

Guery Jean-Louis Final

by Jean Louis Claude Guery

Submission date: 14-May-2021 08:50PM (UTC+0100)

Submission ID: 153293612

File name: 26570_Jean_Louis_Claude_Guery_Guery_Jean-Louis_Final_302505_1274388421.pdf (849.47K)

Word count: 12378

Character count: 69211

Analyzing mobiles phones obsolescence for developing sustainability – Final

By Jean-Louis Guery



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Analysing obsolescence of mobiles phones for developing sustainability

Dissertation (M6X01293)

BSc – Logistics and Supply Chain Management

Lecturer : Dr Irina Neaga

Student: GUERY Jean-Louis(2008118)

Declaration

I, Jean-Louis – Guéry, declare that I am the sole author of this dissertation; that all references cited have been consulted; that I have conducted all work which this is a record, and that the finished work lies within the prescribed word limits.

This has not previously been accepted as part of any other degree submission.

Form of consent

I, Jean-Louis – Guéry hereby consent that my dissertation, submitted in candidature for the BSc Logistics and Supply chain Management degree, if successful, may be made available for inter-library loan or photocopying (subject to the law of copyright) and that the title and abstract may be made available outside organizations.

Date: 14/06/2021

Acknowledgements

I would first thanks Dr Irina NEAGA for her support as well as these many advices throughout the realization of this research work.

I would like to thank once again Dr Irina NEAGA but also Mr Jacob GWA for their support during this school year in Swansea.

Table of contents

1	Introduction	1
1.1	Background	1
1.2	Aims and objectives	2
2	Literature review	3
2.1	Introduction	3
2.2	Supply Chain Management	4
2.2.1	Definition	4
2.2.2	History and development	4
2.3	Obsolescence	6
2.3.1	History	6
2.3.2	Definition	7
2.3.3	Typology of obsolescence	8
2.3.3.1	Technical obsolescence	8
2.3.3.2	Functional obsolescence	8
2.3.3.3	Planned obsolescence	8
2.3.3.4	Fashion obsolescence	9
2.3.3.5	Optional obsolescence	9
2.4	Sustainability	9
2.4.1	Definition and history	9
2.4.2	Sustainability for promotion	10
2.5	Summary	11
3	Methodology	12
3.1	Introduction	12
3.2	Research philosophy	13
3.2.1	Positivism	13
3.2.2	Realism	13
3.2.3	Interpretivism	14
3.2.4	Pragmatism	14
3.3	Research approach	15
3.3.1	Deductive approach	15
3.3.2	Inductive approach	15
3.4	Research strategy	16
3.4.1	Experiment	16
3.4.2	Survey	16

3.4.3	Case study	17
3.4.4	Action Research	17
3.4.5	Grounded theory.....	17
3.4.6	Ethnography	17
3.4.7	Archival research.....	18
3.5	Methodology choice	18
3.6	Time horizon	19
3.7	Technique and procedure	19
3.7.1	Data collection.....	19
3.7.1.1	Questionnaire	20
3.7.1.2	Questions.....	20
3.7.2	Data analyze	21
3.7.3	Research ethics	21
3.7.4	Viability	22
3.7.5	Reliability	22
4	Analysis and discussion	23
4.1	Introduction	23
4.1.1	Sampling.....	23
4.1.2	Gender	23
4.1.3	Age	24
4.1.4	Chi-square test for age and place of consumption	24
4.1.5	Relationship between gender and the shelf life of mobile phones	25
4.1.6	Relationship between type of mobile phone purchased and gender of the respondent	26
4.1.7	The link between a person's budget for a new mobile phone and their age	27
4.1.8	Analysis of the importance of the brand	29
4.1.9	Criteria for a new mobile phone.....	30
4.1.10	Willingness to change a broken component by age.	31
4.1.11	Comparing people willing to buy a phone with replaceable components, with people willing to pay more for a more durable phone.	32
4.1.12	Proportion of people willing to pay more for a more environmentally friendly phone. 33	
4.1.13	Keeping your mobile phone longer for the environment	34
4.2	Discussion	34
5	Conclusion	36
	<i>References</i>	38

1 Introduction

1.1 Background

We live in a consumer society, where people buy new products, new clothes every day, which will be destined to finish their life in a bin. This dissertation focuses on analyzing the obsolescence of different classes of products but especially on electronics products and clothing considering their life cycle, from the beginning with the choice of the raw materials to the end of their life and the disposal as rubbish (Neckel & Boeing, 2019).

Since the beginning of the 20th century, technical and production progress hasn't stopped, and new products of all kinds come out every day. The number of organizations has multiplied, and large corporations are installed in the market, in the top 10 of the brands the most powerful of the world we find, Amazon, Apple, Microsoft, Google, which all are electronics brands or web society (Huot, 2020). If these brands are here today it is thanks to technical innovation and the development of supply chains and logistics.

Supply Chain has also allowed us to evaluate the industry, with the possibility to buy any product in the world no matter where we are thanks to the internet and logistics (Neckel & Boeing, 2019). All this progress and a new possibility of shopping have made the consumers more demanding, and innovation became major for organizations to meet customer demand.

The main issue of this overconsumption is ecological, a lot of electronic products are difficult to manage when they are throwing out, and begin a real problem for the planet.

Some organizations try to be in a demarche of sustainability as the smartphone brand FairePhone and the clothing brand Patagonia, but this challenge has to be accepted by customers to be effective. In 2020, one billion telephones will be sold and a study showed that 88% of the French people change their mobile phone before it stops working (Vidal). To make change happen, People have to change their way of consumption, and organizations their way of production, for sustainable stakes.

The purpose of this dissertation is to analyze obsolescence to define its nature and find what can be changed with the objective of sustainability thanks to the new technology, internet, and

supply chains. It also includes a case study of organizations that bet on sustainability for their range of products rather than on cost reduction and competitiveness.

1.2 Aims and objectives

This study's objectives are to analyze obsolescence and its nature, to find a solution for more sustainability to preserve our nature and earth, we will see how technology and supply chain could help to meet this aim.

The objectives of this dissertation are:

1. Describe the current state of the electronics and clothing market which is the most implicated in obsolescence, and also the possibility offered by supply chains and logistics nowadays.
2. Identify the link between obsolescence, the internet of things, supply chains, and the overconsumption of products, and especially of clothes and electronics products.
3. Analyze the data collection through a survey on people's product consumption and case study of organizations that bet on sustainability.
4. Identify the advantages and the disadvantages of technical progress in terms of sustainability and obsolescence, and also the limits of product-based sustainability.

2 Literature review

2.1 Introduction

The history of technology begins even before the beginning of our species, since the existence of the earth technologies have ceased to evolve, century after century, years after years, new technologies are emerging. Even today, technological progress continues with the discovery and the development of new things, which could be the future. Since the 20th century, the electronics market has changed a lot, with the discovery and the commercialization of new technologies and products. This technological progress brings a lot of positive things and makes life easier for millions of people, but it can also harm society (Spide Group, 2019).

Obsolescence term was born due to the development of new technologies. Recently obsolescence has been used by a lot of media and associations to accuse electronics organizations of planning the "death" of their products. Nowadays, some organizations anticipated product obsolescence to push customers to switch from newer products. This practice is illegal and very difficult to notice, the law is nonexistent to struggle against these practices because that is something new (ScienceDirect, 2012).

Supply chain management and Logistics evolution have also played a key role in the development of the electronic market. Thanks to Logistics evolution, the production of electronics goods can be divided into different countries to lower production costs, allowing the internet to have access to any product everywhere, at any time. Supply Chain and electronic products are linked in their developments, and depend on each other (Springer Link, 2017).

Through this dissertation, I will present the supply chain management history, and most especially the development of this area. To continue I will introduce the term of Internet Of Things (IoT), before presenting the concept of obsolescence and the different typology of obsolescence known in the present. Finally, I will study the sustainability importance for a product, what the issues are, and why that should be an essential element in the conception of a product, whether they are electronic or not.

2.2 Supply Chain Management

2.2.1 Definition

The definition given by The Supply Chain Council (1997) is "The supply Chain - a term increasingly used by logistics professionals – encompasses every effort involved in producing and delivering a final product. From Supplier's supplier to the customer's customer. Four basic processes – plan, source, make, deliver – broadly define these efforts, which include managing supply and demand (Deep Dyve, 1999).

Stein and Voehl (1998) define SCM as "the systematic effort to provide integrated management to the Supply Value Chain to meet customer needs and expectations, from suppliers of raw materials through manufacturing and on to end-customers".

Definitions may vary, but the SCM objectives will be always the same, satisfying customers by giving them what they expect. One of the first definitions of SCM is given by Keith Oliver "Supply chain management is the process of planning, implementing, and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible. Supply Chain Management spans all movement and storage of raw materials, work-in-progress inventory, and finished goods from point-of-origin to point-of-consumption. (Kransdorff, 1982, p. 16).

Supply Chain Management is linked to technical progress and innovation, these concepts have changed a lot during the years and don't stop evolving as the technical progress. Despite this Supply Chain Management evolution, the objectives are always the same and the definition of Keith Oliver is, even today, suitable.

2.2.2 History and development

Logistic and Supply Chain (SC) have evolved during the years, with the development of technologies and innovation. The Internet has also played an important role in logistics and SC history. We will see the history from the beginning to their actual form of these two concepts to understand their evolution.

The beginning of supply chain management history took form in 1911 with Frederick Taylor, the founder of industrial engineering and the person who developed the improvement process of manual loading in this work. In the 1940s, logistics were more developed for the needs of WWII for logistical military operational solutions. Then, logistics has continued to develop, with the evolution of transportation management in 1950 by utilizing intermodal containers together with ships, trains, and trucks to transport them (Flash Global, 2015).

However, the first use of "Supply Chain Management " occurred in the 1980s with the development of personal computers and the standardization of the internet (Flash Global, 2015). Firms saw the benefits of collaborative relationships within and beyond their organizations, they understand the importance of working together, with their suppliers to be competitive (Deep Dyve, 1999). From that moment, the innovations in logistics are followed, with the development of 3PL (Third part Logistics), the concepts of "Lean Management" to reduces waste and losses during the production, the creation of the Supply Chain Council have also allowed to organizations to use tools created by this council to develop themselves, all his advance are regrouped under the name of Industry 4.0.

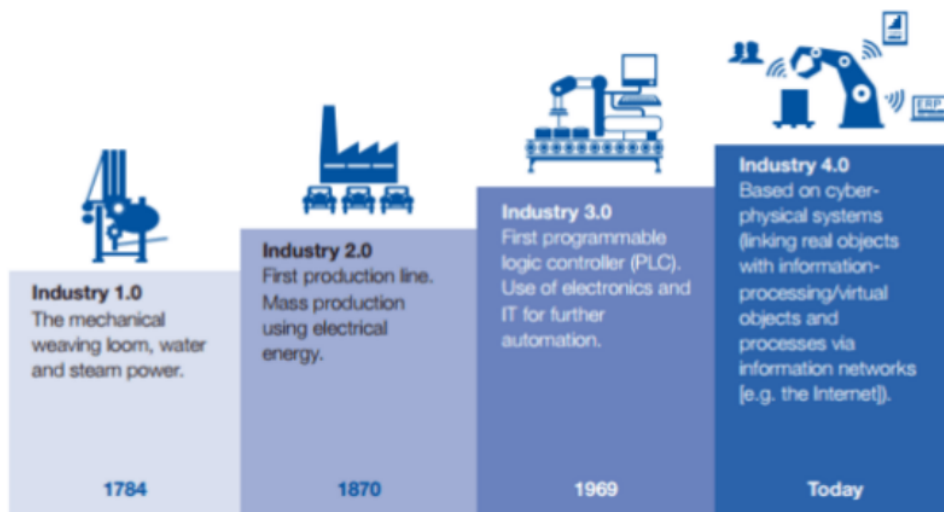


Figure 2.1: *History of Industry Evolution* (Marco Logistique, 2018)

According to Mr. Barry Crocker (2007), Supply Chain history can be divided into three development phases. The first one in the 1980s can be defined as a "Functional supply chain",

with a hierarchical management approach, the customer can wait, he is focused on the time, but to finally receive his product. The collaboration between the different actors was low, and the performance-focused on cost minimization. The period of the 1990s is defined as a "Responsive supply chain" for Crocker (2007), with more reactivity to customer demand, a management aspect less hierarchical and more controlled. Organizations gave more of their time to this function and started to understand the collaboration importance for the business. The last phases begin in the 2000s, the management approach is collaborative, customers want the product now, and they need to get it quickly. Web connections allow us to be interconnected between different actors of the supply chain, and everything is faster. The performance is now focused on revenue and profit rather than on cost minimization (Barry Crocker et al, 2007).

In 20 years, the supply chain approach is different, the sector has been developed simultaneously than the internet and technological progress. Thanks to these tools and innovation, supply chains are currently a way to be more competitive and to generate profit for organizations.

2.3 Obsolescence

2.3.1 History

The term of obsolescence appear in the years 1820-1830, but became most known to people in 1932 thanks to the book of Bernard London named "Ending the Depression Through Planned Obsolescence". The first book treated on obsolescence have been write in the 1960s by Vance Packard, the author gave an example of obsolescence in the sector of airplane and automobile industries during the second half of the 1950s. Obsolescence can be difficult to define and located in history, because of its form which could be vague and varied. (M. Mellal, 2020). Technical progress and innovation are necessarily followed by obsolescence, every new product or new technological advance will make the product used before obsolete. Therefore, more products are becoming obsolete since the end of the 20s century, due to technological progress and innovation which have been more numerous.

Today, obsolescence is faster than ever, with the development of social media and the globalization of the internet, everybody has access to new things immediately and from his house. This evolution has a lot of positive aspects, but also negative ones, with the phenomenon of overconsumption, products begin obsolete before being unusable and can be difficult to treat as rubbish, especially for the electronics product.

2.3.2 Definition

According to Mohamed Mellal Obsolescence is "the act of becoming obsolete, outdated, outmoded, etc. It is a trend to make something "out-of-date". In economics, obsolescence is the fact that a productive asset may become outdated, and thus lose its utility, due to technical developments, innovations, or fashion, even if the products are always operational. The word obsolete can be defined by two different way, first with the word "obsolete" for a product which is "no longer available", in this case, reasons can vary. The other utilization is "obsolescent" for a product that is subject to be obsolete due to future innovations of technical progress, the product is obsolescent before becoming obsolete. A product can become obsolete just due to the appearance of a new product with the same function but with a higher performance level (Mellal et al,2020).

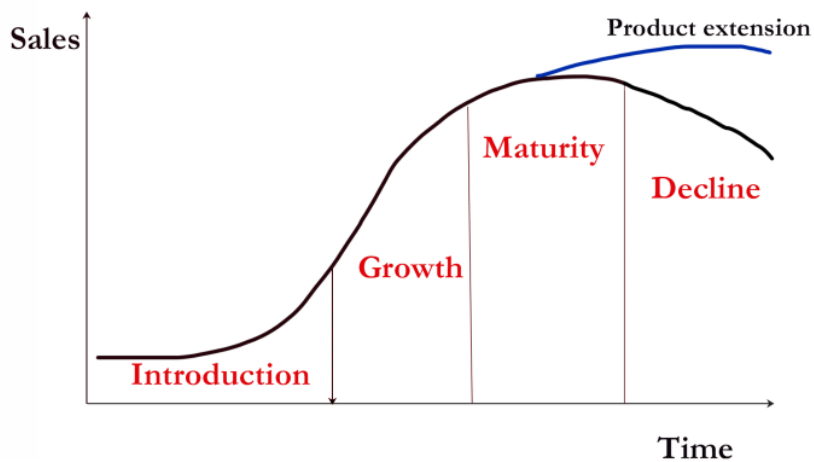


Figure 2.2: *Product Life Cycle* (Economic help)

Obsolescence can be caused by different things, as we talk before obsolescence can be technological, with the notice of sale of a new product more efficiently and which uses new technology. But the obsolescence can also be functional, optional, planned, or due to the fashion trend.

2.3.3 Typology of obsolescence

2.3.3.1 Technical obsolescence

Technical obsolescence is caused by technical progress, the product is devalued due to the selling of new products with higher performance or with newer technologies. Economically is preferable to use the new product, even if the old one is still functional and operational (Mellal et al, 2020). We can take the example of television, the first TVs were replaced by flat screens, today flat screens are replaced by smart TVs.

2.3.3.2 Functional obsolescence

Functional obsolescence can be defined as becoming obsolete "when the main function of the component is degraded or insufficient without the opportunity to be or be brought up-to-date" (Mellal et al, 2020). The best example of functional obsolescence is the mobile phone, smartphones make the old phone obsolete and unlikely by people, most people use smartphones nowadays.

2.3.3.3 Planned obsolescence

Planned obsolescence appeared quite recently, Mr. Mellal defined this type of obsolescence as the act to "introduce obsolescence into their production policy, to generate short- and-medium-term a significant volume of sales by reducing the time between repeat purchase." (Mellal et al, 2020). Examples are difficult to find, organizations do not boast of using planned obsolescence, Nintendo firms have been accused recently of using planned obsolescence.

2.3.3.4 Fashion obsolescence

Fashion obsolescence does not include the functional aspect of a product but its physical aspect. This type of obsolescence is defined by Mr. Mellal as a product "no longer attractive because it is out of fashion, the style becomes obsolete" (Mellal et al, 2020). Fashion obsolescence is especially present in the clothing industry, trend changes every season and clothes become obsolete quickly as they become fashionable.

2.3.3.5 Optional obsolescence

The last type of obsolescence is optional obsolescence, definition given by Mohammed Mellal is "optional obsolescence refers to a situation where technological improvements are not applied to a product, even if they could be." (Mellal et al, 2020). Sometimes organizations choose to not apply new technology to one of their range of products, which is often the case for the cheapest range of products.

2.4 Sustainability

2.4.1 Definition and history

Defined by Bruntland et al. (1987) "sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (Ukko et al, 2018). Protecting the planet is one of the key missions of our society, the environment must be preserved and taken care of to ensure its prosperity.

The concepts of sustainability are directly linked with three major dimensions: environmental, economic, and social (Ukko et al, 2018). According to R. Goodland, the environmental dimension refers to the life-support systems essential to the existence of humanity (Goodland, 1995).

The environment dimensions should follow few principles to be preserved and sustainable, pollution should not exceed the environment's assimilation capacity, the usage rate of renewable resources should not exceed the renewal rate, and the depletion of nonrenewable resources should not exceed the development rate of renewable substitutes (Ukko et al, 2018). These principles require an adaptation of human activity to be respected, and human activity has to adapt itself to follow this principle for sustainability.

According to Goodland and Daly (1996) "social sustainability can be achieved through community participation and a strong civil society. Maintaining social capital requires investments in areas such as education or, like physical capital, it will deteriorate" (Goodland, 1995). The social dimensions concern organizations and humans, thanks to their choice of consumption, each person and organization can implicate himself as he wants to work for sustainability.

The economic dimension is "the maintenance of capital" (Goodland, 1995). This dimension considers all the resources inputs for the production process and is composed of factors such as profit, cost, new business creation, time, quality (Ukko et al, 2018). Economics is often the dimension where organizations are the most focused, to be efficient and competitive, they need to make some choice for the rentability of the organizations, and this choice can be more or less sustainable.

2.4.2 Sustainability for promotion

Today, some organizations bet on product longevity, with the use of quality raw materials, and the possibility to replace broken pieces rather than push the customers to buy a new product because of the impossibility to change pieces or because the cost is too expensive for a new component. This tendency spreads with the importance of sustainable development and has a huge role to play in the coming years.

FairePhone is a smartphone brand that produces a phone with the possibility to change almost every component by itself. Another example of clothing is Patagonia, these brands guarantee all his clothes for life, with the possibility to repair, or change broken pieces as zipping, the main objective of Patagonia is to make clothes, which can be used for a long time. In the production of his clothes Patagonia makes the maximum to minimize their impact on the earth, 72% of their range of products includes renewable material, 1% of their sales are given for environmental preservation and restoration. Patagonia makes sustainability their priority, to reduce their ecological impact on the earth (Patagonia).

FairePhone and Patagonia are perfect examples of brands, which choose sustainability rather than maximize their profit and reduce their cost of production, but this choice can participate

to make them known by people, to make their promotion. With these types of brands, people have the choice of what they consume, they can choose to buy a product sometime a little bit more expensive but for a long time and which are in the sustainable movement.

2.5 Summary

Through this literature review, I mentioned different subjects which will be essential for the rest of the dissertation. The documentary research was focused on three principal aspects. The first one was the concept of Supply Chains Management, with a quick definition of the subjects followed by the history of the sector.

Afterward, I defined the term of obsolescence, which is the principal subject of this dissertation, with his evolution during the years caused by technical progress and innovations. It was necessary to see the different nature of obsolescence and their reasons to understand this concept and see what can be improved.

Finally, I have defined what sustainability is and the importance of making things sustainable for the planet and humans. It includes a resume of sustainability history especially for clothes and electronics products, which allow seeing the evolution of obsolescence through the years and decade. It was interesting to take examples of brands that used sustainability for their product promotion, which is the way to follow for every organization.

Obsolescence can't be wiped out, but can be limited and less important, obsolescence has an impact on the industry and daily life, it can be both voluntary and involuntary (Mellal et al, 2020). Solutions exist to limit obsolescence and make things better for the environment, but this solution has to be applied to be efficient.

3 Methodology

3.1 Introduction

After defining the subject and the necessary knowledge during the literature review I will continue with the methodology which is an essential step to have a total understanding of the topic studied. During this part of the dissertation, I will discuss the different philosophies and find the one which will be the more adapted to the situation, to find a solution and resolve it.

My methodology research will be guided by the Saunders Research onion, thanks to this method I will define a strategy, an approach to identify the tools for collecting data, with the choice of method, the timeframe studying, the procedures, and finally the procedures.

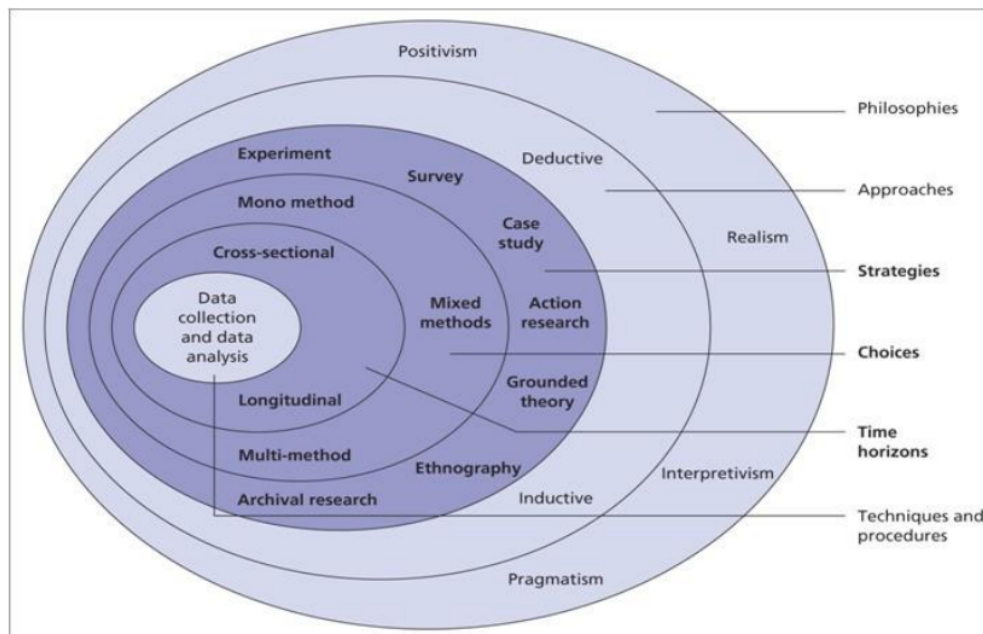


Figure 3.1: Research onion (Saunders, et al, 2006)

The Saunders Research Onions is often used by researchers to guide their survey and research to define the best way possible to collect data. The onion is used from the outside to the inside using a peeling system, when a layer is used, this is necessary to peel the onion to discover a new layer until reaching the center. So the process will follow this way from the first layer on the outside to the last one, the onion center.

That will allow to show and examine the different solutions available to run the study, and used the most adapted methodology for the case to achieve the objectives (Saunders, et al., 2006).

3.2 Research philosophy

The methodology part aim is to understand the principles and the mains issues of the problem to organize a study, the philosophical research allows to choose the best way in which the data of a studied phenomenon must be collected and analyzed. I will focus on four types of philosophy that are most popular than others and presented in Figure 3: Positivism, achieves, interpretivism and pragmatism.

3.2.1 Positivism

The scientific and philosopher Auguste Comte defined positivism as an approach to a society based on scientific fact thanks to scientific study, stats, or experiments (Comte, 2009). This philosophy is therefore based on facts that can be proven by science contrary to certain philosophical currents based on metaphysical approaches.

Positivism depends on quantifiable observations that lead to statistical analyses. It has been noted that "as a philosophy, positivism is by the empiricist view that knowledge stems from human experience. It has an atomistic, ontological view of the world as comprising discrete, observable elements and events that interact in an observable, determined and regular manner" (Collins H, 2010).

The positivist philosophy is the one that will be used in this essay. The subject deals with an objective reality which is that of obsolescence, studying this reality will involve collecting data through general questions that most smartphone users will be able to answer. From this collection of information, it will be possible to make statistics, averages, and generalities that will allow us to propose solutions to the current problem of obsolescence.

3.2.2 Realism

There are two general aspects to realism, illustrated by looking at realism about the everyday world of macroscopic objects and their properties. First, there is a claim about existence. Tables, rocks, the moon, and so on, all exist, as do the following facts: the table's being square, the rock's being made of granite, and the moon's being spherical and yellow. The second aspect of realism about the everyday world of macroscopic objects and their properties concerns independence. The fact that the moon exists and is spherical is independent of anything anyone happens to say or think about the matter (A. Miller, 2002). The first version of realism is based on human senses, and not on external elements, contrary to the second one which considers that some elements are independent of our volunteer, as with the example of the moon which has form and color which is independent of human will.

3.2.3 Interpretivism

Since the 1980s, searchers who contested the positivist methodologies in social science began to use the interpretive method, which was creating discussions about the way to use data and to consider it. Within this context, Mr. S. Scauso gives to "interpretivism" a specific definition, which encompassed meaning-centered research and problematized positivist ideas of truth correspondence, objectivity, generalization, and linear processes of research (M Scauso, 2019).

Researchers will start to interpret data, by trying to understand the context and each person's perception. This methodology is based on the fact that there is not one truth rather a multitude of realities that are perceived differently by each other of its actors (Carson, et al., 2001).

This philosophy objective is to analyze the data collected on the basis that everyone is different and has their interpretation of things, rather than generalizing and globalizing causes and effects.

3.2.4 Pragmatism

Pragmatism is a doctrine or way of thinking in which practical success is the only criterion of truth. According to Saunders, this philosophy recognizes that there are multiple realities and that is impossible to represent the things and most globally the world from a single point of view (Saunders, et al., 2006).

3.3 Research approach

Figure 3.2 below explains how the inductive and deductive methods work and what their main differences are.

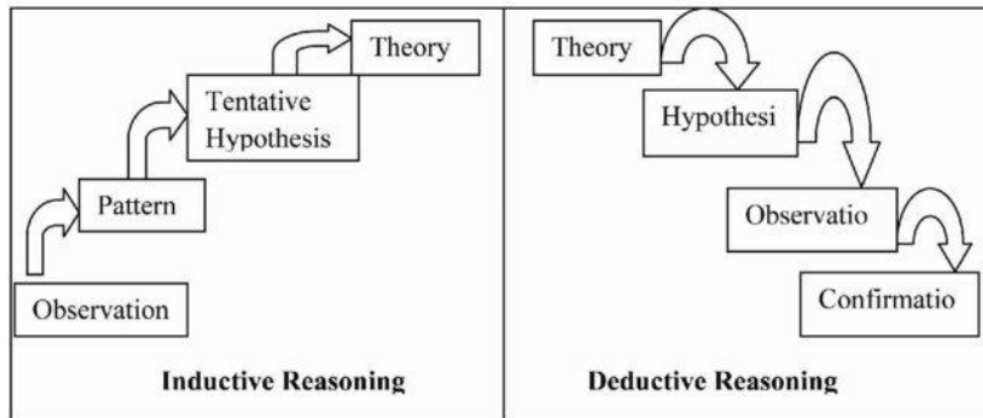


Figure 3.2: Theoretical Perspectives and Empirical Findings (Aliyu Ahmad Aliyu, 2011)

3.3.1 Deductive approach

The inductive approach begins with a theory, searchers use this theory to formulate hypotheses which they will test to have the confirmation that this theory is true or false. We, therefore, do not start from observable facts. According to M. Vilfred, "The deduction serves economists as it does astronomers, physicists, etc. From a certain principle A, one deduces the consequences B, C, D, etc.; these are verified by observation or by experience, and it is this verification that makes A probable; it is not in the least A that proves B, C, D". (Vilfred, 1984). The deductive method is based on working hypotheses to be validated or invalidated. They allow us to find answers to the subject or phenomenon being studied. (Claude, 2020).

3.3.2 Inductive approach

In contrast to the deductive method, the inductive method is based on observations made after research. Then the researcher will come up with hypotheses that will lead to the continuation of his work. To find answers to the hypotheses formulated, the researcher will carry out a survey, which will make it possible to collect information that will validate or invalidate his hypotheses. After all these steps, the researcher will analyze the data collected and conclude.

During this dissertation, I will use this method which is most adapted to the subject and allows the collection of information. This collected information added to the previous research will allow having an observation, identifying the limits, and finding solutions to develop sustainability thanks to the new technologies. This philosophy method seems to be the most appropriate for this study, as the subject is based on a social study, requiring the collection and analysis of information to understand the points of improvement and to find solutions to the problem thanks to the analysis of the data.

3.4 Research strategy

Research strategy includes all the means put in place by the researcher to collect data that will be useful for the current study. Saunders defined this part as the "general plan of how the researcher will be answering the research questions".

3.4.1 Experiment

The experimental research method can be used in a wide range of cases and can be adapted to different subjects. However, the research must be based on a small number of factors, so that the researcher can compare the results of the research with the expected results (Saunders et al., 2006).

3.4.2 Survey

The use of surveys is becoming increasingly common in research. Mostly in quantitative studies, this method of collecting information allows for a response sample representing a portion of the population (J. Ponto, 2015).

This method does not require any cost and can be distributed by paper or through the Internet, which makes it possible to distribute it to a large number of people and to analyze the responses easily thanks to the existing computer tools.

The subject studied in this essay lends itself to a survey, particularly because of the ease of distribution through the internet, and because of the easy analysis of the responses of a section of the population.

3.4.3 Case study

Robson (2011) defines a case study as a strategy for doing research that involves an empirical investigation of a particular contemporary phenomenon within its real-life context using multiple sources of evidence. The case studies focus on specific phenomena to be able to analyze and study them. These case studies can serve as references and examples for research, both positive and negative. These case studies often target specific organizations, individuals, or places (Vizcarguenaga-Aguirre, et al., 2020).

The case study in this essay will highlight proposed solutions to transform obsolescence into sustainability through technical progress and the will of certain entrepreneurs.

3.4.4 Action Research

Action research “is an approach commonly used for improving conditions and practices in range healthcare environments” (Lingard et al., 2008; Whitehead et al., 2003). That is to say that the researcher searches for meaning in the data collected to identify repeating patterns and thus classify the data info in different categories (Allard-Poesi & Perret; 2003).

Research is about generating knowledge. Action research creates knowledge based on inquiries conducted within specific and often practical contexts (Sage publication, 2010).

3.4.5 Grounded theory

According to D H. Noble “grounded theory is a research method concerned with the generation of theory, which is “grounded” in data that has been systematically collected and analyzed. It is used to uncover such things as social relationships and behavior of groups, known as social processes. (H. Noble et, al, 2016). This theory allows to creates from theories some ideas, concepts, and elements related to the researcher objectives.

3.4.6 Ethnography

Ethnographic research is a qualitative method where researchers observe and/or interact with a study's participants in their real-life environment. This is a way of collecting data by focusing on certain population groups, it may be based on religious affiliations, members of certain geographical areas, or by gender. This provides a better understanding of these population groups, their habits, and practices (Vizcarguenaga-Aguirre, et al., 2020).

3.4.7 Archival research

Archival research makes use of administrative records and documents as the principal source of data. This is a way in which researchers use previous surveys and information already collected to carry out their work. Literature reviews and other use of documentation as the main source of information are included in this category. This allows knowledge to be gained from previous work on the same subject (Vizcarguenaga-Aguirre, et al., 2020).

3.5 Methodology choice

This section of the project will focus on how the data is collected and how it is then analysed to provide useful solutions to the problem at hand. There are three ways to organize your methodology.

Mono method	Multi-method	Mixed method
Mono method" is defined by using only one single method to led the dissertation.	Involves a research divided into different segments which makes it possible to have a very specific set of data. Then data will be analyzed thanks to several methods derived from quantitative or qualitative methodologies.	This method allows to cross methods, this means that is possible to use several approaches to organize your research, often researchers use both qualitative and quantitative methodology (Saunders, et al., 2006).

However in this case the methods all should correspond to the same approach, quantitative or qualitative. So the most adapted method for this dissertation seems to be the Mono method.

The data useful for this dissertation are collected with the help of a survey to deduce generalities and statistics, applying the mono method seems interesting.

3.6 Time horizon

Time horizon objectives are to define which way between longitudinally or cross-sectionally study is the most adapted to subject.

Cross-sectional study, also called one-shot, The objective of this method is to study a specific phenomenon in a specific period. However, this method does not allow the phenomenon to be studied over a long time and its evolution to be analyzed; it focuses essentially on the short term.

In contrast, the longitudinal method makes it possible to study a phenomenon over a long period and to analyse its evolution. However, this method requires a continuous study over a long time and therefore a long-term investment to perceive the results.

In the context of this topic and essay, the cross-sectional study seems to be the most appropriate. The study, and in particular the questionnaire used to collect the information for this study, focuses on a short-term analysis of smartphone consumption and not on the evolution of this consumption over a long period.

3.7 Technique and procedure

Data is essential to the functioning of a business, especially nowadays with all the tools available and the different ways to collect data.

3.7.1 Data collection

The data collection can be divided into two parts, secondary data, and primary data. This data collection is done to gather information to analyse it and find solutions to solve the problem and find answers to the questions.

The secondary data correspond to the data that existed before the research began. Researchers will be able to use this data in their work to find solutions to problems. This data is usually found in books, reports, or simply on the internet and is derived from previous research. This data will be analysed and selected to ensure that it corresponds to the problem being studied.

This type of data is interesting for researchers because it saves time and money as the data already exists and does not need to be collected but only analysed.

However, if a researcher does not find the data relevant to his research and problem, he will have to collect the data himself or herself, which is called primary data. In this case, the data is collected for the first time and will become secondary data for subsequent research.

However, primary data requires a greater investment of time and money than secondary data (G. Nigel, 2008).

3.7.1.1 Questionnaire

The questionnaire consisted of 17 questions, 14 closed questions, and 3 open questions. The 14 open questions offer choices of answers to collect information about the consumption of mobile phones and how this consumption could be reduced. The 3 open questions allow the respondent to give a more personal opinion on certain issues to understand more precisely certain consumption patterns.

3.7.1.2 Questions

The first two questions are demographic and identify the age and gender of the respondent. This allows the analysis to be carried out according to its criteria to identify a possible trend between these criteria and the answer to the following question.

From question 3 to question 10, the objective is to understand the respondents' consumption of mobile phones. Questions 3 to 6 are questions related to the purchase of new mobile phones, these questions interrogate the respondent about, frequencies, types of phones, and way of consumption. Questions 6 to 9 focus on criteria when buying a new phone, such as budget, brand, or criteria that influence their choice.

Questions 10 and 11 aim to find out what makes people change their phones and why.

Finally, questions 12 to 17 ask respondents about the efforts they would be willing to make to reduce their phone consumption, by changing certain parts rather than replacing the phone, by buying phones from brands that emphasize sustainability. Questions 12 to 14 ask respondents about the efforts they would be willing to make to keep their mobile phones longer. Questions 15 to 16 ask what happens to old mobile phones. Finally, question 17 asks about the possibility of keeping mobile phones longer to preserve our environment and our planet.

3.7.2 Data analyze

Data analysis makes it possible to transform large amounts of information into understandable problem-related data to find solutions. These can be analysed quantitatively or qualitatively.

Quantitative research is often based on numerical data in the form of graphs or statistics, which are often collected through questionnaires, as is the case in this essay. This allows the data to be grouped into different categories to confirm or reject hypotheses related to the problem or topic being studied. However, data from quantitative studies are not always 100% reliable, as these studies are often based on a sample population and only take into account a certain number of people.

Qualitative data is based on non-numerical data but rather on sources such as interviews or press articles. Five different methods can be distinguished for this analysis: content Analysis, narrative Analysis, discourse Analysis, framework Analysis, and grounded Analysis (Miles & Huberman, 1994).

3.7.3 Research ethics

Ethics is a philosophical discipline dealing with moral judgments. It is a fundamental reflection on which, in principle, the morality of any people could establish its standards, limits, and duties. For philosophers such as Aristotle or Kant, ethics aims at defining what should be. Ethics expresses normative, prescriptive, or evaluative statements among which we find categorical imperatives.

Ethics are very important in carrying out any work and especially in this essay, to set limits. These limits are set by the ethics, which are set by the researcher to conduct his work according to the rules and manners that seem appropriate to him (P. Oliver, 2010).

Often in studies, the researcher stipulates the use of an ethical code when collecting data. This allows the researcher to gain the trust of the respondents, individuals, or companies on which the data collection is based

In the case of this essay, it was mentioned at the time of sharing the survey that the answers were collected anonymously to analyse the data for an essay.

3.7.4 Viability

Viability can be separated into two different groups, which are internal and external. The first group corresponds to how the data are associated with the reality on the ground. The second group refers to the possibility of carrying out the same study in a different environment. Validity comes in the five formats of Face Validity, Constructed Validity, Criterion related Validity, Formative Validity, Sampling Validity (Research Methodology, s.d.).

Validity corresponds to the quality of the tool used to measure the phenomenon studied in the current research.

3.7.5 Reliability

Reliability corresponds to the fact of obtaining the same result several times using the same tools and several times in a row. This makes it possible to check whether the results obtained are reliable, even on different occasions (Research, s.d.).

4 Analysis and discussion

4.1 Introduction

This chapter will be composed of two parts, the first will focus on the analysis of the data, through the dissemination of a questionnaire on the consumption of mobile phones in the current market, and the possible possibility to change their consumption. The second part will be a summary of the information gathered during the different parts of the essay to highlight solutions for the future regarding the consumption of clothing.

4.1.1 Sampling

The questionnaire was published publicly on Instagram and Facebook so that it could be accessed by as many people as possible. The questionnaire was available in both English and French, with no distinction made between the different origins. A total of 54 responses were recorded through the different sharing modes. As the responses to the questionnaires were mandatory, it was necessary to be able to complete the questionnaire in full to submit it.

4.1.2 Gender

As social networks are used by both women and men, it seemed important to start the survey with a question that would define the gender of the respondent. According to other studies, it has been proven that women and men do not consume the same way and not always the same products.

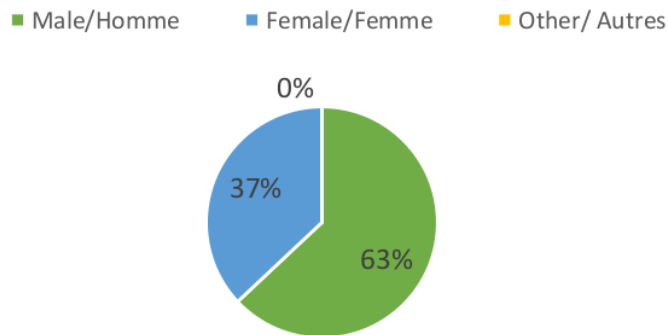


Figure 4.1: Distribution by gender of the sample

Of the 54 respondents to the questionnaire, 34 are men and 20 are women. There is therefore an inequality between men and women in the responses, however, as the number of responses continues to have a good basis, it is still possible to analyse the data.

4.1.3 Age

Age is also one of the differentiating factors for the consumption of mobile phones we notice that according to age people do not have the same consumption of mobile phones, that is why it is interesting to define an age range of the respondent thanks to a question dedicated to it.

■ Under 18 years of age ■ 18-30 years of age ■ 31-45 years of age
■ 46-60 years of age ■ More 60 years of age

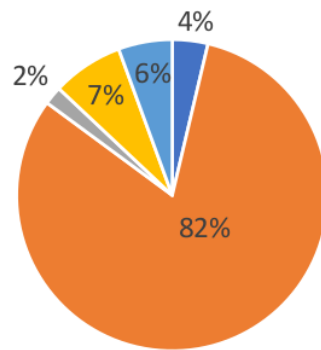


Figure 4.2: Distribution by age of the sample

Of the respondents, 2 were under 18, 44 were between 18 and 30, 1 was between 31 and 45, 4 were between 46 and 60 and 3 were over 60. It can be seen that the majority of respondents were between 18 and 30 years of age, but all categories are represented, i.e. there is at least one person in each age group who responded to the survey. The values in the graph have been rounded up.

4.1.4 Chi-square test for age and place of consumption

H0 – There is no significant difference between age and place of mobile phone purchase

H1 – There is a significant difference between age and place of mobile phone purchase

Test indicates the following result: $X=9,146$ $df=8$ $p=0,05$

This means that there is a significant statistical difference between age and place of mobile phone purchase.

It is, therefore, possible to affirm that the hypothesis H_0 is rejected and that the hypothesis H_1 is validated.

We note that in the 18 to 30 age group, there are no favorite places to buy mobile phones, 38% buy their phone in shop, 29% say they buy their new phone online, and 20% use both methods.

In the 31-45 and 60+ age groups, 100% of respondents buy their phones in shops. In the 45-60 age group 50% of respondents said they bought their phones in a shop and 50% said they used the internet as well as shops.

We can therefore conclude that, apart from the 18-30 category, most people buy their phones in shops.

The chi-square method is an effective method for validating or rejecting hypotheses from quantitative studies, however in the case of this study the lack of response from certain age groups does not allow for a reliable result and therefore is not the best method to use to analyse the results.

4.1.5 Relationship between gender and the shelf life of mobile phones

Period of use	Gender	Female	Male	Total
Between 1-2 years		10%	32%	24%
Between 2-3 years		65%	44%	52%
More than 3 years		25%	24%	24%
Total		100%	100%	100%

Figure 4.3: *Percentage by gender of time spent using a same mobile phone.*

The table above shows that 65% of women and 44% of men keep their mobile phones for 2 or 3 years, and that is 52% of the respondent who keeps their mobile phone during this period. Looking at the other percentages, it is easy to see that the majority of respondents keep their phones between 2 and 3 years.

This table shows that there is not necessarily a link between the time a person keeps their mobile phone and their sex, if a study had been carried out with the chi-square method the null hypothesis (H0) would certainly have been accepted because female, as well as men, generally keep their phones between two and three years. However, the proportion of men who change their phone between 1 and 2 years after buying it is higher than that of women, 32% for men against 10% for women.

Question 10 of the questionnaire will help to understand this statistic and to draw conclusions.

It can therefore be concluded that there is no specific link between the time a person keeps their phones and their gender.

4.1.6 Relationship between type of mobile phone purchased and gender of the respondent

Type of phone purchased	Gender	Female	Male	Total
It depends		35%	26%	30%
New		50%	68%	61%
Used		15%	6%	9%
Total		100%	100%	100%

Figure 4.4: *Percentage by gender of the type of mobile phone purchased.*

The pivot table shows that most respondents buy their phones new, 50% of the respondent's women, and 68% of the men respondent's use this way to buy their new phones, and totally 61% of the respondents buy their mobile phones new.

There is therefore a difference between men and women in the consumption of second-hand mobile phones, moreover, 26% of men said they bought both new and second-hand phones, compared to 35% of women.

However, in recent years the second-hand market for telephones has grown, as has the second-hand market for electronic products generally. But only 6% of men said they bought their phones second-hand, compared to 15% of women.

Types of the phone purchased	Gender	Female	Male	Total
It depends		44%	56%	100%
New		30%	70%	100%
Used		60%	40%	100%
Total		37%	63%	100%

Figure 4.5: *Proportion of men and women in each consumption mode.*

Using a pivot table we observe, as we can see in Figure 4.5, that 60% of the people using the second-hand market to buy their phones are women, and 70% of those who buy new phones are men. Based on this result we can say that more women than men frequently use the second-hand market. From a sustainable and environmental point of view, this is a good thing, as it gives a second life to mobile phones and therefore saves the natural resources needed to manufacture new mobile phones.

However, this statement is based on a relatively small sample of people compared to the number of people using mobile phones in the world, so to draw a more reliable conclusion it would be necessary to analyse the responses of a larger number of people.

4.1.7 The link between a person's budget for a new mobile phone and their age

Budget	Age	-18 years	18-30 years	31-45 year	46-60 years	+ 60 years	Total
Between 100-300£		0%	20%	100%	0%	67%	22%
Between 300-500£		50%	34%	0%	50%	0%	33%
Between 500-700£		50%	30%	0%	50%	0%	30%
More than 700£		0%	16%	0%	0%	33%	15%
Total		100%	100%	100%	100%	100%	100%

Figure 4.6: *Percentage by age of the budget for a new mobile phone*

The Figure 4.6 show that 100% of fewer than 18 years old respondent and 100% of 46-60 years of age respondent have a budget of £300 to £700 for a new phone.

Comparing the age of respondents with their mobile phone budget might suggest that these two factors are interdependent, as it is inevitable that older people have greater purchasing power than younger people who are often unemployed or in low-income jobs.

However, this table shows that, despite the lack of data in some categories, there is no real dependency between the age of consumers and their budget for a new mobile phone. Indeed, the main budget of consumers lies between £300 and £700 regardless of age. It seems that the budget a person spends on their mobile phone is something personal and varies from person to person. It is difficult to analyse a constant across age groups and draw generalizations.

We also note that more respondents were prepared to pay more than £700 with 8 people, than people with a budget of less than £100 as no one responded that their budget for a new mobile phone was less than this amount.

Budget	Age	-18 years	18-30 years	31-45 year	46-60 years	+ 60 years	Total
Between 100-300£		0%	75%	8%	0%	17%	100%
Between 300-500£		6%	83%	0%	11%	0%	100%
Between 500-700£		6%	81%	0%	13%	0%	100%
More than 700£		0%	88%	0%	0%	13%	100%
Total général		4%	81%	2%	7%	6%	100%

Figure 4.7: Proportion of different age groups in each range of budgets.

Figure 4.7 shows that 88% of respondents willing to put more than £700 into a new phone are between 18 and 30 years old.

This kind of table helps to understand the importance of mobile phones in our lives today, they are essential tools for most of us, especially for the 18-30 years of age, and this is reflected in the budget that we spend on them. Then 52% of respondents change their phone on average every 2/3 years and are prepared to pay between £300 and £500 for a new one, so

that's a minimum of £100 of mobile phone budget per year, which is a considerable amount when you consider that 10 years ago smartphones didn't even exist.

4.1.8 Analysis of the importance of the brand

Question 9 of the questionnaire asked respondents about the importance of the brand in their choice of mobile phone. Out of 54 respondents, 51 said that the brand was an important criterion in choosing their phone, i.e. 94.5% of respondents, while only 3 respondents said that the brand was not important in choosing a new phone.

By cross-referencing question 9 with question 7, it is possible to find out which brand of mobile phone is owned by the respondents to question 9.

Brand	Importance of brand	No	Yes	Total
Apple		33%	88%	85%
Other		67%	0%	4%
Samsung		0%	12%	11%
Total		100%	100%	100%

Figure 4.8: *Percentage of respondents who think the brand is important or not by brand of phone they own.*

Figure 4.8 shows that 88% of those who consider the brand for a phone to be important own Apple phones and 12% own Samsung phones. There are therefore no respondents who consider brand important in choosing a new mobile phone, and who currently own a phone of a brand other than Apple or Samsung.

The table also shows that 67% of those who do not value the brand, currently own a mobile phone of a brand other than Samsung or Apple.

From this analysis, we conclude that there are two distinct categories of consumers in the mobile phone market.

The first category is those who consider the brand to be an important criterion when buying a new mobile phone, these people overwhelmingly consume phones from Apple or Samsung, which are the leaders in the smartphone market.

On the other hand, the second category consists of people who do not value brands in their choice of phone. In this category, most people buy phones from brands other than Apple and Samsung.

This study concludes that most people who consider the brand to be important when buying a new mobile phone choose to buy mostly iPhones or Samsung.

4.1.9 Criteria for a new mobile phone

The previous study suggests that many of the respondents would have given brand as a criterion for buying a new phone, however only 6 of them gave this answer, which represents approximately 11% of respondents.

Furthermore, question 8 allows us to analyse that the criteria for buying a new phone are very relative to the person. Indeed, it is impossible to make links between age and gender in relation to the criteria for selecting a new mobile phone.

The most common criterion for choosing a new phone following this survey was photo quality, with around 30% of responses. Apple and especially the iPhone offer high quality photos with their smartphones, so it is logical that a majority of respondents use iPhones to enjoy the best photo quality on the market for a phone.

The other most common criteria were battery quality, phone appearance, performance, size, durability, intuitiveness and price. However, iPhones are not the cheapest or most durable phone on the market, so it is difficult to justify why 85% of respondents use iPhones.

4.1.10 Willingness to change a broken component by age.

When a component of your phone is broken seek you to replace it	It depends	No	Yes	Total
Under 18 years of age	100%	0%	0%	100%
18-30 years of age	66%	7%	27%	100%
31-45 years of age	0%	100%	0%	100%
46-60 years of age	100%	0%	0%	100%
More 60 years of age	0%	0%	100%	100%
Total général	65%	7%	28%	100%

Figure 4.9: *Willingness to change a broken component by age.*

The table below analyses the proportion of people willing to change a component of their phone when it is broken, classified by age category. Thus, it is possible to see whether one age group is more willing to change a broken component than another.

However, the results do not show that one age group is more willing to change a broken component than another. For example, the over 60s answered 100% that they would be willing to change a broken component on their mobile phone, while the 31-45 year olds answered 100% no. Despite these results it is difficult to extend these proportions to generalities due to the lack of response, especially in the 31-45 age group.

On the other hand, 28% of respondents said they would be willing to change a broken component of their mobile phone, and 28% answered that it depended on the component.

The people who answered that it depends on the component are therefore ready to change a component if it is not too expensive and not too difficult to change. We can therefore think that on a phone where all components are easily replaceable, these 65% of people would be ready to change a broken component of their phone, which would give a result of 93% of people ready to change a broken component.

In conclusion, Figure 4.9 shows that most respondents are willing to change a component of their mobile phones.

4.1.11 Comparing people willing to buy a phone with replaceable components, with people willing to pay more for a more durable phone.

Paying more for a more durable phone	No	Yes	Total
Buying a phone with replaceable components			
No	1	9	10
Yes	8	36	44
Total	9	45	54

Figure 4.10: *Dynamic cross-tabulation of the number of the people willing to pay more for a more durable phone with the number of people willing to buy a mobile phone where all components can be changed easily*

Figure 4.10 compares the number of people willing to pay more for a more durable phone with the number willing to buy a mobile phone with easily replaceable components.

What emerges from this table is that the majority of respondents would be willing to buy a more expensive phone if it was more durable and that they would also be willing to buy a phone where all components are replaceable. Indeed, 64% of respondents answered yes to both questions and only 2% answered no to both questions.

The conclusion of this analysis is that the majority of respondents would be willing to change their consumption patterns in order to keep their mobile phones longer.

4.1.12 Proportion of people willing to pay more for a more environmentally friendly phone.

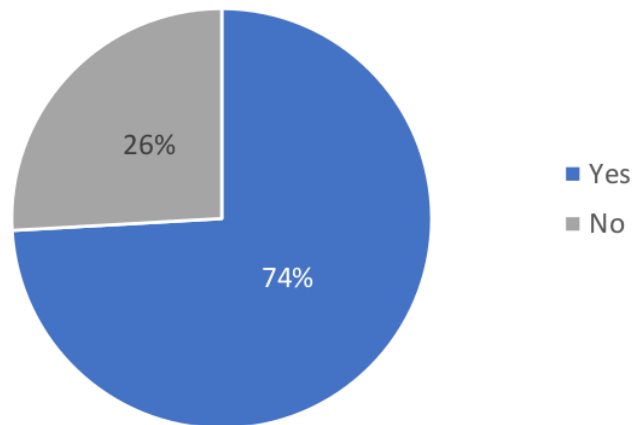


Figure 4.11: *Proportion of people willing to pay more for a more environmentally friendly phone.*

Figure 4.11 shows that the majority of 74% of respondents would be willing to pay more for a more environmentally friendly mobile phone. This statistic shows that a large number of people, even young people, are sensitive to environmental issues and would be ready to change their consumption method to products that are more sustainable and therefore more respectful of the environment.

4.1.13 Keeping your mobile phone longer for the environment

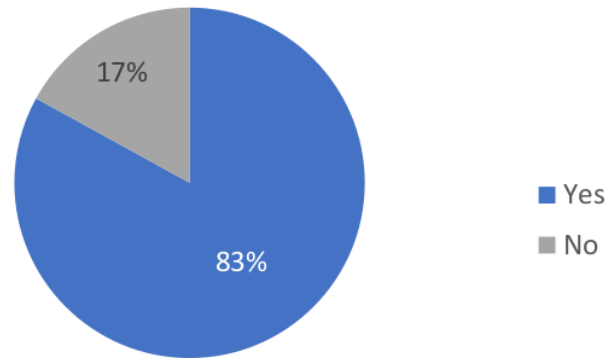


Figure 4.12: *Proportion of people willing keep their phone longer for the environment*

Figure 4.12 above is consistent with the assumption made in the previous section. 83% of respondents say they are willing to keep their mobile phones longer in order to respect the environment. This statistic shows a real awareness of consumers and also a willingness to preserve the environment by changing certain consumption habits that can have a significant impact on our planet.

In addition, as the majority of respondents were young people, particularly between the ages of 18 and 30, it is good for the future to see that these young people are already aware of certain environmental issues.

4.2 Discussion

This section discusses the possibility of change in the world of mobile phone users' consumption, in order to move towards a more sustainable model. This discussion builds on the work done in the literature review and data analysis through the conduct of a mobile phone consumption survey.

First of all it is possible to make an observation on the electronics market and more precisely on the mobile phone market, which pushes users to consume and therefore to obsolesce old products. Producers of telephones and electronic products are always looking to be at the

cutting edge of technology in order not to become obsolete. This is done by making new products using new innovations and technical advances. By doing this, they are pushing old products, which use old technology, into decline so that they can sell the new ones and remain competitive in the market. However, this method of consumption and production is not sustainable for the planet, because electronics products and mobiles phones use many non-renewable resources to be produce. Moreover, once discarded these products are difficult to treat because they contain many materials polluting for the planet.

The arrival of e-commerce and the development of logistics and supply chain also allowed many companies of electronic products and mobile phones to develop, however the telephone market is now occupied by some large companies which hold the majority of the market shares. The explosion of the smartphone in 2007 with the arrival of the first iPhone also changed the mobile phone market (G. Pépin, 2012), since the smartphone has not stopped evolving to be today an indispensable tool for most of us. The smartphone has become so important today, that some people are willing to pay more than £700 in order to have the latest smartphone release. It has also become a fashion tool, especially with iPhone, to have the latest iPhone is now to be fashionable. It is therefore rare to see today a person kept the same mobile phones more than 4 or 5 years, already because it is no longer trends 4 years after its release, but also because after this time of use it can become defective or even unusable.

Nowadays some brand like FairPhone do the opposite and commercializes durable mobile phones with replaceable parts easily in case of breakage. However these phones unlike Apple are not trending, so it is difficult for this kind of brand to stand out and attract customers already satisfied with a type of phone or brand. However, thanks to the survey on mobile phone consumption conducted during this dissertation, it emerged that 85% of respondents would be willing to pay more in order to have a more durable phone over time, and that 83% of them would also be willing to buy a mobile phone with easily replaceable parts. It is also possible to see from the results that 74% of respondents would be willing to pay more for a more environmentally friendly mobile phone, and that 83% of respondents say they are willing to keep their mobile phone longer in order to preserve the environment. Moreover, the majority of these responses were given by people aged 18 to 30 because they represent 82% of respondents.

These statistics show that there is a real will among mobile phone consumers to keep their phone longer and to preserve the environment, Brands like FairePhone therefore have a place to play in the coming years if it can meet the criteria of consumers.

5 Conclusion

During this essay a link was established between mobile phone consumption and technical progress. It is true that the evolution of the mobile phone market was very rapid with the discovery of new innovations and thanks to the technical process.

This evolution of the market has brought a lot of profit thanks to the tools that the smartphone is and all the options it offers. But it also brings a lot of negative effects, which is why some brand like FairePhone bases their marketing on the sale of a durable phone and having parts easily replaceable in case of breakage.

The launch of kind of phones brand shows that there is a real consumer demand in terms of sustainable phones. In addition, a survey conducted during the dissertation validated this hypothesis with statistics showing that a large proportion of respondents would be willing to buy more durable phones even if they are more expensive, and that they would also be willing to keep their phones longer in order to preserve the environment.

However, the market is currently occupied by phone giants like Samsung or Apple that are ready to leave their place. However, since the consumer's choice is his own, it is quite possible that in the coming years the number of people choosing a sustainable and environmentally friendly telephone will be greater. However, the market is currently occupied by phone giants like Samsung or Apple that are ready to leave their place. However, since the consumer's choice is his own, it is quite possible that in the coming years the number of people choosing a sustainable and environmentally friendly telephone will be greater.

This essay was conducted using scientific data available on the Internet or in the university library, and through the dissemination of a survey on mobile phone consumption. A total of 54 responses were collected and the questionnaire was available in both English and French. It would be interesting to carry out a similar survey of a larger number of people in order to

be able to draw more reliable generalities and to analyse certain phenomena which could not be analysed in this paper because of the lack of response in some cases age category.

References :

- Alice Huot, A. H., 2019. *Les marques résistent mieux à la crise du Covid-19 qu'à celle de 2008*. L'ADN tendances.
[Accessed the 31 January 2021]
<https://www.ladn.eu/nouveaux-usages/etude-marketing/marques-resistent-mieux-crise-covid-19-que-2008/>
[On line]
- Allard-Poesi, F. & Perret, V. 2003. La Recherche-Action. In : *Conduire un projet de recherche, un perspective qualitative*. Caen : Ems, PP. 85-132
- Aliyu Ahmad Aliy, A. A., 2011. *Impact of violent Ethno-Religious Conflicts on Residential Property Value Determination in Jos Metropolis of Northern Nigeria: Theoretical Perspectives and Empirical Findings*. Research Gate Article.
[Accessed the 25 April 2021]
https://www.researchgate.net/publication/318760986_Impact_of_Violent_Ethno-Religious_Conflicts_on_Residential_Property_Value_Determination_in_Jos_Metropolis_of_Northern_Nigeria_Theoretical_Perspectives_and_Empirical_Findings
[On line]
- Carson, D., Gilmore, A., Perry, C. & Gronhaug, K., 2001. *Quantitative marketing research*. S.I: Sage
- Collins, H. (2010) "*Creative Research: The Theory and Practice of Research for the Creative Industries*" AVA Publications, p.38
- Compte, A., 2009. *The Positive Philosophy of Auguste Comte*. 1 ed. S.I.:Cambridge.
- Douglas, L., James, S. & Lis, E., 1998. *Fundamentals of Logistics*. 1 ed. s.I.:McGraw-Hill Publishing Co.
- Flash Global., 2015. *The History and Progression of Supply Chain Management*
[Accessed the 29 January 2021]
<https://flashglobal.com/blog/infographic-the-evolution-and-history-of-supply-chain-management/>
[On line]
- Helen Noble, H. N., Gary Mitchell. 2016. *What is grounded theory?* Evidence-Based Nursing.
[Accessed the 1 May 2021]
<https://ebn.bmj.com/content/19/2/34>
[On line]
- Guénaél Pépin, G. P., 2012. *L'histoire du smartphone*. Futura tech.
[Accessed the 12 May 2021]
<https://www.futura-sciences.com/tech/dossiers/telecoms-smartphones-guerre-systemes-exploitation-mobiles-1487/page/2/>
[On line]

G. Nigel Gilbert, N. G., 2008. *Researching social life*. London: SAGE. Previous ed.: 2001.

Gaspard Claude, G. C., 2020. *Utiliser la méthode déductive dans un travail de recherche : définition, méthodologie, et exemple*. Scribbr.

[Accessed the 30 April 2021]

<https://www.scribbr.fr/methodologie/methode-deductive/>

[On line]

Goodland, R. (1995). *The concept of environmental sustainability*. Annual Review of Ecology and Systematics, 26, 1–24.

[Accessed the 31 January 2021]

[On line]

Goodland, R., & Daly, H. (1996). *Environmental sustainability: Universal and non-negotiable*. Ecological Applications, 6(4), 1002–1017.

[Accessed the 31 January 2021]

[On line]

Crocker Mr. Barry, B., 2007. *The relationship-driven supply chain: creating a culture of collaboration throughout the chain* – Gower

Günter Prockl, G. P; 30 March 2017. Springer Link. *Supply chains and electronic markets – impulses for value co-creation across the disciplines*

[Accessed the 27 January 2021]

<https://link.springer.com/article/10.1007/s12525-017-0253-6>

[On line]

Irati Vizcarguenaga-Aguirre, I. V., José Ricardo López-Robles, JR. LR., 2020. *Mono, mixed or multiple strategies approach: a descriptive study of the latest published articles in the International Journal of Project Management*. 3rd International Conference on Research and Education in Project Management.,

[Accessed the 3 May 2021]

http://eprints.rclis.org/40506/1/2020_Vizcarguenaga-Aguirre_et_al_Researches_REPM2020.pdf

[On line]

Julie Ponto, J. Ponto. *Understanding and Evaluating Survey Research*. US National Library of Medicine National Institutes of Health, PMC.

[Accessed the 30 April 2021]

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4601897/>

[On line]

Julien Vidal, J. V. *J'achète un smartphone réparable*. Ca commence par moi.

[Accessed the 2 February 2021]

<https://cacomenceparmoi.org/action/smartphone-reparable/>

[On Line]

Kem-Laurin Kramer, KL. K; 2012. *Planned Obsolescence*. User Experience in the Age of Sustainability

[Accessed the 27 January 2021]

<https://www.sciencedirect.com/topics/computer-science/planned-obsolescence>
[On line]

Kransdorff, A., 1982. The management Page: High Stock Levels – Not the Answer – Arnold
Kransdorff reports on "Supply Chain Management Financial Times, p 16

Sage Publication,. 2010. *What is Action Research?* Sage Publication.
[Accessed the 30 April 2021]
https://www.sagepub.com/sites/default/files/upm-binaries/36584_01_Koshy_et_al_Ch_01.pdf
[On line]

Vincent Ghislain & Essiane Andje, V. G, E. A ; 2017 *Quelle est la différence entre la Gestion Logistique et La Gestion de la Chaîne d'Approvisionnement (Supply Chain Management) ?* MBA, Research doctorate : African logistics and supply chain facing industry 4.0
[Accessed the 30 January 2021]
<http://marcologistique.com/quelle-est-la-difference-entre-la-gestion-logistique-et-la-gestion-de-la-chaîne-dapprovisionnement-supply-chain-management/>
[On line]

Miles, M. B & Huberman, A. M., 1994. *Quantitative data analysis: An expanded sourcebook*.
2nd ed. s.l.:Sage Publication, Inc.

Miller, A., 2002. *Realism*. Stanford Encyclopedia of Philosophy.
[Accessed the 15 April 2021]
<https://plato.stanford.edu/entries/realism/>
[On line]

Mohamed Azerzki Mellal; MA. M., 2020. *Technology in Society*. Science Direct.
Obsolescence – a review of the literature.
[Accessed the 30 January 2021]
[On line]

Neckel Anderson & Boeing Ricardo, N. A, B. R; 2019. *Influence of online consumer innovativeness behavior in electronic products on planned obsolescence process*. Brazilian Journal of Management / Revista de administracao da UFSM
[Accessed the 2 February 2021]
<https://web-a-ebsohost-com.ezproxy.uwtsd.ac.uk/ehost/pdfviewer/pdfviewer?vid=2&sid=46f98836-5708-4b6d-8afe-6d5affd1587e%40sessionmgr4008>
[On line]

Patagonia, web site
[Accessed the 1 February 2021]
<https://eu.patagonia.com/fr/fr/home/>
[On line]

Paul Oliver; PO., 2010, *The student's guide to research ethics*. Series : Open UP study skills,
Maidenhead, England: Open University Press.
[Access the 8 May 2021]

<https://www.vlebooks-com.ezproxy.uwtsd.ac.uk/Vleweb/Product/Index/155461?page=0>
[On Line]

Paul D. Larson & Dale S. Rogers; PD. L, DS. R; 15 Dec 2015. *Journal of Marketing Theory and Practice*. Taylor & Francis
[Accessed the 27 January 2021]
<https://www.tandfonline.com/doi/abs/10.1080/10696679.1998.11501805>
[On line]

Research, M., N.d., *Research Reliability*.
[Access the 8 May 2021]
<https://research-methodology.net/research-methodology/reliability-validity-and-repeatability/research-reliability/>
[On Line]

Rhonda R. Lummus; Robert J. Vokurka ; RR. L, RJ. V; 1999. *Defining supply chain management: a historical perspective and practical guidelines*. Deep Dive page 11.
[Accessed the 30 January 2021]
<https://www.deepdyve.com/lp/emerald-publishing/defining-supply-chain-management-a-historical-perspective-and-Oyu21QSQQN?key=emerald>
[On line]

SpiderGroup, S.G; 2019. *Technology: A positive or Negative Impact on Society?*
[Accessed the 27 January 2021]
<https://www.spidergroup.com/blog/technology-a-positive-or-negative-impact-on-society>
[On line]

Tejvan Pettinger, T. P, 2019. *Product life-cycle*. Economic Help.
[Accessed the 29 January 2021]
<https://www.economicshelp.org/blog/140934/business/product-life-cycle/>
[On line]

Appendix: Questionnaire

1. Gender of the respondent / Genre du répondant

- Male / Homme
- Femal / Femme
- Autre / Other

2. Age of the respondent / Age du répondant

- Under 18 years of age / Moins de 18 ans
- 18-30 years of age / Entre 18 et 30 ans
- 31-45 years of age / Entre 31 et 45 ans
- 45-60 years of age / Entre 45 et 60 ans
- More60yearsofage/Plusde60ans

3. Where are you buying your mobile phone

- In store / En magasin
- On line / En ligne
- Both / Les deux

4. How long you keep your mobile phone / combien de temps gardez-vous votre téléphone portable

- Less than 1 years / Moins d'un an
- Between 1-2 years / Entre 1 et 2 ans • Between 2-3 years / Entre 2 et 3 ans • Morethan3years/Plusde3ans

5. Do you buy used or new mobile phone / Achetez des téléhpones neufs ou d'occasion

- New / Neuf
- Used / D'occasion

6. What is your budget for a new mobile phone / Quelle est votre budget pour un nouveau téléhpone portable

- Less than 100£ / Moins de 115€
- Between 100-300£ / Entre 115 et 350€
- Between 300-500£ / Entre 350 et 580€
- Between 500-700£ / Entre 580 et 800€
- More than 700£ / Plus de 800€

7. What is the brand of your mobile phone / Quelle est la marque de votre téléphone

- Apple
- Samsung
- Huawei
- Other / Autre

8. What are your criteria when you buy a new mobile phone / Quels sont vos critères lorsque vous achetez un nouveau telephone portable

.....

9. Is the brand important in choosing your phone / La marque est-elle importante dans le choix de votre téléphone

- Yes / Oui • No/Non

10. Why you changing your mobile phone / Pourquoi changez-vous votre téléphone portable

.....

11. When a component of your phone is broken seek you to replace it / Quand un composant de votre telephone est cassé chercher-vous à le remplacer

- Yes / Oui
- No/Non
- It depends of the component / Ca depend du composant

12. Would you be willing to buy a phone where all components can be replaced / Seriez-vous prêt a acheter un téléphone où tout les composants peuvent être remplacé

- Yes / Oui • No/Non

13. Would you be willing to pay more for a more durable phone / Seriez-vous prêt à payer plus cher pour un téléphone plus durable

- Yes / Oui • No/Non

14. Would you be willing to buy more expensive an environmentally friendly mobile phone / Seriez-vous prêt à acheter plus cher un téléphone portable respectueux de l'environnement

- Yes / Oui • No/Non

15. What do you do with your old mobile phones / Que faites-vous de vos anciens téléphones portables

.....

16. Do you have unused mobile phones / Avez-vous des téléphones portables inutilisés

- Yes / Oui
- No/Non

17. Would you be willing to keep your mobile phones longer for the environment / Seriez-vous prêt à garder vos téléphones portables plus longtemps pour l'environnement

- Yes / Oui • No/Non