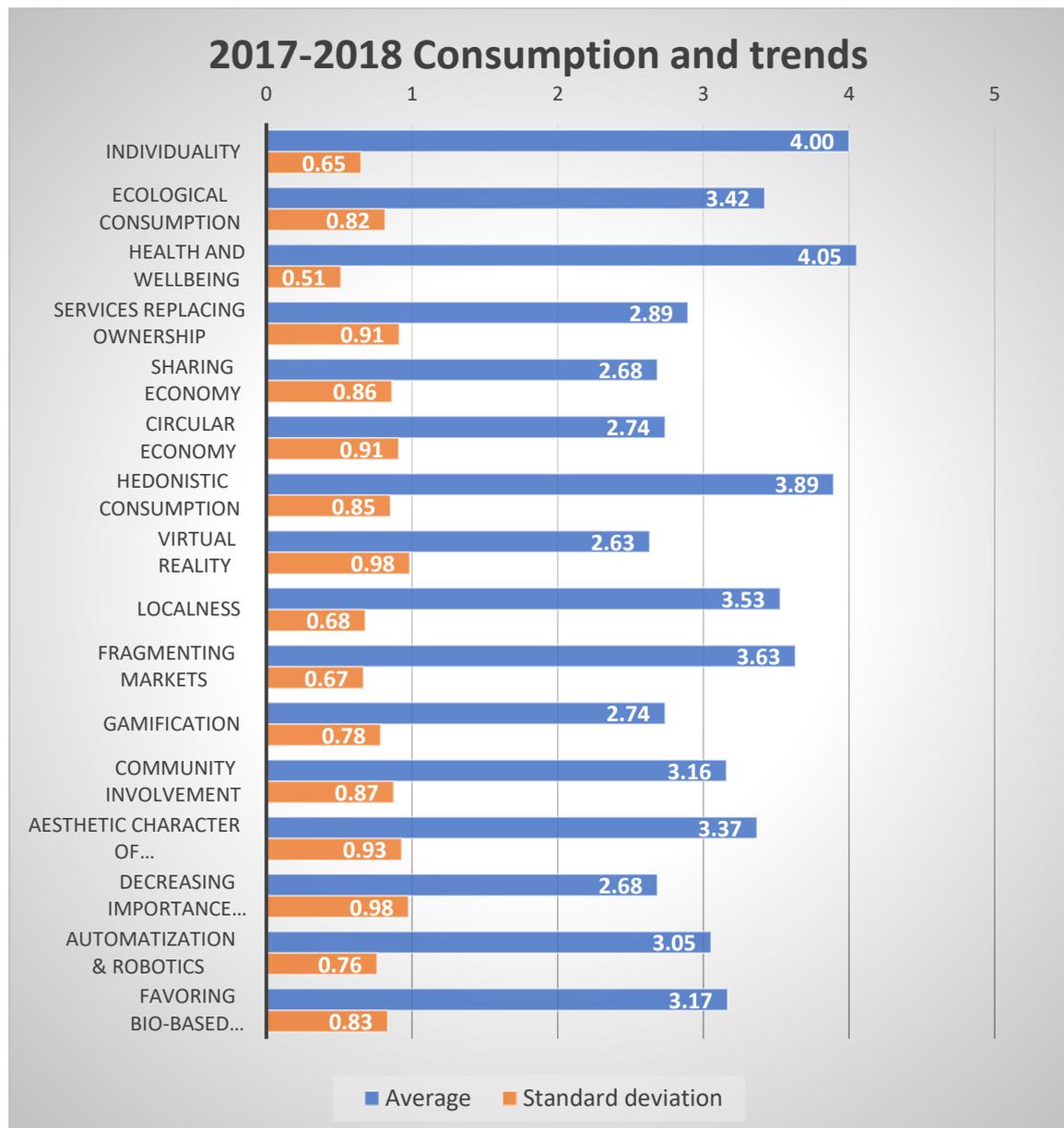


Figure 178. Fixed-choice questionnaire responses for 2017 scenario and the experts' standard deviations for the trends, megatrends and technological developments.

The least notable phenomena of today's consumption are, starting from the least notable: Virtual Reality, sharing economy, circular economy, decreasing importance of ownership and gamification.

Notably the figure 18's strongest consumption phenomena had generally low standard deviations and the strongest phenomena of the questionnaire, health and wellness, had the lowest standard deviation of all trends (0,51). Though one of the top 5 phenomena, hedonistic consumption (#3.), was exceptional amongst the higher rated phenomena with a relatively high dispersal score (0,85). The least notable phenomena had considerably higher standard deviations. Standard deviations of over 0,9 for phenomena were displayed for VR and decreasing importance of ownership, both of which scored a notable 0,98 as their standard deviation and were placed amongst the seemingly least relevant phenomena for 2017, for Aesthetic character of consumption (0,93) and 0,91 for both the phenomena of services replacing ownership and of circular economy.

The standard deviations for all charted 2017 phenomena were above 0,5, but none of them reach up to 1,00, also only one of the phenomena reached over 4 on its scale of strength. These are small but notably different details when compared against the figure 19: 2030 consumption and trends. Figure 19 has generally higher standard deviations and their rates on the strengths of listed phenomena score generally higher.

The strongest phenomena of 2030 are listed below with their Likert-scale score in the following brackets. The seemingly least relevant phenomena for 2030 were individuality (3,58), hedonistic consumption (3,79), VR (3,58), gamification (3,53) and aesthetic character of consumption (3,74), but it should be noted that the scores of all the least relevant phenomena of 2030 still reach above what it would have taken to be considered as one of the most relevant phenomena in the 2017 figure (scoring over 3,5/5).

1. Health and wellbeing (4,53),
2. Services replacing ownership (4,42),
3. Ecological consumption (4,37),
4. Automatization and robotics (4,21),
5. Circular economy (4,17).

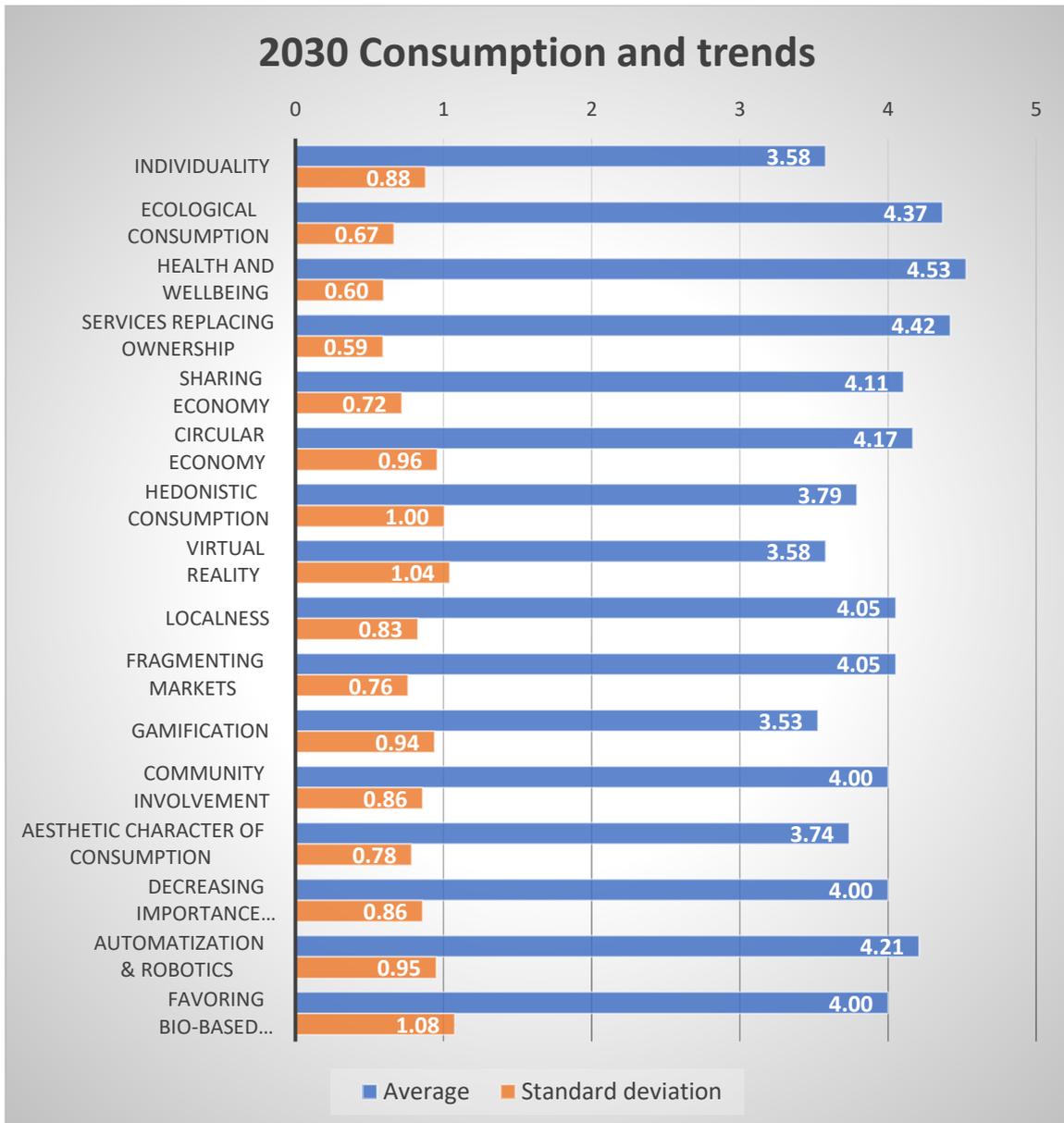


Figure 189. Fixed-choice questionnaire responses for 2030 scenario and the experts' standard deviations for the trends, megatrends and technological developments.

Three out of the five strongest phenomena had the lowest standard deviations of the 2030 figure, but automatization and robotics (0,95) as well as circular economy (0,96) were amongst the highest standard deviations of the figure, even though the experts' consensus had been strong enough to rate the phenomena to be two of the top 5 most influential. The highest standard deviations for 2030 figure's phenomena ( $\geq 1,00$ ) were for favoring bio-based consumption (1,08), VR (1,04) and hedonistic consumption (1,00).

When comparing the lists of relevant phenomena of 2017 and 2030 against each other, it is notable that VR and gamification are on both lists as top 5 least relevant, though both have notable standard deviations. Equally it is notable that the list of 2017's least notable phenomena includes circular economy, which is rated as the 5<sup>th</sup> most relevant in 2030,

whereas the list for 2030 least notable phenomena includes individualistic and hedonistic consumption, both of which are in the top 5 influential consumption phenomena of 2017. On the other hand, the two figures do seem to agree up on health and wellbeing being the most relevant phenomena both in 2017 and in 2030, with increasing relevance.

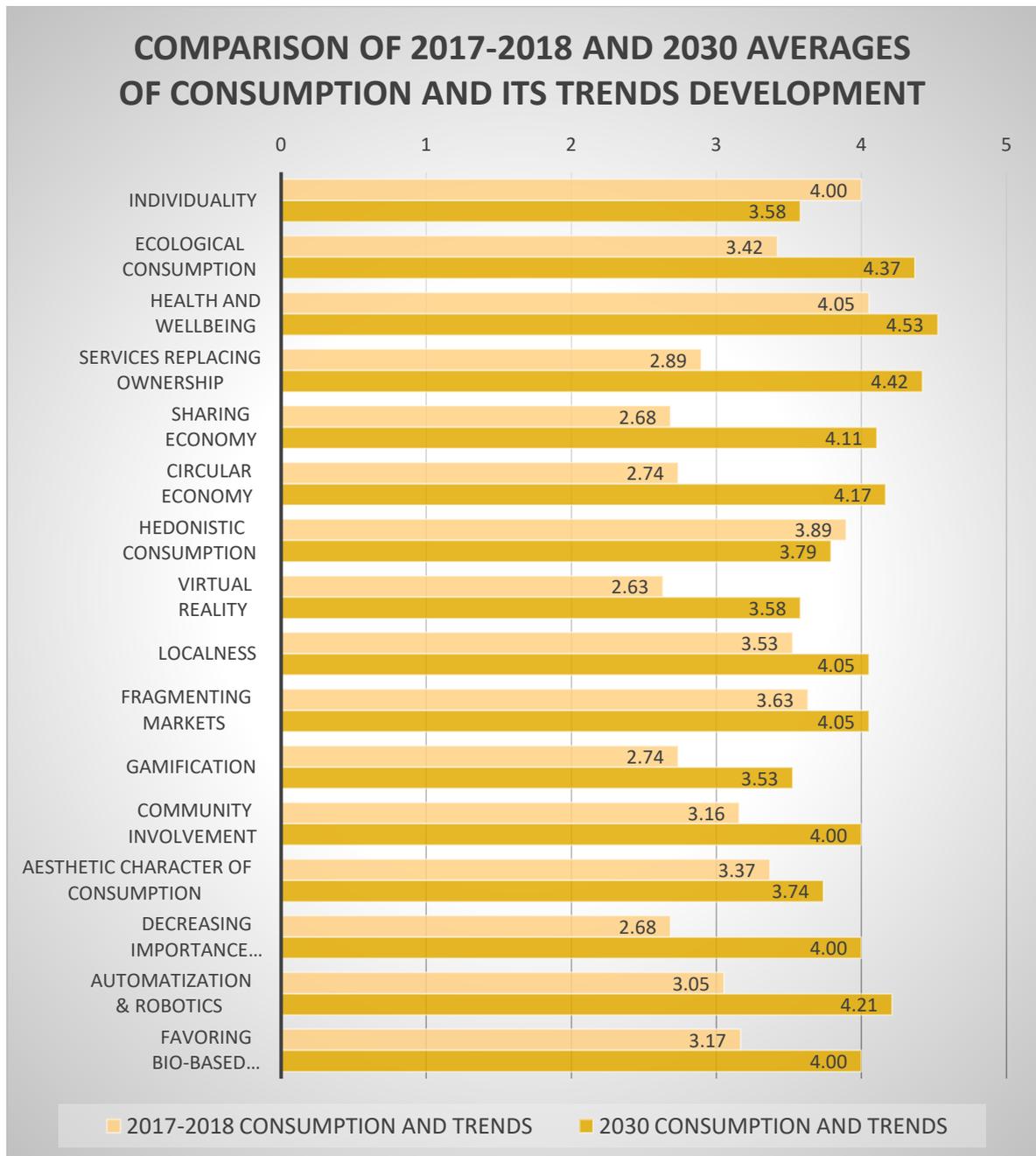


Figure 19. Comparison of fixed-choice questionnaire responses for 2017 scenario and the 2030 scenario.

Figure 20 compares the different phenomena directly against each other and notes their expected increases and decreases. It is notable that only one of the listed phenomena was expected to decrease; hedonistic consumption was lowered by -0,10, which was also the smallest change between any of the 2017 and 2030 phenomena. More so, it should be noted

that hedonistic consumption scored high on the standard deviations for both the 2017 and 2030 figures too, hence leaving room to speculate that potentially the reason for a minimal change in the phenomena's score was due to extremely divided opinions of experts. For the point of comparison, the second smallest change was for fragmenting markets –phenomena with a score of +0,42 and its standard deviations were relatively low on both 2017 and 2030 figures.

The biggest consumption phenomena changes ( $\geq 1,00$  change on the experts' expectation of the phenomena's scale of relevancy) are below listed:

1. Services replacing ownership (+1,53),
2. Circular economy (+1,43),
3. Sharing economy (+1,43),
4. Decreasing importance of ownership (1,32),
5. Automatization and robotics (+1,16).

After the fixed-choice question was a Q4. b, giving a platform for free speech and asking for any relevant phenomena that the list may have missed. There were four comments on the free speech of question 4. The comments brought forward the three points that could be relevant to link to the research of consumption phenomena in the future. First of the suggested links was consumer time usage. The importance of having free-time to consume and to potentially increase it to enable consumers consuming the new digitalized services and to enable financial growth generally having services and consumer for them.

The second suggested linkage was to connect the research to consumer segments with the importance to understand the influence of home, upbringing, work, relaxing and so on, as highly influential characteristics. The third suggested linkage was to further research the phenomena of non-plastic consumption and user-centricity in production.

All three comments brought forward in the free speech section are valid suggestions for future research connections that could bring value and perspective. However, notable there were no omissions brought forward in the section, which on itself is an encouraging marker that the listing of relevant phenomena was extensive enough. The listing was based on the most repeated phenomena the first-round interviewees brought forward, yet not all phenomena were included. For example, Augmented Reality (AR) was not named on its own, despite it being mentioned on some of the interviews, whereas VR was mentioned by

name more so in the interviews and it got specified in the listing, even though both could have been thought to be e.g. in the category of automation and robotics.

### **4.3 Summary of empirical findings**

Consumption in 2017-2018 is seen as excessive, fragmented and serving the individual. Health and wellbeing is the strongest phenomena currently and is expected to remain as such in 2030 equally, if not even as stronger than currently. Consumers awareness of wellbeing, ecology and digital solutions is expected to influence their consumption, for example the role of services replacing ownership or circular economy are concepts that are expected to hit mass-stream consumption notably. Whereas the roles of gamification and VR are expected to remain outside the mainstream consumption phenomena.

On open-ended questions, consumption experts brought forward concepts, such as Access Over Ownership (AOO) and immaterial consumption, which enforced the fixed question results and the earlier mentioned concepts, such as services replacing ownership. Yet mundane routines of consuming and the importance of being able to be served, instead of digitalizing consumption fully, are norms and values that the experts saw to be relevant when looking forwards. Equally as the importance of basic principles, such as price, product availability / selection and ease of consumption, are not expected to see change, even though consumers are expected to use consumption as a reflection of themselves and become more demanding of sustainability principles as a basic setting in their purchases.

Regulations, retailers and producers are viewed by the consumption experts to have a strong grip on the steering wheel when it comes to the development of consumption, however user-centricity is something that is notably growing and is expected to continue to do so further. There are no absolutes or certainties when discussing who are driving the development of consumption and it is important to keep in mind that consumption will develop in a multitude of characteristics that differ in different consumer-segments, geographical locations and in different markets. Common notes that can be made are expectations such as digitalization and services replacing ownership, becoming a part of a cause driving a general decrease of physical consumption.

Regarding secondary forms of consumption, such as packaging, consumption experts viewed it to be influential, and potentially for it to grow in importance, due to e.g. increasing digitalized consumption. Packaging's basic functions are an expectation, such as its

durability, ability to distribute information and its ease of use, which compose the key requirements. Intelligent packaging, sustainable and recyclable material selection as well as esthetical appearances bring additional value and are thought to rise in importance too.

Consumers' role in packaging development is controversial. As a lot of packaging is supplied by businesses, who provide primary products to consumers, where the consumers don't select or purchase the packaging consciously. A consumer may influence the packaging when/if they are able to select and by having expectations or requirements for it. The research asked the experts regarding consumers' role to sustainable development of packaging and the findings concluded that it is difficult to estimate who is the driver to e.g. potentially decrease (over-)packaging, using recyclable materials or increase of intelligent packaging options.

## 5 DISCUSSION

As both the theoretical and empirical chapters have had a summery, this chapter of discussion dives straight to relevant discussion to be found by combining the two. The purpose of discussion is to combine key points. The chapter is divided to discuss first megatrends, narrowing them and their development down to Finland and the relevant topic. The second sub-chapter 5.2 discusses consumption trends through both literature and empirical findings, after which sub-chapter 5.3 discusses of cardboard packaging, its industry and connects them to the previous discussion of megatrends and trends in consumption. The conclusions chapter (6.) combines and briefly summarizes the findings of this chapter and answers the research questions directly.

### 5.1 Megatrends

Through the theoretical findings the most relevant megatrends for packaging were concluded to be be population growth (1), urbanization (2), climate change and environmental challenges (3), competition over natural resources (4), as well as digitalization and technological development (5). When this list is compared to the consumption experts' interview and survey input, it is notable how the experts brought forward trends smaller scale trends, rather than megatrends. As consumption experts, it is to be expected that their perceptions are focused on consumption related trends rather than megatrend trends on macro-levels, especially as the research strategy chose not to guide the experts' responses, hence the importance of the sub-chapter 5.2 regarding consumption trends.

What can be concluded through the combination of the experts' input and the megatrend focused literature is that megatrends such as competition over natural resources (4) and climate change (3) are visible through trends in today's consumption already. Whereas digitalization and technological development (5) can be seen added to the trends seen in 2030 consumption expectations, in e.g. the expected trends of automatization and robotics.

Even though the megatrends of growing population (1) and urbanization (2) don't seemingly show as clearly in the trends that the consumption experts listed to be the most relevant for Finland, they are notable in the undertones. They can be seen in e.g. urbanization (2) being a requirement for societal setting where services can replace ownership. Or growing population (1) is a megatrend that is directly linked to push climate change and environmental challenges (3) as well as competition over natural resources (4) forward,

which can be present in consumers' minds and consumption trends through e.g. demands for responsibility of corporations (Finnish Packaging Association 2018a), or an increasing LOHAS consumer segment (Korhonen 2018). In a societal setting such as Finland, concerns over a growing population (1) or urbanization (2) is limited, especially when compared to e.g. Asian countries where those megatrends are in much larger proportions, but media is an effective tool to share the concern to a larger audience.

Even if all megatrends aren't equally a cause for concern in Finland, they all do still influence consumption in Finland, hence confirming the short-listed megatrend lists relevancy. Notably it should also be mentioned that the forest industry publications did consider growing population (1) to be the most relevant megatrends for the industry, particularly in terms of opportunities that it can bring.

## **5.2 Trends and phenomena of consumption**

The consumption trends presented in theory are clear to see reflected in empirical results. However, it is important to distinguish that neither consumption trends in literature, nor empirically gathered consumption trends are directly comparable to relevant trends for cardboard packaging. To correlate consumption trends and cardboard packaging is a very specific of area of research, and consumption trends is a large concept, so not all trends that were noted in literature and/or empirical findings, are relevant. This is further due to the explorative methodology choice to not guide the interviewees and to put the weight of the questionnaire in open-ended questions, though consumption trends were particularly notable in the questionnaire fixed-choice Q4.

The influence of consumption trends is much more notable than the undertones of megatrends seen in empirical findings. Hiltunen's (2017) listing of consumption trends noted for example the 'Fragmented market', 'Cheap & easy & immediate consumption solutions', routines and 'Traditions in consumption', as well as social media and a 'Decreasing family size', which are all characteristic echoed by the consumption experts and relevant variables to the cardboard packaging industry.

In terms of comparing Hiltunen's (2017) list of consumption trends, there are points which overlap with the list this research assembled based on the consumption expert's interviews. The most important examples of these are: 'Market fragmentation', 'Smart consumers' and 'Innovations as influencers', which almost directly overlap with the empirical findings.

Notably Hiltunen (2017) had also noted ‘Mis-information’, ‘Innovations’ and ‘Consumers of fear’ on her consumption trends and phenomena list, which were not notably brought forward by the interviewees, or free speech sections of the empirical findings. Hiltunen had not specified technological trends or phenomena, nor had this research considered aspects seemingly irrelevant to its scope, such as ‘Perfect-me social media image’ as a trend, even though during the interviews trends as such were brought up and Q4 did have some trends which didn’t have a directly notable correlation to packaging, e.g. ‘gamification’.

As written in the empirical summary, empirical findings concluded the consumption in 2017-2018 to be seen as excessive, fragmented and serving the individual. Consumers’ awareness of wellbeing, ecology and digital solutions are expected to influence consumption in the future, though retaining the mundane aspect of routines in consumption. The norms and values of consumer’s aren’t likely to be compromise-able, rather they are expected to be more prominently expressed. Basic product characteristics such as price, availability and ease of consumption, are not expected to see change, even if the consumer is reflecting themselves in their consumption.

Regulations, retailers and producers are seen to hold the heaviest sway in consumption’s development, however user-centricity is something that is notably growing, though in terms of packaging, consumers’ role in its development is controversial.

Expectation is for consumer-segments to differentiate themselves further to remain reflective of their consumer. On a common note, digitalization is thought to influence all types of consumption somewhat equally, and for physical consumption to reduce due to e.g. services replacing ownership.

Consumption’s trends are expected to influence packaging in terms of e.g. smart packaging solutions to emerge, yet the basic functions of packaging to remain. Packaging’s key requirements currently were seen to be such as its durability, ability to distribute information and its ease of use (Järvi-Kääriäinen and Ollila 2007, 302-307; Leppänen-Turkula et al. 2000, 1). Future and further application emphasizing intelligent packaging, sustainable and recyclable material selection as well as esthetical appearances bring additional value and are thought to rise in importance.

### 5.3 Carboard packaging and its industry

The basic purpose of packaging was not seen to have changed or was expected to dissolve, but in the future, it was expected to evolve further. Two needs noted in both literature and consumption experts was for future packaging to better facilitate consumers' ease of consumption and to have increased environmental consideration in packaging.

Cardboard packaging / fiber-based packaging has been the most used material choice in the Finnish packaging industries, though it has also the most volatility history of production when compared to other packaging material productions. However, cardboard packaging is expected to grow in the eyes of the industry (Finnish Packaging Association 2018d; Hänninen, et al. 2013, 675-677; Finnish Forest Industries 2016), equally as the consumption experts have seemingly high expectations for the consumers to demand for e.g. cardboard alternatives to the plastic packaging. Despite an incoherency on statistics not seeing an increase in cardboard packaging's production or import (Finnish Packaging Association 2018c, 36-37), potential causes for the demand not being reflected could be that e.g. the industry's capacity of cardboard production is already full, hence it wouldn't be able to have an increase, or raw material fluctuations would not make it profitable to produce cardboard, or that it would demand considerable investment for the industry to increase their cardboard production in response to an expected demand, hence very slow reaction time to increased demand. Following the same logic, if there is no increased production of cardboard, its export logistics would be unlikely to move notably either. However, the above examples are simply that, examples; the statistics of cardboard packaging production need further research to conclude how and what findings could be drawn based on them.

Cardboard industry is a part of the Finnish forest industry cluster with deep know-how, a wide product selection and a good reputation. The cluster has high tech abilities and is known for their fast and flexible services, in a manner of a one-stop shop. Within the forest cluster, the cardboard industry's strengths rely on customer-centricity, environmental consideration and redesigning traditional solutions (Leppänen-Turkula et al. 2000, 11-12; Nikunen 2018), which are all good prospects that go well alongside the consumption experts view how customer-centricity and environmental consideration will come to likely give value in the future. These strengths are further complimented by the positive image of cardboard as a packaging material.

Drivers of change in the cardboard packaging industry are particularly tied to European legislation, as well as increasing consumer awareness. The role of media and social media for growing consumer awareness is impactful. (Finnish Packaging Association 2018c, 36-37; Säilä 2017)

The cardboard packaging industry seems to be reactively adapting (EEA 2015) to the drivers, megatrends and trends. In terms of influential variables currently, both the literature and the empirical findings have brought up EU's steering power, technology's development, an increase of service society and pragmatic aspects such as decreased package sizes, consumers attention to sustainability. (Leppänen-Turkula et al. 2000, 6-7) Notably most of the variables can be linked to the short-listed megatrends e.g. climate change and environmental challenges (3.) causing the need for attention to sustainability, competition over natural resources (4) increasing demand for renewable materials such as cardboard, and digitalization (5) enabling the technological development.

Secondary consumption's environmental aspects were discussed in a favorable manner for both cardboard packaging and packaging industry as a whole, in both empirical and literature findings. It can be concluded that consumers are interested in secondary forms of consumption, if primary product has choices for the consumer to choose amongst equal primary products with differentiating packaging, yet neither packaging compromising their primary functions.

## 6 CONCLUSIONS

This chapter presents the direct answers to the research questions (RQ) and continues by discussing the limitations of this research, as well as where future research on the topic could be built to continue. The purpose of the chapter is to gather briefly all findings.

### 6.1 Answering research questions

#### **RQ1. How do megatrends influence the cardboard packaging industry in Finland?**

Megatrends have a more or less direct influence on the cardboard packaging industry, depending on which megatrend and which megatrend listing is being discussed. This research short-listed the most relevant megatrends for cardboard packaging industry to be population growth (1), urbanization (2), climate change and environmental challenges (3), competition over natural resources (4), as well as digitalization and technological development (5). (EEA 2015; Olsmats, Kaivo-Oja 2014; Finnish Forest Industries 2017a) From the short-listed MGs, the ones with the most notable impact are megatrends 3, 4 and 5, whereas megatrends 1 and 2 are heavily influential, but their influence is not so visible in the Finnish context.

The influence of megatrends can be seen in expectations for cardboard packaging industry growth and in the positive consumer image of cardboard packaging. A part of the positive cardboard packaging image is derived simply from the opposing packaging option, namely plastic, being connected to fossil fuels in the minds of consumers and by media. (Säilä 2017)

It could be concluded that megatrends encourage the industry to innovate, develop and give an edge for the industry to compete against alternative packaging materials. Through the context of forest cluster in Finland, megatrends give a boost and a positive recognition for using wood as a renewable raw material. The context of growing and positive expectations of forest industry gives the cardboard packaging industry a business environment, where it is part of the solutions that the forest industry offers, giving it visibility and inclusion. Even amid tough international competition, the quality, know-how and fast flexibility have distinguished the Finnish forest industry (Leppänen-Turkula et al. 2000, 11-12). Customer-centricity, environmental consideration and redesigning raw material opportunities, production methods as well as usages of traditional solutions have distinguished the cardboard industry (Nikunen 2018) to be competitive and to innovate themselves to adapt to megatrends.

Cardboard and forest industries are traditional industries with capital intensive production, hence it can be expected that industry adaptation to megatrends is not necessarily fast, even though one of the industry strengths is noted to be fast and flexible service provisions. Within the forest industry cluster, the drivers of packaging industry are connected to EU regulations and customer awareness (Finnish Packaging Association 2017c). Currently the Finnish market expects cardboard packaging industries to grow in short-term. Longer-term expectations see bioeconomy to increase its share within the Finnish forest cluster with new innovations, services and products regarding e.g. biomaterials. (Hänninen, et al. 2013, 675-677; Viitala 2014, 123-128)

Megatrends and trends of consumption are both influential phenomena for the cardboard packaging industry. Megatrends can be seen less directly in consumption than trends, which are quicker to surface, shorter-term and have a lesser scale of impact, however trends of consumption are often derived from megatrends. (EEA 2015; von Groddeck, Schwarz 2013; Holopainen, Toivonen 2012)

### **Sub questions:**

#### **RQ2. What are the megatrends that are relevant to the cardboard packaging industry in Finland currently?**

The megatrends that are currently most visible in consumption and have the most relevancy to cardboard packaging industry are ‘competition over natural resources’ (4) and ‘climate change’ (3). The megatrends are visible particularly through a seeming consumer preference to avoid plastic and to see plastic packaging as more of a negatively wasted resource, whereas the recycling properties of cardboard and its renewable origin, give cardboard packaging a positive consumer image.

The trends of consumption that are currently the most visible through empirical results and through literature discussion are ‘Health and wellbeing’, ‘Individuality’ and ‘Fragmenting markets’. Whereas cardboard packaging industry’s strengths are considered to be customer-centricity, environmental consideration, and redesigning traditional solutions. The trends of consumption and the strengths of cardboard packaging industry have commonalities that could allow the industry an advantageous position, especially if a company in the cardboard industry is connected to be able to take advantage of the forest industry’s strength of linking to holistic, fast and flexible services. Adjusting quickly to changes or trends may not be the ‘forte’ of either industry, but with the services they can provide, and the renewable raw

material combined with increasingly environmentally aware consumers may be able to answer the individualistic and fragmented-market demands.

### **RQ3. How and with what implications are those megatrends expected to develop by 2030?**

The long-term implications of consumption trends see an increase in ‘Services replacing ownership, ‘Ecological consumption’ and ‘Automatization and robotics’ by 2030. The clearly visible megatrends connected are ‘climate change’ (3), as well as ‘digitalization and technological development’ (5). The undertone is competition over natural resources (4) and the development of ‘urbanization’ (2) which is required to enable e.g. circular economy. Competition over natural resources (4) can encourage preferring services over ownership, which may be seen in the future practically as e.g. a price increase of ownership, and an increase of availability of service offerings versus purchasing products. The consumption trends that were most notably expected to fluctuate by 2030 were services replacing ownership, circular – and sharing economy, all of which were expected to considerably to rise in relevancy too.

Through the above-mentioned examples, it is clear to note the influencers and the contextual power that retailers, service providers and producers hold over consumer choices. The empirical findings considered consumers powerful but were too divided to conclude how much power does a consumer hold in e.g. product development beyond selecting from what is available to them.

The relevance of consumer segments is expected to increase. Differentiation amongst consumers, market fragmentation and reflective consumption are characteristics that don’t change the base requirements for packaging but do expect the packaging to develop further features. For example, LOHAS consumers are expected to start considering corporate responsibility or environmental consideration as base-requirements.

## **6.2 Limitations and suggestions for further research**

Future research that could be done on the topic of megatrends and the Finnish cardboard packaging industry can be continued in multiple manners. For example, future research could have a different approach with megatrends and trends of consumption (1), with cardboard packaging industry (2), with the functionality of and the material comparisons of

packaging (3) as well as by differentiating with the methodological choices (4). These four example differentiations revolve the 4 main elements of this research.

Regarding megatrends (1), future research could grasp wider know-how by researching the industry's perception to megatrends directly, as opposed to this research, which was not in contact with the industry. Another opportunity could be to research MGs in their bigger framework with weak signals, empty signifiers, strong signals and wild cards. An addition to the research could be to better cover the 'responses' to MGs with primary data, i.e. shaping or adapting to global change, and connecting MGs to risks, and/or to more thorough expectations of consumer segmentation. In the open-ended questions, the questionnaire respondents also brought forward suggestions to connect MGs and consumer trends to consumer time usage, to understanding the influence of characteristics like home, upbringing and relaxing, as well as de-growth research when studying the development of consumption.

From the perspective of the cardboard packaging industry (2) further usage of statistics and primary data would give insight to research. Primary data from the industry would give context and better understanding of the industry drivers, restrictors and inter-connectedness. This understanding could be used to research the current moment, as well as the future of cardboard packaging and forest industry in a larger scale. Research could also combine EU regulations and the industry's own view of their responses to MGs (i.e. shaping them or adapting to them), which could be a base to discuss future potential for bio –, circular – or shared economy, and the ability to use wood as a renewable resource.

Regarding packaging's future research (3) in terms of its functionality and material options, further research could be conducted to understand the balance of trends influencing consumers. In this case the trends to influence consumers, besides the primary product, could be the outlook of a package, price and a package's environmental footprint, etc. Further research could map out exactly how strong of an influence do such characters have to an initial purchase decision and what is their weight in making a repeat purchasing decision. A perspective as such could benefit from e.g. an exploratively scoped deductive research with quantitative primary data from the consumers.

With the development of consumption, the measuring of packaging's performance should be developed accordingly too. As the measuring of performance was presented only briefly in this research, a more thorough look into it would provide further perspective and understanding for its development.

Based on the he limitations of this study and its methodology choices (4) future research could expand to cover a wider and more heterogeneous sample audience, to gather quantitative data or to confirm findings deductively. This research's focus on Finnish cardboard packaging industry context also could be extended to benchmark further outside. Equally, as the focus could be narrowed internally to further segment inside the Finnish cardboard packaging industry to research its structure or potentially unique features, such as to research if e.g. co-opetition could be found in the Finnish forest cluster.

This study holds a relatively low generalizability, due to its highly focused qualitative approach and the skewed scale of empirical experts that had a strong representation of academic consumption experts and lacked primary data from the industry.

## REFERENCES

AALTO UNIVERSITY, 2018, Ioncell. [online document]. [Accessed Jun 16, 2018]. Available at: <https://www.whatif.aalto.fi/ioncell/>.

ANSOFF, H., 1975. Managing strategic surprise by response to weak signals. *California management review*, 18(2), p. 21.

ERIKSSON, P. & KOVALAINEN, A. 2008, *Qualitative methods in business research*. London: SAGE Publications Ltd. p. 22-23

EUROPEAN ENVIRONMENT AGENCY, 2015. *The European environment: state and outlook 2015: assessment of global megatrends*. Luxembourg: Office for Official Publications of the European Communities. p. 3-107.

FINNISH FOREST INDUSTRIES, 23.10.2017a, What is it? [online document]. [Accessed Nov 16, 2018] Available: <https://www.forestindustries.fi/innovation-contest-wood-u-make-it-happen/whatisit/>.

FINNISH FOREST INDUSTRIES, 04.08.2017b, Pakkaaminen kasvatti kartongin tuotantoa lähes kymmenen prosenttia – kustannuspaineet korostavat kilpailukyvyn merkitystä | Metsäteollisuus ry. [online document]. [Accessed Available: <https://www.sttinfo.fi/tiedote/pakkaaminen-kasvatti-kartongin-tuotantoa-lahes-kymmenen-prosenttia-kustannuspaineet-korostavat-kilpailukyvyn-merkitysta?publisherId=3973&releaseId=62541175> [Nov 16, 2018].

FINNISH FOREST INDUSTRIES, 03.05.2016, Kartongin tuotanto kasvoi alkuvuonna yli kahdeksan prosenttia, paperin tuotanto pienentyi | Metsäteollisuus ry. [online document]. [Accessed Nov 16, 2018]. Available: <https://www.sttinfo.fi/tiedote/kartongin-tuotanto-kasvoi-alkuvuonna-yli-kahdeksan-prosenttia-paperin-tuotanto-pienentyi?publisherId=3973&releaseId=45215742>

FINNISH PACKAGING ASSOCIATION, 2018a. Maalitehtaasta pakkauspinoitetta. Finnish Packaging Association. [online document]. [Accessed Jun 17, 2018]. Available: <https://www.pakkaus.com/maalitehtaasta-pakkauspinoitetta/>.

FINNISH PACKAGING ASSOCIATION, 2018b. Pakkausbarometri. *Pakkaus Magazine* 1/2018, p. 6.

FINNISH PACKAGING ASSOCIATION, 2018c. Pakkaustarvikkeiden valmistus, tuonti ja vienti 2007-2016. *Pakkaus Magazine* 1/2018, p. 36-37.

FINNISH PACKAGING ASSOCIATION, 2018d. Posti toimitti vuonna 2017 yli 37 miljoona pakettia. *Pakkaus Magazine* 1/2018, p. 8.

FINNISH PACKAGING ASSOCIATION, 2017a, EcoFishBox on maailman paras kestävän kehityksen pakkaus – Sai myös WorldStarin. [online document]. [Accessed Jun 16, 2018]. Available: <http://www.pakkaus.com/stora-enson-ecofishbox-on-maailman-paras-kestavan-kehityksen-pakkaus-sai-myos-worldstarin/>.

FINNISH PACKAGING ASSOCIATION, 2017b. Hyvä pakkaus viestii selkeästi tuotteen laadusta. Finnish Packaging Association. [online document]. [Accessed Jun 16, 2018] Available: <https://www.pakkaus.com/hyva-pakkaus-viestii-selkeasti-tuotteen-laadusta/>.

FINNISH PACKAGING ASSOCIATION, 2017c, Pakkausjätteiden kierrätystavoitteet nousevat – EU:n kiertotalouspaketista yhteisymmärrys. [online document]. [Accessed Jun 16, 2018]. Available: <http://www.pakkaus.com/pakkausjatteiden-kierratystavoitteet-nousevat-eun-kiertotalouspaketista-yhteisymmarrys/>.

FINNISH PACKAGING ASSOCIATION, 2017d, Sulapac lähtee maailmanvalloitukseen. [online document]. [Accessed Jun 16, 2018]. Available: <http://www.pakkaus.com/sulapac-lahtee-maailmanvalloitukseen/>.

FINNISH PACKAGING ASSOCIATION, 2017e, Suomalaisyhtiö kehittää puupohjaista tuorekelmua – kelmu kuluttajille vielä tänä vuonna. [online document]. [Accessed Jun 16, 2018]. Available: <https://www.pakkaus.com/suomalaisyhtio-kehittaa-puupohjaista-tuorekelmua-kelmu-kuluttajille-viela-tana-vuonna/>.

FINNISH PACKAGING ASSOCIATION, 2017f, Neljä WorldStar-palkintoa Suomeen. [online document]. [Accessed Jun 16, 2018]. Available: <https://www.pakkaus.com/nelja-worldstar-palkintoa-suomeen/>.

GOLAFSHANI, N., 2003. Understanding reliability and validity in qualitative research. The qualitative report, 8(4), 597-606.

HIRSIJÄRVI, S., REMES, P. & SAJAVAARA, P., 2014. Tutki ja kirjoita. 19th edition. Helsinki: Kustannusosakeyhtiö Tammi.

HUHTANEN, J., 2011. LOHASPAC – Pakkauselämyksiä LOHAS-kuluttajille. Kehittyvä Elintarvike, 4/2011, p. 26.

HILTUNEN, E., 2017. Mitä tulevaisuuden asiakas haluaa : trendit ja ilmiöt. Jyväskylä: Docendo.

HOLOPAINEN, M. and TOIVONEN, M., 2012. Weak signals: Ansoff today. Futures, 44(3), pp. 198-205.

HÄNNINE, R., KATILA, P. and VÄSTILÄ, S., 2013. Megatrendit muuttavat Suomen metsäalaa. Metsätieteen aikakauskirja, p. 675-678.

JÄRVI-KÄÄRIÄINEN, T. and OLLILA, M., 2007. Toimiva pakkaus. Helsinki, Finland: Pakkausteknologia-PTR. p. 302-307

KALINAINEN, T., 2015. Value creation in intelligent packaging value chains, Lappeenranta University of Technology.

KORHONEN, V., 2018. Kolumni: Miksi muovi ärsyttää kuluttajaa? Finnish Packaging Association. [online document]. [Accessed Jun 10, 2018] Available: <https://www.pakkaus.com/kolumni-miksi-muovi-arsyttaa-kuluttajaa/>.

LEPPÄNEN-TURKULA, A., MERISTÖ, T. and JÄRVI-KÄÄRIÄINEN, T., 2000. Pakkaus 2020, tulevaisuuden visioita Suomen pakkausalalle. Helsinki: Pakkausteknologia-PTR. p. 1-27

- MÄNTYLÄ, J., 23.01., 2018, Näin suomalaisyritykset pelastavat maailman meriä muovilta: kelmujen gore-tex ja 5 muuta innovaatiota. [online document]. [Accessed Jun 10, 2018]. Available: <https://yle.fi/uutiset/3-10036369>.
- NAISBITT, J., 1982. Megatrends: ten new directions transforming our lives. New York: Warner Books.
- NIKUNEN, J., 2018. Trendit Paketissa 2018. Pakkaus Magazine 1/2018, p 22-23.
- NIKUNEN, J., 2017, Kolme suomalaisehdokasta LuxePackin palkinnonsaajaksi. [online document]. [Accessed Jun 16, 2018]. Available: <http://www.pakkaus.com/kolme-suomalaisehdokasta-luxepackin-palkinnonsaajaksi/>.
- OLSMATS, C., 2003. Packaging scorecard – a packaging performance evaluation method. *Packaging Technology and Science*, 16(1), p. 9-14.
- OLSMATS, C., 2002. The business mission of packaging: packaging as a strategic tool for business development towards the future, Åbo Akademi. p. 43
- OLSMATS, C. and KAIVO-OJA, J., 2014. European packaging industry foresight study—identifying global drivers and driven packaging industry implications of the global megatrends. *European Journal of Futures Research*, 2(1), p. 1-10.
- ROHNER, P., BISWAS, A. and TORTAJADA, C., 2018. Water: A megatrends perspective. *Assessing global water megatrends*. Singapore: Springer, p. 1.
- SAUNDERS, M., LEWIS, P. and THORNHILL, A., 2016. *Research methods for business students*. 7th edition. Harlow: Pearson Education Limited.
- SAUNDERS, M., LEWIS, P. and THORNHILL, A., 2012. *Research methods for business students*. 6th edition. Harlow: Pearson Education Limited.
- SAUNDERS, M., LEWIS, P. and THORNHILL, A., 2009. *Research methods for business students*. 5th edition. Harlow: Pearson Education Limited.
- SOLALA KARI, 2018. Miksi testata tuotteen makua kuluttajilla? [online document]. [Accessed Jun 4, 2018]. Available: <https://www.senseninsight.com/blog/2018/5/25/miksi-testata-tuotteen-makua-kuluttajilla>.
- SUOMEN METSÄYHDISTYS RY, 2014, Suomen metsävarat. [online document]. [Accessed May 5, 2018]. Available: <https://www.smy.fi/forest-fi/metsatietopaketti/suomen-metsavarat/>.
- STENBACKA, C., 2001. Qualitative research requires quality concepts of its own. *Management decision*, 39(7), 551-556.
- SÄILÄ ANTRO, 15.02.2017, Vaihtoehtoisia tosiasioita. [online document]. [Accessed Nov 16, 2018]. Available: <http://www.pakkaus.com/vaihtoehtoisia-tosiasioita/>.
- VIITALA ESA-JUSSI, 2014. Metsäteollisuuden miljardit ja megatrendit. *Metsätieteen aikakauskirja*, , p. 123-128.
- VISKARI, K., 2008. Drivers and barriers of collaboration in the value chain of paperboard-packed consumer goods, Lappeenranta University of Technology.

VON GRODDECK, V. and SCHWARZ, J.O., 2013. Perceiving megatrends as empty signifiers: A discourse-theoretical interpretation of trend management. *Futures*, 47, p. 28.

YIN, R. K., 2014. *Case Study Research: Design and methods*. 5th edition. Thousand Oaks: SAGE Publications, Inc.

## APENDIXES

### Appendix 1: Questionnaire for consumer expert interviews (in Finnish)

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Kuluttaja-asiantuntijahaastattelun kysymykset:

Tausta:

1. Mikä on työtehtäväsi ja asemasi?

Kulutuksen nykytilanne, keskiössä muutosajurit, -nopeus ja suunta:

2. Miten kuvailisit kuluttamista ja kulutuskäyttäytymistä vuonna 2017 muutamalla sanalla tai lauseella? Mikä on tyypillistä tai merkillepantavaa?
3. Millä tavoin arvelet kuluttamisen muuttuvan seuraavien kymmenen vuoden aikana?

Yritysvastuu, kestävyysmuutos ja kuluttaja

4. Ajateltaessa kulutuksen kestävyysmuutosta, tuotettujen ja kulutettujen asioiden muuttumista ympäristön ja yhteiskunnan kannalta kestävämmiksi, mikä rooli on kuluttajalla?
  - a. Miten kuluttajan toimijuus voi vaikuttaa kulutuskestävyysmuutokseen?
5. Mitkä tekijät rajoittavat tai mahdollistavat kuluttajan toimijuutta kulutuskestävyysmuutoksessa?
6. Ajateltaessa kulutuksen kestävyysmuutosta, mitkä muut tahot kuluttajan lisäksi vaikuttavat markkinoilla vaihdettujen tuotteiden ja palveluiden kestävyysmuutokseen?
  - a. Miten ja mikä ajaa tätä muutosta?
7. Kuinka tavallista on mielestäsi, että kuluttajilla on odotuksia tai oletuksia yritysten vastuullisuutta kohtaan? Miten tämä näkyy kulutuskäyttäytymisessä?

Kuluttajat ja tuotekehitys:

8. Miten näet kuluttajien tarpeen ja halukkuuden vaikuttaa siihen, millaisia tuotteita markkinoille tulee? Miten tällainen ilmenee ja kuinka yleistä se on?
9. Kuinka tavallista mielestäsi on, että yritykset hyödyntävät kuluttajia tuotekehityksessä? Onko kuluttajien hyödyntäminen tuotekehityksessä lisääntyvä vai stabiili ilmiö?
10. Onko näkyvissä joitakin uusia tapoja, joiden avulla yritykset pyrkivät hyödyntämään kuluttajia tuotekehityksessä?

Hiljaiset signaalit:

11. Tuleeko mieleesi muita merkillepantavia asioita / ilmiötä, jotka ovat tärkeitä, kun mietitään kulutuksen ja kuluttajakäyttäytymisen muutosta seuraavan 10-15 vuoden aikana?

## Appendix 2: Questionnaire for consumer expert interviews (translated to English)

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Consumption expert interview's questions

Background:

1. What is your job and position?

Current state of consumption, focusing to drivers of change, speed and direction of consumption:

2. How would you describe consumption and consumer behavior in 2017 with a words or sentences? What is typical or notable?
3. How do you expect consumption to change over the next ten years?

Corporate responsibility, change towards sustainability and the consumer:

4. When thinking of the sustainability change; the change towards environmental and societal sustainability of produced and consumed goods; what is the role of the consumer?
  - a. How can a consumer influence the sustainability change?
5. What factors limit or enable consumer influence in sustainability change?
6. When considering the sustainability change in consumption, which other parties influence the sustainability of products and services?
  - a. How and what drivers this change?
7. In your view, how common is it that consumers have expectations or assumptions of corporate responsibility? How is this seen in consumer behavior?

Consumers and product development:

8. How do you see the need and willingness of consumers to influence what kind of products are placed on the market? How does this occur and how common is it?
9. How common do you think it is for companies to use consumer in product development? Is consumer utilization in product development an increasing or stable phenomenon?
10. Are there any new ways in which companies are trying to involve consumers in product development?

Silent signals:

11. Do you notice any other remarkable things / phenomena that are important when thinking about changes in consumption and consumer behavior in the next 10-15 years?

### Appendix 3: Questionnaire for consumer expert Delphi-survey

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1. How would you describe consumption of today with five words or phrases?
2. In your perception, which five words or phrases would describe consumption in 2030?
3. Please continue thinking of consumption in the future. Describe what kind of consumption could be in 2030, when taking into account your perception of possible directions of development. (You can consider e.g. what, where, why, who and how consumers consume.)

**[Page break]**

4. a.) Below you can find a list of phenomena that may be relevant in terms of the development of consuming and consumption in the future. Please consider how strong influence do these listed issues have on consuming currently (column 1) and in 2030 (column 2) according to your expertise? (In brackets the Finnish translations.)

[Likert scale 1-5 with two columns]

- ✓ Individuality (yksilöllisyys);
- ✓ Ecological consumption (ekologisuus);
- ✓ Health and wellbeing (terveys ja hyvinvointi);
- ✓ Services replacing ownership (palvelut korvaavat omistamisen);
- ✓ Sharing economy (jakamistalous);
- ✓ Circular economy-based consumption (kiertotalous) e.g. second life products.
- ✓ Hedonistic consumption (hedonistinen kulutus, esim. elämyksellisyys)
- ✓ Virtual reality (virtuaalitodellisuus);
- ✓ Localness (paikallisuus) including story telling;
- ✓ Fragmenting markets on product level (markkinoiden pirstaloituminen), e.g. Fragmenting of a basic product to different products, like milk's or coffee's different qualities;
- ✓ Gamifying (pelillistäminen);
- ✓ Community involvement (yhteisöllisyys);
- ✓ Aesthetic character of consumption (kulutuksen esteetisyys);
- ✓ Decreasing importance of ownership (omistamisen merkityksen väheneminen);
- ✓ Automatization & robotics (automaatio ja robotiikka);
- ✓ Favoring bio-based materials to substitute fossil-based materials (biopohjaisten materiaalien suosiminen).

4. b.) If you find that one or more significant trends are not mentioned, please list them here.

**[Page break]**

5. How do the forms of secondary consumption, e.g., packaging of primary products, influence consumers? What expectations do consumers have regarding their secondary forms of consumption?

6. Please describe your perception of how the attitudes towards renewable natural resources will change, and what kind of influence it will have on consuming in 2030?
7. What do you think, will the sustainability development between tissue paper and packaging materials be different? If yes, what do you think drives this difference?
8. How do you see the role of consumers in driving the sustainability development of packaging materials?

**[Page break]**

8. How do you see the role of technology and digitalization in the Finnish consumer markets currently?
9. Considering the technological development and the continuing digitalizing environment of consuming, how do you see the role of technology and digitalizing in consuming in 2030?

This is a section for free speech, if you've got feedback (for better and for worse), noticed something missing or have a further comment onto earlier questions, please write them below.

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Please describe your position and industry briefly.

- a) In consulting
- b) Researcher
- c) University researcher/professor

Please indicate how long of a working experience do you have within your industry?

- a) Less than 1 year
- b) 1 - 5 years
- c) 6 - 10 years
- d) Over 10 years