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Innovative scan app as a means to overcome counterfeit in the sneaker market

Studying the degree to which the Generation Z would adopt an innovative sneakers scan app to overcome the counterfeit

Jules Bernard

Alan Frignani

jamk | Jyväskylän ammattikorkeakoulu
University of Applied Sciences

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Description

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Abstract

We can see more and more young people with pairs of sneakers. This market has become global very quickly. In recent years, thanks to social networks or online sales giants, many counterfeit sneakers have emerged. Knowing how to differentiate fake sneakers from legit ones is now complicated and requires a high level of expertise to differentiate the real from the fake. This rise of the streetwear industry can also be an opportunity to rethink the sneaker market through an innovative application. To help consumers improve their expertise on the origin of pairs of sneakers, a tool would be interesting. The objective of this empirical study is to investigate how interested Generation Z would be in a scan application that would facilitate expertise in identifying the authenticity of sneakers. The research approach of this study is a deductive approach with mixed methods. The qualitative and quantitative data that we will use were collected through the Jaxber application via a survey. The panel of responses consisted of 32 young people from generation Z. The responses to the survey were generally positive and the participants were quite interested in the presentation of our app-idea. They also expressed their willingness to adopt this style of app to support innovation in sneakers. The app was welcomed as an innovative app idea that would allow sneaker fans to gain expertise through this authenticity detection tool. Further research on this topic could be conducted by deepening, diversifying, and broadening the panel of Generation Z individuals. This would potentially allow us to understand what might motivate users of this application to overcome the problems of the fake sneaker industry.

Keywords/tags (subjects)

Fake industry, Generation Z, Experience design, User eXperience

Miscellaneous (Confidential information)

For example, the confidentiality marking of the thesis appendix, see Project Reporting Instructions, section 4.1.2

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1 Introduction

1.1 Background, motivation and purpose

The last decade has seen a great evolution in the way we perceive and wear sneakers. Indeed, the wearing of trainers has become more common at work and at formal events and is now the norm for Generation Z. The global market for the sneaker industry, with the rise of social networks and our ultra-connected world, has become exponential and represents an enormous economy. In 2020, it was worth $79 billion and is expected to reach $120 billion by 2026 (Braithwait, 2021). Initially intended for the sports domain through street style, sneakers have reached such popularity that they have also conquered the luxury market, making footwear the best-selling category in the latter (Hypebeast, 2019). All the high fashion brands, from Gucci to Balenciaga, have adapted to this new craze and are setting the pace in the luxury market by offering sneaker models.
The gains of the sneaker market seem limitless as it is similar to bitcoin speculation (JI-YOEN & Sarah, 2021). Indeed, the sneaker resale system allows items marketed in limited numbers by brands to increase in value according to their popularity in the manner of crypto currencies such as bitcoin. This resale system can reach mind-boggling dimensions and prices. For example, when LIDL put a pair of limited-edition trainers on sale, the initial price was 12.99 euros, but they sold for over 1,000 euros on the internet. The rarity and limited collections of items lead to their resale on specialized websites. Some people no longer buy sneakers to wear them but only to sell them at a higher price and make a considerable profit. This new market is called the "secondary market". This market is a peer-to-peer market. All these elements make sneakers true cultural icons of our time and the perfect embodiment of globalization: the same product bought and worn all over the world. The success of the sneaker business inevitably leads to the success of another business that correlates directly with it: the counterfeiting of sneakers. It is almost inevitable to avoid counterfeiting such successful products. Sneakers, with their simplicity of manufacture and profitability, are not an exception and are suffering from the consequences of their immense popularity. They are at the top of the 460 billion euros a year global counterfeit market, accounting for 22% of it, or 102.96 billion euros (OECD, 2019). Counterfeiters adapt to current trends and flood the market with counterfeits, taking advantage of the current business model. The overabundance of releases, limited editions and exorbitant prices of some articles push some consumers to consciously

buy counterfeits, with more than 60% of counterfeit purchases being voluntary. This results in huge losses of revenue for brands and job losses for their workers. Brands are therefore obliged to counter-attack by promoting the authenticity of their products. Counterfeits are a real nuisance and a real poison for brands and consumers wishing to acquire authentic products. The rise of social networks in which Generation Z is immersed amplifies this phenomenon. Instagram, for example, had around 1.074 billion users in 2021 (Moshin, 2021), which represents a huge market. More than 50,000 Instagram accounts are said to be dedicated to the sale of fake items (Lieber, 2019). It is almost impossible to stop this system due to the ease of opening an account and the difficulty of tracing the holders of these accounts.

We propose a solution to overcome this fake industry for consumers through the creation of an innovative application that would allow people to identify, thanks to a scan, if a pair of sneakers is authentic or not. This would be a real added value for the sneaker ecosystem, which is currently suffering from an invasion of fakes, whose quality is improving. It would relieve the sneaker industry of the weight of the fake industry which weighs heavily on the economy of this ecosystem. An app-idea would help to quickly differentiate the authentic from the counterfeit. The authors of this thesis have more than 7 years of experience in the field of buying and selling sneakers. They themselves have been victims of the fake industry by buying some fake items at official prices. The authors are interested in understanding how to fight counterfeiting.

Therefore, the purpose of this research study is to consider whether an innovative scan application would be a way to curb the fake industry or even make it disappear. Our investigation is to consider the extent to which consumers would accept an innovative scan application to overcome the fake industry. The focus is on Generation Z as we assume that they are more adept at embracing new technologies and that they are the main target of the sneaker industry market and therefore for counterfeit sneakers. The authors believe that exploring the measures that could be implemented through an innovative application could help consumers overcome the counterfeit industry and avoid being ripped off. The potential uptake of this type of innovative application with a scan still needs to be measured, which is one of the objectives of this study. This should provide new insights into the appeal and usefulness of this new system to Generation Z.

1.2 Research objectives, questions and approach

The purpose of this study is to explore whether an innovative scan application would help consumers avoid counterfeit sneakers. The objectives of this investigation are to bring together knowledge from existing theories and previous empirical studies to: (i) Exploring different means to overcome the counterfeiting industry; (ii) Determine how UX is affected by the UX factors; and (iii) Determine how the adoption of an app-idea is impacted.

For this investigation we have one main research question and two sub-questions:

- Q1 To which degree would Generation Z adopt an innovative scan application to overcome the fake industry?
    - Q1.1 What factors impact the degree of UX satisfaction?
    - Q1.2 What factors impact the intention to adopt?

This study is carried out in applying a deductive approach in the context of the innovation management course during the autumn semester of 2020.

1.3 Thesis structure

Our thesis is composed of six chapters. The first one, the introduction chapter presents the background, motivation, the research objectives, questions and approach. The second chapter introduces the main concepts from the previous work and existing theories, to collect and discuss existing knowledge that helps us to elaborate the research framework. The third chapter details the research design while in the fourth chapter, we present the data collected through a bipolar survey carried out on Jaxber and analyse quantitative and qualitative data. In the fifth chapter, we conclude from the evidence gathered in the analysis of the results in relation to the initial objectives and research questions. Finally, in chapter 6, we present the future research to deepen the subject. (p. 6).

2 Literature review

2.1 Introduction

This chapter "literature review" is dedicated to presentation and discussion of the concepts related to our research topic. Based on a few keywords, we carried out a Google scholar search in order to identify previous studies and research works that have been carried out. Then, we selected the publications that seemed relevant to our research topic. Based on the previous work, we analyzed the definition of the fake counterfeit in general, then, like a funnel, we searched for the definition of counterfeit fashion and luxury counterfeit fashion, and finally arrived to the counterfeit sneakers. We decided to use the previous work to define the Generation Z because it represents the main targets of our app-idea. Identified relevant publications are used to highlight the issues that our app-idea can help to overcome. We then looked at all the concepts related to the potential acceptability of our app-idea by its future users, namely: Experience Design, User Experience, Anticipated User Experience, Adoption Theories and Models. Finally, we discussed the Identified gaps and our research framework elaborated from the existing knowledge.

2.2 Counterfeit industry

A counterfeit product is defined by any goods that bears without authorization a trademark which is identical to a validly registered trademark, or which cannot be distinguished from such a trademark (Agreement on Trade-related Aspects of Intellectual Property Rights, 1994). Thus, counterfeiting is the manufacturing and distribution of counterfeit products. Since the 1970s, the counterfeiting industry has grown enormously (Bian & Veloutsou, 2005) "in terms of volume, sophistication, range of goods, and countries affected" (IACC, 2005) and is now worth several hundred billion dollars. It is difficult to estimate the real size of this market as it is illegal and therefore lacks reliable data (cf. identified gap). Some factories or manufacturers replicate their brand image and their products with a quality which is similar but at a lower price. It can be easily explained by the fact that they don't have costs due to marketing, research of designs or research of new technologies. The counterfeiting industry is a global economic plague, affecting most sectors such as music, software, luxury goods industries, pharmaceutical industry, automobile industry, fast moving consumer goods industry, and toys (Pollinger, 2008). It is a real scourge for companies and

states as it is responsible for loss of employees and sales, unpaid taxes that add up to astronomical sums. In addition to direct economic losses, legitimate businesses are affected by indirect non-economic losses such as loss of goodwill (Jacobs & al., 2001; Barnett, 2005; Wilke & Zaichkowsky, 1999; McDonald & Roberts, 1994; Nia & Lynne Zaichkowsky, 2000), loss of brand reputation and reduced brand equity (Nia & Zaichkowsky, 2000). Furthermore, many counterfeited brands experience loss of confidence from their customers (Gordon, 2002; Bloch & al., 1993; Barnett, 2005; Wilke & Zaichkowsky, 1999; Nia & Zaichkowsky, 2000; Gentry & al., 2006). Consumers are also victims of counterfeits. The direct impact of counterfeiting upon the individual consumer is the financial loss incurred from consumers that are disappointed to have paid a premium price for a fake item (Wall & Large, 2010). It can be much more serious: they can threaten their health and have serious consequences, sometimes even leading to death. This is evident in counterfeit medicines and food products, which are not subject to any standards or controls: addition of harmful chemicals, presence of antibiotic residues or metallic traces, appearance of moulds producing mycotoxins that can accumulate in the body, etc. "Counterfeit medications accounted for 10% of the global medicines market worldwide and up to 30% of medicines consumed in developing countries" (Wyld, 2008). These figures show the extent and the danger of this phenomenon. The danger is also hidden in counterfeit products that one would not initially suspect to be dangerous, such as toys. For example, counterfeit toys are frequently mixed with original products before being exported to their destination country. They may contain doses of chemicals or metal traces far more than those permitted by regulation, which poses a risk of poisoning to the children who use them. The exponential growth of the counterfeit industry can be explained by many factors. Firstly, the rise of globalization and the internet has largely contributed to this growth since 70% of counterfeit transactions happen online (Mooij, 2018). New technologies have enabled counterfeiters to become more professional, better organized and to improve their production techniques. They now have at their disposal sophisticated manufacturing machines that allow them to reproduce products easily with better quality and at minimal cost. Secondly, globalization makes supply chains more complex and the importance of subcontracting in the manufacturing processes of products, especially in East Asia and China, make it difficult to control the growing number of suppliers and subcontractors (ETH, 2007). According to the U.S. Chamber of Commerce’s Global Intellectual Property Center (2016), China represents more than 70% of global physical trade-related counterfeiting; it represents more than 285 billion USD. It's 12.5% of China's exports of goods and it represents 1.5% of its GDP (see figure 1).

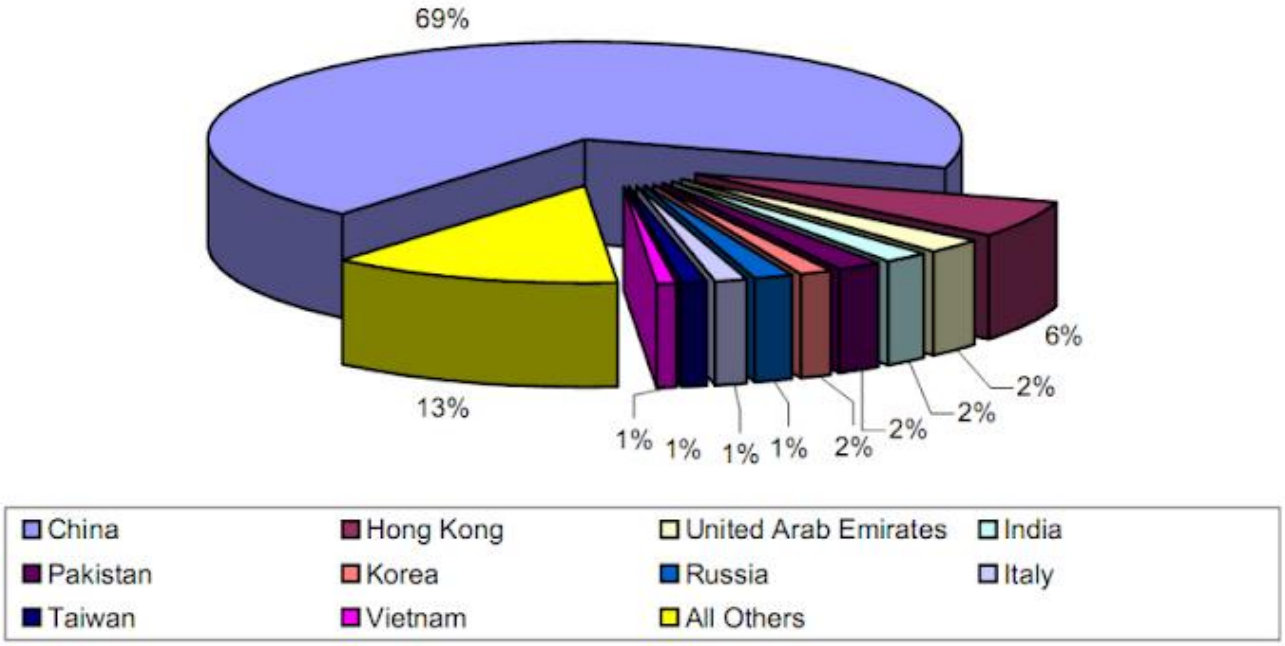

Figure 1: Countries of Origin of Counterfeit Products (2005)

One of the main factors favouring counterfeiting is that the criminal risk is quite low when engaging in this kind of activity and the profit is very high. It is indeed much less risky than drug trafficking "Motivated by enormous returns on investment from mark-ups that are potentially greater than drug trafficking" (Blakeney, 2009). Finally, the legal resources to inhibit counterfeiting and prosecute counterfeiters are weak. This is because intellectual property laws differ from country to country and are sometimes unclear.

2.2.1 Luxury and fashion counterfeit industry

It seems necessary to have a sectoral approach to counterfeiting. In relation to our thesis topic, we are particularly interested in two counterfeiting sectors: Fake Fashion and Fake Luxury, which it is important to dissociate before studying and understanding the challenges of the sneaker counterfeiting industry.

The textile sector is marked both by a very high degree of internationalization of production, subcontracted to low-wage countries, and by the rapid renewal of collections and models. For standard articles, 90% of fabrics are imported from China, India or the rest of the world (Lapalud, 1997).

A survey carried out by the European Commission among 50 textile manufacturers reveals that 25% to 30% of collections, which represent 70 to 80% of turnover, are the targets of counterfeiting (FABRE, 2018). As clothing is a means of expressing one's personality and belonging to groups, counterfeiters take advantage of this.

It is difficult to define what luxury is due to its subjective nature. However, 4 factors always come up when describing it: superior quality, rarity, durability and exclusivity (Achabou & Dekhili, 2015). According to Allérès (1991), there are three types of luxury: inaccessible luxury, which involves exceptional products and services; intermediate luxury, which mainly concerns the affluent class with high quality but less sophisticated products; and accessible luxury, which is addressed to the middle classes with products manufactured in larger series with a lower level of quality and rarity. However, with the evolution of societies, globalization and the rise of social networks and new technologies, luxury has become more democratic. The notion of "new luxury" is emerging. It is defined by "products and services that possess higher levels of quality, taste and aspiration than other products in the category but are not too expensive and therefore out of reach" (Silverstein & Fiske, 2003). Counterfeit luxury goods represent 60% - 70% of the total trades of counterfeits (Fontana & al., 2019) and between 5 to 7 percent of all world trade (see IACC, 2005: 5; Yar 2005: 2; Hetzer 2002: 306). 20% of shoe or clothing sales in Europe are counterfeit (Blakeney, 2009). Luxury is the main sector of counterfeiting in fashion. What makes luxury a very attractive target for counterfeit manufacturers is that, according to Veblen (2005) and his theory of “conspicuous consumption”, luxury goods are consumed in order to affirm a social position of the buyer. Indeed, it allows one to display belonging to 'an exclusive group' while generating “emotional benefits” as the acquisition of luxury goods “arouses strong physiological and psychological reactions such as pleasure” (Ladwein & Sanchez, 2018). The price elasticity of luxury goods is positive, the higher the price of the product, the higher the demand. This opposite tendency is also called the "Veblen effect" and in the literature one can also find the term "Veblen goods" for this style of product (Eaton & Eswaran, 2009). "Luxury goods, a rise in price increases their exclusivity, but also the consumer's perception of them as a status good. Conversely, as the price decreases, then so does their exclusivity, which, in turn, decreases the desire for them. The object of counterfeiting" (Wall & Large, 2010). The purpose of counterfeiting luxury goods is therefore to exploit consumers' desire for exclusivity in order to extract added value by selling them non-authentic and sometimes poor-quality products. Nevertheless, a distinction must be made between fashion design piracy, which refers to the misappropriation of the brand image to create new products, and counterfeit branded goods, which corresponds to the copying of branded products. Those are not subject to

the same rules and laws.

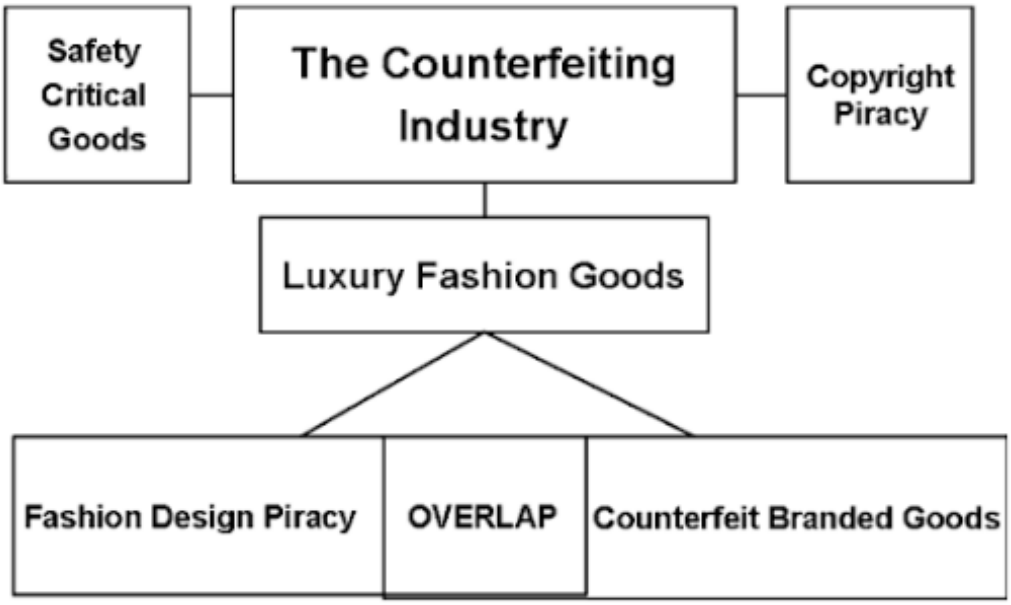

Figure 2: Mapping out counterfeiting. (Wall & Large, 2010)

Up to 3 million consumers may have bought a counterfeit item of the 'top ten' luxury brand names in the United Kingdom (Ledbury Research, 2007). Ledbury also reported that the top counterfeit luxury brands are Louis Vuitton, Gucci, Prada, Burberry, Tiffany, Chanel, Dior, Hermès, Cartier and Yves Saint-Laurent.

2.2.2 Counterfeit Sneakers

Sneakers are part of the fashion industry as they are one of the major pieces of outfits. They are also part of the luxury industry today as all the major luxury brands offer sneaker collections. While they can fetch exorbitant prices, their materials are not necessarily of the same high quality as the rest of the luxury goods. They have thus contributed to the democratization of luxury. Fake shoes, replicas, variants, counterfeits are familiar terms for everyone in modern-day sneaker culture. The popularity of sneakers boosted by social networks and stimulated by a young clientele makes them a very profitable business for counterfeiters.

There is few relevant literature and research specific to the sneaker counterfeiting industry. Faced with a lack of resources, we decided to rely on articles and sites that are well known and referenced by sneakerheads (someone who collects and does business with sneakers, a sneakerhead is also a sneaker connoisseur) like Hypebeast.com.

According to Vice News (2018), South-East Asia and especially China have become an institutional competence centre to produce fake sneakers. China also owns many factories of big brands like Nike or Adidas. Their intention here is to relocate the manufacturing process of products because labor is cheaper in China. However, as the manufacturing and distribution chains are relocated, their controls escape to the big companies because this makes access to materials and labor much easier for the counterfeiters. They also explain that the process of creating counterfeits is done in several stages starting with exchanges to try to bribe workers in official factories of big brands to get products out under the table (sketches, materials, or pairs of sneakers). According to Hypebeast.com (2020) businessmen who want to trade in counterfeits can bribe factory workers at major brands to gain access to information and products directly. The founder of Yeezy Mafia also explains that the suppliers are also located in China, so it is easy for counterfeiters to produce with the same materials as the originals by bribing them. The assembly in most counterfeit factories is also done with the same machines as the original factories. This advantage offers counterfeit producers the chance to anticipate the release of a product to the public by creating upstream stocks. Some counterfeiters sometimes rely on photos alone, usually leaks of rumored sneaker releases. An expert from "Vestiaire Collective" (2020) assures that in this case, the counterfeit will have a rather well-made exterior, with a catastrophic interior because the manufacturers have never had the pair in hand. According to Christophe, an experienced reseller and founder of retro-shop, the faster the manufacturers produce, the more profitable it will be. So, it's a race between the counterfeit factories, each of which has a "version" of the model. Derek Morrison, European director of Stock X, says that counterfeits improve over time and that the longer a sneaker is on the market, the better the copies become. So, it's a race between the counterfeit factories, each of which has a "version" of the model. All these parameters combined make it possible to produce near-perfect copies of sneakers (Thomas, Boudwin, Ye, 2018). “On the one hand we are talking about original products and fake products being manufactured in the same factory, with the same materials and functions, and on the other, of their trademarked brands only, splitting into fake and original only on the basis of a different retail price” (Lia Yoka, 2017). Charles Charly reports in 2017 that Flight Kickz produces quality fakes. So much so that many sneaker shops would be mistaken in a legit check saying the pair was real when the pair was fake. Rapids Crew has also proven

in 2021 that human verification is too inefficient and that in huge companies that see thousands of pairs of shoes every day it is difficult if not impossible not to make mistakes in the process of verifying the legitimacy of a pair of sneakers. (Rapids Crew, 2021). Subcontracting is therefore indirectly linked or even directly linked to counterfeiting (FABRE, 2018).

Almost all social media can be a place where you can find fake sneakers for examples: reddit, Instagram or Facebook. Instagram is one of the social networks where leaks of fake sneakers are most common and viral as many accounts are quick to share the leak without even checking the veracity of the photos and information they share (Pauwels, 2020). These social networks can also become a sales platform thanks to private messages or even directly through the sharing of links to websites. Drop shipping has also helped a lot in the propagation of fakes. Drop shippers used to act as intermediaries between customers and suppliers in China through e-commerce sites. More recently, sites such as Walmart and Amazon have allowed third parties to sell fakes on their websites.

Figure 3: A screenshot of the Walmart website showing counterfeit Yeezy Foam runners

According to the BusinessInsider.com website (2021), the famous Kanye West (Fondator of Yeezy) has filed a lawsuit against Walmart for letting third parties sell counterfeit Yeezy Foam runners. So,

we can see that big companies are taking steps to protect their footprint. During his speech at Columbia University in February 2017, the leading designer Virgil Abloh said "I love the knock-offs, it's the best return you can get. It's better than an article in Vogue. If what you're doing works to the point where someone else is profiting from it, that means it's really working. You're not taking anything away from me, you're just giving me extra publicity" however his opinion changes and he filed a series of lawsuits against counterfeit sellers a year later, explaining that they were harming his relationship with his collaborators and customers, as well as tainting his brand image and creating a loss of revenue. This event underlines the extent to which the fake industry is becoming a threat to the sneaker industry. There are several types of sneakers counterfeiting that play on intellectual property rights such as Bootlegs that are a special kind of counterfeit. It is the reappropriation of the brand image to make a different product. Bootlegs are most often of poor quality but sometimes some bootlegs become iconic and even highly coveted by collectors. The example of Bapesta is striking.

Figure 4: Comparison between a Bootleg on the left (Bapesta) and the original on the right (Nike Air Force 1)

2.3 Generation Z

Firstly, a generation is defined by Ollivier and Tanguy (2017) as *"a group of individuals who share, in a given economic and social context, the same history and who are marked for life by the initiating experiences lived during their youth (20 years)"*. They then establish the longevity of a generation according to the pace of historical, societal, technological, or natural change. This definition is borderless, since in our hyper-globalized world, behaviors are similar today. They remind us of the different generations that live together today: the Veterans born between 1928 and 1945; the Baby Boomers born between 1946 and 1964; Generation X born between 1965 and 1979; Generation Y born between 1980 and 1995; Generation Z born between 1996 and 2008.

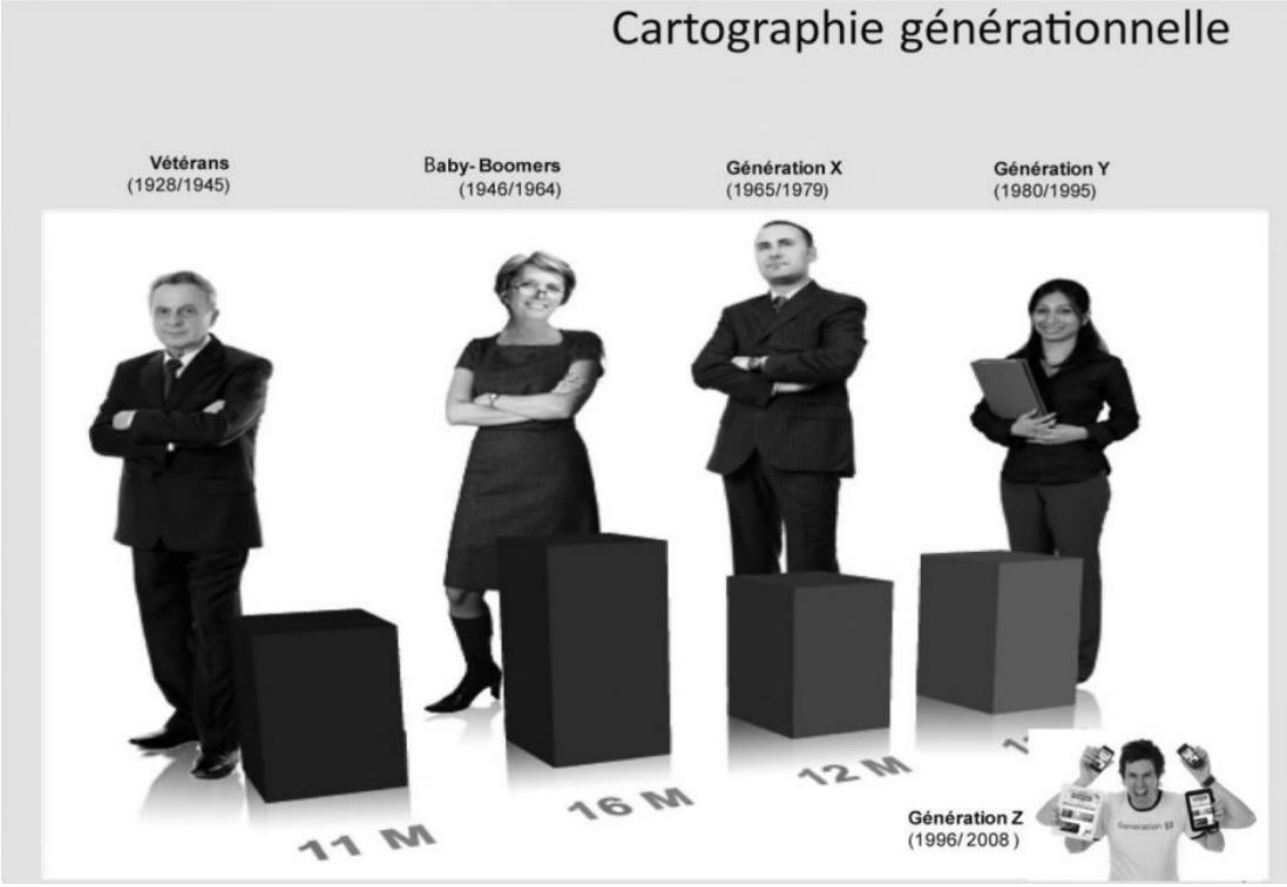

Figure 5: Intergenerational mapping (Ollivier & Tanguy, 2017)

Secondly, McCrindle (2014) presents different categories that describe how generations interact with new technologies or the digital world: Digital Observers, Digital Transactors, and Digital Integrators. Digital Observers have seen the beginning of digital technologies and then the digital world but were not born into it. These notions are new to them, and they are more reticent about new technologies. They are the veterans.

Digital Transactors embrace new technologies, even if they were not born with them. However, some do not integrate them into their lives. We can consider the X and baby boomer generations. The digital integrators were born with the new technologies and have lived their whole lives with them. Technology is an integral part of their lives in all areas. We are talking about generations Y and Z. The difference between Digital Integrators and Digital Transactors is that technology is fully integrated into the life of the integrators and has become almost indispensable, whereas Transactors see technology as an everyday tool that is put aside once it has been used. As technology is

integrated into the lives of the new generations, Y and Z, it can be assumed that this relationship to technology leads to finding solutions to their problems. This is especially true for generation Z who are also called digital natives because they can simultaneously create a document, edit it, post an Instagram photo while talking on their phone. Therefore, Generation Z will be more likely to accept and adopt new technologies as they are already in them. Thus, in addition to being the main market for the sneaker industry and its counterfeits, they are also the generation that will be more accepting of our application.

2.4 Experience Design

Experience Design is extremely important especially for an application as the user will still use it or not according to how he experienced it (Pallot & Pawar, 2012). The objective here is to have the best possible design experience to enable widespread adoption of the application.

The definition of design experience is very broad. According to Aarts and Marzano (2003) *"the practice of designing products, processes, services, events, and environments with a focus placed on the quality of the user experience and culturally relevant solutions, with less emphasis placed on in-creasing and improving functionality of the design".* The authors are trying to underline here how the user experience with the product should be the main feature of attention and should be the main axis to work on when designing an application for example. It should come before the design and the different features that the app can offer to the user. Indeed, they explain that these areas of improvement can affect the user's experience when using the product, but that the user's experience is based on what the user can test with the product.

According to Hassenzahl (2013), the design experience starts with the why, trying to articulate the needs and emotions, meanings, experiences involved in the activity. Only in this way it. Identify the capabilities (what) that provide the experience and the appropriate way to implement them (how). Design wants to experience. The why, what, and how come together, but in terms of why, need, and emotion. This leads to product pairs. The specificity of human experience. It results in products that can tell interesting stories through use or consumption.

Experience design is an iterative process consisting of four steps: (1) co-creation of innovative ideas, (2) exploration of alternative use scenarios, (3) experimentation with how the alternative solutions could properly support the use scenarios, and (4) evaluation of the use scenarios through UX quality measurement (Pallot & Pawar, 2012). These four steps are a process of identifying and evaluating possible values. The co-creation of the is a very important part as it allows the needs of the users to be met through consideration and adaptation of the UX for them. Exploring usage scenarios can be done through various techniques such as storytelling, short animations, storyboarding or teaser videos. Experiments consist of predicting what the user experience will be like from a version of the model based on usage scenarios and ideas. Evaluations are carried out using both quantitative and qualitative methods.

Figure 6: The Iterative Experience Design Process (Pallot & Pawar, 2012)

2.5 User Experience

Firstly, the word "User" is defined as a person who uses something. Experience is defined as knowledge acquired through interaction with an environment such as an activity or event. Experience is the body of knowledge that comes from practice and is thus opposed to theoretical knowledge.

When these terms are combined, user experience becomes a reference for a person to an interaction between him/her and a product or service that has already occurred and is remembered by that person. It will serve as an indication when a similar situation is encountered in the future. Indeed, if the interaction leads to a positive result, it will be remembered and reproduced in the future. On the contrary, if it leads to a negative outcome, it will be forgotten so as not to be repeated (Pallot & Pawar, 2012).

Agreeing on the previous studies, it is difficult to establish a general and unique definition of user experience. According to ISO (2009), user experience is "a person's perceptions and responses that result from the use and/or anticipated use of a product, system or service". Roto (2008) defines it as "A term that describes user's feelings towards a specific product, system, or object during and after interacting with it. Various aspects influence the feelings, such as user's expectations, the conditions in which the interaction takes place and the system's ability to serve user's current needs". Alben (1996) defines it as "All the aspects of how people use an interactive product: the way it feels in their hands, how well they understand how it works, how they feel about it while they are using it, how well it serves their purposes, and how well it fits into the entire context in which they are using it". Despite all these definitions, the various authors agree on the fact that user experience is to be differentiated from usability. Indeed, it goes beyond usability and the functionality of products since it integrates the feelings and emotions of users towards these products before or during the interaction (Allam, 2013). Usability is therefore an integral part of the user experience as it includes effectiveness and efficiency. Another statement common to all these definitions is the subjectivity of the user experience. Indeed, since we are no longer simply evaluating the effectiveness of a product but also the feelings that the user has before, during and after the interaction with the product and the system. The user experience becomes subjective as the motivations and expectations of the users play a determining role in it (Allam, 2013). Users' expectations are subjective because they are modified and defined by their previous experiences which can increase their levels (Kankainen, 2002).

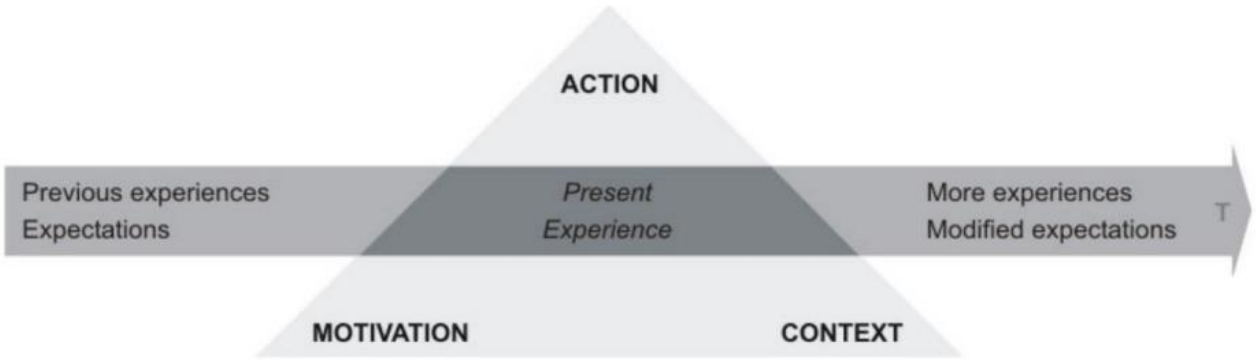

Figure 7: Conceptual Model of User Experience (Kankainen, 2002)

2.6 Anticipated User Experience

According to Pallot et AL (2020), the anticipated user experience allows project stakeholders to anticipate the degree of adoption users will have of the project. It allows them to refine and design the research on the project by establishing the positive experiences that they believe users will have. Indeed, in the anticipated user experience, future users are asked to imagine a desired product in such a way that it is perceived as a positive experience (Yogasara, 2014). The anticipated user experience therefore only involves a product, service or system concept imagined by the user. The user therefore feels fewer emotions than during the user experience, since he or she imagines the emotions he or she will feel when using the product but does not actually feel them. The main differences between the anticipated user experience and the user experience are therefore, according to Yogasara (2014), that the goals of the anticipated user experience are to design and anticipate, whereas the purpose of the user experience are to perceive and evaluate by testing real products.

2.7 Adoption Theories and Models

Recognising the needs and acceptance of users is the first step in launching a product or service, understanding them facilitates and directs their development. It goes without saying that determining user acceptance is necessary for the launch of a new technology such as an application. There are several theories and models that explain the adoption of technologies by users and the factors that determine its acceptance. These models and theories will serve as the theoretical

framework for this study as they mainly analyse the user's perception and intention of use. Acceptance is defined by Simon (2001) as "an antagonism to the term refusal and means the positive decision to use an innovation".

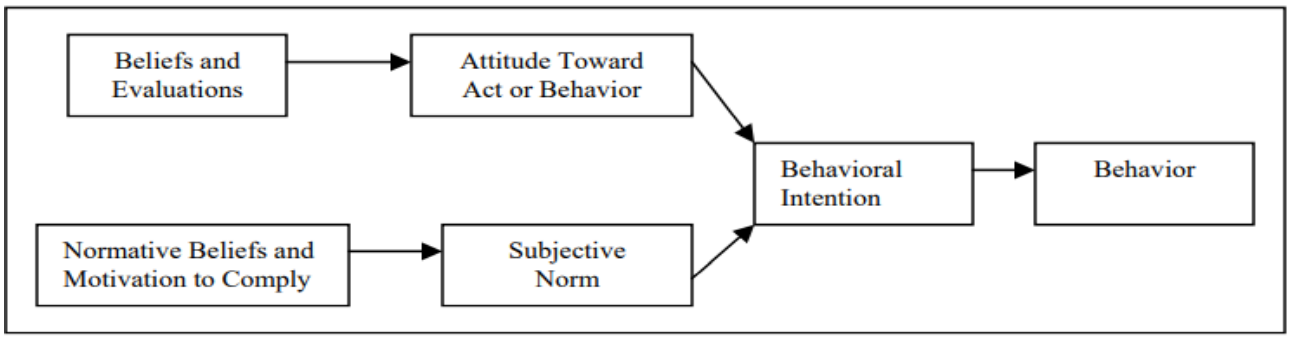

Figure 8: Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975)

The Theory of Reasoned Action (TRA) established in 1975 by Fishbein and Ajzen is a social psychology theory that explains an individual's behaviour according to 2 main factors: the attitude towards the behaviour and the subjective norms. A person's behavioural intention is determined by his attitude which is determined by his beliefs on the consequences of this behaviour, multiplied by his evaluation of these consequences and the subjective norms that are themselves determined by the normative beliefs of an individual and by his motivation to comply with the norms.

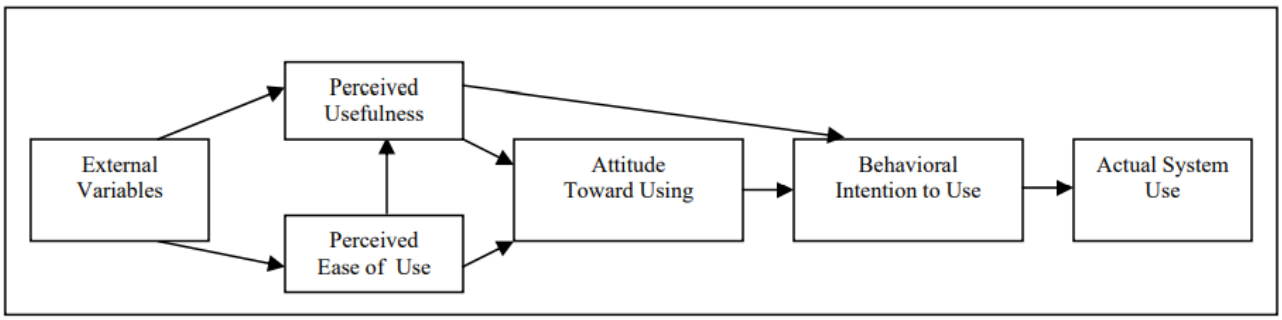

Figure 9: A conceptual model for technology acceptance (Davis, 1985)

The Technology Acceptance Model (TAM) based on the TRA and established by Davis in 1985 predicts the acceptance of a new technology or information system by users according to two main factors: perceived usefulness and perceived ease of use. Perceived usefulness is the degree to

which a person believes that using a technology will improve their performance. Perceived ease of use is defined by the degree to which an individual believes that the technology will be easy to use.

Based on the TRA, the TAM states that the use of a technology is determined by behavioural intention. However, this is determined by the person's attitude towards using the technology and by their perception of its usefulness. The TAM creates a link between perceived usefulness and perceived ease of use, which can also be equated with system design. Given two technologies with the same characteristics, a user will find the one that he finds easier to use more useful (Dillon & Morris, 1996).

Topolewski and AL create the UX-based adoption model, which is similar to TAM because like TAM, user experience analyses the intention to use. In both models, the design of the system affects the user experience and, of course, the user's intention to adopt. The UX-based adoption model, in addition to considering usefulness and ease of use, adds the properties of UX to cover three dimensions all composed of 2 facets, namely: Business which is composed of the economic and technological facets, Human which is composed of the emotional and cognitive facets, and Social which is composed of the empathic and interpersonal facets. Each UX facet is composed of several properties (Marc Pallot, 2019), (Figure 8). The analysis of this model makes it possible to know precisely which elements of the technology are appreciated or not, to what degree by the users and what could be improved in order to meet their needs and correspond to their expectations in its development phase. This more accurate model also provides a better understanding of the factors that influence the intention to use the technology.

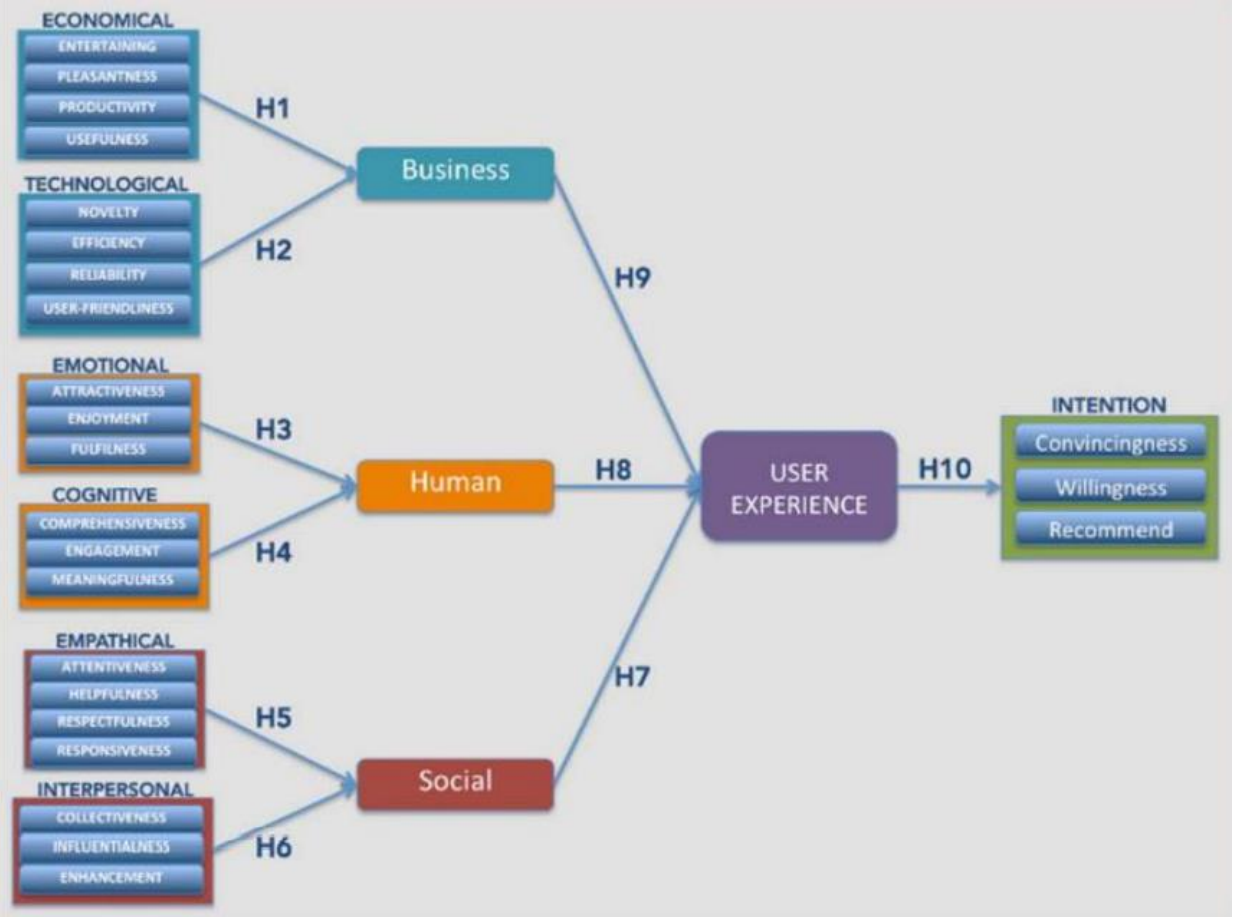

Figure 10: UX Model and Causal Effect on Adoption (Topolewski et al., 2019, 2020)

UX Property	*Description*
Entertaining	Degree to which the app entertains users
Pleasantness	Degree to which the app is pleasant to use
Productivity	Degree to which the app helps users to be more productive
Usefulness	Degree to which the app allows users to carry out specific tasks
Novelty	Degree to which the app is new to the user
Efficiency	Degree to which the app allows users to be efficient
Reliability	Degree to which the app is reliable
User-Friendliness	Degree to which the app is easy-to-use and intuitive enough
Attractiveness	Degree to which the app is visually attractive
Enjoyment	Degree to which the app is enjoyable
Fulfillment	Degree to which the app allows users to achieve properly a task
Comprehensive-ness	Degree to which the app allows users to understand others
Engagement	Degree to which the app allows users to engage in their task
Meaningfulness	Degree to which the app allows users to provide meaningful results
Attentiveness	Degree to which the app allows users to be attentive to others
Helpfulness	Degree to which the app allows users to help others
Respectfulness	Degree to which the app allows users to be respectful of others
Responsiveness	Degree to which the app allows users to be responsive to others
Collaborativeness	Degree to which the app allows users to collaborate with others
Communicative-ness	Degree to which the app allows users to communicate to others
Confidence	Degree to which the app allows users to trust others

Table 1: Description of UX properties

2.8 Identified Gap

The biggest identified gap we faced during our research work is the lack of information on the fake industry. This is due to the fact that this industry is part of the underground and illegal economy. As a result, there are few sources where one can find detailed explanations of how this industry works. Figures are also very hard to find. Most of the time the figures that can be found in older research are either estimates or seizures of counterfeit goods at customs.

There is a double asymmetry of information: for certain types of products such as clothing and luxury goods, some consumers knowingly buy counterfeit goods. Companies have an interest in launching advertising campaigns to defend their brand image. However, for other products such as medicines or foodstuffs, where counterfeit products can have a direct impact on the health of consumers, companies avoid providing information so as not to tarnish their brand image (FABRE, 2018). It is therefore difficult to find information on a specific industry of counterfeit consumer goods, and even more so for sneakers. Indeed, as sneakers are a recent concept, there are few scientific works and relevant publications dedicated to them. Some articles or media outlets manage to interview important players in this industry, but even they cannot estimate or give figures about the global fake sneaker market. Indeed, the number of accounts on social networks and sites selling sneakers varies and grows every day, making it very difficult to count and to identify them.

We also faced a problem with the survey. Indeed, the panel of respondents is sufficient for the qualitative analysis but too small for the quantitative. We would have needed at least 100 responses to our quantitative study to be at least representative. We also did not have a proper balance between genders, which may influence the responses. All respondents came from the same country. This is a problem because we could not collect data from respondents from other countries.

2.9 Research Framework

2.9.1 Present your app-idea

The Sneaker_Scan app provides an easy scan that allows people to see if a pair of trainers is authentic or not. This innovative application was thought out with the idea of making a process that wasn't before much easier. Through the interface, users have access to a function that uses their camera to take a picture and scan a pair of trainers. The aim of the application is to curb the counterfeiting industry, which has a negative social, environmental, and economic impact. The application is intended to be an easy-to-use and highly ergonomic interface for users, thanks to a developed UI/UX.

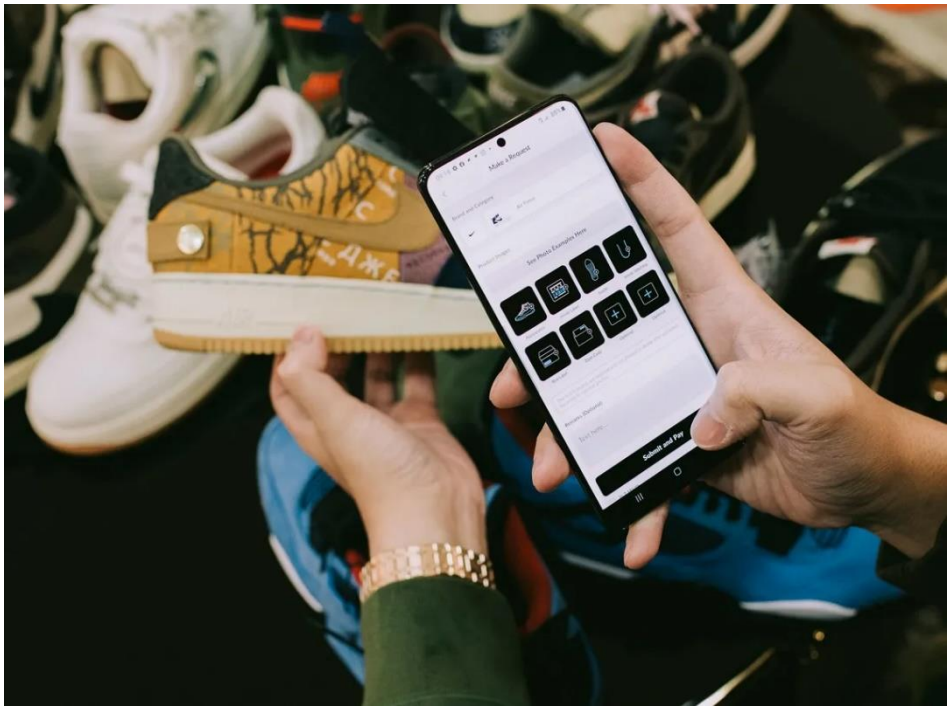

Figure 11: Potential UI/UX of the Sneaker_Scan app.

Value Dimension	Value Element	Justification
Emotional	Attractiveness	Potential users will experience an UX adapted to sneakers lover.
Social	Sustainability	Sneaker_Scan will provide a support to all legit check of sneakers.
Empathical	Responsiveness	Potential users will reinforce their knowledge about the disaster that cause the industry of counterfeiting in the social sector.
Economical	Productivity	The legit check of a sneaker can take few hours. The app makes it instantly. It a huge gain of time for users that make them more productive.
	Usefulness	The Sneaker_Scan benefit is the scan of sneakers that gives an analysis instantly.
Technological	Novelty	The app is an innovative app that doesn't exist yet.
	Efficiency	Sneaker_Scan provides a tool that allows users to be efficient and stop loosing time with legit check of sneakers that are made manually and are a long process.
	User-Friendliness	Sneaker_Scan will be easy-to-use and ergonomic

Table 2: Table of the value elements of the app Sneaker_Scan

2.9.2 Personalisation of the UX-based Adoption Model

In our study, UX facets and UX dimensions represent user expectations. UX, representing the perception of user satisfaction, has a direct impact on the "intention to adopt". This is defined by three different parameters, namely (i) "Convincing to adopt the app idea"; (ii) "Willingness to use the app idea when it is ready"; (iii) "Willingness to recommend the app idea to a colleague". These parameters are the causal effect on adoption and allow us to assess the degree of potential adoption of our application. We will thus observe different degrees of adoption potential. The scale of precision of the parameters of this model is lower than that of the TAM model, to better understand their potential impact on the adoption intention through the design of the UX facets and dimensions (Topolewski et al., 2020). The proposed model was therefore adapted to this specific application context to measure the potential degree of adoption of an application idea.
For this investigation, we focus on some particular properties that specifically fit this sneaker scan application. This App-Idea is targeting Generation Z, so we focus on the following UX properties:

Utility, Productivity, Reliability, Novelty, Comprehensiveness, Collectiveness, User-friendless, Willingness. Thus, we study the potential adoption of this Scan App-Idea by Generation Z, which is established by the Intention to Adopt.

3 Research methods and implementation

3.1 Research context

This empirical study was carried out after taking into account our innovative Management Track course at JAMK. The innovative application "Sneaker_App" was co-created during this course. The idea of a scan that can identify authentic sneakers came from different daily scrum in which the authors were able to raise ubiquitous problems in a sector linking their research topic and their passion.

3.2 Research design

During workshops in the innovation management track course, we came to the creation of several steps: first the implementation of an eXperience Design (XD) which is a non-negligible part of User-Centred Design (UCD) methods. The daily scrums allowed us to quickly build a table of value elements adapted to potential future users. Then the innovations Management Track course allowed us to create storytelling through storyboards. We then created a video teaser to identify all the features of our app-idea. The teaser highlighted its usefulness, the UI/UX potential of the app (cf. fig), concrete cases of the storytelling we had worked on, and an overview of the targets of our app. Finally, we presented our app-idea through a presentation of the value elements (see fig) and our teaser to a panel of participants (32 students). The participants then used the Jaxber application to give their opinion through a survey. The data collected with mixed methods allows a triangulation between qualitative and quantitative data.

The authors decided to follow the “onion” research design scheme proposed by Saunders & al. (2009, p.108).

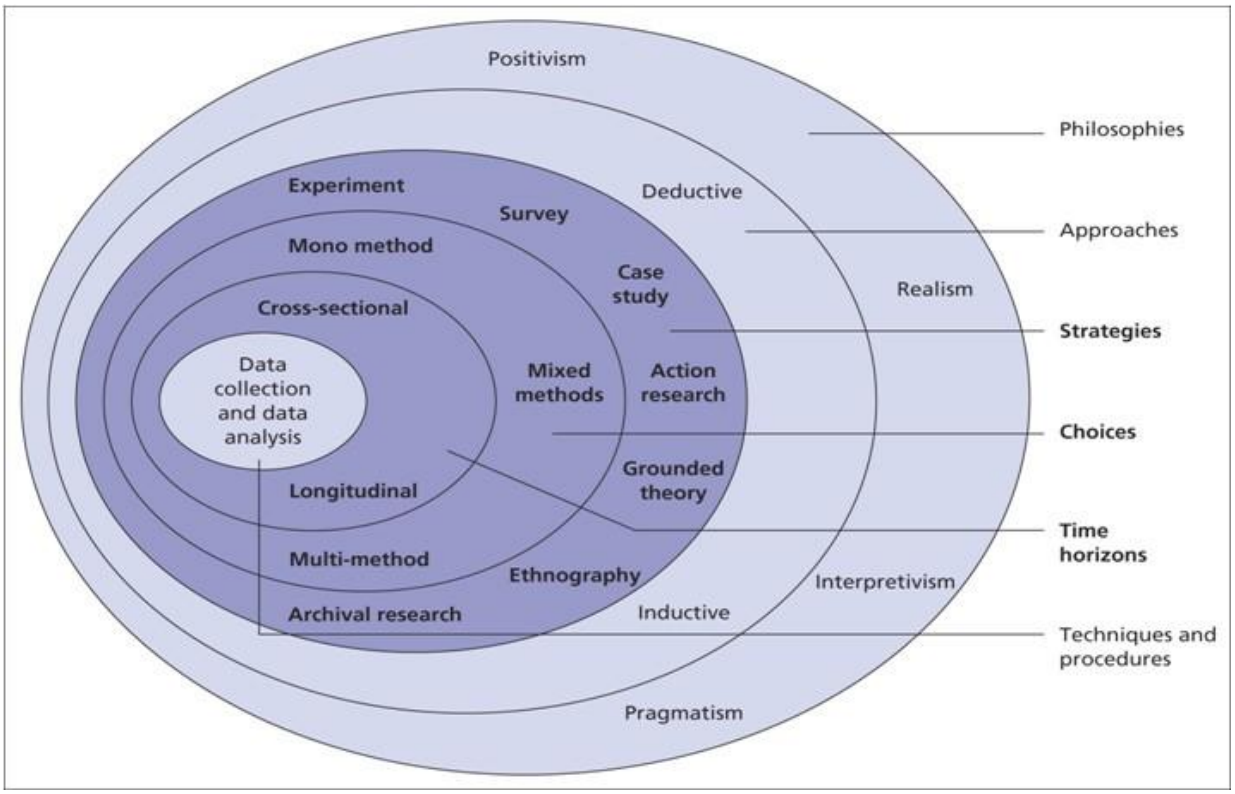

Figure 12: Onion research design scheme (Saunders et al., 2009)

3.2.1 Philosophical Stance

The research philosophy is pragmatism. It means having a combination between objective and subjective point of view (Saunders et al., 2009). Objective means that when analyzing the data and the concepts you have to be neutral. Subjective means that the value of the authors can affect the subject and the collecting data. “Pragmatism is the most commonly used paradigm in mixed methods research” (Pallot, Topolewski & Piotr, 2017).

3.2.2 Research purpose

Of the three types of research objectives, our research is exploratory. This means that our research objective is to study the potential adoption of an app idea based on a description of the UX and features. The characteristics of the app were made in a neutral and objective way. The analysis of the collected data is factual.

3.2.3 Research approach

The research approach is deductive because it consists in developing a hypothesis based on previous work. The app-idea is considered as a solution to test the hypothesis that the authors defined. The data collection will be analyzed respecting the previous work on UX, experience design and adoption theory and model. Deductive is from the particular to the general.

3.2.4 Research strategy/method/s

The research strategy that the authors used is a bipolar survey, used to collect both quantitative and qualitative data. The survey was conducted in the Jaxber application. It was a questionnaire, filled with closed questions that the panel of respondents could answer by putting a score between 1 and 5 representing the level of satisfaction of a UX property. A response to an open-ended (qualitative) question was also expected to justify their choice of score. Chapter 3.3 on data collection gives more specific information about the survey.

3.2.5 Methodological choice

According to Pallot, Topolewski & Piotr (2017), "In the field of UX, the mixed methods paradigm is an emerging research approach that allows researchers to combine quantitative and qualitative methods in different forms of research strategies." The qualitative and quantitative data came from the Jaxber mobile application. According to Saunders et al. (2009), qualitative and quantitative data should be used but not combined. Qualitative data should be analysed qualitatively, and quantitative data should be analysed quantitatively. These definitions and the fact that the aim of the research is to determine whether an application idea can be accepted or not lead the author to use this methodology for the research. The quantitative data gives an idea of the opinion of the panel of participants about the app-idea and the qualitative data helps to explain their choice of scores in more depth.

3.2.6 Time horizon

This research is a cross sectional study where data was collected only one time in 2020. In this case, the authors evaluated cross-sectional data from the year 2020.

3.3 Data collection

There are 2 main types of data used in research. Primary data is data that is first generated by the researcher through direct effort, specifically for the purpose of solving his/her research problem. Once collected, it will be analyzed to answer the research question. Secondary data is data that has already been collected and analyzed by a previous author in another research study. In this survey, primary data is used through a bipolar survey.

These data, whether primary or secondary, can be quantitative or qualitative.
Quantitative data or numerical data Quantitative data is data that can be counted or measured in numerical values. Qualitative data is descriptive, expressed in terms of feelings rather than numerical values. It cannot be counted or measured because it describes the data. It is the words or labels used to describe certain characteristics.

For this study, qualitative and quantitative data were collected through a survey on bipolarity via Jaxber which is a mobile application that allows users to receive feedback on specific topics. We collected the data respecting the anonymity of respondents, and they are remaining anonymous. The survey sample consisted of 32 Generation Z respondents who were students enrolled in the Innovation Management course. In effect, the students acted as evaluators, watching the teaser of the application and then giving a score for each UX property followed by a textual explanation justifying the score given. The Jaxber data is collected data that has been processed by mixed methods implementing a triangulation between the quantitative (score given by the student) and the qualitative (feedback from the students). This method allows the researcher to have a more complete answer that can help to answer the research questions and objectives.

The 32 respondents completed a bipolar questionnaire with a 5-point rating on a semantic scale. For example (i) -2: useless; (ii) -1: rather useless; (iii) 0: neither useless nor useful (neutral); (iv) 1: rather useful; (v) 2: useful. The authors analyze the feedback from the Jaxber platform following this application idea. Indeed, the author chose to select the most relevant responses.

3.3.1 Quantitative data analysis

We analyze these quantitative data using descriptive statistical techniques. Numerical data can be analyzed in several ways in the form of different variables such as central tendency, frequency distribution or variations (Olsen, 2004). In our study, where the numerical data analyzed are the scores attributed to each UX property, we use the mean to measure the central tendency to summarize the information from the scores into one value, then the "minimum" and "maximum" range to describe the distribution of these values, and finally the standard deviation allows us to show the variation of these values as it represents the average distance between the mean and the scores. We then compare the scores for the different UX properties to determine which are most valued and the degree of their potential adoption. A general table is used to show the overall results, followed by bar charts to describe more precisely the selected UX properties most relevant to our study.

3.3.2 Qualitative data analysis

Our qualitative analysis is conducted through sentiment analysis. Sentiment analysis (SA) is defined as a systematic analysis of online expression (Rambocas & Gama, 2013). Their theory of affective position and appreciation states that emotions motivate and determine our actions. Indeed, they have a direct impact on the purchasing behaviour of customers in relation to a product or brand. Sentiment analysis is described as "a data mining technique that uses natural language processing, computational linguistics and text analysis to identify and extract content of interest from a textual dataset" (p. 4). Indeed, it allows us to translate people's written opinions about a specific topic into emotions classified in 3 polar categories: positive, negative and neutral. In our study, we will apply sentiment analysis to the qualitative data collected on the Jaxber application through the participants' comments justifying their ratings of each UX property evaluated. It allows us to compare their justifications by transforming them into polarised sentiments that express their opinions. We use the ternary classification of sentiment polarity because it includes the neutral polarity. Rambocas and Gama (2013) divide the sentiment analysis into 5 steps.

Figure 13: The five steps of the sentiment analysis by Rambocas and Gama (2013)

The first step is to collect the data to be analysed. In our study, this is done on the Jaxber application. The second step, the preparation of the text, consists in grouping the collected data. For our study, we group the justifications of the evaluators by group. Then, the third step, sentiment detection, allows us to detect the polarized sentiments of the UX properties data. Finally, the fourth step, sentiment classification, classifies the data into negative, neutral or positive sentiment using a processor. In our study, as the collected data is not very numerous, it can be translated manually. Indeed, the scores -2 and -1 are translated as negative, 0 is translated as neutral and 1 and 2 are translated as positive. Finally, the fifth step, the presentation of the results, allows them to be visualised in a clear and readable way, for example, as in our case, using a bar graph.

4 Research results

4.1 Quantitative analysis

The objective of this part is to present and analyse the quantitative results obtained from the previously presented questionnaire. First, we can see the descriptive statistics table which summarizes all the results obtained at the time of the data collection, including the average obtained for each question.

UX Property	N	Minimum	Maximum	Mean	Std. Deviation
•USEFULNESS	32	-1	2	1,16	0,884
•PRODUCTIVITY	32	0	2	1,47	0,718
•RELIABILITY	32	0	2	1,41	0,712
•PLEASANTNESS	32	0	2	1,5	0,718
•EFFICIENCY	32	0	2	1,37	0,751
•COMPREHENSIVENESS	32	0	2	1,5	0,672
•ENTERTAINING	32	0	2	1,09	0,777
•ENJOYMENT	32	0	2	1,16	0,767
•ATTRACTIVENESS	32	0	2	1,19	0,738
•NOVELTY	32	0	2	1	0,803
•USER-FRIENDLINESS	32	-1	2	1,41	0,875
•MEANINGFULNESS	32	-1	2	1,16	0,847
•COLLECTIVENESS	32	0	2	1,28	0.729
•FULFILLNESS	32	0	2	1,22	0.792
•ENGAGEMENT	32	-1	2	1,06	0.840
•ENHANCEMENT	32	-1	2	0,97	0.897
•INFLUENTIALNESS	32	0	2	1,28	0.772
•RESPECTFULNESS	32	0	2	1,25	0.880
•CONVINCINGNESS	32	0	2	1,22	0,706
•RESPONSIVENESS	32	-2	2	1,03	0,967
•HELPFULNESS	32	0	2	1,37	0,707
•ATTENTIVENESS	32	-1	2	1,16	0,92
•WILLINGNESS	32	-1	2	0,94	0,878
•RECOMMEND	32	0	2	1,5	0,672
•Valid N	32				

Table 3: Descriptive Statistics of the UX Properties and Adoption Factors

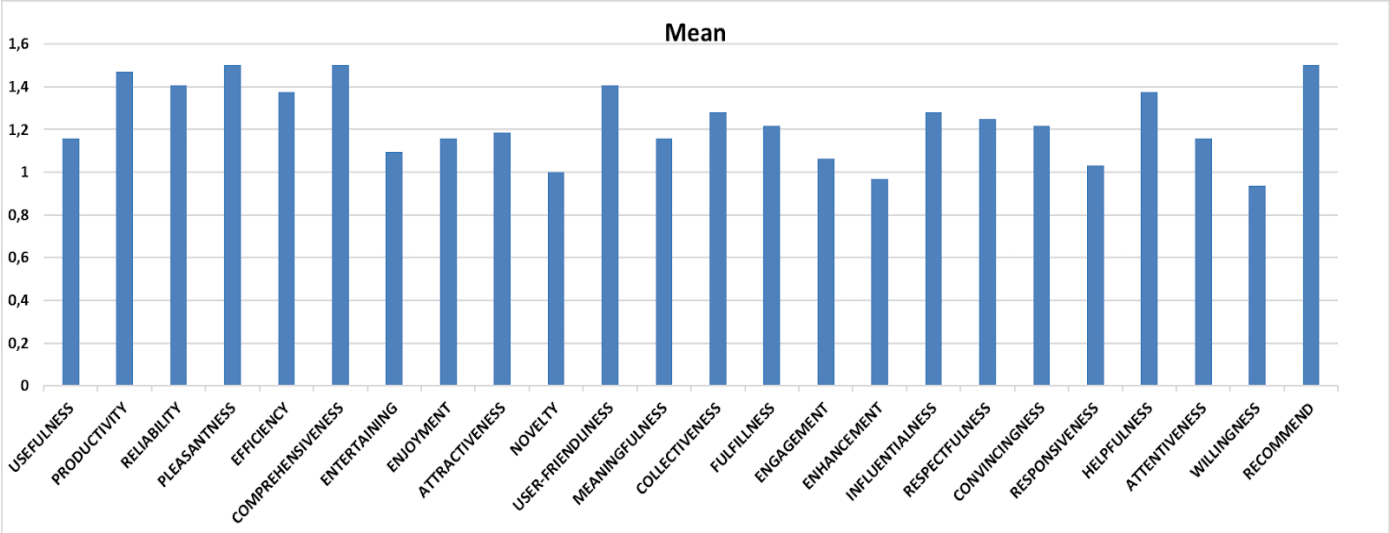

Table 4: Graph presenting the mean value per UX property

The graph of the averages of the level of satisfaction of the UX property evaluated by the interviewees shows only positive values since the minimum average is willingness with 0.94 average. These first results show that the application was well received by the evaluators and that it was generally appreciated by them. Next, we can see the answers obtained in detail, with the exact numbers obtained for each question and their analysis. The authors had chosen to study the UX properties that are the most relevant for the subject. 8 have been selected: usefulness, productivity, reliability, novelty, collectiveness, user-friendliness, comprehensiveness, willingness.

*1-Please rate what would be the **USEFULNESS** of The App Idea after looking back at its presentation/teaser*

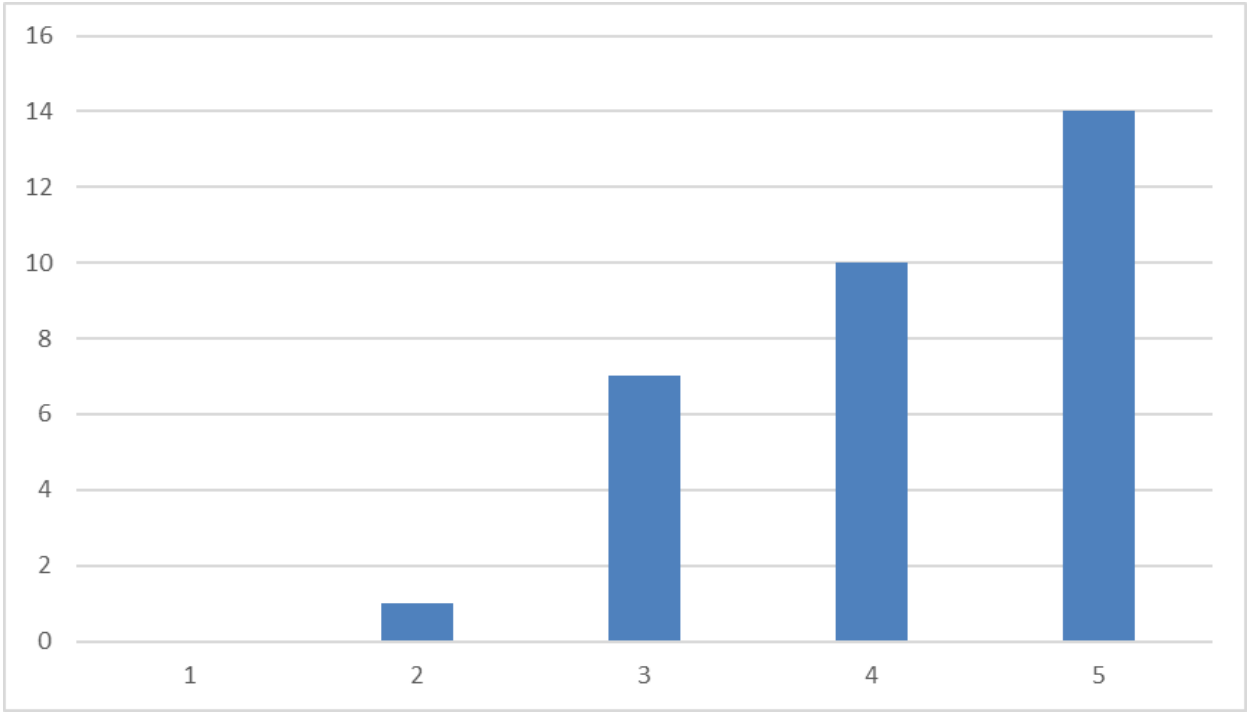

Figure 14: Usefulness

1 useless; 2 mostly useless; 3 almost useful; 4 mostly useful: 5 useful

About the Usefulness, we note that 0% of the participants consider the application as useless, 3,1% founded it was mostly useless however 21,8% of participants indicates that the application was Almost Useful, 31% indicated meanwhile that the App is mostly Useful, and finally 44% of participants indicated that the App was useful.

Overall, respondents tend to agree that the app is useful. As with all the following questions, our aim is to find out whether the Generation Z that corresponds to our respondents will adopt an innovative Sneakers_scan app to fight the sneaker counterfeiting industry. If the score of the answer to these questions is high, indirectly if they find it interesting and useful, they will use it and therefore adopt it.

*2- Please rate what would be the level of **PRODUCTIVITY** when using the App Idea compared to a paper-based approach.*

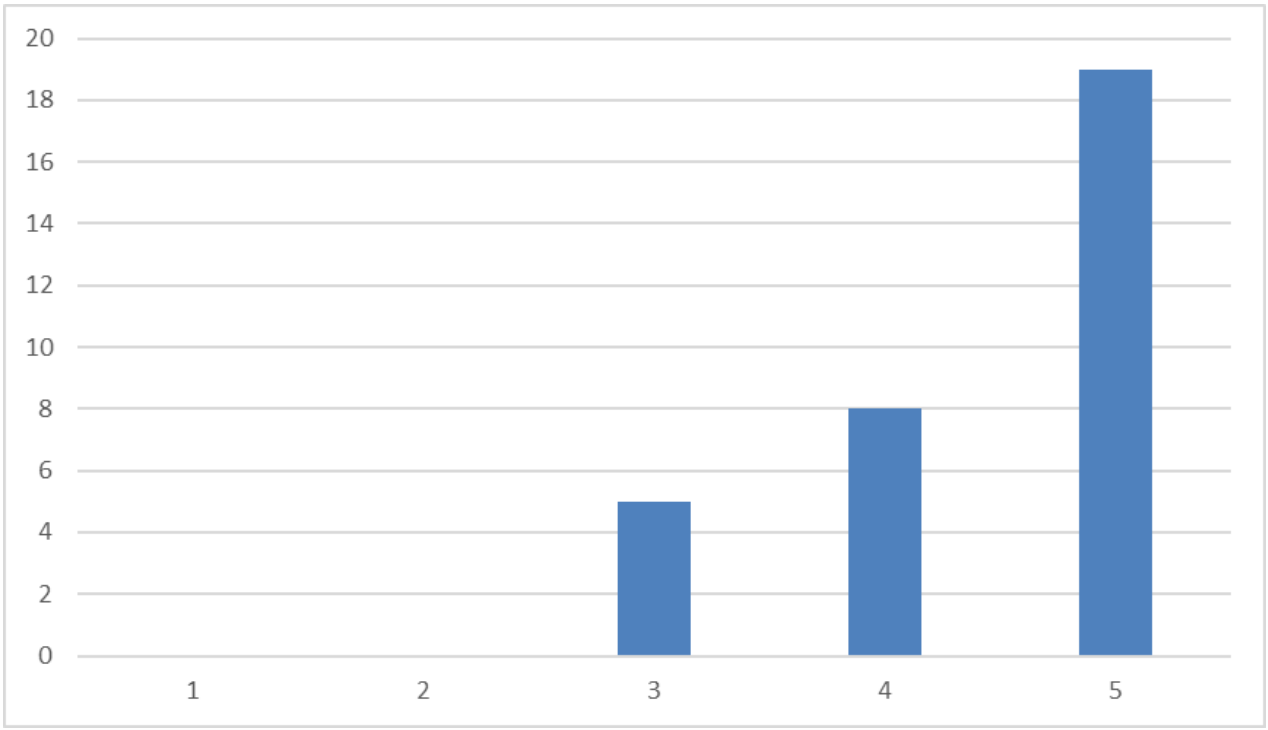

Figure 15: Productivity

1 unproductive; 2 mostly unproductive; 3 almost productive; 4 mostly productive; 5 productive

About productivity, we note that none of the participants consider the application as unproductive or mostly unproductive, 14,2% of participants indicate that it is Almost productive, 25 % said that the App was mostly productive, finally 59,3% of participants indicated that the App was productive. With 84,3% of the participants thinking the app is mostly productive or productive, the opinion of the app's productivity is clearly positive. Having such a high rate of positive feedback in the creation of an innovative Scan App is encouraging as the application market is very wide and already highly developed. Moreover, the Z Generation, having been immersed in it, is very demanding in this market. This high score shows their interest and is an encouragement for the development of the app.

*3- Please rate what would be the level of **RELIABILITY** of The App Idea after looking back at its presentation/teaser.*

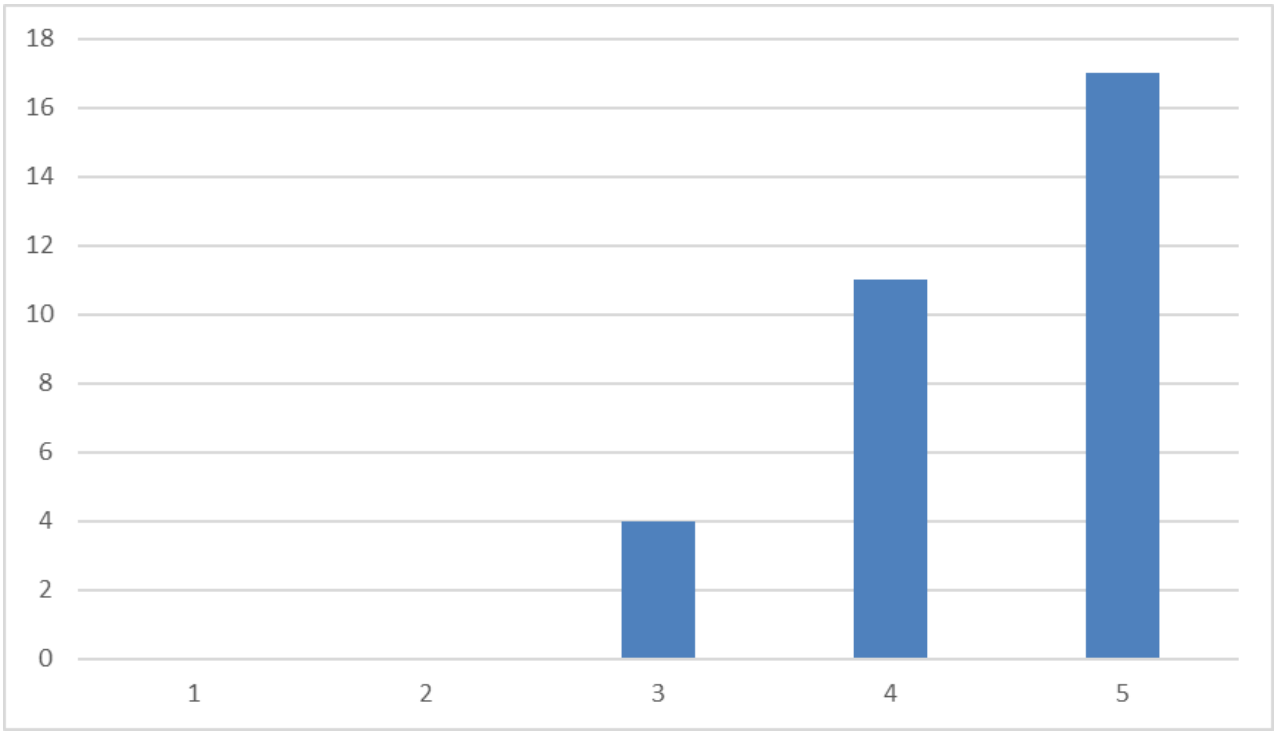

Figure 16: Reliability

1 unreliable; 2 mostly unreliable; 3 almost reliable; 4 mostly reliable; 5 reliable

About reliability, we note that none of the participants consider the application as unreliable or mostly unreliable, 13% of participants indicate that it is Almost reliable, 34% said that the App was mostly reliable, finally 53% of participants indicated that the App was reliable. These percentages clearly show that the participants find the application reliable, which is one of the most important criteria for our application. Indeed, its main functionality being a scan, if users think it is not reliable, they will not use it.

*4- Please rate what would be the level of **NOVELTY** of the application idea compared to other existing applications or tools on the web.*

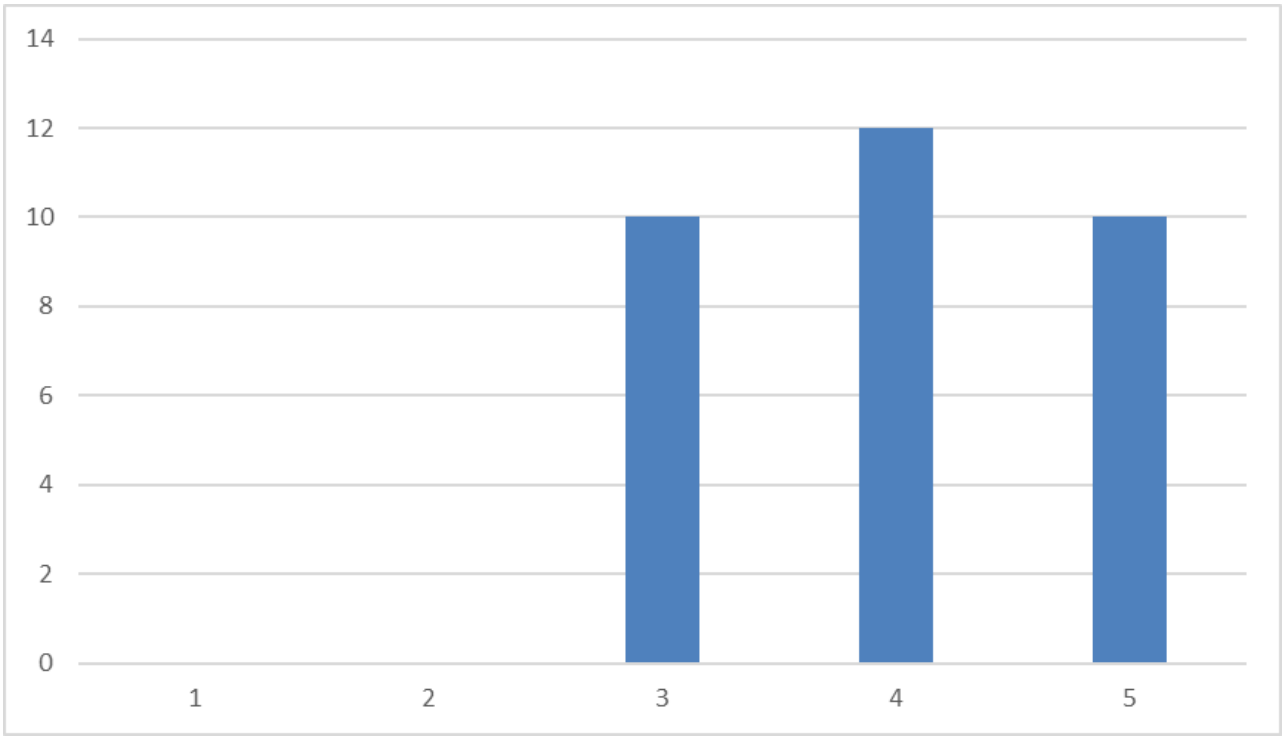

Figure 17: Novelty

1 old; 2 mostly old; almost new; 4 mostly new; 5 new

About novelty, we note that none of the participants consider the application as not new, 31,25% of participants indicate that it is almost new, 37,5% said that the App was mostly new, finally 31,25% of participants indicated that the App was new. On this aspect, we note the opinions on the novelty of the application are mostly positive. Indeed, before considering the conception of the application the authors looked at what had already been made as to the application area. They found that this application concept did not exist on the market. The results obtained are also in this direction.

*5-Please rate what would be the level of **COMPREHENSIVENESS** after looking at The App Idea presentation/teaser.*

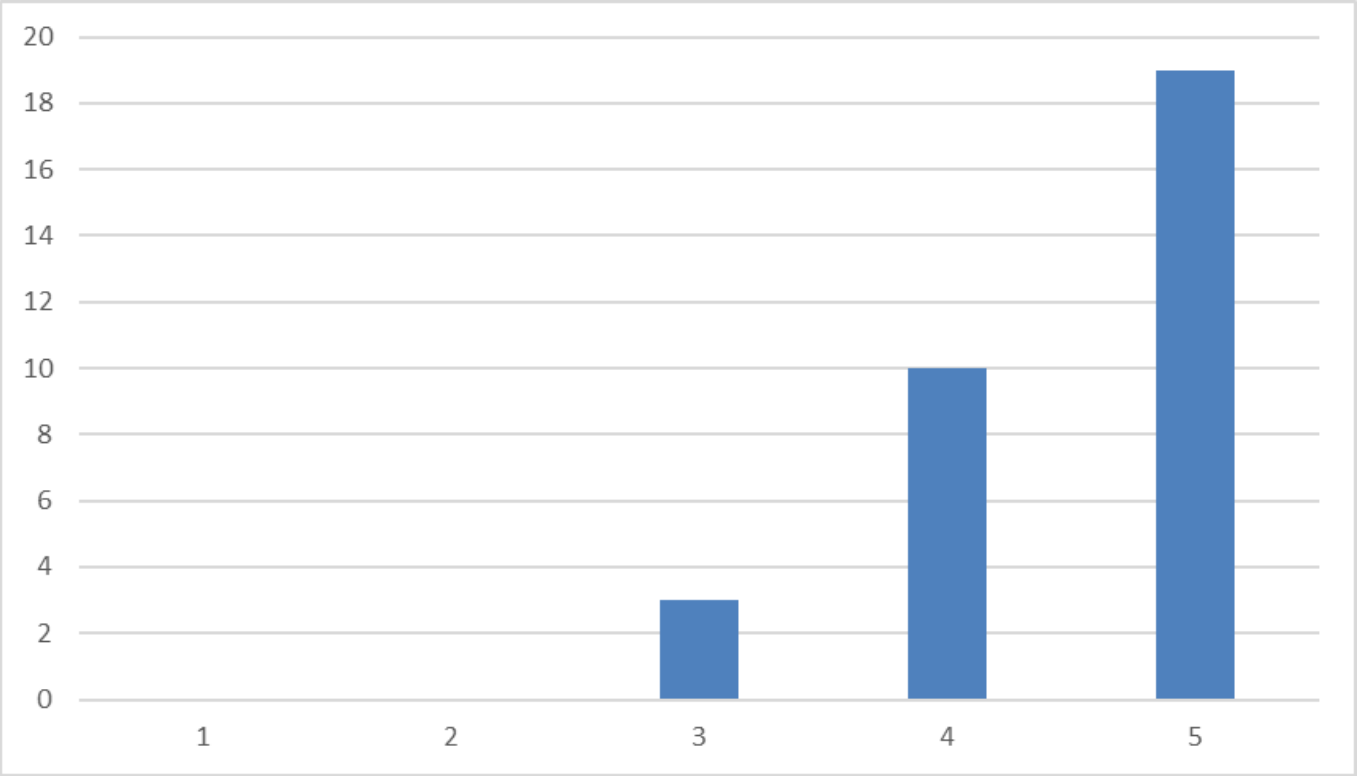

Figure 18: Comprehensiveness

1 incomprehensive; mostly incomprehensive; 3 almost comprehensive; 4 mostly comprehensive; 5 comprehensive

About comprehensiveness, we note that none of the participants consider the application as incomprehensive or mostly incomprehensive, 9,3% of participants indicate that it is almost comprehensive, 59,3% said that the App was mostly comprehensive, finally 31,25% of participants indicated that the App was comprehensive. Those results allow us to conclude that the purpose of the application is well passed and that it appeals to Generation Z. Indeed, they understood the concept and found it clear.

*7- Please rate how much **USER-FRIENDLESS** would be The App Idea looking back at its presentation/teaser.*

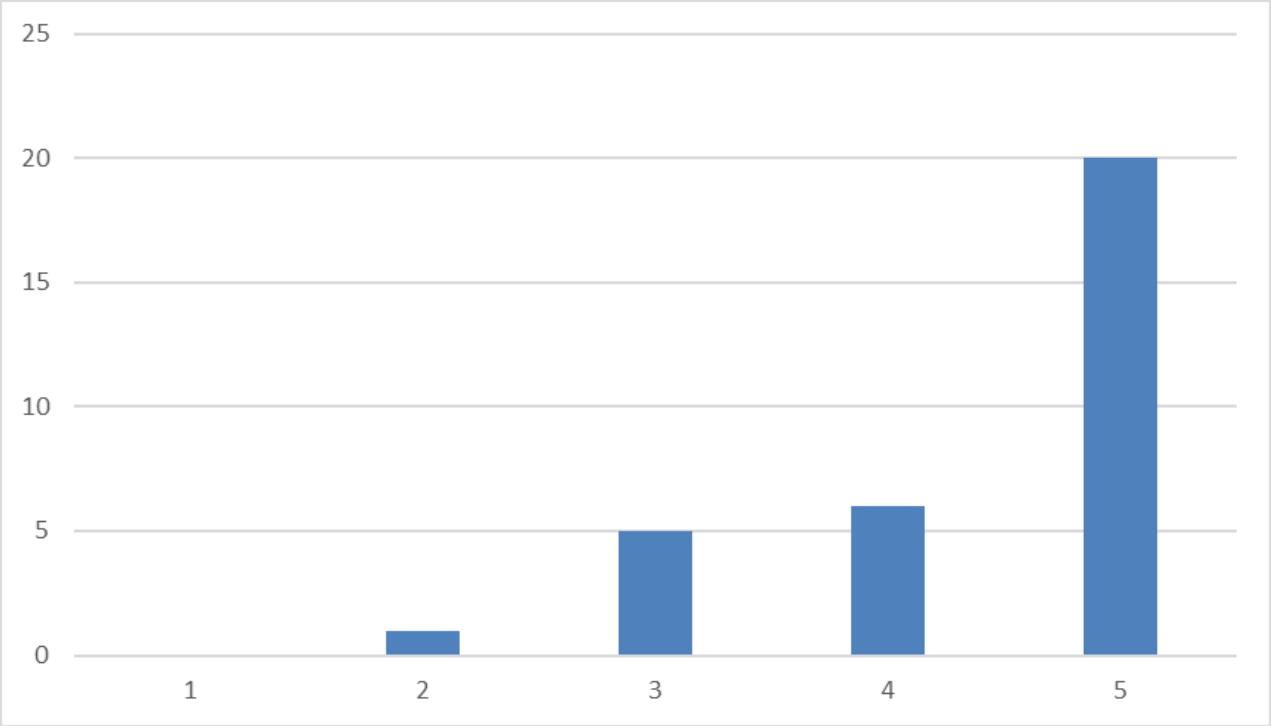

Figure 19: User-friendless

1 unfriendly; 2 mostly unfriendly; 3 almost friendly; 4 mostly friendly; 5 friendly

About user-friendliness, we note that none of the participants finds the app unfriendly. 3,125% find the app mostly unfriendly. 15,625% of the respondents think it is almost friendly. Then, 18,75% think it is mostly friendly. Finally, 62,5% think the app is friendly.

*8-Please rate what would be your level of **COLLECTIVENESS** C to use The App Idea when ready to use.*

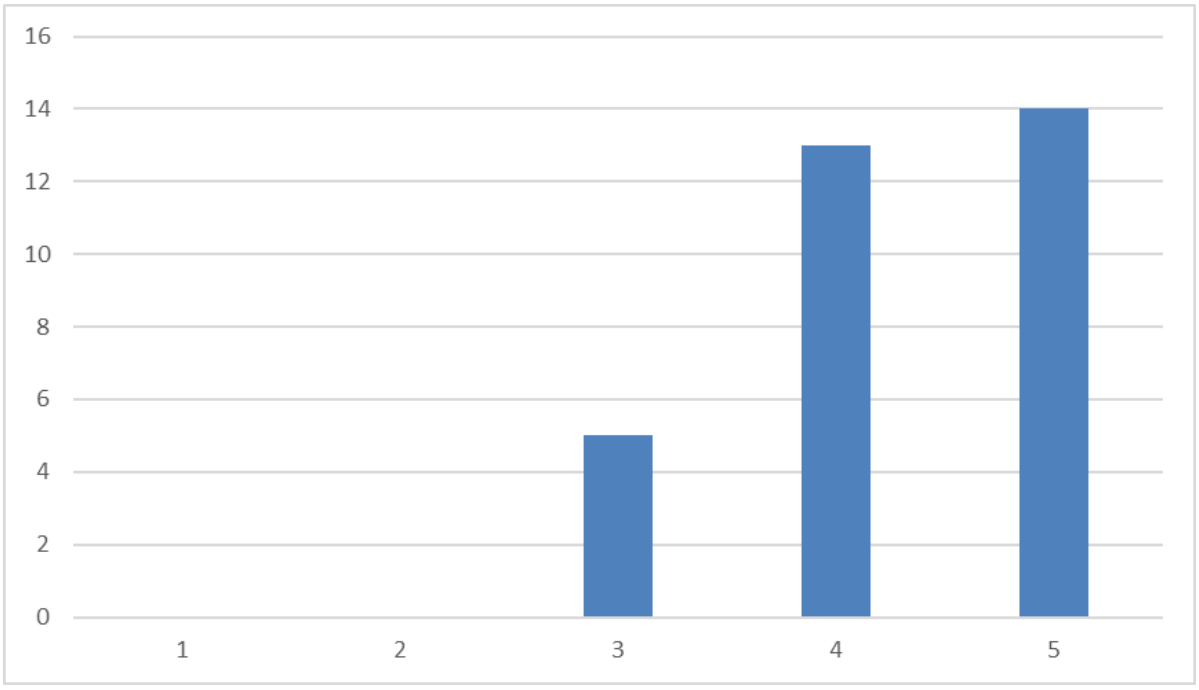

Figure 20: Collectiveness

1 uncollective; 2 mostly uncollective; 3 almost collective; 4 mostly collective; 5 collective

About collectiveness, we note that none of the participants consider the application as uncollective or mostly uncollective, 15,625% of participants indicate that it is almost collective, 40,625% said that the App was mostly collective, finally 43,75% of participants indicated that the App was collective.

*6-Please rate what would be your level of **WILLINGNESS** to use The App Idea when ready to use.*

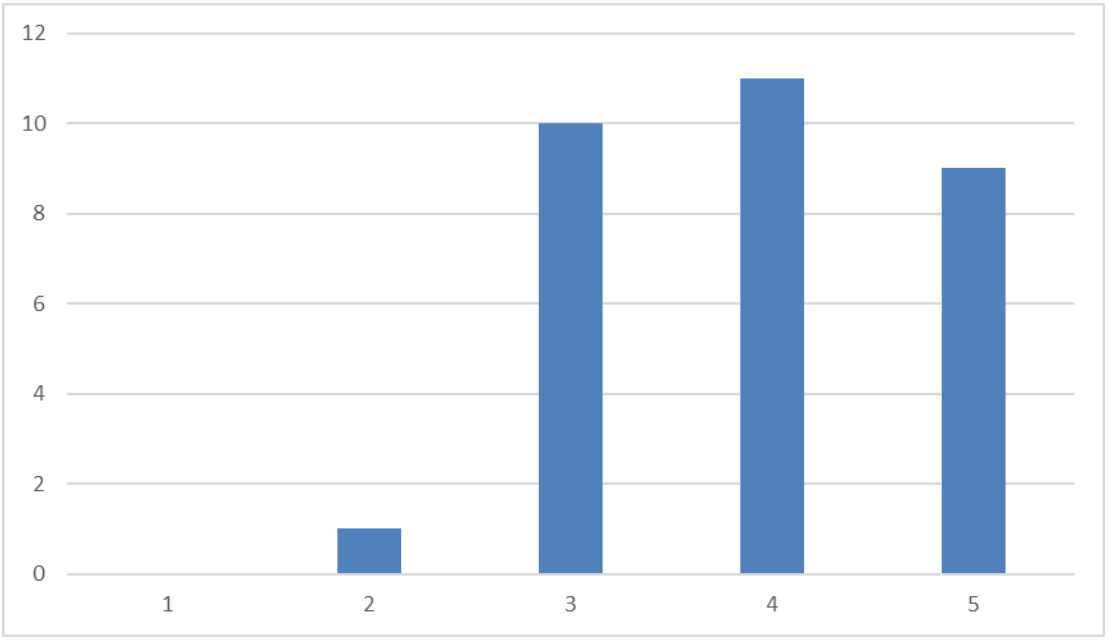

Figure 21: Willingness

1 unwillingness; 2 mostly unwillingness; 3 almost willingness; 4 mostly willingness 5 willingness

About willingness, we note that none of the participants finds the app unwillingness. 3,125% find the app mostly unwillingness. 31,25% of the respondents think it is almost willingness. Then, 34,75% think it is mostly willingness. Finally, 28,125% think the app is willingness. In total, more than 60% of respondents find the app willingness. We can therefore deduce that it is quite willing.

4.2 Qualitative analysis

As explained earlier, our qualitative analysis is based on sentiment analysis. This is done on the comments of the Jaxber survey raters when justifying their ratings of the UX properties. The total of the comments differs from the total of the scores attributed to each UX property because some participants did not justify their choices. It ranges from 22 to 32. However, the amount of qualitative data collected is still sufficient to conduct a representative sentiment analysis. The sentiment

analysis created the table with the following columns "UX Property", "Negative", "Neutral" and "Positive" which categorizes the sentiment expressed behind each comment. There are also differences between some of the ratings given by the participants and their comments that do not match. However, these differences are minimal and do not distort the analyses. In fact, in general, the comments correspond to the ratings given.

UX Property	**Negative**	**Neutral**	**Positive**	**Total**
Useful	3	5	20	28
Productivity	0	5	23	28
Reliability	0	4	28	32
Novelty	2	8	15	25
Comprehensiveness	0	3	19	22
Collectiveness	0	5	20	25
User-friendless	1	5	26	32
Willingness	4	7	20	29

Table 5: Sentiments of Respondents per UX Property and Adoption Factor

A large majority of the feelings are positive, with 171 out of 221, or 77.3%. However, there were still 42 neutral and 10 negative feelings.

This is encouraging for a potential future development of the application as it indicates that the idea of the application is perceived by the generation Z represented by our sample, as effective and that it would then have a meaningful purpose and impact. Reliability is the UX property that

received the most positive reviews with 87.5% of positive reviews. In the case of our Scan application, this is one of the most important criteria. Indeed, it proves that potential users would trust our application and thus the authentication of their sneaker peers that it could bring them. This can influence the intention to use the application. The factor that received the most negative feelings, although very few, was willingness. This is due to the fact that although our application targets generation Z, it still targets a profile of people who like sneakers. The negative feelings of the evaluators are therefore not particularly directed against our application but because they do not feel concerned by it.

The table above allowed us to create the resulting bar graph shown in figure…

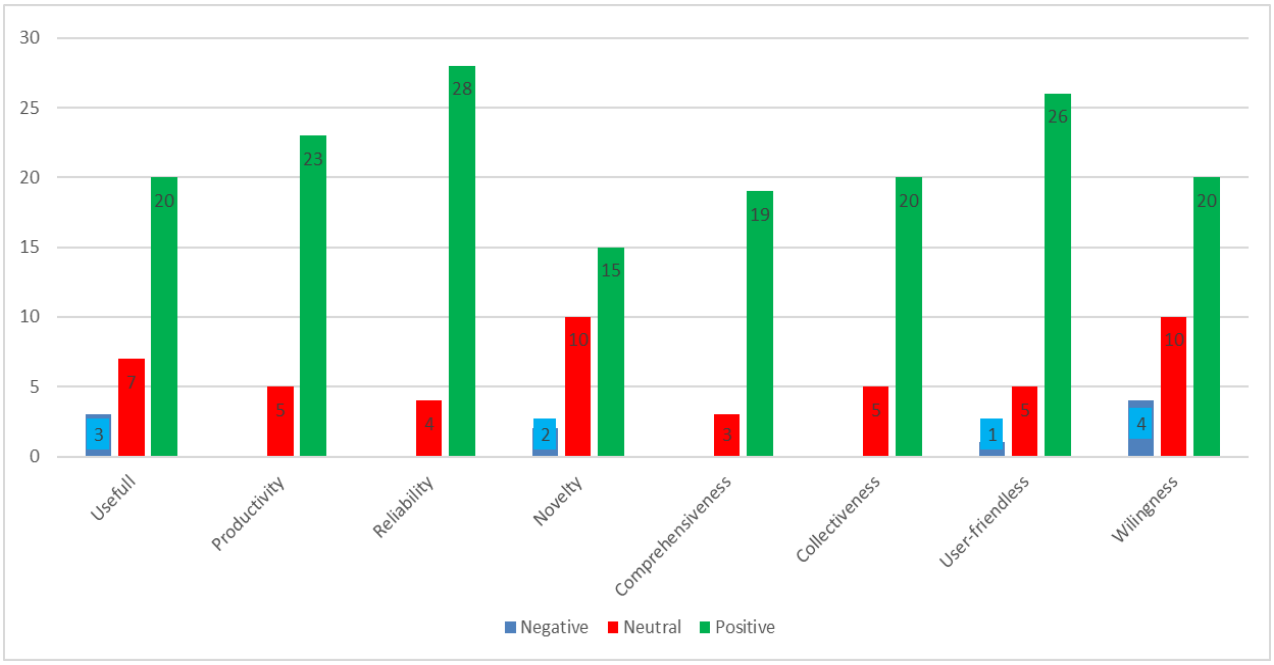

Figure 22: Polarized Sentiments Presented per UX Property

4.3 Triangulation of Results

The table below compares the results of the quantitative data with the results of the qualitative data

	QUALITATIVE				QUANTITATIVE			
UX Property	**Nega-tive**	**Neu-tral**	**Posi-tive**	**Total**	**Nega-tive**	**Neu-tral**	**Posi-tive**	**Total**
Useful	3	7	20	28	1	7	24	32
Productivity	0	5	23	28	0	5	27	32
Reliability	0	4	28	32	0	4	28	32
Novelty	2	10	15	25	0	10	22	32
Comprehensive-ness	0	3	19	22	0	3	29	32
Collectiveness	0	5	20	25	0	5	27	32
User-friendless	1	5	26	32	1	5	26	32
Willingness	4	10	20	29	1	10	20	32

Table 6: UX Properties Quantitative Sentiment VS Qualitative Sentiment

The table then allows us to create the bar graph below which is more accurate and allows us to synthesize the data collected to compare feelings and ratings. We can see in more detail the differences in responses between the quantitative (ratings) and qualitative (feelings) data and confirm the facts observed in the previous data analysis. Thus, we can explain these differences.

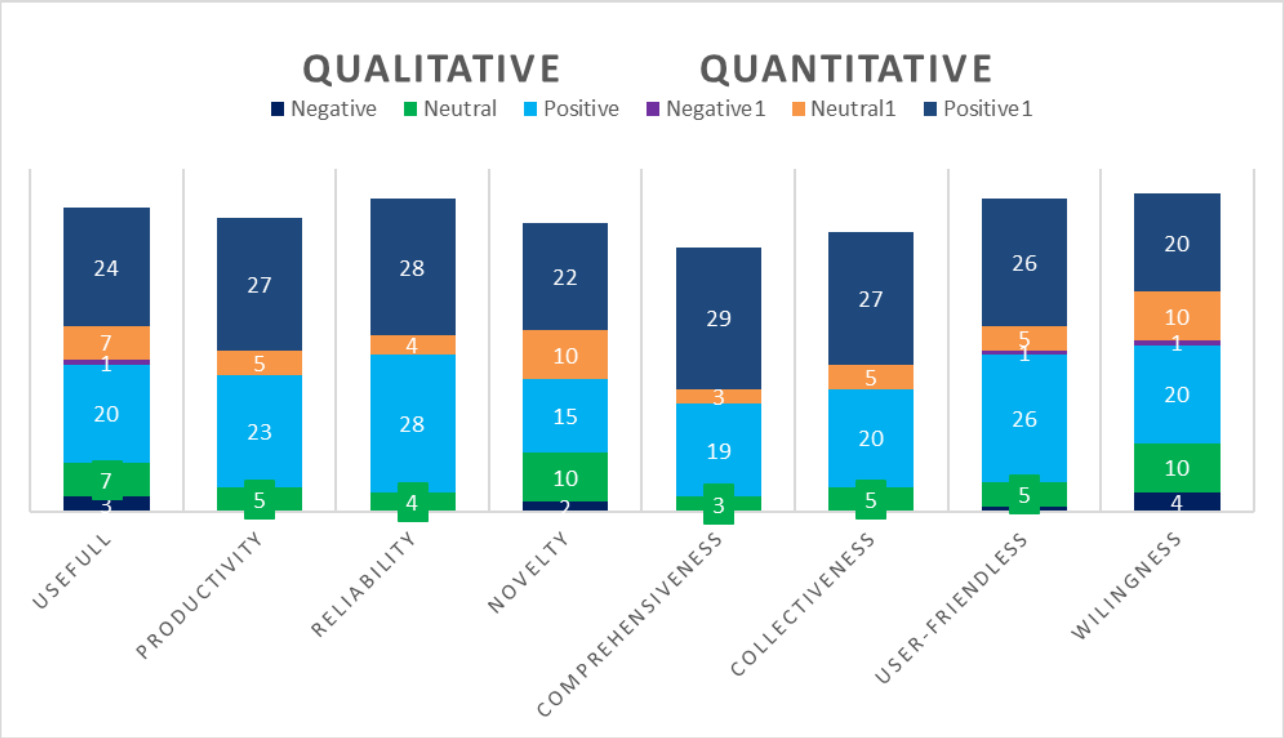

Figure 23: Synthesis of the data collected

We observe that the feelings are more varied than the ratings. Indeed, the opinions are more negative and the neutral opinions decrease. We can therefore deduce that the feelings are more expressive because the evaluators justify their evaluations with their own words. This could be explained by the fact that they tried to evaluate the UX properties in a more objective way than when they justified their choices. This helps to highlight the UX properties that need to be improved in the development phase of the application.

5 Discussion

5.1 Limitations, reliability and validity

The objective of our investigation is to measure the potential adoption of our app-idea "Sneakers_Scan" by generation Z. This research work allowed the authors to centralize important information from previous works. The rise of the fake industry and the spread of counterfeits in the sneaker market led the authors to think about an app-idea that would help Generation Z to easily identify the authenticity of a pair of sneakers.

The reliability and the validity of our work is limited because of few settings such as the number of participants for the quantitative part that should be more than 100 participants to be reliable. Unfortunately, we only had access of 32 participants which is sufficient for a qualitative study but not a quantitative one. The facts that we don't have a proper balance between genders and that they all came from the same country are also playing against us about the reliability and validity of our research because it's not representing all the potential users but only the opinions of French students of the generation-Z.

5.2 Answering the research questions

Q1 To which degree would generation Z adopt an innovative scan application to overcome the fake industry?

Q1.1 What factors impact the degree of UX satisfaction?

Q1.2 What factors impact the intention to adopt?

In order to answer these research questions, we conducted a literature review on previous work and a survey on a panel of 32 students belonging to generation Z. This work allowed the authors to collect quantitative and qualitative data about the "sneaker_Scan" app-idea and to use survey instruments and validated models to analyse the data.

The research question Q1.1 was addressed through the above-mentioned process of collecting survey instruments and validated models. These previous works allowed us to evaluate the degree of UX satisfaction according to the different properties of the UX. The data collected through the Jaxber application was then analysed. Participants' opinions of the app-idea were generally positive.

To answer the research question Q1.2, we used previous work and previous theories for our literature review. The data collected through the Jaxber application on the panel of 32 Generation Z students and the UX-based adoption model and several survey instruments were used to collect their opinions and analyse the data.

When the authors addressed the main research question (Q1), the study of the responses from the panel of participants showed that the overall feeling towards the app-idea was positive and that they recommended our app for several reasons including UX satisfaction and some of its properties such as the usefulness and the efficiency of the app-idea. These factors highlight a potential willingness to adopt the app by the panel of participants and more broadly by generation Z. It seems that generation Z see in the app-idea as high potential which could help users in authenticating the authenticity of sneakers in the first instance, but which would also help to undermine the counterfeit industry business and all the negative factors that this brings.

Globally speaking, our research questions were properly answered. Those answers bring new knowledge on the subject while confirming the potential of our app-idea as a future viable development.

5.3 Dialogue between key results and knowledge base

According to Topolewski & al (2019, 2020) and their UX model, the authors noticed that the intention to use an application could be evaluated by 21 UX properties covering 3 dimensions all composed of 2 facets, namely: Business which is composed of the economic and technological facets, Human which is composed of the emotional and cognitive facets, and Social which is composed of the empathic and interpersonal facets. In this study, we adapted this UX model to our idea of an innovative scan identifying counterfeit sneakers. After conducting a questionnaire with a sample of Generation Z, we selected the UX properties that were most relevant to our application idea in order to analyze them to understand what factors influenced the adoption of our application among Generation Z. The results show that the acceptance of a sneaker scan app was accepted by 8 factors or UX properties. These 8 factors are usefulness, productivity, novelty, collective nature, usability, completeness, and willingness. The most significant factors according to the authors' research were perceived usefulness and reliability. These results support the idea that the more trust consumers have in the Scan sneakers app, the better they understand the benefits of using it.

5.4 Ethics in research

During this research work the authors are making sure that the anonymity of the respondents is respected and that their names will not be divulgate. The authors collected data in respecting ethics. The respondents will remain anonymous.

6 Conclusions

6.1 Key Findings

The purpose of this study was to investigate the degree of potential adoption of an app-idea that would help combat the counterfeit market in the sneaker industry. The authors wanted, firstly, to research information on topics related to the counterfeit market and, secondly, on the components and features of UI/UX that enable potential future user adoption.

To do this, the authors used previous research and existing theories that allowed them to find data on Generation Z (the target of the app-idea) but also on the counterfeit market (on its functioning, its harmful effects and the business related to it).
In a second step, the authors carried out a qualitative and quantitative study through a survey on the Jaxber application. The analysis of the data collected through the panel of 32 respondents gave an idea of the potential adoption of the app-idea on a small scale. A mixed-method methodology was used to collect data. The purpose was to be able to answer two sub-questions. Those two sub-questions are relevant to answer the main research question of our thesis.
Results have shown that based on the answers of our survey such an app-idea like "Sneaker_Scan" could be an interesting tool to use in order to overcome the counterfeit industry (according to the 32 French students that answered). It also appears that the UI/UX is playing a huge role in the potential adoption.

6.2 Managerial implications

First, our app-idea would save infinite time in authenticating sneakers. In the current structure of sneaker reselling, humans perform authentication checks by hand and do not use tools to facilitate the task. Authentications are done with the human senses (touch, smell, vision). For managers of

this style of business, this tool could drastically reduce the payroll because one person could have the efficiency of several others. This would allow them to save costs. From the point of view of independent resellers for example, it could save them a lot of money. When resellers make a mistake in authenticating a product and buy a counterfeit, it is very difficult to get rid of it and they have to accept the loss they have made from buying it. The app-idea could therefore provide them with a solution to better manage their risk by avoiding buying counterfeits. This app-idea is realistic because similar applications have been observed in other fields, notably wine.

6.3 Recommendations for future research

Future research should be based on a larger data collection, for example through a larger panel of respondents. This study could provide insight into whether this type of app could be adopted on a larger panel of sample. These findings can also build on UX properties validated by Topolewski et al. (2019) and follow up with an empirical study based on quantitative data.

A new study about interviewing managers in this business could be helpful to understand the point of view of insiders of this industry. Interviewing future potential investors for our app-idea could be interesting because the economic part of the app and the benefits that it can generate has not been studied yet.

Finally, a last track of future research would be an analysis of the feasibility of the implementation of NFT (Non-Fungible Token) on each pair of sneakers, which would allow sneaker brands to use blockchain technology to number the sneakers and thus allow customers to quickly verify the authenticity of a pair of sneakers by consulting the blockchain. This study could also analyse the benefits of this strategy from the point of view of both companies and consumers.

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Appendices

User Experience Bipolar Survey on Jaxber :

XQ1. How would you rate the Usefulness of this app idea?

• Useful, almost useful, mostly useful, mostly useless,

XQ2. How would you rate the level of Pleasantness of this app idea?

• Unpleasant, Mostly Unpleasant, Almost Pleasant, Mostly Pleasant, Pleasant

XQ3. How would you rate the level of Productivity of this app idea?

• Unproductive, Mostly Unproductive, Almost Productive, Mostly Productive, Productive

XQ4. How would you rate the level of Entertainment of this app idea?

• Boring, Mostly Boring, Almost Entertain, Mostly Entertain, Entertain

XQ5. How would you rate the Reliability of this app idea?

• Unreliable, Mostly unreliable, Almost reliable, Mostly reliable, Reliable

XQ6. How would you rate the level of Efficiency of this app idea?

• Inefficient, Mostly Inefficient, Almost Efficient, Mostly Efficient, Efficient

XQ7. How would you rate the User-Friendliness of this app idea?

• Unusable, Mostly Unusable, Almost Easy to use, Mostly Easy to use, Easy to use

XQ8. How would you rate the Novelty of our proposed solution?

• Already exists, Somehow exists, Almost New, Mostly New, Brand New

XQ9. How would you rate the level of Attractiveness of our App idea?

• Unattractive, Mostly attractive, Almost attractive, Mostly attractive, Attractive

XQ10. How would you rate the level of Enjoyment to use our App idea?

• Hated, Mostly Hated, Almost Enjoyed, Mostly Enjoyed, Enjoyed

XQ11. How would you rate the level of Fulfilness with our App idea?

• Unfulfilled, Mostly Unfulfilled, Almost Fulfilled, Mostly Fulfilled, Fulfilled

XQ12. How would you rate the level of Comprehensiveness with our App idea?

• Incomprehensive, Mostly Incomprehensive, Almost Comprehensive, Mostly Comprehensive, Comprehensive

XQ13. How would you rate the level of Meaningfulness with our App idea?

• Meaningless, Mostly Meaningless, Almost Meaningful, Mostly Meaningful, Meaningful

XQ14. How would you rate the level of Enhancement with our App idea?

• Enhancement Less, Mostly Enhancing, Almost Enhancing, MostlyEnhancing, Enhancing

XQ15. How would you rate the level of Influentialness with our App idea?

• Uninfluential, Mostly Uninfluential, Almost Influential, Mostly Influential, Influential

XQ16. How would you rate the level of Collectiveness with our App idea?

• Individualist, Mostly Individualist, Almost Collective, Mostly Collective, Collective

XQ17. How would you rate the level of Engagement with our App idea?

• Disengaging, Mostly Disengaging, Almost Engaging, Mostly Engaging, Engaging

XQ18. How would you rate the level of Responsiveness with our App idea?

• Unresponsive, Mostly Unresponsive, Almost Responsive, Mostly Responsive, Responsive

XQ19. How would you rate the level of Helpfulness with our App idea?

• Helpless, Mostly Helpless, Almost Helpful, Mostly Helpful, Helpful

XQ20. How would you rate the level of Attentiveness with our App idea?

• Sleepless, Mostly helpless, Almost helpful, Mostly helpful, Spleenful

XQ21. How would you rate the level of Respectfulness with our App idea?

• Irrespective, Mostly Irrespective, Almost Respectful, Mostly Respectful, Respectful

Causal effect: potential adoption

XQ22. How would you rate the level of Convincingness of our App idea?

• Unconvinced, Mostly Unconvinced, Almost Convinced, Mostly Convinced, Convinced

XQ23. How would you rate the level of Willingness to use our App idea?

• Unwilling, Mostly Unwilling, Almost Willing, Mostly Willing, Willing

XQ24. How much would you Recommend our App idea?

• Discouraged, Mostly Discouraged, Almost Encouraged, Mostly Encouraged, Encouraged