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The dependence on staying updated
– a social practice approach to consumption of personal electronics

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Abstract

The Swedes are consuming personal electronics like never before, despite knowledge of environmental and social issues that comes with production, use and waste management of these products. The aim of this study is therefore to develop a deeper understanding of the practice of consuming electronics and its sustainability aspects. According to practice theory, a practice is the setting in which the social is performed and can be described as a block of interconnected elements. Actors are carriers of a practice where qualities such as understanding, know-how and purposes are not seen as characteristics of the individual but as part of a practice where individuals take part. Practice theory helps to move away from theories of individual consumer choice when it comes to environmental behaviour research. By using the analytical framework by Shove, Pantzar & Watson (2012) the elements that make up the practice are placed into the categories *competence*, *meaning* and *material*. Through interviews with eight consumers in a Swedish municipality, the elements that characterise the practice of consuming electronics are put in words as well as the consumers' thoughts on what is missing to make the practice more sustainable.

The interviewees feel they can act competently in the practice by having knowledge about technology, brands, safety, price and product requirements. The meaning they get from participation is access to society, a sense of belonging and pleasure from using the electronic devices. These devices are the most important materials in the practice which are held up by the infrastructure of the internet and influenced by marketing. There is a lack of sustainability knowledge in the practice, which keeps it unsustainable. However, when the sustainability knowledge shows, guilt of consuming electronics can lead to decreased consumption or consumption of second-hand products instead of new. The lack of accessible green infrastructures is another thing making the practice unsustainable. To be able to compare products from a sustainability perspective is something the interviewees are missing. The pushing marketing infrastructure is also perceived as preventing sustainability. The interviewees feel the need and the expectation to own updated electronic devices to be able to communicate and access societal infrastructure. Since producing companies don't build computers and mobile phones to last for more than a couple of years, this leads to a rapid turn-over of electronic products.

Keywords: practice theory, consumption, electronics

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1 Introduction

One of the greatest sustainability problems of today is consumption (United Nations 1987; WWF 2018). This issue of unsustainable consumption was first brought to the international arena by the United Nations report Our Common Future (1987), also known as the Bruntland Report. It highlighted the negative environmental impacts that are linked to the consumption of industrialised economies. Today, organisations such as the United Nations and the European Union are stressing the need to change consumption and production patterns into more environmentally sustainable to prevent even further ecological degradation (European Commission 2008; United Nations 2019a). The organisation WWF goes even further by stating that the increasing human consumption is the dominant cause of species loss and planetary change (WWF 2018). Furthermore, many researchers now mean that the capitalist market economy of the industrialised countries has created a society with a consumerist ideology (Sklair 1997; Schwarzkopf 2011; Nixon & Gabriel 2016), a society where too much attention is given to the buying and owning of things (Cambridge Dictionary 2019).

That a change in the consumption patterns of industrialised countries is needed has been on the agenda for quite some time. At the World Conference in Johannesburg 2002 (Rio+10), the role of the individual consumers was put in focus of sustainable consumption policy instead of only focusing on resource efficiency and technological fixes to the problems (Evans 2011). Ever since, sustainable development policy has been concerned with notions of 'behaviour change' to help consumers consume more sustainable (Evans 2011). Still today, the dominating focus among environmental policymakers, and consequently the media, is the one focusing on changes at the level of the sovereign consumer (Shove 2010; Hargreaves 2011; Sahakian & Wilhite 2014). The responsibility for tackling environmental issues is thereby put on individuals and their behaviour choices, which brings focus away from changes that need to be done on a societal level through, for example, governmental regulations on industries or taxes (Shove 2010).

It is not uncommon that every family member in a Swedish household has their own phone and computer (Internetstiftelsen 2019), and the rapidity of turn-over is high. As much as 62 percent of Swedes change their phone before the old one is broken (Naturvårdsverket 2015). The number of electronic products in circulation is increasing at the same time as their lifetimes are getting shorter (Naturvårdsverket 2011). This mostly has to do with the fact that the software in computers and smartphones become outdated after a few years, creating a need to buy a new product with the latest technicality (Bakhiyi et al. 2018b; Satyro et al. 2018). The lifecycle of these electronic devices is sustained at a high environmental and social cost. From the extraction of the raw materials to the waste management, the environments in several countries are affected (Naturvårdsverket 2011). In a country with high sustainability ambitions, it could be seen as a big paradox that these resource-demanding electronic products are still growing in numbers, and the issue about their harm is not a big part of the discourse of consumption. If we know that consuming too much is not sustainable, then why do we consume as we do?

To be able to reduce the environmental impact of consumer electronics there is a need to understand how and why the users buy, use and dispose of electronic products (Demene & Marchand 2016). Therefore, this study investigates how a practice connected to major environmental problems, namely electronics consumption, performed through daily acts of doings and sayings are discussed by the practitioners of the practice. Practice theory allows us to look at the issues of consuming electronics without focusing on the individual actors nor the major structures of society. Instead we may investigate how the actions performed by the practitioners with underlying motivations create the impacts of society and the environment we see today.

The usefulness of a practice theoretical approach to consumption is now well rooted in the research community (Halkier *et al.* 2011; Warde 2014; Welch 2017), though the application to electronic consumption is rare. This type of consumption may not have the same every-day routine as the purchase of foods or clothes do, but it is still possible to find a specific pattern in the way private consumers make sense of consuming electronics.

This study aims to develop a deeper understanding of what characterises the practice of consuming electronics and what, according to the consumers themselves, makes participation in a sustainable consumption practice feasible.
Drawing on practice theory, the research questions I answer are:
- What characterizes the practice of electronic consumption based on consumers' own reasoning?
- What, according to consumers themselves, is making participation in a more sustainable consumption practice easy, and what is making it difficult?

Based on the answers from the research questions it becomes possible to identify some of the obstacles seen by the consumers in transforming the practice into a more environmentally friendly one. This research will attempt to contribute to the fields of consumer culture studies and social practice theories by investigating consciously experienced elements within a consumption practice. It might also help future research investigate the more unconscious parts of the practice. Further, the hope is that the conclusions from this study will contribute to the work on transforming society into a more sustainable one by helping policymakers and planners to address the issue of unsustainable electronic consumption. This could for example be by prioritising resources and directing communication to make sustainable consumption easier and more convenient for the users.

2 Background

For this study, I started out planning for a practice theoretical approach to an environmental problem. Since I was also interested in the phenomenon of the value-action gap (or the attitude-behaviour gap), I searched for a subject where a lack of action or behaviour change could be a part of the problem. I found the issue of over-consumption in the western world to be an interesting topic. The idea to apply the setting to the consumption of electronics came from my background in working with municipal waste management, where e-waste (electric and electronic waste) often came up as a problematic fraction. This allowed me to look deeper into the issue of this newer waste fraction as well as the consumption background of the products. This study is more specifically examining so-called consumer electronics, home electronics or brown goods. To the interviewees in this study, the product category was described as personal electronics, such as mobile phones, computers, TVs, gaming consoles and other such devices.

2.1   Unsustainable lifecycles

Before going in on the sustainability issues connected to the consumption of electronics, I will introduce some of the problems connected to the rest of the lifecycle of these products, from production phase (design, mining and manufacturing) to end-of-life phase. This will help understanding why the over-consumption of personal electronic devices is such a big problem.

Industrial progress has been made in designing products so that much less materials and energy are used through their lifecycle compared to earlier generations (Laurenti et al. 2015). However, the rebound effects from these improvements are working against a long-term sustainable perspective. When the electronics become cheaper, people can afford to buy more which leads to increased production resulting in higher environmental impacts (Laurenti et al. 2015).

Some of the elements in personal electronics are critical metals such as rare earth elements (REE), indium, lithium, cobalt and precious metals (Zhang et al. 2017). The demand and production of these critical metals have been increasing dramatically due to the growing demand for personal electronics and electric vehicles (Zhang et al. 2017). These metals are often geochemically scarce and difficult to extract. The extraction comes with a variety of environmental issues such as global warming, eutrophication, acidification, respiratory effects and ozone depletion (Vahidi et al. 2016). The safety of the workers is often bad, resulting in health problems, human rights abuses, child labour and fatal accidents (Amnesty 2016).

Most of the personal electronics made from these metals are produced in China (Intrepid Sourcing 2019) and the factories are sometimes having sweatshop conditions. Suppliers to big international companies such as Apple, Samsung and Amazon have been proven to have bad working conditions like too long working hours, bad working environment, under-aged employees and low wages (China Labor Watch 2017, 2018a; b, 2019). Further, hazardous chemicals are used in the production of electronics, toxic to humans in too big doses, and some of them remain in the finished products (Naturvårdsverket 2011). This also makes the products hazardous waste when it comes to the products' end life where even their waste management is a big environmental issue.

E-waste is the fastest growing waste-fraction around the world, even though as little as 20 % is properly recycled (Baldé et al. 2017). And even during the recycling process, not much is in the end taken care of (Graedel *et al.* 2011; Sommer *et al.* 2015). Therefore, the most common supply of metals to new personal electronics is primary production, through mining. Some of the reasons for this is that product designs are making disassembly and material separation difficult or impossible. Another problem is to get the un-used electronics to recycling. However, a frequent habit in industrialized countries are to keep

un-used products in drawers instead of recycling them. Some devices are also thrown in the trash bin which takes away the opportunity for recycling (Graedel et al. 2011). Because of these problems, legislation has been introduced in the EU to make producers responsible for the recycling of their products. According to the Directive on Waste electric and electronic equipment (European Council 2012) producers are requested to finance the collection and treatment of electronics. However, much of the e-waste in the EU and around the world is not collected by the correct channels. It is instead processed so that the valuable components in the electronic products are extracted in an unregulated way, much of it is shipped abroad (Naturvårdsverket 2018). When the recycling of e-waste is done under non-compliant conditions, it affects human rights conditions and health as well as toxic materials ending up in nature (Schluep *et al.* 2009; Huisman *et al.* 2015). Hazardous substances from the e-waste or the recycling process can easily be released because of inappropriate treatment. This is a major problem in developing countries where 'backyard recycling' including acid extraction of metals, melting or burning of plastics on open fires have negative effects on health and environment (Schluep *et al.* 2009; Naturvårdsverket 2011).

2.2   Consuming electronics

A consumption perspective, compared to a production perspective, looks to the entire life cycles of products and to where they are sold and used (Naturvårdsverket 2011). The approach makes it easier to outline the environmental pressures linked to the living standards and lifestyles in a country. It measures the impacts of demand and the final usage of products (SCB 2020). This can for example be measured in ecological footprint, the pressure from human consumption on the biosphere. Sweden has an ecological footprint of 6.5 global hectares per capita (Global Footprint Network 2019). This number can be compared to if everyone lived within a sustainable usage of the planet's resources, the ecological footprint today would be 1.7 global hectares per person (Global Footprint Network 2019). There is a clear correlation between high income among people and high consumption (Naturvårdsverket 2008). The more we earn, the more we consume. There is also a correlation between high consumption and big negative environmental impact deriving from the lifecycle of the consumed products (Naturvårdsverket 2008). Seen in connection with the fact that the richest 25 % of the world's population stands for consuming 75 % of many natural resources (Loftas 1995) also gives an understanding of why the Ecological Footprint of consumption is peaking in the western world (WWF 2018).

In the UN 2030 Agenda for Sustainable Development, sustainable consumption and production are achieved through efficient use of natural resources, reduced waste generation, management of chemicals, promotion of sustainable public procurement practices and spreading of information and awareness for sustainable development (United Nations 2019b). Further, the means of reducing natural resource depletion and waste generation is perceived to be reached through prevention, reduction, recycling and reuse (United Nations 2019b). The definitions above are used in this study when talking about sustainable consumption.

Sweden has the 4th highest domestic material consumption in the EU (to the amount of materials extracted in the country, plus materials imported, minus material exported) (OECD 2020b). The consumption of electronic products has had a steady increase in Sweden over the last decades (Stefansdotter et al. 2016). 78.8 % of the population owns a smartphone of their own, which is a high number globally (Newzoo 2018). By looking at Sweden, a country with a high gross domestic product (GDP) (OECD 2020a), gives a good picture of how people consume in industrialised, rich countries. Sweden is also importing ever more consumer goods from developing economies, having a big impact on the emissions and pollution in the producing countries (Naturvårdsverket 2011). At the same time, Sweden has high national sustainability goals and ambition to be a leader in

sustainable development and in implementing the UN 2030 Agenda (Swedish Government 2017), where sustainable consumption patterns is a big part (United Nations 2019b). The country is also aiming to be one of the world's first fossil-free societies (Ministry for Foreign Affairs 2019). These factors make a consumption practice in Sweden interesting to investigate.

Because much of the power to change lies in the practice of consumption and lifestyle use of these products, I have chosen to look at the consumption of electronics and not production or waste management. I chose this because it seems that products can be made more environmentally friendly, produced under more sustainable conditions, built to last longer and consume less energy. In many cases this is already happening, but there is also the issue of economic gain from the producing companies. However, as long as there is a high demand for new personal electronic products, the market will happily meet it, and strive to make the demand greater.

In addition, there are few studies done on the consumption of electronics in general, most have the focus of energy consumption. Studies on electronics consumption from a practice theoretical perspective are even harder to find.

2.3   Research on consumption behaviour

Unsustainable consumption arises when consumers don't pay the actual costs deriving from their consumption (Stefansdotter *et al.* 2016). As mentioned in the introduction, the problems with unsustainable consumption are known to policymakers, and attempts to change the way consumption is performed in the society is being enacted. In this process, the Attitude-Behaviour-Choice (ABC) model is widely spread among policymakers, and builds on the assumption that individuals will change their behaviours when presented with adequate knowledge to create the right values and attitudes (Shove 2010; Barr *et al.* 2011; Stefansdotter *et al.* 2016). This has resulted in initiatives trying to make consumers act more sustainable. Mostly through providing information, such as various information campaigns from governmental agencies and municipalities as well as the nudging European Union energy label (Stefansdotter *et al.* 2016). Unfortunately, the actual line of behaviour does seldom correlates with the assumptions of the ABC model (Kollmuss & Agyeman 2002; Barr *et al.* 2011). This attitude-behaviour gap has led to confusion in the lines of research and politics when people are not changing a behaviour even though they have the knowledge and attitude to do so. Many studies have tried to understand the workings and barriers of behaviour change within the sociology of consumption. In those studies, the individual actor with its knowledge, attitudes and feelings takes up a big part in the research focus. This focus has in later years been criticised by practice theoretical researchers and the use of applying practice theory on the field of consumption has grown, providing a new way to study the workings of consuming. Practice theory can help us understand how sustainable behaviour change happens or not (Halkier *et al.* 2011) and could contribute to an increased understanding of the attitude-behaviour gap. How practice theory contributes to the issues of consumption and behaviour change is treated in the next chapter where I present the theoretical framework.

3 Theory

To be able to gain a deeper understanding of the consumption of electronics, the data in this study have been analysed with the help of a theoretical framework. Since consumption can be seen as a process where actors engage in acquiring products according to observable patterns in everyday life, where more or less reflection is needed (Warde 2005), the theoretical framework of practice theory was chosen.

   Practice theories, or Social practice theories, are a set of ideas from the fields of philosophy, sociology and culture studies, focusing on the practical performance of social life where the practices are seen as the settings in which the social is performed (Halkier *et al.* 2011). There are many strands within the theories of practice and the framework that has been used for this paper has its roots in the theories of Bourdieu (1977) and Giddens (1984), developed further by Schatzki (1996) and summarised by Reckwitz (2002). Finally, the work of Shove, Pantzar and Watson (2012), offers an even more developed framework.

3.1 Practice theory

Agency and structure, the two traditional ways of social scientific analysing, providing tools to look at the society from different viewpoints. With attempts to combine the two theories into one, Bourdieu (1977) and Giddens (1984) formed their social practice theories. Bourdieu with more focus on structures and Giddens more on the actor. The topic of investigation in practice theory however, is not the actor or structures in society but practices: patterns of doings and sayings by actors, made custom because of how it is being repeated over time, becoming a social structure (Inglis 2012). The practice becomes 'embodied' in the actors who participate in it (the practitioners) and they will act according to what seems as reasonable behaviour within the practice (Bourdieu 1984). That is, the practitioners act according to their *practical consciousness*. This term has its roots in phenomenology and ethnography where most daily actions are seen as semi-conscious and the actor has learned how to do a certain task and repeat it without much reflection (Inglis 2012). Every practice has a set of rules, guidelines and assumptions connected to it. From these, the practitioners will perform in a way that makes sense for them within the structures of the practice, even when guidelines are missing. Even though the actors seem to act mostly according to the structures of the practice, they are seen as knowledgeable and reflexive in their role as practitioners (Giddens 1984). Further, the actors are seen as carriers of a practice where qualities such as understanding, know-how, meanings and purposes are not seen as characteristics of the individual but as part of a practice where individuals take part (Reckwitz 2002). At the same time, these individuals do not themselves consciously create the practices they act within, but constantly recreate the practice by their actions (doings and sayings) (Giddens 1984; Schatzki 1996).

   A practice can be described as a block of interconnected elements (Reckwitz 2002), or a nexus of doings and sayings (Schatzki 1996). It can be a way of cooking, walking or voting, always defined by time and space. For example, there exists and have existed several washing practices - how to wash cloth, with the help of what materials, who is washing and how often it is customary to wash – this vary when looking at different times and places. However, for a certain time and place, a perceived 'right way' to perform the practice of washing can be found.

3.1.1 Practice theory on consumption

Practice theories are well used for studying activities of everyday life and are useful when conducting empirical studies of consumption (Warde 2014). Coming from the 1990s when consumption studies were focusing on symbolic meaning and identity creation (Halkier *et al.* 2011), practice theories helped taking focus away from the individual when it came to

environmental behaviour research (Spaargaren 2011). Practice theory presented a way to investigate other aspects of consumption such as behavioural patterns and habits (Welch 2017) as well as institutions and infrastructures connected to the consumption (Halkier & Jensen 2011; Shove *et al.* 2012). Many researchers now apply practice theories to consumption studies (Ingram *et al.* 2007; Røpke 2009; Spaargaren 2011; Sahakian & Wilhite 2014; Johnstone & Tan 2015; Welch 2017) and private consumption have been studied from a theoretical position where high natural recourse use and the view of individual choice is seen as political problems (Spaargaren 2011; Shove *et al.* 2012; Warde 2014).

It is also to be noted that, at the same time as consumption of electronics can be defined as one practice among others, it's elements can also be parts of other practices where consumption of electronics has a role. Where, for example, consuming the 'right' electronic products, the 'right way' can determine what is defined as a competent practitioner in another practice (Warde 2005).

3.1.2   Practices and behaviour change

There is still a large number of contemporary research and information pointing to that by accessing the right knowledge and attitude, an actor will choose to act accordingly (Shove 2010). Practice theory moves away from other contemporary theories of individual consumer choice and cultural structures (Halkier & Jensen 2011).

From the participants of a practice, there is a shared understanding of how the practice is best performed but there also exists a mixture of ways to perform the practice, ranging from good enough to perfect (Warde 2005). If certain knowledge or attitudes are not yet part of a practice, the practitioners will not use them to act within the practice. The customs of a practice are however sometimes questioned by pioneers when new elements enter a practice, while conservatives keep hold of the old ways (Warde 2005).

To be able to understand behaviour change, one should look at the changes in the practices themselves (Warde 2005; Shove 2010). At any given point in time a practice has a set of established elements. When links between the elements are created - a practice is born or changed, and when the links are broken - the practice as it was known cease to exist (Shove *et al.* 2012; Warde 2014). The actors participating in a practice have the power to change the practice, at the same time their behaviour becomes changed by the practice. The actors can choose not to be part of a practice or leave it when it is not suitable anymore.

3.2   Analytical framework

In this study, the work by Shove, Pantzar & Watson (2012) *The Dynamics of Social Practice: Everyday Life and how it Changes* have been used as an analytical framework. The work is often used as a handbook for introductory practice theory research (Warde 2014). The framework is also helpful when studying practices that involve environmental and natural resource issues, because of how it gives much weight to the material objects involved in the practice. The practitioners interact with and relate to these objects when participating in the practice. Objects that are dependent on problematic natural recourses. And when the practice change, in one way or another, it causes significant impacts on the environment (Warde 2014).

The work suggests three key concepts, categories of the elements that build up any practice; *competence, meaning* and *material*. The concepts are presented below.

3.2.1   Competence

The elements connected to competence in a practice are the background knowledge needed to, in a competent way, participate in a specific practice. The practitioner must have an underlying understanding of how the practice is supposed to be enacted, the everyday

know-how, skills and techniques needed to fully participate (Shove *et al*. 2012). Within the structures of the practice, the practitioners are supposed to know how to act, even in a new situation without given 'rules'. In the practice of consuming electronics, competence can be knowledge of how to buy a new product, where to go, which products you need to buy, their functions and the knowledge of how to use them.

3.2.2 Meaning

This next category answers the question why, why are the practitioners involved in a practice? These elements provide the practitioners the social and symbolic meaning to participate in the practice. The things that motivate, aspire and reward the practitioners. The values, ideas and emotions connected to the participation of a practice. The elements of meaning can be found in the purposes and values this practice creates around consuming electronics.

3.2.3 Material

The final category includes all the material objects or 'things' that are connected to a practice. It includes infrastructures, tools, technologies and building materials (Shove et al. 2012). The materials in the practice of consuming electronics are helping the participants maintain the meaning and the competence needed to participate competently in the practice. It can be the electronic products themselves as well as the tools and infrastructures that make the consumption of them possible.

4 Methods

Since this study aims to investigate some characteristics of a consumption practice, it is performed as a qualitative case study with a theory-driven, thematic analysis.

The search for a suitable practice theoretical framework led me from the roots in Bourdieu and Giddens, through Reckwitz and later researchers focusing on environmental issues and consumption such as Warde, Shove and Spaargaren. The framework by Shove, Pantzar and Watson (Shove *et al.* 2012) was often mentioned as an excellent and easy-to-use theoretical framework. The framework itself, with its three key concepts, is briefly described and easily summarised and I first thought the framework seemed to be too simple. However, when understanding the research background and connecting it to other research, I could see how the framework had developed. In many parts Shove *et al.* have only reworked the theories from former researchers and in other parts added to and developed existing theories. Putting as much weight to the aspect of material objects as the two other categories is for example a later addition.

4.1 Data collection

The data collection for the study was done through qualitative, semi-structured interviews with eight private consumers in the municipality of Uppsala, Sweden. The recruitment of interviewees was done through purposive sampling from two different groups.

The first group of interviewees was recruited with the help of acquaintances. They were asked to participate because of their outspoken interest in technology or electronics. The second group of interviewees was recruited through contact with the local ENGO (environmental non-governmental organisation) Naturskyddsföreningen Uppsala. The ENGO was asked for help in finding environmentally conscious interviewees, which resulted in a note of inquiry being sent out in a newsletter to all the members. The members were asked to contact me if they were interested in being interviewed about their electronic consumption habits. Five members showed interest and the four who were available for a physical meeting were interviewed.

The two groups were chosen so that the diversity in the practice of consuming electronics could be investigated. Practitioners with outspoken environmental interest and practitioners with a technology interest could be seen to represent two opposing sides within the practice. Demographic factors such as gender, age and occupation were considered when recruiting to try to get a heterogeneous sample to find different ways of participating in the consumption practice. However, all the interviewees but one had a university education. This homogeneity influences the results of the study, perhaps in the way that also the interviewees without an outspoken environmental engagement can be more aware of the problems with consuming electronics than other societal groups. On the other hand, higher education might lead to higher income and therefore an extended consumption. The interviewees are presented in Table 1 below.

Table 1. Presentation of interviewees.

Interviewee	Recruitment	Gender	Age	Occupation
A	Acquaintance	Female	30-40	Unemployed teacher
K	Acquaintance	Female	40-50	Assistant nurse
L	ENGO newsletter	Male	70-80	Retired IT technician
M	Acquaintance	Male	30-40	Engineer PhD student
P	ENGO newsletter	Female	20-30	Agronomy student
R	ENGO newsletter	Female	60-70	Retired translator
S	Acquaintance	Male	60-70	Senior dentist
T	ENGO newsletter	Female	30-40	City planner

The first contact with the interviewees was made through either e-mail, phone call or SMS, and the interviews were held at the interviewees' homes, university or at a café. Some complementary questions were given to one of the interviewees on the phone after the actual interview.

Before starting, I performed three pilot interviews on family members. This was done to see how the interviewees responded to and understood the questions. These three interviews are not part of the analysis but were much helpful to frame the questions in a good way.

The interview questions were first based on the three key concepts, building up a practice from the framework by Shove et al. (2012); *competence*, *meaning* and *material* and then re-worked into open-ended questions trying to find the different aspects of the practice. Above that, questions regarding the interviewees' explanation of their consumption behaviour were asked, as well as their thoughts on why others consume electronics. The issue of environmental problems regarding electronics was also brought up.

All interviews were transcribed in their original language Swedish, and the parts that were used as quotes in this paper were translated into English. The material was then coded with keywords and themes were found among them. The key concepts from the theoretical framework were used to create the main themes which the rest of the data was ordered under.

4.2 Methodological considerations

According to Schatzki, "Understanding is expressed and acquired in a tightly interwoven nexus of doings and sayings in which neither the doings nor the sayings have priority." (Schatzki 1996 p. 112). This has become a central notion of practice theory. The results from an interview-based study however, will show only sayings about actions in the practice and not the doings or sayings of the practice itself. It will be without first-hand observation of the social situation it portrays and presents how the interviewees see and reflect upon their practice of consumption, not how they actually consume. One way to gain validity to such a study would be triangulation, the combination of methods (Creswell & Creswell 2017). However, the use of a method comes with certain views on reality, and the methodological choice will shape the work in several aspects (Creswell & Creswell 2017). One assumption made when using interviews as a data collection method is that reality is rather constant and stable. Whereas the assumption from choosing participant observations is that reality is greatly influenced by the actions of all participants, including the observer (Berg 2004).

Becker and Geer (1970) dismiss interviewing as an optimal source of information when finding out what has happened in an event somewhere else from the interview. This due to that the interviewee might be unwilling or unable to talk about certain matters of the event. They might also see the event through distorting lenses and have a perception of what

ought to have happened in a situation (Becker & Geer 1970). Therefore, a practice theoretical study based on interviews cannot claim to fully map out a practice, with all its doings and sayings. However, adding participant observation to such a study will not help to persist the 'objective' truth, though it would help to add breadth or depth to the analysis (Flick et al. 2004). Some practice theoretical researchers mean that participant observation is providing facts about a social situation and that it is the only right way to portray a practice. However, Atkinson and Coffey (2003) claim that the ongoings in a social situation are not self-evident and that data from participant observations are as filtered through our interpretation as data from interviews. Even though the data from interviews are filtered twice, by the interviewee and then the interviewer. Atkinson and Coffey argue that both participant observation data and interview data can be seen as performances by social practitioners in different settings. Adler-Nissen points out that "Interviews are important, not because informants know the 'big-T' truth, but because their particular truths are valuable. From a practice viewpoint, interviewers and informants are always actively engaged in constructing meaning." (Adler-Nissen 2016 p. 97).

Iaquinto (2016) suggest interviews are suitable for observing practices performed consciously, but this method leaves out practices performed unconsciously. To examine these practices, he suggests participant observation as a more helpful method. However, he also states that it can be difficult to detect temporal elements of a practice and that some practices can be unobservable (Iaquinto 2016). The assumption I make is that the consumption of electronics is more of a conscious practice, where much thought goes into the consumption decisions. In this study I do not attempt to describe a practice as it is but ask the practitioners involved in the practice to reflect on the practice they are involved in and their behaviour when they carry it out.

5 Analysis

In this section, the results from the interviews are presented. The results are structured according to the concepts of the practice, provided by the analytical framework of Shove *et al*. (2012). This way it will become clear what characterise the practice of consuming electronics as it is depicted by the consumers themselves.

5.1 Competence

The elements of competence in the practice of consuming electronics are the background knowledge needed for the practitioners to participate competently in the practice. I found that a big focus of the practice lies in the preparation of purchase. Where to find the right product, seller and price are important elements.

5.1.1 Research

All interviewees in this study researched before purchasing any expensive electronic products. They had all been searching online and comparing products before they made up their mind. Even though a purchase could be made seemingly spontaneous (as in the cases of interviewees A and S) research had been done before, preparing for the purchase. The amount of research done before buying an electronic product varies among the interviewees. This seems to depend on the interest in electronic devices in general and the background knowledge of the interviewees. For example, interviewee P felt frustration and boredom when searching for a laptop:

> "I spent about two hours of boredom and boring time trying to go to different comparison sites and blogs that compared and such. […] You have very little power. After all, I can't keep track of what this means."

At the same time, interviewee A thought it to be quite easy to buy certain products because of the number of online video reviews of many products, both done by the companies themselves and by private persons. Interviewees A, K and R said they do more researching online today, compared to 10 years back or more, since there are more ways of comparing products and prices. They don't do as much investigation in the electronics stores anymore.

One way of doing this research is, as already mentioned, to look at comparisons of different products done by someone else. Interviewees L, P and R for example, specifically mentioned they used the consumer magazine Råd & Rön. Interviewee R, who relied a lot on these comparisons, mentioned that even if she sometimes did a lot of research, in the end, she might not be comfortable with the product she bought. She felt it to be a jungle and hard to know what to look for, pointing out that it was "a little hard to buy something new and learn how it works, know if you buy the right thing and if you buy too expensive". On the opposite, interviewee M felt comfortable to do research when the time came to find a new electronic product. He wanted to familiarize himself thoroughly with the field to feel that he really knows what he is doing when researching for a product. In other words, the interviewees want to feel like competent practitioners by gathering as much knowledge as possible and comparing products.

5.1.2 Technical knowledge

With a field constantly being updated and expanded there is a need to access the background knowledge of the electronic products. Interviewee M talked about the need to buy devices compatible with the other products, for example Android and Windows systems work well together and with much else.

The two pensioners mentioned specifically that they wanted an SSD disk when they bought a new laptop. Others mentioned they wanted good cameras with high pixel capacity on their smartphones or components and programs that is not quickly outdated. Interviewee M had noticed the knowledge expected from electronics consumers have changed:

> "In the past, there were many more things listed, like the mobile phone has features with SMS or something. But now there is so much that obviously should be included. That way it becomes easier, then maybe you just compare something... some screen with another screen, how big resolution it has […] then there will be only a few variables that show that this is a little bigger and a little faster."

The interviewees were happy to share the technical knowledge they did have but many also mentioned they did not always have all the knowledge they thought they needed. Most interviewees wanted to ask someone else about what to buy or not, even though they had good knowledge in the field and had done some research. It could be friends, co-workers, shop assistants or "tech-nerds". Most of the female interviewees referred to a male family member to help them with finding the right electronic products. Even interviewee P, who stated that she had to do the research all by herself, mentioned missing a tech interested uncle she could turn to.

Striving to gain sufficient technical knowledge and applying it when consuming was seen as worthwhile when participating in the practice. However, lack of knowledge was apparent among the interviewees.

5.1.3 Price and timing

One of the most important factors when buying electronics seemed to be the cost, or rather the value of the products. Regardless of their income, the interviewees still think about pricing.

> "I am careful to look for that it should be a good thing and that it should be affordable, so I do not see the next day that if you had gone there, you would have got it 25 % cheaper. I don't like that" (Interviewee S)

The interviewees said they compare the prices of a product at different stores and on price comparison sites. Planning for the purchase and waiting for the right moment was seen as a good thing. Then one doesn't have to buy the products straight away but wait for the right moment, sometimes for years. This happened to interviewee A and a gaming console:

> "it was games we had been waiting a year to get. We were at a convention and there was a special price, so then we took the special convention price and bought it there."

Interviewees K, P and T had bought some second-hand electronics. This, interviewee T said, was mostly possible if she was not in a rush to get the products but could wait and see what came up on the online sites, e.g. Blocket. She did not think most people had the time to wait for that.

> "Firstly, you want it NOW. And it may not be found second-hand. Most often it is: I can't even wait over the weekend, I want it now."

This phenomenon was also mentioned by interviewee A when asked what is good to think about when buying an electronic product:

> "What I think is good to think about might be life standard for some things. […] To know that if I buy the newest mobile phone now, how will it work within a certain time. And maybe also, if you want the newest that has just been released, let's say 10 000 [SEK] for a phone, will it be cheaper in two months? Do I need to have it now or should I wait? It becomes so that we discover when it is big sales such as Black Friday, that has become a thing in Sweden, that you can wait and see."

Interviewees K and M also mentioned sales holidays and they had both waited until the sales in the intermediate days between Christmas and New Year's Day (mellandagsrea) to get a good price on electronic products.

To carefully plan and hunt for the best prices as well as being able to have patience was seen as a competent way to act within the practice.

5.1.4 Mapping the need

Another requirement except the price was the functions of the products. Interviewees A, M and T said they found it important to be able to map one's own needs before searching for products, to know what the product will be used for:

> "You need to know what requirements specification to have. After all, there is not just one computer, there are as many as any, and screens and memories and graphics cards and all that. So you know what to use the computer for. What do I need this phone for, should I take a lot of pictures or is it the mostly SMS. Is it important with good memory or battery or that it should be good looking or… yes, but what is really my need?" (Interviewee T)

While for example R had bought her tablet based on the assumption that she would use it a lot when her life situation changed after retirement. In reality however, that turned out not to be the case.

Knowledge of one's own needs and the products' functions was perceived as important to be able to competently participate in the practice.

5.1.5 Safety

All of the interviewees talked about security and trust when knowing where to buy their products. They only wanted to purchase an electronic product if they felt safe and trusted the seller. The element of trust could be classified as an element of Meaning, but this is also a background knowledge, to know if a seller is trustworthy or not. It could for example be to not trust companies where they sell products that seem very cheap (Interviewee M). Or to be able to return a product if it did not turn out to work the way one expected (Interviewees K and T). Another example is to be able to get service and ask questions about a product from the seller after it has been bought (Interviewee L). Interviewee T was first sceptical towards buying second-hand electronics online from a private person. But when she found out the site (Blocket.se) had a guaranty for them to inspect the product before paying, she felt comfortable enough to proceed.

There were different levels of trust among the interviewees when it came to buying second-hand electronics from a stranger. While interviewee T said it felt appropriate to buy a second-hand monitor, she felt sceptical towards buying for example a mobile phone. Interviewee K said she wanted to know the person if she was to buy a used phone from them while interviewee P felt comfortable buying even from a stranger.

It was important for the interviewees to know if the seller was trustworthy and the felt purchase safe. This knowledge was part of the know-how of where to buy products.

5.1.6 Brands

To ensure the quality of the products the interviewees wanted to buy, some of them mentioned that they looked for specific brands that they had heard or knew was good. Big, well-known brands gave them a starting point in their research. Interviewee K felt pleased with buying a Samsung tv, a well-known brand to her. Interviewee R got a tip from her son that Lenovo had good laptops and therefore she bought one. The brands also worked as a starting point in what not to buy. Interviewee P did not want an iPhone and interviewee R did not think the same brand was worth the extra cost. Interviewee S did not want to buy products from the Chinese brand Huawei.

The brands were seen as part of the know-how of the practice that provided competence when researching devices.

5.1.7 Environmental awareness

A specific question was asked in all interviews on how the interviewees thought regarding the production of the products they wanted to buy. It turned out that where and how the production of the products had been conducted was not a big issue for the interviewees when searching for products.

> "What the material contains or how it is manufactured I should be completely honest and say that I have not so much thought of. If it is environmentally hazardous or if it is child labourers, if it is from a low-income source like in China that has done it. It is usually more to what the need is and this selfishness… you think it is affordable." (Interviewee A)

Interviewees L, P and R mentioned the brand Fairphone as the only thing they knew to be better than other phone brands. Interviewee P also mentioned Apple had a sustainability goal for the materials in their computers which was better than other brands. Most interviewees had some idea of the social and environmental problems with the production and waste management of electronics. They mentioned bad working environments, poor payment, child labour, environmental hazards and problematic minerals. However, they also said they had no way of knowing how bad different producing companies or devices were. In their research, these parameters were not visible. Connected to this, one thing that came up in almost every interview was the issue of eco-labelling of electronics. None of the interviewees knew of any certification of the kind. Interviewee L missed environmental information in his product research like "Clearer declarations of the product's history, manufacture. Like Fairphone but much more developed. So that there would be some kind of points [...] The history of the metals and the manufacturing - working conditions. Like Råd & Rön's points."

However, there was also some scepticism towards certification systems among the interviewees. Interviewees P, S and T had experiences of labels they expected to be standing for something more than it did. Interviewee T said that if a kind of environmental certification for electronic products would come to be, it is important it is transparent and trustworthy to be able to work fully (connected to safety). Interviewee M thought it would be very difficult to gather the information from all the materials in a device to be able to label it as more or less sustainable.

All in all, the knowledge of environmental issues was not perceived to have a sufficiently big role when researching products in this practice.

5.2 Meaning

The elements of meaning can be found in the purposes and values this practice creates around consuming electronics. They tell us more about the reasons the practitioners are participating in the practice. The electronics the interviewees bought that give them joy and convenience sometimes provoked guilt, and most of all – was needed to fulfil the expectations from society.

5.2.1 Convenience and treats

The personal electronic products the interviewees buy are to make their life a little easier or more fun. Interviewee S said he likes to try out new technologies and electronic products, to find an easier way to do things or just for fun. The same thing applies to interviewee K's new TV that she bought because it had a smart function, making it easier to watch online content. Interviewee R was also looking for convenience when she bought the tablet she could use in the kitchen and interviewee A bought her gaming console for the sake of pleasure. Interviewee T mentioned a duality in her attitudes towards consuming. Even though she could feel it was bad for the environment to buy a new device, there was also another drive, "You think yes, why shouldn't I treat myself?".

One reason for the interviewees to participate in the practice was to get more pleasure in life, not perhaps when consuming, but when getting the products, the rewards.

5.2.2 Needs and expectations

Other than the reason to want electronic products because of entertainment, curiosity and comfort, many interviewees mentioned the need to have the products to be able to function properly in today's society. Both interviewees M and P felt they had to buy a smartphone to be able to have all the software expected from them to be able to for example communicate.

> "When it comes to new software, you might be expected to have certain software. And then you will not fit in [if you don't have the expected software], because it is not possible then. So to communicate, if everyone should start using certain types of apps and you can't use it yourself, then you can't communicate and then the communication does not work. It almost becomes a language, where you then start to speak the old language. And then you can't communicate in the same way. […] So in that way I think that perhaps being the first with the technology may not be the most necessary, but if you always lag behind in the technology, then you are always isolated" (Interviewee M)

An example of this isolation came from the retired interviewee L:

> "Coop [the store chain] changed the old credit card for something new and now I can't access the accounting online without a bank ID. I made an attempt many years ago and it failed. And that's where the digital exclusion begins."

Interviewee T said it felt safe acting within the already existing system of how things are, and almost all interviewees admitted they were defendant on their electronic products.

> "I have no alternative, it feels like I can't be without a computer." (Interviewee L)

> "You really feel a shortcoming when you don't have these apps [...] I want to be able to have a travel app and that it works so that I can find... And now there is hardly any bus timetable at the bus stops." (Interviewee P)

> To be able to be part of social groups and society in large, and not left out, the interviewees were motivated to participate in the consumption practice.

5.2.3 Belonging

The interviewees want to buy the products that feel comfortable for them, from a company that they feel share the same values. Interviewee R talked about different brands:

> "So the iPhone, as I understand it… my daughter has one and I have a friend who... so it has many good features. Personally, I don't think it's worth the extra money, but it's a bit of a status thing, I think so. You want to be like your friends."

Later in the interview, she continues:

> "I talked about it being status marking to have an iPhone but I might feel… think it would feel a little strange to have a Fairphone. You might be a bit too odd then maybe."

For R then, different brands really had distinct statuses to which she could connect to or not.

Most of the interviewees found through the ENGO newsletter felt pride in being un-ordinary in their consuming behaviour, in the sense that they felt they had more environmental awareness and buying more products second-hand or fewer products in general. For example, interviewee L was now the only one in his climate organisation who did not have a smartphone. The one exception was interviewee T who said she bought a lot of things even though she felt bad about it. She compares herself to her parents and grandmother who she feels has more sound values when it comes to consumption.

> "Sometimes you wish you were a bit more like grandma who really only uses what she needs and for a long time. And that's quite possible, it's not like I'm forced to have a consumption system." (Interviewee T)

> How and what the interviewees consumed provided them with social status and meaning.

5.2.4 Guilt and climate anxiety

As mentioned before, almost all of the interviewees knew about the sustainability issues with electronics. Some of the interviewees mentioned they knew they were not supposed to buy too much stuff and two mentioned climate anxiety. Interviewee T talked about her climate anxiety and how it grew when she had her first child. These feelings made her and her husband choose to look more for second-hand products for their home, even electronic products. She said she is doing it to try to cure the climate anxiety but also that she thinks it is only a way of justifying a sort of over-consumption.

> "You can't really compensate. If you have done the damage then the damage is already done, you can not do plus minus zero. After all, it is like that, humans have our own reward system and I know the best would have been if we had not bought any screen at all."

> Some interviewees acted on the feelings of guilt when they participated in the practice which changed the consumption behaviour.

5.3 Material

The materials in the practice of consuming electronics are helping the participants maintain the meaning and the competence needed to participate competently in the practice. Here is found the infrastructures, tools, technologies and building materials of the practice. The consumption was found to have moved away from the physical stores and more into online counterparts. The big quantity and availability of the electronic products with the help of marketing are perceived as keeping the practice running.

5.3.1 The products

TV with new functions; computer screen with better picture quality; remote control for lights; mobile phone with banking and communication apps; portable computer or tablet, easy to access; gaming console with new games. These were some products the interviewees mentioned they had recently bought. Some of the products were obtained to replace older products - broken or deemed outdated. Some products were acquired to make life a little bit more convenient or because of curiosity to try out something new. This was the case of interviewee K when she bought her new TV:

> "I did not have a smart TV before, and I wanted one. Because it should be better and bigger."

The mere existence of these products makes up the whole foundation of the practice. New products emerging on the market, software being updated – outdating the old. Interviewee M believes that "if a technology is well spread, it may replace another technology. And even if that technology doesn't only need to be the gadget, it could be a certain software or similar."

At the same time interviewee P thinks we now demand more from our devices.

> "We live more and more of our lives on the mobiles, or with the help of the mobiles. We also place increasing demands on the mobiles. That they are to be good cameras and mini-computers where you can perform banking business and write as well […]. Then it will be higher demands and then you easier discover the shortcomings. […] It is very difficult for a product to be good at everything as well. And then comes one who has more, higher performance, so the processing goes faster. Things that you did not require from a mobile

five years ago. But now it should function like a small computer as well and you set the same claims on it as its computer."

When asked, the interviewees said they bought electronics in more or less the same way today as they did over 10 years or ago. Only interviewee P said she was buying more now than before.

The electronic devices are the reason the interviewees participate in the consumption practice. The products and their usability gave meaning to the participation.

5.3.2 Marketing

Although there is an abundance of electronic products with different possible use, the products cannot sell themselves. A part of the infrastructure of today's society is marketing. We are faced with commercials when we are walking in the streets, looking at TV and surfing online. Interviewee K first saw the TV she bought on a commercial:

"I did see it on the TV, the TV commercial. It was maybe where I actually discovered it, that they advertised about it on TV and then I started looking."

Commercials show a piece of buyable lifestyle, as interviewee P noticed, which creates a demand for the products. The marketing created more meaning to buying personal electronics.

5.3.3 Internet and availability

All of the interviewees used the internet to do their product research. To do this, they needed a device with the internet to be able to participate correctly in the practice. Online shopping had made the consumption of all kinds of electronics much easier, a lot of interviewees thought. Interviewee A remembered how it used to be more complicated:

"The accessibility, where the stores were located, affected much more before. That you... which we had here in Uppsala for example, compared to other places. And big gadgets such as printers and the like, it was nothing I wanted to order from for example CDON, even though they were big already then. Compared to today, I have no problem making such an order."

Interviewee S mentioned in the 80s, he used to bring wireless phones back from the USA because they could not be bought in Sweden. Today most things can be bought online.

The internet proved to be a major infrastructure that provides tools for researching, comparing and buying electronics.

5.3.4 In the store

Two interviewees talked about how their parents would buy electronics without so much research but by just visiting a store and talking to the staff.

"My parents, I know they go to a place and then they buy there. They don't compare so much, they just go." (Interviewee K)

The interviewees liked having the possibility to go to an electronics store and look at the products they are interested in. Interviewees L and R went to a store in town to buy their laptops. Interviewee K thought it was nice to see the TV she wanted to buy in the store before buying it.

Interviewee A talked about how she wanted to hold a potential new phone and feel how it feels in her hand. However, she also said she more often buys things online and she sometimes misses the possibility to see the products in real life before deciding.

"What I miss with it is this classic thing that you can't feel the products. It is something I can miss, but it is something that is there, it is just that you choose to divide it and take one or the other. And then it depends on how you live and what opportunities you have."

Interviewee S did not want to buy online at all if he did not have to:

"I have a basic attitude to shop as little online as possible. I don't want to [have to] go to London to try on a suit in the future. I want there to be shops nearby. If we shop online then we will destroy all local business enterprises in terms of shops and stuff. I think it is very important and I often talk about it."

Interviewee K appreciates the help of the store staff when she is not sure what to buy while interviewee R and M don't really trust them and says they mostly want to sell.

"That partly you don't really trust [them] because they want to sell and then sometimes they talk over your head. Then you have to ask lots of questions. I try not to let them push me down and instead just ask what is it and so. Like I may not have done when I was younger but now I feel that: no, now you actually have to explain what you mean." (Interviewee R)

In the end, the stores could provide a helpful tool for the interviewees when they were searching for products.

5.4   A related practice: reparation

Three interviewees mentioned an alternative to buying a product to replace an old: the practice of repairing a broken or old electronic device to prolong its life.

Interviewee M mentioned that because his phone was starting to get slow, he needed to face the question of whether to change the battery in the old phone to make it last longer or to buy a new one instead. He had not decided what actions to take yet. Interviewee P had a slow computer and considered handing it in to reparation.

Since this practice was not the focus of the study, it did not receive much space in the interviews. However, it became clear the practice of repairing old electronics was not one with much participation from the interviewees.

6 Conclusions

In this chapter the research questions are answered and discussed.

What characterizes the practice of electronic consumption based on consumers' own reasoning?

The competent way to act within the practice is to find the right product for the consumer's needs. The way to do this is by gathering as much knowledge as possible and comparing products. Part of the know-how is knowledge of different brands and if a seller is trustworthy and a purchase safe. It is also important to carefully plan and time the purchase to get as good a price as possible. Since there is so much knowledge to be found, it is common to feel incompetent when consuming. Knowledge about sustainability when it comes to electronic products does not have a big part in the practice.

The meaning of participation in the practice is to be able to enjoy the electronic devices when they are bought. The devices provide access to society and social groups and give social status and a sense of belonging to the owners. Sometimes, participation in the consumption practice causes feelings of guilt when environmentalist values are introduced. This in turn can change the consumption behaviour.

The most important materials in the practice are electronic devices themselves, their acquisition is the reason the interviewees participate in the practice. Internet is a major infrastructure in the practice which provides tools for researching, comparing and buying electronics. Physical stores are also a helpful tool when consuming. The infrastructure of marketing creates more meaning to the consumption of personal electronics.

What, according to consumers themselves, is making participation in a more sustainable consumption practice easy or difficult?

The lack of sustainability knowledge in the practice makes it difficult for consumers to start looking for sustainable consumption options. When this knowledge exists however, there are traces of guilt when consuming electronics because of the sustainability problems that come with it. This in turn can lead to decreased consumption or attempts to buy second-hand products. However, there exists a scepticism towards buying advanced electronic products second-hand. This scepticism derives from the perception of unsafety. Yet, the consumption of second-hand products has been made safer and easier by companies online.

The lack of accessible infrastructures, such as easily comparison of products from a sustainability perspective and eco-labels, makes the practice unsustainable. This unsustainability is also added by the presence of a pushing marketing infrastructure.

Finally, the demanding need to own a smartphone or computer to access societal infrastructure makes it difficult to participate in the practice in an environmentally friendly way.

6.1 Discussion

The consumers in this study mostly justify their consuming behaviour with dependency. They need to own a smartphone or computer to access their electronic identification app, buy bus tickets and communicate with friends and colleagues. Without the online services and platforms, they feel cut off from society. The consumers need to be updated and own new technology to be able to participate in other practices which demand the use of up to date electronic products. When electronics become outdated, it mostly comes down to the software not being compatible with the device. When the devices can no longer be updated, they become slow or drain battery more quickly. The producing companies don't build computers and mobile phones to last for more than a couple of years (Bakhiyi *et al.* 2018a). After that you are expected to buy a new device that can handle the new demands on the

software. The endless supply of cheap electronic products keeps this practice running. In a rich country such as Sweden, these luxury items are wildly spread (Internetstiftelsen 2019). Companies keep developing new products and creating new demand. Many interviewees see marketing of the electronic devices as one big reason for the over-consumption of electronics. In their commercials, companies don't show indications of their unsustainability.

If the guidelines from the UN Agenda 2030 should be followed, spreading knowledge of the sustainability problems regarding the life cycle of the products (United Nations 2019b) should make the practice more sustainable. However, as brought up in the Background chapter, the research on behavior change says it is not that simple. Even when the interviewees know about some aspects of the negative sides of electronics consumption, they don't incorporate it in their actions. Consumers' concerns for the environment has in general been growing faster than their actual uptake of environmentally friendly products (Johnstone & Tan 2015). Most interviewees say they buy about as much electronics as they did 10 years or ago. However, research shows Swedes are bad at estimating their consumption and believe they have reduced their consumption when it has actually increased (Karlsson 2018). This could also be the case for the interviewees, and that they consume more electronics now without realizing it. It is just the way the practice is recreated.

6.2   Suggestions for change

What can this study then contribute to policymakers and planners dealing with the issues of over-consumption? For a start, not taking for granted that everyone owns the newest smartphones or even a smart device at all. Even though electronic identification applications are very useful, the widespread use of them and other applications can lead to an even higher dependence on the electronic devices. Consumers run the risk of digital exclusion if they don't keep up with updates or choose not to own a personal electronic device.

Helping consumers to find sustainable options when researching for their personal electronics is another suggestion. For example, by making it easy to compare products from a sustainability perspective. Also, communicating existing eco-labels, how to think about when buying second-hand electronics and promoting reparation and re-use of old but functional products is a way to go.

6.3   Future research

For future studies of electronic consumption with a practice theoretical approach, it would be interesting to use combined data collection methods and also include observation. One example could be to interview consumers while they are attempting to buy new electronics. In that way one may more easily observe behaviour the consumers are unaware of doing, the unconscious elements.

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