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Internet and the Environment: A Catalyst to Consumerism and Environmental Degradation

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Abstract

Many activities and work traditionally performed in person have shifted online in the past few years. The sudden surge in the use and reliance on the Internet strongly underlined how it has affected consumerism and thus the environment. In this light, this research seeks to address how billions of people's daily use of the Internet intensifies their consumption habits and degrades the environment altogether at high speed.

The ramifications of Internet use are observed from three specific perspectives: economic, psychological, and political. As such, this research paper is broken down into five chapters. The first chapter observes the environmental issues resulting from the use of the Internet and explores the Internet and its technologies' role in consumerism, and its effects on society due to the degradation of the environment. Physical effects, such as air pollution and e-waste caused by the Internet are also observed. The following chapter 2 explores how our habits in E-commerce and cryptocurrency are unsustainable. Chapter 3 observes the digital footprint and discusses why society consumes so much. One of the reasons is triggers from advertisements and commercials on the Internet. This chapter also looks at the correlation between generation Z's Internet use and their increased susceptibility to mental health issues such as Nature Deficit-disorder. The fourth chapter explores the way users communicate online about environmental topics and what actions they might take, as a result, as well as the influencers' role and trends in consumerism habits. It also looks at information pollution and how this might affect discourse online. In Chapter 5, a few policies concerning the management of online advertisements and the Internet technologies are observed as a potential solution to the problems raised throughout the paper.

Keywords: digital footprint, air pollution awareness, consumerism, information pollution, disconnection from nature, environmental issues, online discourse, energy, policy recommendations

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Introduction

Not long ago, one had to purposely take out time in their day to physically go to a supermarket or a store and, in some cases, blindly, select a bar of soap just to wash their body. If one was lucky, their friends or family would recommend which specific brand of soap to buy, which would save them the difficult task of having to pick a soap among all the different brands and types being presented. Back in the day, (thirty years ago), selecting a soap without the help of anyone, left the buyer with the possibility of being disappointed by the product – with the resulting money and precious time wasted. In the 21st century, and with the emergence of the Internet such hassle is finally avoidable. Looking at the totality of different soaps is only a click away and all in one place. Best of all, the purchase can be done from the comfort of your own home. With one search, one can get a review on any soap one would like – from brands themselves or from fellow citizens for a more candid opinion on the product. This easy access to products' reviews, diminishes the possibility of getting a product that might not fit your expectations or desires. There are even online enterprises where you can buy your reviewed and desired soap, and the soap itself gets delivered at your door. That way, the time one would need to invest to go physically to the store can be saved and instead redirected to spending more time browsing online for the "perfect" product.

Many of our daily habits as consumers have changed since the creation of the Internet. Everything is more accessible and "exhibited." While the modern Internet we know debuted in 1983, it only became mainstream around the 1990s and with the birth of technology such as Google and social media platforms, the number of users exponentially increased. Nowadays, practically everyone residing in *first world* countries uses the Internet and its technology on a daily basis. Many of our habits online revolve around buying or selling – in short, the exchange of goods. While many view these new online habits as a positive progress, they have in many different ways, degrading impact on the environment. The rise of

the Internet is the catalyst to our increased consumerism and related degradation of the environment.

The increasing use of the Internet also greatly contributes to climate change as well as pollution, through the addition of *greenhouse effect*. Since the Internet is only a catalyst to a phenomenon that was already happening before its popularity, a deeper understanding of consumerism and its link to the environment needs to be examined. This research will therefore observe how our use of the Internet affects the environment directly, and through our consumerist habits through three lenses. The first perspective through which this research will be analyzed is economic. Understanding the economic effect behind consumerism and its degradation of the environment is vital. Next, the research will observe consumerism through a psychological lens. It will attempt to understand the reason for human beings' increased consumerist habits and their impact on people's alienation from nature. Lastly, the research will have a political lens on possible solutions, policies or regulations that could be legislated in order to fix the issue of consumerism and environmental degradation accentuated by the Internet.

The first chapter of the research will give an overview of the environmental issue and its importance. Furthermore, it will explore the physical effects (greenhouse effect, pollution, waste) of the Internet and the technologies causing such effects (i.e., computers, smartphones). The second chapter will focus on the economic aspect of environmental degradation due to accentuated use of the Internet. This chapter will observe three popular activities which many take part online such as E-commerce, cryptocurrency and video streaming. Chapter 3 explores the psychological aspect of environmental degradation due to the use of the Internet. It analyzes the reasons for our consumerist habits, such as a desire for experiences and how we are constantly triggered by advertisements and commercials especially since our increased use of the Internet. Moreover, it observes the correlation

between the increased use of the Internet by generation Z and their susceptibility to Nature Deficit-disorder. Chapter 4 explores how users online navigate and engage in discussions regarding environmental issues and what role each actor plays online. This chapter discusses the Internet's effect on environmental activism and actions that might result from it. Moreover, it looks at the role of influencers and trends in increasing consumerism online from the users. The last chapter 5 explores through a political perspective, possible policy recommendations and solutions to the issues raised and discussed in the research.

Chapter 1 The Hidden Agenda of the Internet

Nowadays, we use the Internet for so many different activities. We use it to communicate among ourselves, through emails or messages, or to search for anything that might come to our minds, such as which brand of soap is best, as discussed in the introduction. While many people focus on the benefits of the Internet, the negative impacts are present and should not be overlooked as they are detrimental to the environment. Let us start with an overview of the functioning of the earth. To have a prosperous planet, three factors, which are interconnected, are needed. One of the first factors needed is a constant cycling of nutrients, important for the survival of organisms on earth. Indeed, the earth "does not get significant inputs of matter from space, its fixed supply of nutrients must be recycled to support life" (Miller and Spoolman 2020, 51). The second factor needed for the flourishing of the earth is gravity. Its purpose consists of holding the planet to "its atmosphere and enabl[ing] the movement and cycling of chemicals through air, water, soil, and organisms (Miller and Spoolman 2020, 51). Lastly, the third and important component for sustaining earth's life is *greenhouse* effect, which happens when "solar energy interacts with carbon dioxide (CO2), water vapor, and several other gasses in the troposphere" (Miller and Spoolman 2020, 51). However, an increase in greenhouse effect leads to global warming

which in turn is detrimental to our climate systems (Turrentine 2020). The five major greenhouse gasses (GHG) are methane, nitrous oxide, fluorinated gasses, water vapor and carbon dioxide, on which this research will mostly focus (Turrentine 2020). Indeed, about 40 percent of GHG that are emitted remain in the atmosphere after 100 years, while 10 percent can remain as long as 10,000 years (Turrentine 2020). A good portion of GHG come from the production of electricity and heat, but also from industries and transportation (Turrentine 2020). Not only does the increase in GHG cause extreme weather incidents and the sea levels rise, but it also alternates ecosystems such as shifting the abundance of freshwater, which in turn threatens all species on earth (Turrentine 2020).

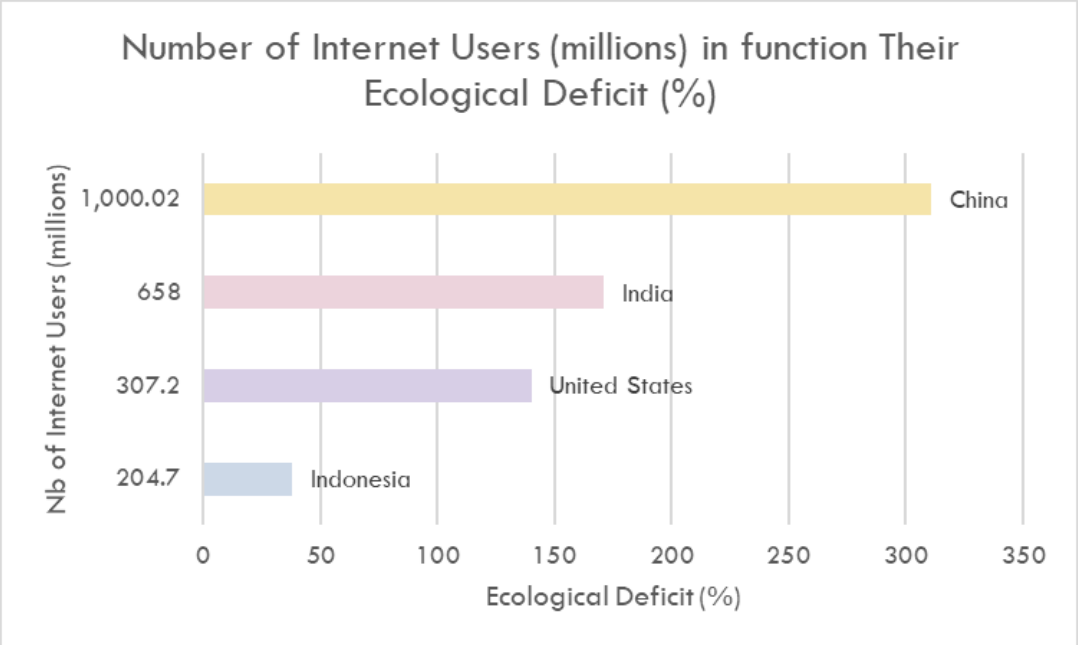
From the three factors necessary to sustain life on earth, four ecosystem services are contained within. These are the provisioning, the habitat and supporting services, the regulating as well as the cultural services. Since, the greenhouse effect is crucial for the functioning of the planet as it keeps the earth warm and sustains all life on it, this research will look at the regulating services, such as carbon sequestration and storage. About one-third of all greenhouse gasses are emitted by land-use conversion and soil cultivation, whereas 14.5 percent of all human-caused greenhouse emissions are released in the atmosphere yearly (FAO n.d.). From the 14.5 percent of GHG emissions, about 3.7 percent is coming from the inhabitant's Internet use alone (Energuide n.d.). It is also important to note, that the number of emissions from the Internet continues to grow yearly and is expected to double by 2025, and this is excluding the effects from the increased use of the Internet during the Covid-19 pandemic (Energuide n.d.). In addition to observing regulating services, this research will also look at the cultural services such as recreation and mental and physical health. Indeed, it is necessary for inhabitants to have "nature-based opportunities" to practice outdoor activities and also connect to nature (FAO n.d.). For instance, agricultural landscapes are "recognized as having mental health benefits," which can be jeopardized by the amount of time people

spend online (FAO n.d.). Finally, we will look at the spiritual experience and a sense of place to better understand the gravity of the issue (FAO n.d.). As it will be shown in this research, one's connection to nature should not be neglected as it influences how we perceive the environment and therefore either participate in its protection or destruction. There are many societal activities and factors, some direct and other indirect, which contribute to the imbalance of ecosystem services. However, the one factor that this research will focus on is the Internet.

To better understand the impact the Internet has on the environment, the environmental/ecological footprint of a person, which measures the supply and demand of nature, is observed. The ecological footprint on the supply side "represents the productivity of its ecological assets (including cropland, grazing land, forest land, fishing grounds, and built-up land). These areas, especially if left unharvested, can also serve to absorb the waste we generate, especially our carbon emissions from burning fossil fuel" (GFN n.d.). Whereas the ecological footprint on the demand side, measures "the ecological assets that a given population or product requires to produce the natural resources it consumes (including plant-based food and fiber products, livestock and fish products, timber and other forest products, space for urban infrastructure) and to absorb its waste, especially carbon emissions" (GFN n.d.). Therefore, to calculate a person's, or population's ecological footprint, one needs to look into how much that person or population uses natural capital through their daily activities. (GFN n.d.). Natural capital is the natural resource providing ecological services as well as goods to the living beings. A few examples of natural capital include "minerals; water; waste assimilation; carbon dioxide absorption; arable land; habitat; fossil fuels; erosion control; recreation; visual amenity; biodiversity; temperature regulation and oxygen" (GDRC n.d.). The biocapacity of a person/country is also calculated, which is "the ecosystems' capacity to produce biological materials used by people and to absorb waste

material generated by humans, under current management schemes and extraction technologies" (GFN n.d.). A person/country's ecological footprint is then subtracted from that person/country's biocapacity in global hectare to calculate its ecological deficit or reserve (GFN n.d.). For instance, as of February 2022, the country with the highest number of Internet users is China with 1,000.02 million. Followed by India with 658 million of Internet users, and then the United States with 307.2 million of Internet users (Jonhson 2020). It is interesting to point out that the top three countries with the highest number of Internet users are also countries which are all in ecological deficit as shown in Figure 1, which means that the country's footprint is greater than their biocapacity, and therefore one could correlate that the Internet's pollution could be a factor in the ecological deficiency of those countries (GFN, n.d.).

Figure 1: *Number of Internet Users in a Country in Function of Their Ecological Deficit*

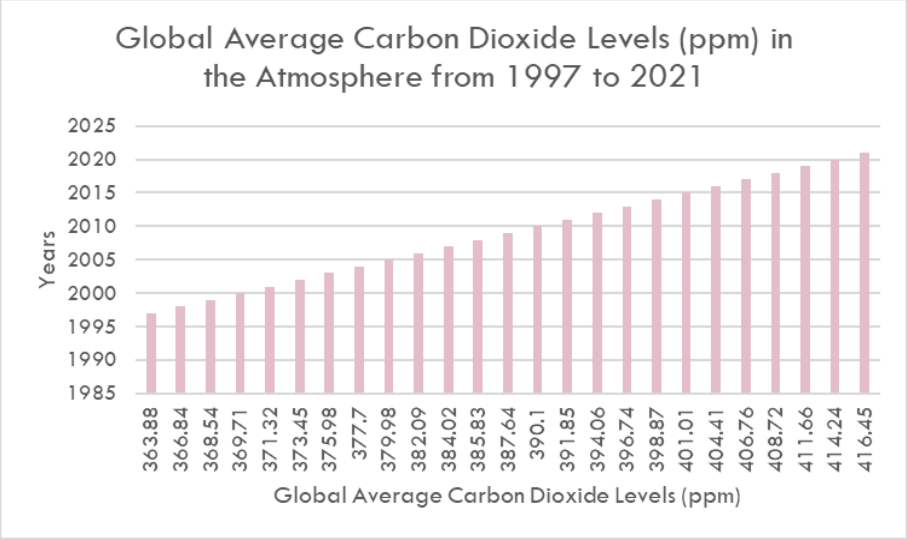


Source: Stanovic, 2022, based on data published by Jonhson and GFN, 2022 and n.d.

As mentioned earlier in the chapter, one of the three important factors to the functioning of our environment is the greenhouse effect. From 1990 to 2015, the net emissions of greenhouse gasses have increased "by 43 percent" (EPA n.d.). Whereas,

emissions of carbon dioxide, “which accounts for about three-fourths of total emissions” of gasses have increased “by 51 percent” during that same period of time (EPA n.d.). Thus, this increase in greenhouse gas emissions has led to a warming effect of the planet altogether, and is affecting all the ecosystem services stated in the chapter, especially regulating services. Moreover, from 1990 to 2019, the greenhouse gasses “added by humans to the Earth’s atmosphere increased by 45 percent,” while the amount of CO2 alone has “increased by 36 percent” (EPA n.d.). In 2020, the “carbon dioxide (CO2) emissions fell by 5.4%,” but “the amount of CO2 in the atmosphere continued to grow at about the same rate as in preceding years” (Nasa 2021). In 2020, a global average atmospheric carbon dioxide of 412.5 parts per million was recorded (Lindsey 2021). That number continued to increase in 2021 and reached 416.45 parts per million compared to 354.45 parts per million in 1990 when the Internet started to become mainstream (Tiseo 2022). As shown in Figure 2, since the start of social media in 1997, the global average of carbon dioxide levels in the atmospheres has been increasing exponentially.

Figure 2: *Global Average Carbon Dioxide Levels (in parts per million) in the Atmosphere from 1997 to 2021*



Source: Stanovic, 2022, based on data published by Tiseo, 2022.

While many factors contribute to the increase of this natural phenomena, the most prominent one is the burning of fossil fuels such as coal and oil which goes back to "1880s when coal was first used to generate electricity for homes and factories" ("Fossil Energy Study Guide:" n.d.). However, as discussed earlier, transportation and industries are important factors contributing to the considerable increase of CO2 and GHG, in general. Both, transportation and industries, also play a role in consumerism, as industries manufacturers goods, and transportation brings those goods to the markets. For that reason, understanding the reason behind our consumerist habits, increased by the use of the Internet, is necessary.

While the concept of consumerism debuted in the late 1600s, today the consumerist culture seems to have taken a whole new meaning. Before, most people would buy goods and services to meet their needs, whereas today the ideology of consumerism has intensified to the point where we buy more than we need. Indeed, as a study has shown, in 1901 the average family "could allocate only 20.2 percent, or $155, for discretionary annual spending" whereas in early 2000s, the average U.S. family "could allocate 49.9 percent ($20,333) of total annual expenditures for a variety of discretionary consumer goods and services" (BLS 2006, 69). This increase in the amount of discretionary spending demonstrates an inclination to consumerism and thus to environmental degradation altogether.

There is no direct correlation between increased consumerist habits, the rise of the Internet, and the significant degradation of the environment. This paper, however, will argue that there is no coincidence between the increase of these three concepts. Indeed, the rise of the Internet acted as a catalyst to consumerism and thus contributed to the degradation of the environment. Both the increased use of the Internet and the phenomenon of consumerism have positively contributed to the greenhouse effect, especially the increase of CO2. The Internet alone pollutes more than we think. With any Internet activity, "a few grams of

carbon dioxide are emitted due to the energy needed to run your devices and power the wireless networks you access" (Griffiths 2020). A single router, for instance, consumes 10,000 watts and a large data center can consume approximately 100 million watts and that is without taking into account electronic circuits that need to be cooled down using air conditioning (Energuide n.d.). Almost any online activity pollutes the environment in some type of way. Searching a web address alone accounts for "0.8 g of carbon dioxide," but an Internet search which produces, for instance, five results, can generate up to 10 g of carbon dioxide (Energuide n.d.). That number accounts for the search of the web address alone. Browsing the web, annually results in around 264 kWH of electricity and 2,9000 liters of water consumed (Energuide n.d.). This number is the equivalent of a quantity of CO2 emitted by a car traveling 1,4000 km (Energuide n.d.).

One of the few reasons why the electricity usage from the Internet is large is because of its infrastructures. Indeed, to respond to peak usage, which refers to the time when the traffic online is at its highest, web infrastructures are oversized (Verizon n.d.). Even though a router operates "at 60% of its capacity," when inactive the device consumes "as much energy as when they're running at full capacity" (Energuide n.d.). Moreover, applications on our devices have little optimization and broadband boxes operate non-stop (Energuide n.d.).

While, the amount of carbon dioxide emitted by a search and the amount of water it consumes might seem minuscule, if we take into account all the searches people do, texts they send, or emails they respond to in a single day, it all adds up. Take that approximate amount of carbon emitted from your own use of the Internet and multiply it by the amount of people doing the same activities as you on a daily basis. The amount of carbon dioxide emitted becomes quickly greater. Indeed in 2020, "approximately 4.1 billion people, or 53.6% of the global population, now use the Internet," (Griffiths 2020). According to a recent report, that number rose to 4.9 billion Internet users around the world in 2021 (Jonhson

2022). That is 4.9 billion of people doing a fair number of searches, texting, emailing and tweeting in a day.

While there is carbon dioxide emitted due to the energy used to run our online activities, there is also a fair amount emitted during manufacturing of the equipment and technologies (i.e., tablets, computers, smartphones etc.) that provide us with easy and portable Internet access. The manufacturing of a smartphone degrades the environment from the moment the minerals used to manufacture the device are picked up, until it is being held in its user's hand. For instance, smartphone's batteries are made of graphite, a mineral consisting of carbon which ensures a good conductivity of the electricity in the phone (Pitron 2021, 57). While the residues from acquiring this mineral are detrimental to the people around it and the environment, as long as the market is demanding smartphones and as long as the profit from them are high, it won't stop. Many towns in China produce 70% of that mineral and each metric ton of graphite flake can cost upwards of US$ 6,000 (Pitron 2021, 57). If the demand for smartphones increases, the chances of saving the environment will decrease, the same applies to other devices such as computers. Indeed, if one was to simply use a "single computer and monitors from four to six years [they]could avoid the equivalent of 190kg of carbon emissions" (Griffiths 2020).

Not only does the manufacturing of these technologies emit carbon dioxide, but it also utilizes primary energy use, as mentioned earlier with smartphones. For instance, for the chemicals sector in 2009 in the U.S., a total of 4,513 TBtu (British unit temperature) of primary energy [was] used. This accounts for 71% of primary energy consumed onsite with a total of 29% consumed offsite (Brueske, Sabouni, Zach, and Andres 2012, 17). Furthermore manufacturing "computers, electronics, and electrical equipment" accounts for a total of 527 TBtu of primary energy use, with 43% of primary energy consumed onsite and 57% of primary energy consumed offsite (Brueske, Sabouni, Zach, and Andres 2012, 17). Moreover,

as studies from 2019 have shown, electricity accounts for a total of 25% of U.S. Greenhouse Gas Emissions (Brueske, Sabouni, Zach, and Andres 2012, 17). This electricity comes from burning fossil fuels and is used for many technologies that we are using on a daily basis.

Besides the use of electricity and primary energy, 29% of U.S. Greenhouse Gas Emissions are generated by transportation which comes “from burning fossil fuel for our cars, trucks, ships, trains, and planes” that are used to deliver many of our goods as well as the technologies we use (EPA, n.d.). All these data and numbers demonstrate how the manufacturing and use of these technologies to access the Internet, not only uses primary energy but also contributes to greenhouse effect thus degrading the environment in a subtle way as many people do not necessarily think of these numbers when using their phone or computer. However, what happens when these polluting technologies come to the end of their useful life? They are thrown away and add waste to the environment. These thrown out technologies are often referred to as “E-waste,” which is an “informal name for electronic products nearing the end of their "useful life." Examples of these include but are not restricted to “[c]omputers, televisions, VCRs, stereos, copiers,fax machines and common electronic products.” (“What is E-Waste?” 2021). Contrary to many products that we often recycle such as plastic bottles for example, which are made of one or few materials, “[h]igh-tech electronics contain dozens of materials—all tightly packed—many of which are harmful to the environment and human health when discarded improperly” (Grossman 2016, 6). Thus, electronics are harder to recycle due to numerous materials included in their production. In 2019, the U.S. has generated around 59 million tons of e-waste, and many believe it is because of falling prices of these electronic products but also because of “planned obsolescence” from the seller companies (Turrentine 2020). Planned obsolescence “occurs when a product designer creates a design that is meant to phase out after a certain period of time,” having a lifespan limited duration for the product (HG n.d.). Planned obsolescence is

harmful to the environment as manufacturers intentionally make a smartphone (or any electronic device) unusable after a certain period of time. The concept of obsolescence can be "material," such as having the phone batteries not function after a while, and therefore having no other option than to discard the phone and buy a new one (Pitron 2021, 74). It has been alleged that some manufacturers purposely use inexpensive materials such as plastic in place where a more sturdy material could be used (for example metal), thus "planning" that the part will "fail" – usually when the warranty period expires. On the other hand some manufacturers have built their reputations by making quality products and offering generous warranty terms. For example, Bryston – a Canadian audio electronics company offers 20 years of parts and labor warranty on their amplifiers (Bryston n.d.). As they say: "Bryston prides itself in building and manufacturing quality products that last for a generation" (Bryston n.d.).

However, the concept of obsolescence is not only material, it can also be "cultural" (Pitron 2021, 74). This happens when a company, Apple for instance, designs a new iPhone, looking more efficient and desirable than the current iPhone, and therefore inciting their customers to buy a new one and throw away their current phone to fit the new "trend" (Pitron 2021, 74). Sometimes, having the "latest" product becomes a status symbol and people want to have it just to be popular.

Lastly, the concept of obsolescence can also relate to "software." This occurs when an electronic product stops working because it becomes incompatible with the most recent software updates. By using the different ways of obsolescence as stated, we can see how producers and companies can incite consumers to buy more of their products and thus contribute to the growth of E-Waste and energy use.

Image 1: *New York City's Lights at Night*

Source: Stanovic, 2022.

Many can agree on the increased use of the Internet and the reasons for its popularity, for example because of its accessibility and the opportunities it represents. However, there are many discussions on whether the surge and banalization of the Internet is a positive or negative thing. Some argue that the Internet is a good thing for humanity as it makes us more empathetic towards each other and also toward the environment. This could be due to what is known as "Six Degrees of Separation," or as the "Small World Theory," which states that "a person is one step away from each person they know and two steps away from each person who is known by one of the people they know, then everyone is an average of six "steps" away from each person on Earth" (Rifkin 2009, 694-95). This theory may have been downsized to less than six steps due to the Internet and social media. Researchers from information technology and communications fields further believe that "the small world phenomenon could be harnessed to bring the human race together quickly around natural

disaster relief or for political and social purposes" (Rifkin 2009, 697). One could then argue that the Internet perhaps can help us solve some of the environmental issues we are facing by bringing people together to become aware and to act. The world would then go from people being away from each other, to an "empathetic multiplier effect," where traditional boundaries "ripples out and affects the lives of countless others. Quickly encompassing the whole of the human race" (Rifkin 2009, 698). In his book, *The Empathetic Civilization*, Jeremy Rifkin postulates how the Internet could be used to "reconfigure the world's power grids, enabling millions of people to collect and produce their own renewable energy in their homes, offices, retail stores, factories, and technology parks and share it peer-to-peer across smart grids, just as they now produce and share their information in the cyberspace" (Rifkin 2009, 760). While this could be true, the negative externalities from the use of the Internet could quickly outweigh its potential future benefits. Nonetheless, this unity among the Internet users, could inspire young generations to "view the world less as a storehouse of objects to expropriate and possess, and more as a labyrinth of relationships to access" and perhaps spark some new innovations to solve environmental issues (Rifkin 2009, 870).

One of Rifkin's arguments is that the Internet's purpose was to increase connectivity among human beings in the world, which in fact it has. Since the birth of the Internet people have been increasing their connectivity by staying in contact more often and by sharing more. No more sending letters, when you can send a text accompanied by a picture in the space of a second. However, there are plenty of other consequences from the use of the Internet among billions of people that are being disregarded in the above argument and which are discussed in this research. Another topic that Rifkin brings up in his book and which is interesting to point out is the rise of "The Third Industrial Revolution" characterized by the "use of distributed information and communications technology, as the command-and-control mechanism to organize and manage distributed energy" (Rifkin 2009, 759). In his book

entitled *The Empathic Civilization*, Rifkin discusses how the Third Industrial Revolution can allow us to finally establish "a complex global human civilization in a locally distributed way" which will "extend the empathic embrace while lowering the entropic bill" (Rifkin 2009). However, the argument does not take into account the downside of increased global communication in regards to globalization and consumerism through the use of the Internet.

In summary, GHG is increasing and is harming the environment. Many factors are responsible for this phenomenon but this research is focusing on the different ways in which the Internet is contributing to not only the increase of GHG, but also to the use of energy and creation of waste. Moreover, this research focuses on how the new Internet culture made us bigger buyers and how it changed our relationship towards nature. The Internet brought change to our economy, psychology and politics. It is therefore necessary to find policies which acknowledge the Internet's impact on consumerism and on the environment.

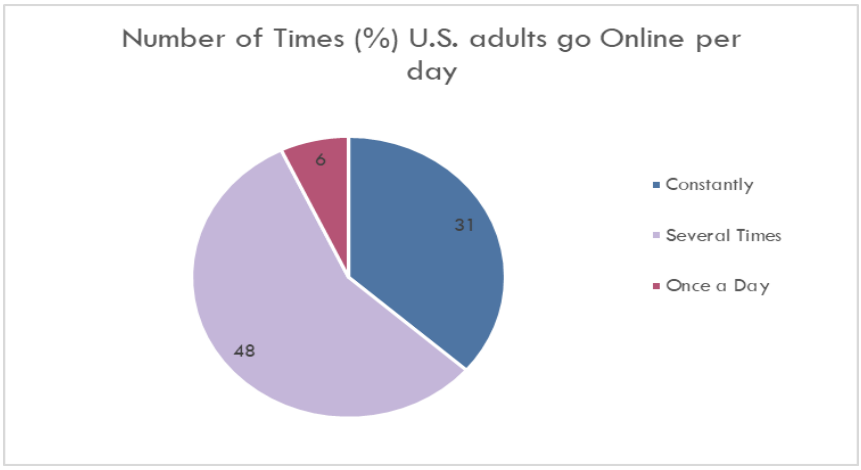
Chapter 2: Money Spent Online

The Internet gives access to numerous activities, from networking to playing online games. However, popular online activities which will be discussed in this chapter are E-commerce, cryptocurrency and video streaming. Since the creation of the Internet, these activities have increased in popularity.

A survey conducted in 2021 shows that more than "eight-in-ten U.S. adults go online at least daily" (Tanner and Raymond 2012). Indeed, of those eight-in-ten adults, "31% report going online constantly, 48% say they go online several times a day, and 6% go online about once a day" (Tanner and Raymond 2012). Moreover, another study done by Hootsuite in 2021 demonstrates that "the average Internet user now spends almost 7 hours per day using the Internet across all devices, equating to more than 48 hours per week online," and about three hours and twenty-four minutes watching television, which includes broadcast and

streaming (Kemp 2021). Video streaming is one of the three activities taking up a large amount of time online and which degrades the environment fairly.

Figure 3: *Number of Times (in percentage) U.S. Adults go Online per Day*



Source: Stanovic, 2022, based on data published by Tanner and Raymond, 2012.

The most obvious reason as to why people buy technologies such as smartphones or laptops is to more easily access the Internet for activities such as online shopping which has been growing over the years and which is often referred to as "E-Commerce." More and more people opt out of traditional shopping for a more rapid and "practical" (which can be argued) way of buying goods and services. Data shows that in just a year in the U.S. (2021), "Total e-commerce sales for 2021 were estimated at $870.8 billion, an increase of 14.2 percent (±0.9%) from 2020" (U.S. Department of Commerce 2022). Global retail e-commerce sales, however, amounted to approximately 4.2 trillion in 2020 (Chevalier 2022). A study done in January 2021 demonstrates the "total amount spent in consumer e-commerce categories around the world in 2020, in U.S. dollars" (Kemp 2021). Data shows that the majority of money was spent in the category of "fashion & beauty" with total of $665.6 billion (Kemp 2021). Following as the second most spent category online is "travel, mobility, & accommodation" with a total of $593.6 billion (Kemp 2021). The third category is "toys, diy & hobbies" with a total of $525.6 billion spent on ecommerce (Kemp 2021). As data shows,

most consumers spent money on fashion and beauty when shopping online, which has a significant consequence on the environment.

Today, we have many e-commerce companies, such as Shopify or Ebay, offering us endless choices of various products. As an omnichannel report done by BigCommerce and PayPal in 2021 demonstrates, “62.5% of all respondents report spending less in person and more online while 19.6% state they are spending about the same in person and more online” (Bigcommerce and PayPal Zettle 2021, 3). Another survey about consumers’ feelings towards shopping online and shopping in-person since March 2020 was done. In the US, the majority responded stating that “online shopping is better than in-person shopping,” whereas 21.9% think “in-person shopping is better than online shopping” (Bigcommerce and PayPal Zettle 2021, 6). Another major group of that survey, 32.6%, stated that they “prefer in-person shopping, but the benefits of online shopping outweigh the trade-offs,” and only 12.2% expressed that in-person shopping and online shopping are about the same (Bigcommerce and PayPal Zettle 2021, 6).

One of the biggest reasons as to why consumers who expressed their preference to shop in-store rather than online is “the immediacy of receiving their order instead of waiting for delivery” (Bigcommerce and PayPal Zettle 2021, 7). For that matter, many retailers started to offer the “buy online, pick up in-store (BOPIS)” option to provide quick delivery of the product while minimizing the time one would need to spend in store (Bigcommerce and PayPal Zettle 2021, 7). Data show that BOPIS usage “has increased 183% (from 1.8% to 5.1%) since March 2020” in the world (Bigcommerce and PayPal Zettle 2021, 7). In the United States alone, BOPIS increased 373% (from 1.5% to 7.1%) altogether (Bigcommerce and PayPal Zettle 2021, 7). Moreover, the number of consumers preferring to use online payment methods has increased from 28.3% prior to March 2020 to 35.2% after March 2020 (Bigcommerce and PayPal Zettle 2021, 8). The reason for this increase of online payment

methods is because of their flexibility. For instance, “PayPal’s built-in benefits of faster checkout, financial information security, and protection” make the consumer more prone to using digital payment (Bigcommerce and PayPal Zettle 2021, 10).

However, the most famous E-commerce today is Amazon. To visualize to what extent Amazon is taking over society, one just needs to walk down a street in a big city like New York. The streets are full of people in blue jackets with what seems like a smile drawn on their back, carrying many packages and driving big trucks with that same logo on– a smile. A smile that became the symbol of society’s favorite e-commerce. Founded by Jeff Bezos in 1994, the company is included in what we call GAFAM and which is an acronym for the five biggest and most powerful tech companies on the web. These include Google, Apple, Facebook and Microsoft (Mitchell 2020). In 2020, Amazon’s sales revenues increased by 37% and e-commerce ads year-over-year increased by 39.1% which represents 75.7% of the overall e-commerce ad spending (Vollero, Sardanelli, and Siano 2021, 2).

Few reasons that could explain Amazon’s sales increase could be low pricing and large number of products proposed by the company, quick and effective customer service, efficient return policy as well as quick shipping (Vollero, Sardanelli, and Siano 2021, 2). All those simple factors put the company in front of many industries. In their work in 2021, Vollero, Sardanelli and Siano stated that Amazon does not only provide its customers with benefits that can invite them to spend more, but that there is also an “amazon effect” that takes place. Their discussion was based on Jelodari Mamaghani, E., & Davari, S. definition of the ”amazon effect” and its role on customer expectations as published in “The bi-objective periodic closed loop network design problem” in *Expert Systems with Applications*. The Amazon effect has been “used to indicate the progressive transformation of e-commerce websites and physical retailers to being “more like Amazon” but, by extension, it also denotes the massive change in consumer expectations and habit” (quoted in Vollero, Sardanelli, and

Siano 2021). The Amazon effect refers to customers' impatience as they want specific products quickly and they are used to getting it that way because of e-commerce. This effect therefore puts Amazon on a pedestal compared to other retailers. However, the Amazon effect does not stop there. Indeed, it brings customers' expectations up, and it also often puts them in a "filter bubble." When customers are in what we refer to as "filter bubble," they are in a process that "makes user searches and queries more personalized and effective, but at the same time tends to make people unaware of conflicting or different viewpoints, products, and so forth, thus isolating them in their own "cultural bubbles"" because of filtering algorithm (Vollero, Sardanelli, and Siano 2021). Where some see this filter bubble as a positive thing, allowing consumers to see targeted and recommended products that might interest them based on their past Internet behavior, this phenomenon might actually prevent them from considering other choices of products or viewpoints. Amazon also seems to change customers' behavior, increasing their expectations and bringing them to compare everything to those high expectations.

The problem is that many people use Amazon as a benchmark, which can be an issue especially if we attempt to reduce the Internet's negative effects on the environment. People need to revalue the amount of time spent buying things online, which could be done in person (i.e. grocery shopping). This is an obvious example of how the retailing on Amazon in fact changed customer's behavior in regards to their buying habits. As mentioned earlier, there are a few perceived customer benefits from Amazon: low price, large product selection, great customer service and efficient shipping as well as return policy. These five benefits are what made the customer's behavior change and perhaps might have played a role in increasing the rate of shopping online.

The first benefit provided by Amazon is low prices. While we have seen earlier in chapter 1 an increase in the amount of expenditures by American families on goods and

services, that does not change the fact that people appreciate low prices. Most people, if they can, will rather pay a lower price for a bottle of shampoo online rather than spend a higher price on that same bottle of shampoo in store. Many can argue that often prices on some products online are the same as in store. A tool which E-commerces have and physical stores do not, is a simple button that will filter the products for the customer and offer the cheapest products for their needs. This feature is part of an e-commerce platform and facilitates a customer's desire to buy as cheaply as possible, allowing them to buy more goods for the same budget, and therefore increasing the total amount of goods they can purchase. The second benefit offered by online retailers such as Amazon is large product selection. Online sites and therefore e-commerces, have built-in features that keep suggesting similar products to what the customer might like, this way inciting them to buy even more. By having ads and "what you might like" products showing up while the customer is searching for goods, might tease them into buying more than they actually wanted to buy or need. The third benefit provided by Amazon is great customer service which is always a bonus in buying goods and services as customers are usually willing to pay a premium for products if they are happy with the service they get. The fourth and fifth benefit that customers receive by using Amazon is efficient shipping and return policy. Indeed, ordering goods and services has never been easier as they are only a click away. There is no dragging the products to your home or painful thinking in the store making sure this is the product you want. If the price seems right, the customer buys and waits until it is delivered to their house by one of the people wearing a blue jacket with a smile on their back.

In regard to the return policy at Amazon, it is as easy to return a product if the customer is unsatisfied, as it is to buy it. Indeed, when a person takes the time to go shopping in a store, they should be careful to buy things that they are sure they will need or appreciate. Often, if the customer is in doubt, they might just not buy it on that day and give it more

thought. Same as if they are alone carrying the goods, they might buy less in order to be able to carry those products back home. However, when a customer shops online, they do not need to worry not to buy too many products in fear they won't be able to carry them back home since those products will be delivered to them. Moreover, the customer does not need to put too much thought into whether or not the product itself will bring them satisfaction as it can easily be returned and at no extra cost. All these little benefits, as one would argue, do indeed subtly incite the customer to buy more without even realizing it, which we have seen does increase consumerism and at the same time affects the environment as more people spend time shopping online amongst many other activities. The practice of e-commerce is increasing quickly and affecting the environment as it encourages the users to consume more.

There are many other ways in which excessive consumerism affects the environment, Yet, most of the focus on living a greener lifestyle is on issues such as "energy efficiency, how much meat we eat, the size of our homes, and how much we drive or fly" (MacKinnon 2021, 216). Many fail to see the impacts of consumerism in general on the environment, especially since the rise of the Internet. As a recent study, stated in J.B. MacKinnon's book *The Day the World Stops Shopping*, explains "greenhouse gas emissions related to consumption in nearly a hundred major cities around the world, these [different shopping] categories, taken together, rival food and private transport" of the whole world, annually (MacKinnon 2021, 307). The externalities, from the production of material goods to its consumption, are overlooked. The production of these goods contributes to air pollution, soil erosion, causes habitat loss and affects humans' health, as well as plays a role in wildfires, floods and storms (MacKinnon 2021, 446).

Nonetheless, the increase of consumerism through E-commerce is not the only phenomenon we should be worried about, there is also the rise of the concept of cryptocurrency, which more and more people use. For those who are unfamiliar with it,

cryptocurrency “is a type of currency that’s digital and decentralized” and where one can buy or sell different things to “store and grow value” (Kendall 2021). Some of the most famous ones include Bitcoin and Ethereum for instance.

Bitcoin is gaining popularity because of few advantages compared to other currencies and its production is “estimated to generate between 22 and 22.9 million metric tons of carbon dioxide emissions a year” (Green Eco-Friend 2021). For instance, no Third-Party can seize bitcoins because “there are multiple redundant copies of the transactions database,” giving complete freedom to users over their money (Stanford n.d.). There is also no tracking of Bitcoins, therefore, no Third Parties can access the owner's personal financial data (Stanford n.d.). Another advantage to Bitcoin is that there are no transaction costs. Indeed, by simply using bitcoins and contributing to the network, users share “the burden of authorizing transactions” and that way “greatly reduce transaction costs, and thus make transaction costs negligible” (Stanford n.d.). Moreover, Bitcoins cannot be stolen unless another user “has physical access to the owner’s computer, and they send the Bitcoins to their account” (Stanford n.d.). All these advantages might seem appealing in using cryptocurrency, however its big downside is that it pollutes the environment.

Back in 2009 less than “10,000 transactions were passed with $0.50 per Bitcoin, whereas in 2019 there was a significant increase in transactions through cryptocurrency “as more than 350 k transactions on the last recorded rate of $13,000” were passed (Mohsin, et al. 2021). While many would believe that cryptocurrency is environmentally harmless as it is digitalized, this is debatable as a lot of electrical energy is used to power the “behemoth computer systems,” just to mine the cryptocurrency (Edgell 2021, 75). For instance, a participant could extract their first Bitcoin “for X watts of electricity, but it could take 100X watts to mine their tenth Bitcoin” (Edgell 2021, 75). Through the usage of electricity for cryptocurrency, fossil fuels are burned and carbon dioxide emissions generated. Indeed,

cryptocurrency such as Bitcoin, work on “an energy-intensive process that often relies on fossil fuels, particularly coal” (Green Eco-Friend 2021). In 2018, it is estimated that Bitcoin “mining farms” alone, consumed around 0.05% of the world’s total energy, which is the annual energy consumption of Austria or Ireland (Edgell 2021, 78). It is estimated, that Bitcoin production will “generate between 22 and 22.9 million metric tons of carbon dioxide emission a year” alone (Green Eco-Friend 2021).

Another online activity which has increased over the last few years is video streaming. Indeed, by “the end of April 2020, after the sharpest increase in history, three-quarters of US households had subscriptions to streaming services” (MacKinnon 2021, 387). While it might seem harmless to the environment at first sight, “one hour of video-on-demand streaming generates the equivalent of 55 grams of carbon dioxide emissions” (Green Eco-Friend 2021). A couple of decades ago, “most households shared a single TV,” however, this changed in having people “watch different programs on different devices at the same time” (MacKinnon 2021, 397). This also led to the increase of the practice of “trivial watching,” which is defined by “viewing things that add little or nothing to our lives – not even guilty pleasure or escapism” (MacKinnon 2021, 397).

While this research does not address specifically the increased use of technologies and the Internet in light of the Covid-19 pandemic, it is important to note that a digital surge did arise from it. As a survey of British and American consumers demonstrates, the “locked-down Spring [of 2020] found that 80 percent were consuming more media than usual, most of it – by far – being television and video” (MacKinnon 2021, 387). However, this is not the only consequence from the digital surge. The use of “video- and audio- conferencing tools” increased significantly and “organizations will ramp up their technology infrastructure to account for the surge” (De’, Pandey and Pal 2020). Many educational institutions have shifted to online learning which therefore left students with no other option but to use

technology to learn. For that matter, “[d]igital transformation technologies such as Cloud, Internet- of- Things (IoT), Blockchain (BC), Artificial Intelligence (AI), and Machine Learning (ML), constitute a bulk of what is being adopted by organizations as part of their transformation effort” (De’, Pandey and Pal 2020).

Furthermore, this digital surge might become a new reality and some even argue that there are benefits to it, especially in regards to the environment. Indeed, “in July 2020, Vili Lehdonvirta, a Finnish-British economic sociologist who studies how digital technology shapes economies" explained that we should aim for a world “in which much of what we do in the material economy now – telling the world who we are, exploring our identities, showing off our taste or our skill and so on – is done through virtual consumption, while real-world consumption shrinks to focus mainly on material needs” (MacKinnon 2021, 391). Lehdonvirta suggested then that perhaps if society could use “lightweight glasses instead, [or a pair of a VR goggles] or better yet contact lenses, we might embrace virtual possessions as eagerly as we took to recorded and disembodied voices through technologies like radio, the phonograph, and landline telephones more than a century ago” (MacKinnon 2021, 393). Perhaps, Lehdonvirta’s suggestions might even become reality if the concept of Metaverse or Web 3.0 takes hold in the near future (Canavesi 2022). In this case, “the metaverse will exist when a user can enter a huge virtual shopping mall that can be experienced by as many people as the virtual space can fit, purchase a unique digital item, and then sell the same digital item a few weeks later inside a completely different virtual world” (Canavesi 2022). The Metaverse will then become powered by “cloud infrastructure, software tools, platforms, applications, user-generated content, and hardware” (Canavesi 2022). All technologies which affect the environment by consuming energy and burning fossil fuels.

In this first chapter, we discussed the emergence of the Internet and its importance on society and the environment. The activities that society does online increase our habits of

consumerism and thus contribute to the degradation of the environment. The Internet alone pollutes the air with the gas emissions which contribute to greenhouse effect. Its infrastructure also consumes great amounts of energy which will only increase as more people over the world get connected. When these technologies which allow us to connect "expire" either because they break down or become obsolete, perhaps in a "planned" way, and they are not properly discarded, they contribute to the accumulation of E-waste. Moreover, activities such as shopping on E-commerce or engaging in cryptocurrency trading and transactions feed consumerist habits which throws us into the never-ending cycle of buying and disposing of goods.

Chapter 3: The Invisible Hand Behind our Consumerist Habits

In this chapter we will be discussing the effects of the Internet on users' psychology but also the reason behind consumerist habits and what effect it has on society. As discussed in chapter 2, users spent more time online shopping on e-commerces which made us bigger buyers because of more advertisements and accessibility to items. Therefore, the psychology behind consumers needs to be explored in order to understand why it can become a problem to the environment but also to users. There is a constant use of the word "consumers" to refer to people emphasizing our ability to purchase and consume and demonstrates how "our humanity is being defined as our connection to commodities instead of to each other and our communities" (Magdoff and Foster 2009, 52-53). As discussed in Chapter 1, we live in an economy which offers goods and services to meet our necessities as well as luxurious wants. To make it function, demand needs to constantly be met at an affordable price. How things are going nowadays, it is not about meeting our basic needs anymore, but we came to a point in which most of us buy goods exceeding "what is necessary to satisfy biological or even

comfort needs" and what this research attempts to understand is how society came to consume more than what they consumed before the advent of the Internet (Power 2009).

Living in a society, the demands from the participants might vary, thus "a well-functioning economy is expected to respond to that effective demand by producing goods and services that match those preferences at affordable prices" (Power 2009). For that reason, some believe that the growing level of consumption and consumerism is one of the primary reasons for the destruction of the environment. As society consumes more, a proportional increase in the amount of raw materials "have to be extracted from the earth's crust and [consequently] the more waste has to be dumped back into the earth's land, water, and atmosphere" (Power 2009). It is a cycle that needs to be understood at its root and that starts with observing consumer behavior and why society consumes the way it does.

There are many reasons to explain consumers' behavior especially with regards to material goods, but the "most straightforward reason that we pursue materialism [is because]: powerful forces and structures, largely beyond our control, compel us to do so" (MacKinnon 2021, 97). Thus, as we will discuss more in depth in this chapter, marketers play on the consumers' "[f]eelings of insecurity and threat [which] are among the most powerful incitements to shopping and consumerism" (MacKinnon 2021, 199). Indeed, "insecurity has become a core operating principle of consumer capitalism, built into everything including ads that make us doubt that we're keeping up with the entrepreneurial obsession with "disrupting" comfortingly familiar systems" (MacKinnon 2021, 199). Therefore, advertisements encourage consumers to purchase more to feel better, but by doing so impact the environment. Furthermore, since the rise of the internet, advertisements have become inevitable to the users.

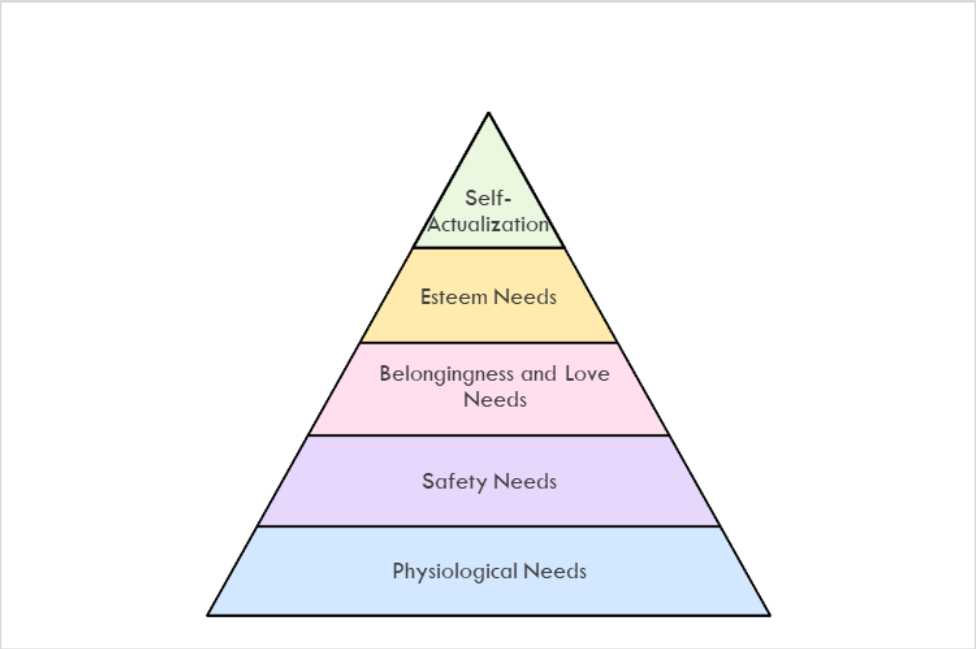
Many, therefore, see a prominent conflict arising "between environmental protection and economic well-being," and believe that the two cannot coexist together (Power 2009). So

why are we so attached to buying material goods even though we know how too much goods harm the environment? The reason for such action is because many assimilate the idea of consumption with the idea of materialism, that we buy and collect goods (thus consume) because we like to do so. However, as Michael Power argues in his work entitled *Consumption*, the "purchase of material goods indicates a quest for a subjective experience, not the materials themselves" (Power 2009). Let us look into the example of big loudspeakers. When a customer buys a large set of speakers, it is not necessarily for the material itself that they buy, but rather for "the subjective experience of the music and the convenience of reproducing it" (Power 2009). While this is true for that specific example, it is also true for many other consumer goods as long as they "satisfy a desire for a particular type of subjective experiences, styles, tastes, or conveniences, but not necessarily a desire for the accumulation of materials" (Power 2009).

For that reason, often when a company is designing an advertisement to promote the purchasing of a product, they make sure to promote an experience that one could get when buying a certain product. For instance, if we look at commercials for perfumes, we do not see a table with the product and a person examining what the perfume actually smells like. However, we do see a whole short film, with a story and actors being presented and promoting not the product itself, but the experience of using that perfume. For example, if we look at Versace's commercial for its masculine fragrance Eros (2012), all one sees in the few seconds of the commercial is a muscular man, looking and acting as a Greek God throwing its spear in the sky. The ad itself transmits feelings of power, confidence and almost "superiority." Those feelings are used to make the product appealing to the customers who want to feel powerful and confident. Indeed, advertisements are important in inciting the consumer to buy a certain product as they appeal to their innermost psychological needs and wants, and thus influence their attitude towards wanting to possess the product.

As research (2015) demonstrates, consumers' attitudes in regards to a product puts them "into a frame of mind of liking or disliking things, of moving toward or away from them," therefore they need to make sure to have a positive attitude on the consumer (Mwakasege 2015, 22). As Maslow's Hierarchy of Needs explains, human beings need to fulfill their physiological needs such as food, water and sleep first (Maslow 1954, 38). Then, when those are fulfilled, people desire to fulfill higher or second-order needs in the Maslow's pyramid such as self-esteem and actualization (Tanner and Raymond 2012). Marketing professionals use Maslow's Hierarchy to better target the consumers and influence them in buying products. Some thirty years ago, there was no Internet and advertisements were diffused on TVs, radios and posters. One had to manually turn on the technology or go down a street to become a target of advertisements and commercials. Nowadays, people owning devices with Internet connection, are constantly bombarded with advertisements and commercials inciting them to buy products whenever and whatever activity they do online. On any website that you decide to browse, most likely there will be ads waiting to be clicked on. There can be ads triggering a safety need, such as buying a new home, or those promoting a product that will fulfill our self-actualization needs. However, very often we fall into the trap of buying goods that are not immediately necessary for us but because they trigger certain needs, we might still want to purchase them. With the example of Versace's fragrance Eros, we see that its advertisements trigger the consumer's social needs of being loved, accepted and appreciated by others, as explained in Maslow's Hierarchy of Needs pyramid. Maslow's theory can also be applied for products being advertised on e-commerce sites such as Amazon.

Figure 3: *Maslow's Hierarchy of Needs pyramid*



Source: Stanovic, 2022, based on data published by Poston, 2009.

As discussed in chapter 1, Amazon is an E-commerce company with many benefits for the consumers, it is also part of what we refer to as GAFAM (Google, Apple, Facebook, Amazon and Microsoft). When one shops on the website and clicks on a specific product, Amazon immediately lists numerous other products that might be similar or that are complementary to the product that the customer is already considering buying. The online company might not have advertisements from other companies on their website but they put forward many other products that are found on the website to trigger the needs of the customer. Very often, those trigger less important needs which are found at the top of Maslow's Hierarchy of Needs (such as Esteem or Self-actualization needs) (Poston 2009). With the rise of the Internet, marketing professionals were able to more easily reach their consumers and promote through various ways products to be bought. It has been harder to resist the temptations of buying goods that one might not actually need.

In chapter 2, we have discussed the increased use of e-commerce by users in the last few years and the categories in which they buy the most goods such as “fashion & beauty,” “travel, mobility, & accommodation” and “toys, diy & hobbies” have led users to overall consume more (Kemp 2021). Based on Michael Power’s theory, and on the principle that “people often buy products not for what they do, but for what they mean,” the consumers therefore often choose “the brand that has an image (or even a personality!) consistent with our underlying needs” (Solomon 2017, 40).

However, “consumers increasingly pay more attention to environmental issues, and many even say they will pay more for products that manufacturers produce under ethical conditions (e.g., in humane workplaces and without harmful chemicals)” and therefore buy green products (Solomon 2017, 76). Despite good intentions, there is still a “disconnect between consumers’ attitudes and their actual behavior” in buying “green” (Solomon 2017, 76). One of the reasons for this reluctance is the price. Indeed, many green products cost more because of their ingredients and their transportation, as “they are sold in smaller volumes than the big brands” (Solomon 2017, 76). Furthermore, consumers are more reluctant to buy eco-friendly products because of “Greenwashing” which occurs “when companies make false or exaggerated claims about how environmentally friendly their products are (Solomon 2017, 76). Indeed, as a report has shown “more than 95 percent of consumer companies that market as “green” make misleading or inaccurate claims,” which raises consumers’ skepticism (Solomon 2017, 77). With the rise of the Internet, Greenwashing has become easier and can be seen on many websites or can happen even on social media. Thus, avoiding advertisements for goods becomes difficult for a connected buyer.

In our society, those who have been the most exposed to these constant advertisements are Generation Z, young people born between 1997 and 2012 (Dimock 2019).

However, there is no doubt that Generation Z is among the first to fight in order to save the planet to the point of even dragging States in Court for not taking proper action for the environment's protection (Pitron 2021, 21). At the same time as being a generation full of activists, Generation Z is also the generation that shops the most on e-commerces, plays video games, and watches TV or videos online (Pitron 2021, 21). There is therefore a paradox between wanting to act for the good of the planet and at the same time harming it by spending a lot of time online. Indeed, according to studies, Generation Z will be one of the primary actors to double Internet's electricity consumption (around 20% from worldwide production) as well as responsible for 7.5% of global emissions of greenhouse effect (Pitron 2021, 21). Gen Z is also the one most susceptible to all those constant influences around them.

Not only does spending too much time online directly damage the environment, but it also puts at risk users' wellbeing, especially those belonging to Generation Z. Excessive consumption habits can bring about change in the user's behavior. For instance, over a period of time users can and tend to form relationships with products which are similar to bonds users create with people, such as love, respect and even hate (Solomon 2017, 206). This phenomenon is known as the self-image congruence models which suggests that consumers choose products with attributes that match an aspect of the consumer's self, and is aesthetically pleasing to make the consumer feel better about themselves (Solomon 2017, 205). As discussed by A. Dwayne Ball and Lori H. Tasaki in "The Role and Measurement of Attachment in Consumer Behavior," from *Journal of Consumer Psychology* 1, no.2 1992, this brings the consumer to get "*attached* to an object to the extent [they] rely on it to maintain [their] self-concept" and to use this object as "security blanket when they reinforce [their] identities (quoted in Solomon 2017, 206). Moreover, consumers might buy goods in order to complete some part of themselves. As explained in *Symbolic Self-Completion*, published in 1982, by Robert A. Wicklund and Peter M. Gollwitzer, this is referred to as

Symbolic self-completion theory which “suggest that people who have incomplete self-definition tend to complete this identity when they acquire and display symbols they associate with that role” (quoted in Solomon 2017, 207). This dependency on objects, make the consumers more prone to “feelings of alienation, [or even] depression,” if something were to cause loss of their objects (Solomon 2017, 208).

Unfortunately, this isn’t the only negative consequence on consumer’s behavior. Many consumers struggle from consumption addiction which is a “physiological or psychological dependency on products or services, such as social media for instance (Solomon 2017, 79). Having an addiction in addition to being connected can also result in Phantom Vibration Syndrome, which “describes the tendency to habitually reach for your cell phone because you feel it vibrating, even if it is off or you are not even wearing it at the time” (Solomon 2017, 80). Social media addiction, however, has higher chances of affecting Gen Z as social media obsession usually brings on loneliness (AddictionCenter n.d.). Nearly 10% of Gen Z, also called “zoomers,” “have been diagnosed with severe major depression. Within that age group, 60% did not receive any mental health treatment” (AddictionCenter n.d.).

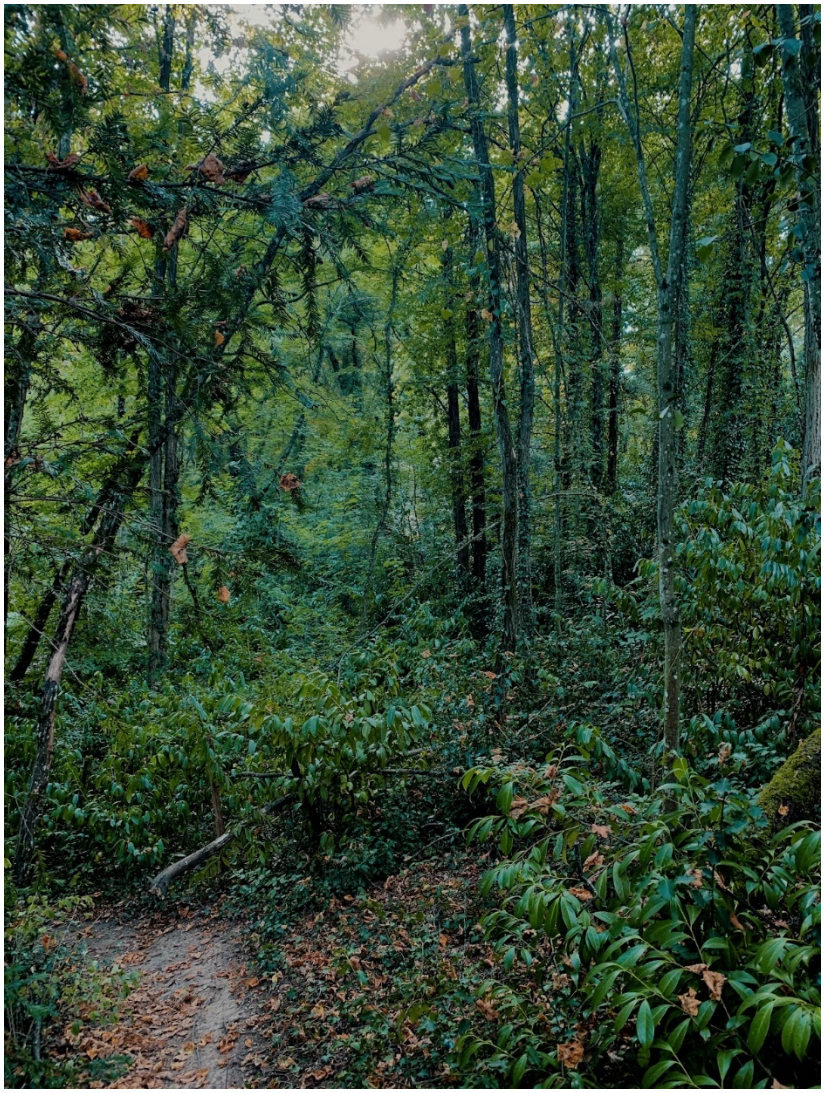
Besides social media addiction, Internet users are also prone to experience compulsive consumption, which can become more problematic now that consumerism is accessible online. A survey has shown that “one out of 20 U.S. adults is unable to control the buying of goods that he or she does not really want or need,” and that “compulsive shopping may be related to low self-esteem” (Solomon 2017, 80). This would explain consumers’ attachment to objects or goods that reinforce their identities, as explained above in the paper. Furthermore, this can lead to harmful consumer behavior such as “a behavior [that] is not done by choice,” or having “gratification derived from the behavior [that is] short-lived” to having users experiencing “strong feelings of regret or guilt afterward” (Solomon 2017, 80).

As we can see, spending extensive time online can put the users at risk of developing various destructive habits and affect their mental and physical well-being by developing an addiction either through social media platforms, or through shopping. Moreover, a "1950s, research suggests, [that] we have become more and more distanced from nature and its life-giving benefits, especially since the rise of the Internet (Kesebir and Kesebir 2017). Not only is it problematic to humans' wellbeing, but to the environment itself as a strong "connection to nature strongly predicts pro-environmental attitudes and behaviors" (Kesebir and Kesebir 2017). Indeed, since the late 1990s, the Internet "has been claiming more and more leisure time" (Kesebir and Kesebir 2017). Therefore, one can conclude that as members of society started to spend more of their leisure time online, this decreased the amount of time spent outdoors in nature and thus increased their chances to suffer from its lack. The increasing disconnection from nature "may be one of the reasons why people in wealthy countries report that they are less happy with each passing decade (Magdoff and Foster 2009, 78). This unhappiness leads many to try to find comfort in possessing material goods in the hope of filling this lack and throwing them in a cycle of excessive consumption and environmental pollution.

Spending much time online can affect the users' relationship with the environment and make them more prone to suffer from *Nature deficit syndrome*. As defined by Richard Louv, "[n]ature-deficit disorder describes the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses" (Louv 2018, 34). This syndrome can quickly become problematic as "it can even change human behavior in cities, which could ultimately affect their design, since long-standing studies show a relationship between the absence, or inaccessibility, of parks and open spaces with high crime rates, depression, and other urban maladies." (Louv 2018, 34). In his work, Louv manages to find a correlation between the relationship a person has to

nature and them suffering from a mental disease. Illnesses such as Attention Deficit/Hyperactivity Disorder, Autism Spectrum Disorder, Anxiety and Depression are all symptoms of Nature-deficit disorder. However, Nature-deficit disorder can also lead to physical symptoms such as obesity. Statistical studies have shown that “obesity in American society is on the rise, and has significantly grown during the past 30 years” (Dwyre 2015, 9) There was an increase of 11% of obese children ages 6-11 from 1980 to 2012 and obesity in children ages from 12-19 years increased 16% during that same period (Dwyre 2015, 9). This apparently was due to children spending more time in a sedentary position connected to the Internet, rather than playing outside in the woods.

Suffering from Nature-deficit disorder is not only harmful to the person suffering from it, but also has a negative effect on nature. Research has shown that “childhood experiences with nature were a key formative influence on today’s environmentalists” (Fahey 2010), implying that children suffering from Nature-deficit syndrome would not have created that bond with nature while playing outside. Therefore, it is in everyone’s interest to restore that connection with nature by spending more time outdoors instead of online.



Source: Stanovic, 2020.

However, a reconnection to nature is not only beneficial to children, but it is also helpful to adults. As Louv says in his book *The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder*, "there's no denying the benefits of the Internet. But electronic immersion, without a force to balance it, creates the hole in the boat – draining our ability to pay attention, to think clearly, to be productive and creative (Louv 2018, 49). As we increase our time spent online, the time spent outside in nature should also increase. However, as stated in this chapter, many people spend less time outdoors neglecting the benefits for example, from a simple walk in the park.

According to Richard Louv, nature makes us think more as “[w]hen truly present in nature, we do use all our senses at the same time, which is the optimum state of learning” (Louv 2018, 51). Moreover, “the natural world helps us perceive connections; it can also help us fine-tune knowledge” (Louv 2018, 52).

Environmental psychologists Rachel and Stephen Kaplan suggested in their study for the U.S. Forest Service and later research “that direct and indirect contact with nature can help with recovery from mental fatigue and the restoration of attention” (Louv 2018, 55). Furthermore, Kaplan also suggested “that nature simultaneously calms and focuses the mind, and at the same time offers a state that transcends relaxation, allowing the mind to detect patterns that it would otherwise miss” (Louv 2018, 56). However, as explained in previous chapters, we are living in an increasingly digitized world compared to thirty years ago. As neuroscientist Gary Small at UCLA says, “the pace of technological change is creating what he calls “brain gap” between generations” where the brain has been affected quickly (Louv 2018, 69-70). Therefore there needs to be a balance between nature and technology.

In this chapter, we have observed the reasons behind our increased consumerist habits especially since the rise of the Internet. A lot has to do with the psychology of the consumer and the desire to fulfill our needs and how these are used by sellers to make us consume even more. This chapter also observed how much the increased use of the Internet affects users' mental health, especially generation Z, by making them more prone to addictive behavior. The importance of spending time in nature is also discussed especially for children who are still growing and learning. Understanding and becoming more aware of the reasons behind our consumerist behavior can help us in being more conscious of our buying and spending habits. Moreover, we should re-establish a strong connection to nature which will help us lead healthier lives and get more involved in protecting the environment.

Chapter 4: A New Form of Communication and Action

In the following chapter we will be looking at communications theory and its effect on human's relation to the environment. Technologies and the Internet took on an important role in our daily habits. It also became a new form of communication, especially through social media platforms. By 2025, it is expected that each user will generate 5,000 digital interactions a day (Pitron 2021, 58). To live up to these expectations, companies feel like they need to constantly upgrade their interface into something more enjoyable, performant, and aesthetically sophisticated (Pitron 2021, 58). However, it is not only the interface that companies feel the need to upgrade but their technologies as well. Back in 1990, the telephone required roughly around 19 different resources for its production, nowadays producing a smartphone requires around 50 different primary materials such as brome, lithium and even gold (Pitron 2021, 59). The production of smartphones is responsible for close to half of the environmental footprint and about 80% of its energy expenditure during its life-cycle. As further discussed in chapters 2 and 3, over time we as a society have shifted many of our habits and activities online which increased society's screen time. This grand shift created modern forms of communication which we are all familiar with such as social media platforms.

In this chapter, we will discuss how environmentalism is tackled online and how it engages change regarding its degradation. Furthermore, we will discuss how social media increase our consumerist habits through influencers and advertisements. Social media "are not so much about media per se but more about being *social*" and they "connect people and their social activities in technological artifacts by facilitating information flows between users" (Zhong 2022, 13). It becomes a place where one expresses their identity as well as thoughts through their platform of choice.

As stated in previous chapters, Generation Z is very active and many people voice their opinions online concerning environmental degradation. Moreover, “digital technologies have been instrumental in the push toward collaborative activity,” and generation Z have “been exposed from an early age to software and websites that promote joint efforts” (Katz, et al. 2021, 17). It is therefore nothing uncommon for them to join online platforms and take part in environmental activism. One common action that many do is signing petitions online for a specific cause. Many believe that by signing a petition they are taking action on the issue being discussed, however this “new type of political and social action, or rather inaction” is referred to as “slacktivism” (McAnelly 2015, 38).

However, social media platforms can also be an effective tool to augment participation in environmental movements by communicating their goals, purpose, and plans to a wider audience (McAnelly 2015, 38-39). Online activism therefore needs to be translated into action and change (McAnelly 2015, 39). The issue with videos or articles about a movement can attract the users’ interests but often it is for a short period of time. Indeed, this happened with Al Gore’s Oscar 2006 documentary on climate change entitled “an Inconvenient Truth” (McAnelly 2015, 40). Following the release of the film, the United Nations’ Intergovernmental Panel On Climate Change (IPCC) released its fourth assessment report, “Climate Change: Impacts, Adaptation and Vulnerability,” in 2007, in which it warned with 96% certainty that climate change was a result of human activity” (quoted in McAnelly 2015). These events provoked a spike in climate related search terms such as “climate change” and “global warming” between “August 2006 and March 2007” (McAnelly 2015, 41). It is therefore important for environmental activism to continually happen to keep the topics trending online and to encourage action in real life.

There are various feelings towards the use of the Internet as a tool in environmental activism. Some argue that its use is beneficial, as it increases activists’ chances of

disseminating their views since it might be otherwise difficult for them to enter the mainstream media because of their strong views (Graf 2016, 26). Indeed, as studies have shown “Informants assessed the digital exchange as unique, firstly because it provided valuable insights, arguments and information, which were not to be found elsewhere, especially not in the mainstream media. Secondly, it was considered of key importance because it was the only possible way of divulging information generated by the groups of activists” (Graf 2016, 34).

However, some activists would argue the opposite, stating that the use of the Internet as a tool is more harmful than beneficial since its activities can be traced by governments and thus easily punished (Graf 2016). This fear can hold back activists in using digital technology in their fight for the betterment of the environment. Moreover, this minimal use of the Internet as a tool “influences the use of these digital technologies for the organization of dissent and, in practice, reduces their potential impact on democratization processes” (Graf 2016, 27).

The way environmental concerns are also discussed online is through what Graf refers to as “Camouflaged Arguments,” where activists attempt to present “their arguments in terms that may appeal to both the populace and mainstream media” (Graf 2016, 30). That way, the environmental issue is “associated with another frame of discourse in a process of transformation, which involves what might be termed discourse camouflage” (Graf 2016, 30). Through this technique, “the apparent importance of the matter dealt with” is increased (Graf 2016, 30). Mobile phones and connection to the Internet allows activists to be connected to each other and “informants to ‘be there’ even though the protests occur in geographically different locations, sometimes simultaneously, and often far apart. In this sense, activists are able to deploy spectacular physical demonstrations in isolated places, far from countries’ capitals, while still staying in contact with each other and being aware of each other’s

actions" (Graf 2016, 38). This accessibility enhanced the discourse about environmental issues and for users to be informed of protests or actions being taken for the issue discussed. Prior to the Internet, concerns about the environment were discussed through media such as radio, newspapers, or broadcast television, whereas nowadays "The Internet has converged traditional media with new media, which has produced an eclectic and multifaceted resource for consumers to get news" (Vandrick 2011, 4). Another advantage of the new media is that everyone can engage in the discussion by commenting, and not just receive information. When discussions about the environment are broadcasted on television, for instance, the person watching can only receive the information and not give their opinion in return. This makes the information about the environment "limited and subject to bias and inaccuracies" (Vandrick 2011, 6). There is no discussion. However, with the rise of the Internet and as we have discussed earlier in the chapter, and with social media, people can participate and exchange ideas (Vandrick 2011, 5).

The rise of the Internet allowed for more inclusive and open debates about the environment online. However, it also increased possible disinformation and misinformation about environmental issues especially those in regards to climate change. As a study on misinformation about climate change describes, there are six categories of actors. Those include "(a) scientists; (b) governments; (c) political and religious organizations including think tanks, foundations, and institutes; (d) industry, often oil or coal extraction, also steel, mining, and car industries; (e) media, particularly those with right-wing affiliations; and (f) the public, particularly politically conservative white males" (Treen et al. 2020, 4). As explained in the study, "philanthropic actors with a vested interest provide funding to a range of actors who produce climate change misinformation. This misinformation is then repeated and amplified through the "influencers echo chamber" of people in positions of power such as the media, politicians, and prominent bloggers, from where it reaches a wider audience"

(Treen et al. 2020, 4). Once the misinformation gets online, the "sharing and repetition behaviors of online social media users" makes it widely known (Treen et al. 2020, 4). The research further discussed the way in which misinformation about environmental issues can be diffused. Often it happens simply because of human behavior such as "belief systems, or confirmation bias, and social norms" and people often believe and trust information that comes from their social network which can also play a role in the spread of misinformation (Treen et al. 2020, 13). Furthermore, the misinformation often echoes in "echo chambers" which are "polarized communities around type of content" which results in what is known as "homophily" (Treen et al. 2020, 13). Homophily is being defined as "the ubiquitous tendency for humans to be linked to others who share their traits, observed in almost all (offline and online) social networks" (Treen et al. 2020, 6). The climate change research found a strong homophily, between "polarized "activist" and "skeptic" groups, evidence of echo chambers, and that ideologies, values and social norms play a role in people's attitudes toward climate change, and proposed that climate change is a belief system, suggesting that climate change debate on social media is highly susceptible to misinformation (Treen et al. 2020, 13).

However, research shows that human behavior is not the only factor involved in the spread of misinformation, but that social media platforms also play a role. This is due to the "algorithmic bias, the construct of the platforms, and malicious accounts such as bots, spammers and Astro-turfers" (Treen et al. 2020, 13). Misinformation about environmental issues can be detrimental as it "likely confused the climate change discourse, increased existing political polarization, led to political inaction, and stalled support for or led to rejection of mitigation policies" (Treen et al. 2020, 13).

While the online platforms can be an effective tool in inciting grassroot movements regarding environmental issues, they can paradoxically also increase consumerism on the part of users. Indeed, around "45% of global Internet users say that they turn to social networks at

least once per month when looking for information about products or services that they're thinking of buying" (Kemp 2021). Indeed, since the rise of social media such as Facebook and Instagram, many consumers go online to look "for information exchange and relationship building," and this has led to social media in recent years becoming a "significant advertising platform that enables brands to reach out to consumers via the internet" (Singh 2021, 232). Moreover, The Influencer Marketing Factory's Social Commerce report so far for 2022 show that "82% of [American] consumers have discovered a product on social media and purchased it directly on their phone through the app" while "76% had done so during the 2021 holiday season" (DIW 2022). From those who purchased online, "52% indicate they shop on social media once a week or more" and "15% said once a month" (DIW 2022). The following data demonstrate that it has became common to purchase directly through social media thus increasing our consumption of goods. Many advertisements are online, but many of the products are also being promoted by trends and especially by influencers. This gives rise to what is known as influencer marketing where "a brand [is] collaborating with an online influencer to market one of its products or services" this way the brand improves their recognition and ultimately sales (Werner 2022).

According to Cambridge Dictionary, there are two definitions for the word "influencer." The first definition refers to "someone who affects or changes the way that other people behave" (Cambridge University Press n.d.). The second definition refers to "a person who is paid by a company to show and describe its products and services on social media encouraging other people to buy them" (Cambridge University Press n.d.). Therefore, an influencer becomes almost a job of marketing, i.e., inciting users to consume specific products. Over the past few years. Influencer marketing has grown to "13.8 billion in 2021 and there "has been a 465% increase in searches for the phrase "influencer marketing on Google alone since 2016" (Werner 2022).

However, many believe they follow influencers on platforms because they like their content and the aesthetics of their pages or persona. And while the influencer might have started off their page as sharing content that they enjoy for fun, many start to advertise various products on their pages for money, entering the influencer marketing. Influencers also have “the power to affect the purchasing decisions of others because of his or her authority, knowledge, position, or relationship with his or her audience” (Geyser 2022). Previous studies have shown “that Consumers with positive attitudes towards an SMI [social media influencer] would generally intend to buy a product that SMI markets, which has also emerged in this study then most consumers who have positive attitudes towards the phenomenon also have took part or could take part in offers marketed by SMIs” (Singh 2021, 239). Therefore, if one appreciates the influencer, they are more likely to buy the product they promote. But what are they buying? Is it the experience from the product as discussed in previous chapters that the customers hope to obtain or just the material itself? Often users might get the product promoted by their influencers to feel closer to them or to complete their self-identity as discussed in chapter 3.

For that matter, it is also important that the influencer “identifie[s] with the product, so he or she will not recommend a product without any experience with it, or even absence of any knowledge of it” (Zak and Hasprova 2009, 2). A survey done by Stefan Zak and Maria Hasprova had the goal to “determine whether and how much influencers affect consumers in purchasing decisions” (Zak and Hasprova 2009, 3). The survey was “attended by 430 respondents” from “various age groups and regions” and the results were the following (Zak and Hasprova 2009, 3). 55% of respondents considered products “that promote influencers to be better than others” and 32.8% “of respondents considered products promoted by influencers to be of high quality (Zak and Hasprova 2009, 3). The survey’s results show how

indirectly, influencers might play a role in increasing users' consumerist habits as they influence them in purchasing products that might not be of necessity.

Indeed, influencers play an important role in the social commerce space which is referred to when a "consumer's shopping experience occurs directly on a social media platform" (Insider Intelligence 2021). The social commerce also includes actions such as "clicking links on a social network that lead to a retailer's product page with an immediate purchase option" (Insider Intelligence 2021). As already mentioned in this paper, influencers advertise different products for various companies who often reach out to them. Many social media platforms such as Instagram or Snapchat have tools built in the platform to connect users to stores selling the product being promoted by the influencer. For instance, Instagram has the option to create posts with direct links to different items which are embedded in the posts (Insider Intelligence 2021). Likewise, Snapchat has a feature known as a "shop button" on Instagram to get direct access to the products being promoted. According to some studies, about "67.9% of US marketers from companies with 100 employees or more will use influencer marketing this year [2021]" (Insider Intelligence 2021).

In addition to the social commerce space, there are different video trends and phenomena on social media platforms which incite users to buy products. On the application TikTok, for instance, there is a hashtag entitled "#tiktokmademebuyit" which has "over three billion views as users share affordable or life-changing products" (Giovanetti 2021). By accessing that hashtag, users are taken to a page where many different reviews of that same product are posted.

As further stated in Giovanetti's article, compared to all the advertisements on other social media platforms, "people considered those on TikTok to be 21 percent trendier" and thus more likely to buy goods being promoted on TikTok (Giovanetti 2021).

The mix of trends and influencers and their direct linkage to retail companies, definitely increase consumerism online and therefore contribute to the degradation of the environment.

Chapter 5: Mindful Use of the Internet for Betterment of the Environment

We have seen the many different ways, some more simple than others, of how our use of the Internet intertwines with having a healthy and prosperous environment. In the previous chapters of the research, we have seen that the increased use of the Internet affects and increases our consumption habits which, in turn, degrades the environment in various ways, from the moment those goods are manufactured to when they are thrown into the waste. The environmental impact issues raised by the consumers' online habits could be seen through three lenses: economical, psychological and political. This chapter will be discussing the political aspect and seek to identify some solutions. As discussed throughout this paper, the increased use of the Internet is inevitable, and some might even say that this is a good thing. However, it is important to keep in mind that the Internet remains only a tool created in our own image (Pitron 2021, 315). Therefore, if we decide to use it in a constructive way, it could help us connect with each other and educate people. Conversely, if we use our resources in a detrimental way and pollute for example, the digital will only accentuate this effect (Pitron 2021, 216).

As Naomi Klein explains in her book *This Changes Everything*, "core battle of ideas must be fought" (Klein 2014, 125). It is not enough to do small changes, even though they surely help, the core ideas of how our society and economy are running need to be addressed. In order for this to happen, we all need to work toward a common goal and put in place policies which will address environmental issues, especially those linked to growing consumption of the Internet.

Currently, there are many policies put in place to reduce carbon dioxide emissions from different sources, however, laws regulating the negative externalities of the Internet are not yet effective as their application is still controversial. Many people are unaware of the effects of the Internet on the environment and therefore there are not many policies put in place to directly tackle this problem. As we have seen in this research, advertisements seem to incite people to consume more, especially since the rise of the Internet reaching out and its influence on consumers has augmented and become targeted. In this chapter possible policies are discussed in hope to solve this rising issue.

Government

Firstly, there need to be policies addressed by the government, especially regarding online advertisements. As discussed throughout this research, online advertisements play a big role in making users buy more as they target our consumer habits, sometimes over stepping the boundaries of our privacy. Our Internet use history and behavior analytics are used to make purchase "recommendations" or return "select" (biased) search results when using online search engines. The issue here is that many advertisements are deceptive in order to make the product more appealing, and thus make us more likely to purchase the product. At the moment, the Federal Trade Commission Act states that an advertisement online is considered deceptive if it "misleads consumers" or "affects consumers' behavior or decisions about the product or service" being advertised (Federal Trade Commission 2000, 2). Following this policy, we could conclude that companies advertising their products through influencers on social media platforms are deceptive, as the company is marketing their products based on the users' likeability of the influencer promoting it and not on the actual product.

Moreover, it is stated in the Federal Trade Commission report that sellers online are held responsible for "claims they make about their products and services" and that "third

parties – such as advertising agencies or website designers and catalog marketers" might also be liable for redistributing the advertisement (Federal Trade Commission 2000, 2). While there might be laws in regards to advertisements online, such as on websites, those same laws cannot be applied to advertisements and marketing taking place on social media platforms. Social media platforms are protected by section 230 of the Communications Decency Act, which states that no social media platform's owner will be held accountable for anything said or posted from users of their platforms (Electronic Frontier Foundation n.d.). Therefore, not only are marketers and influencers free to advertise on social media platforms as they are not covered under Federal Trade Commission laws for the Internet, but they are also protected by the 230 Act itself. Because of this, platforms do not worry too much about filtering the content posted by users on their platforms promoting deceptive advertisements and tricking other users into buying various products. Meanwhile, companies and marketers have the freedom to advertise anything, as deceptive as it can be. Marketers will make the product more appealing to the consumers which in turn can incite them to consume more and therefore contribute to the environmental degradation.

Furthermore, the Federal Trade Commission report states that it is deceptive to promote a product stating that it has an important environmental benefit, and that such a claim should be avoided altogether. Indeed, as stated, "ads shouldn't imply significant environmental benefits if the benefit isn't significant" (Federal Trade Commission 2018, 7). For instance, there might be an advertisement for a recyclable trash bag. This ad might insinuate an important environmental benefit resulting from buying that reusable trash bag instead of a regular trash bag. However, the claim "recyclable" is deceptive since trash bags are not separated from other trash for recycling at an incinerator" (FTC 2018,7). This can lead to what is called *greenwashing*, and which refers to "the process of conveying a false impression or providing misleading information about how a company's products are more

environmentally sound" (Kenton 2021). Since in recent years, the demand for environmentally friendly products has been increasing, as discussed in chapter 3, the amount of greenwashing online has also been increasing. Furthermore, many companies nowadays seem to be going "green". Or at least this is what they say to the public. Indeed, clothing companies use the "trade-in" model, which consists of giving or trading-in something you own in exchange for a discount on a new product in the company's inventory (Kenton 2021). Some might perceive this as greenwashing as on the outside it seems like an environmentally sound action. However, others believe that this might incite people to consume even more than they normally would (Kenton 2021).

However, this exchange can actually be a "green" action for the planet for "highly durable products, like jeans, suits and items from brands known for quality, like Patagonia," as their prices are high because of their quality (Kenton 2021). It all depends if the traded-in items are subsequently recycled – in which case there is an environmental benefit, or they are disposed of in which case there is no environmental benefit and the whole scheme looks more like an incitement to overconsumption. Now, as discussed in chapter 1, there is a growing use of online shopping through e-commerce companies such as Amazon where one can practically buy anything for low prices. Moreover, many social media platforms offer to different sellers the opportunity to engage in the market with their users, for example, to sell items or accept payments in their online store.

Perhaps, to discourage deceptive advertising, the policies implemented by the Federal Trade Commission about advertisements on the Internet could be extended to social media platforms. For that to happen, Act 230 should be amended to differentiate between protections given to individuals expressing their opinions on social platforms and commercial selling. Indeed, if the Act 230 is amended, then there would not be so many loopholes for deceptive advertisements online. Furthermore, there could be policies regarding how much

one could buy online, to discourage users from spending unnecessary amounts of money and accumulating goods due to the Internet. This could be similar to the maximum daily withdrawal limit of bank ATM cash cards.

Policies regarding how many advertisements a platform can have a day could also be considered.

Applications Infrastructure

Policies addressing the physical impact on the environment from our activities online should be implemented. For example, infrastructures of online services could be redesigned to save the amount of electrical energy they use or quantity of materials that go into the production of Internet hardware such as servers, cables and antennas. Redesigning how some applications such as e-mails work could also be beneficial. For example, a useful feature could be for email programs to automatically delete all spam emails. This would free up computer resources and might reduce the pace of hardware upgrades, thus decreasing electronic waste. The users could also just generally be more conscious of the environmental impact of activities online such as searches, emails or website surfing and use them only when necessary. Moreover, as stated in MacKinnon's book "instead of autoplay, for example, apps could have autoclose features, or be required to allow people to choose, during set-up, maximum amounts of time they want to use them" (MacKinnon 2021, 398-99). In short, the temptation of users to consume more of the applications or products which affect the environment, would be decreased.

It is also important to note that "[e]lectrical demand from digital infrastructure and our devices has been growing at about 7 percent a year globally, more than twice as fast as the rate of economic growth" (MacKinnon 2021, 396). To fight the issue of climate change resulting from the Internet's effects, we would need not only "to produce enough renewable electricity to replace nearly all the energy we currently pump into our digital lives, but more

and more in the future" (MacKinnon 2021, 396). To reduce this effect, the demand for Internet, according to Kelly Widdicks, would need to be curtailed (MacKinnon 2021, 396). This could be achieved if for example, we stopped overnight shopping for materials goods. Indeed, if we stopped for just one night, "the market shrinks for upgraded phones and devices, new Internet-connected lights and showers and toasters and cars, and the data consumed through online shopping itself" (MacKinnon 2021, 397). Perhaps, an online policy could be introduced where for a day or two in the week, all purchases online are stopped during the night, and then resumed later the next day.

Industries/Companies

Thirdly, there could be a price assigned to the negative externalities from the production of material goods. For instance, there could be policies on assigning a "climate pollution price" such as "charging a tax on carbon emissions, in order to make industries and shoppers pay something closer to the true cost of the fossil fuels burned up for their benefit" (MacKinnon 2021, 447). An approach similar to this one could be used for other natural resources, for example cotton for t-shirts. For instance, organic cotton, grown in ways that regenerate rather than deplete the soil, would cost the same or less than a cotton raised with fertilizers and pesticides" (MacKinnon 2021, 447). Promoting the buying of organic cotton t-shirts would be more profitable than t-shirts with a big ecological footprint. Same could be applied for "rare earth minerals found in our digital devices" (MacKinnon 2021, 447). If the value of a phone included "the cost of the land and waterways ruined to produce them, then your phone would be made to be repaired or updated, not discarded and replaced every two years" (MacKinnon 2021, 448). This change would thus decrease the accumulation of E-waste, which we have seen in this research is a considerable issue contributing to environmental degradation. Similarly, as MacKinnon explains, "if the right to cut down trees came at a higher price, wooden shelves would be built to last rather than be thrown away and

the wooden frames of demolished houses would never end up in a landfill" (MacKinnon 2021, 447).

Many such changes could be put in place according to Mackinnon, such as lifespan labeling on products which would encourage "product durability; new tax regimes and regulations that favor repair over disposability; job-sharing programs and shorter work days or work weeks could keep people employed in a slower, smaller economy. (MacKinnon 2021, 449).

As discussed in Chapter 1, planned obsolescence is a process that is being more adopted by many technology industries over the years. Not only does this process leave the consumer with no other choice but to buy replacement products more often, but it also contributes to the increasing amount of e-waste. At the moment, a couple of countries in Europe are taking action to reduce planned obsolescence. For instance, in France, a bill was prepared by the French Senate "regarding consumers' rights that would extend the minimum lifetime of electronic items and establish a minimum three-year guarantee or five-year guarantee" (HG n.d.). Moreover, France put in place a law called "Hammon Law," which "fines manufacturers that fail to disclose the lifespan of their products to customers" (Matthews 2018). Similar to France, the German Green Party wants manufacturers to sell products to "consumers with instructions for repairing the products as needed and keeping spare parts available for purchase" (Matthews 2018).

Such action would encourage consumers to try to fix devices rather than spend money on buying a new one. This would also help local service and repair shops, many of which are small enterprises. If, however, "repairs are not possible due to a lack of spare parts, the product labeling must clearly indicate that, allowing consumers to make decisions before their purchases" (Matthews 2018). While countries in Europe are taking some initiatives to combat planned obsolesce, in the United Stated there are "no currently national laws that

prohibit planned obsolesce" (HG n.d.). Nonetheless, "the Consumer Product Safety Commission does have the power to issue durability standards if it chooses to exercise it." (HG n.d.).

To solve this issue, legislation regarding planned obsolescence needs to be put in place in the United States as well. For instance, there could be legislation requiring technology companies to publish a service manual for their products, as suggested in France. Indeed, as discussed in Chapter 1, service manuals for cars are more often available to the public. However, having a service manual for all technology products, such as smartphones, would allow customers to repair their own devices instead of having to buy a new one. In many cases it would be less expensive for a customer to repair their devices locally, and thus help support local enterprises, than sending it back to the manufacturer for repair. Moreover, legislation could mandate that companies have a longer minimum guarantee period such as five years or longer for parts and labor. Such legislation would encourage companies to manufacture better quality products and diminish planned obsolescence.

Furthermore, a legislation mandating software developers to design software programs compatible with older operating systems would eliminate the need for consumers to continually buy newer computer equipment that can work with the latest versions of Windows or Mac operating systems which typically require more random access memory and faster processing chips. This would save consumers money and reduce the amount of E-waste.

Another legislation could require computer manufacturers to offer PCs or laptops with free and open source operating systems, such as Linux. Linux is a community-based operating system with related productivity software whose source code is free and "open" for users to utilize or modify. There are no license fees or royalties, and everybody is free to develop new software applications or improve the existing ones providing they are not sold.

Although perhaps not as sophisticated as Windows or MAC based applications, Linux has performant software applications in word processing, spreadsheet calculations, presentations, graphics and video editors, music players and many others. Unfortunately, it is rarely if ever seen pre-installed on computers and laptops available for sale in shops or on Amazon. It is interesting to note that usually Linux machines are more difficult to get "infected" with a virus. Finally, Linux operating system and software applications require comparatively modest computing resources and have often been installed in recycled computers distributed to users in developing countries.

This way, Linux "helps to bridge the digital divide and extend the life of hardware, making it an eco-friendly choice for an operating system" as it adds life to aging hardware (Watkins 2022). Moreover, Linux-based computers are known to start up quicker and also consume overall less power (Watkins 2022).

Public Education

There need to be policies in rebuilding the lost connection to nature. As we have discussed in chapter 3 of this research paper, more people are spending more time online and slowly over the years, losing their connection to nature. This loss of connection puts users increasingly at risk for worsening mental and physical health and more prone to addictive consumerist behaviors such as shopping addiction. We have also seen that many people, especially the younger generation are more susceptible to, or already suffer from Nature-deficit syndrome. In this regard, policies could be put in place to require schools to provide adequate facilities and encourage kids playing outdoors. In addition, schools could be encouraged to organize field trips in nature and offer courses where students would learn hands-on about nature and its functioning. Another solution would be to build greener communities, more parks in cities, and perhaps have a green space near educational institutions. As concluded in chapter 3, spending time in nature as a child is vital to growing

a connection to it and being able to take care of it later on as an adult. Moreover, if children are encouraged, especially at school, to be outside, they would become more aware of their ecological footprint and take the necessary precautions for their online behavior. The educational institutions could also implement in their curriculum hands-on learning classes in nature or close to it for institutions placed in the city. An education regarding the environment and our impact on it, including digital should be required from first grade to college level.

As we have seen in this chapter, a couple of legislations and laws could be put in place in order to take conscious action forward, but there should also be a change in the population's mindset. As Aja Barber describes in her book, *Consumed: The Need for Collective Change: Colonialism, Climate Change, and Consumerism*, "[s]ustainability in its purest form is being sustainable with that which you already own" (Barber 2021, 347). Being sustainable and conscious of what we already own, could help us step back from consumerism, especially over the Internet. Moreover, the mindset of sustainability can be applied with respect to our habits towards the Internet and the technology that accompanies it. For example, "[i]t's making your stuff last by taking care of it and using it properly" but also "questioning whether you actually need a new dress [product or even device] or if you want a new dress [product or device]" (Barber 2021, 347). In chapter 3, we discussed the psychology behind our consumerist habits and how these have been accentuated with the rise of the Internet. One reason for our growing purchase of goods discussed in the chapter, was our need to fulfill something that we were missing, and creating attachment to the purchase of certain goods. Society would need to shift their mindset as Barber would say, by "thinking about whether you're "poor" or whether society's subliminal messages have made you feel lesser in order to lure you into the spend cycle because it has invalidated you and told you that your worth is only to be found externally through consumption, and not that you are

valid and valuable in the first place" (Barber 2021, 348). The key here would be to detach ourselves from finding value in goods.

Society just needs to buy less in general. Easier said than done of course, but there are numerous small ways in which we could get closer to living with a decreased level of consumerism. One way would be to be conscious of the purchase, to make sure that the things that one buys serve their purpose and avoid buying to numb our feelings. Another small change would be to repair as much as possible instead of just throwing things away and buying new ones. For instance, if the screen of a phone is broken, one should attempt to repair it instead of buying a new phone altogether. As J.B MacKinnon explains in her book, perhaps "consumerism is hurting you financially, cluttering your life with things you don't need or love, using up time and attention that you could put to better use, or contributing to planet-wide ecological crises that you care about deeply" (MacKinnon 2021, 443).

This thesis attempts to show a correlation between the increased use of the Internet, in the twenty-first century, which accentuated consumerism, and thus is negatively affecting the environment. The idea was to demonstrate that there is no coincidence that we live in a very digitalized world and that we consume much more than society had in the past. Moreover, many consequences which degrade the environment in some ways have resulted from the increased use of the Internet. From the use alone, which contributes to GHG, to its influence on markets and consumerism of the user through targeted advertisements. This thesis also demonstrated how much waste results from the different technologies used to access the Internet, but also the energy that is consumed through all of these actions. Thus, we can see that the problem is more complex than one could have imagined, and therefore there is not a simple solution to it. Rather, a general shift in how society functions and thinks should happen and that can happen through bringing awareness, especially through education and data.

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