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BEAUTY TECH: HOW CAN TECHNOLOGY MAKE A CHANGE, CREATING A MORE CONSUMER FRIENDLY BUSINESS MODEL?

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List of Abbreviations

AI – Artificial Intelligence

AR – Augmented Reality

CAGR – Compound Annual Growth Rate

GDP – Gross Domestic Product

ML – Machine Learning

SLAM – Simultaneous Localization and Mapping

VR – Virtual Reality

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Abstract

A growth in cutting-edge technologies has enabled beauty brands to launch disruptive experiences. Understanding how beauty merges with technology, the present Work Project dives into the Beauty Tech field through the lens of inclusion, sustainability and consumer behavior. Likewise, a quantitative analysis was conducted on consumers aiming to comprehend their behavior, as well as a qualitative analysis towards qualified professionals within these areas. The findings clearly evidence the differences between the beauty market segments – Mass Market, Active Cosmetics, Luxury Beauty and Professional Products, as proposed by the authors –, and the way each of these segments, with their specifications, can take advantage of technology to build an inclusive, sustainable and consumer-friendly business model.

Keywords: Beauty Industry; Beauty Tech; Artificial Intelligence; Augmented Reality; Inclusion; Sustainability; Consumer Behavior.

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Part 1. Introduction

Research Context

A new digital era is being witnessed, where the consumption of online content is growing exponentially. According to McKinsey & Company, “the digital future is here to stay” as “92% of consumers who tried online shopping in 2019 became converts, cementing an emergency response into an indispensable habit” (McKinsey & Company n.d.). Beauty brands have been prioritizing the adjustment to a society that is highly digitized, introducing cutting-edge technologies in their business models, which has been improving the consumer experience, besides creating unique opportunities to integrate clean and inclusive beauty (Aprinnova n.d.). As sustainability and inclusion have become a priority for beauty brands, consumer relationships have been upgraded with technological advancements that enable greater personalization and engagement authenticity (McKinsey & Company n.d).

Accordingly, Beauty Tech – a developing new tech trend that includes virtual try-on technology and diagnostics powered by Artificial Intelligence (henceforth, AI) and Augmented Reality (henceforth, AR) (Fjermedal 2022) – has enabled brands to create innovative products and apps that have contributed to improve consumer trust through virtual try-ons and personalized recommendations (Hai 2021). Moreover, it has generated a change in consumer behavior throughout their purchase process. Essentially, Beauty Tech is a trend with a strong emphasis on social issues such as inclusion and sustainability, given these tech developments are defining a new way for misrepresented consumer segments to feel included, whilst rationalizing production methods and minimalism with sustainable processes, which all come together to provide the most complete customer experience in the market.

Problem Definition

As beauty enthusiasts are consistently on the lookout for the latest tech innovations, it only seemed fair to understand how, exactly, the beauty industry has been impacted by technological developments, merging two industries into only one concept – Beauty Tech. Essentially, we wanted to comprehend how this merge can impact and be of extreme importance to social and mediatic themes, such as inclusion and sustainability, adding something to improve both of these topics, as well as understanding how, precisely, technological advances can better the consumer experience, impacting the consumer behavior.

Research Questions

As this research is focused on three specific sub-areas of the impact that Beauty Tech might have, three major questions were drawn out and will be addressed throughout the course of the project. Primarily, 1) Can Beauty Tech draw the guidelines for inclusive beauty? Secondly, 2) How can sustainable beauty be achieved with new technologies? And lastly, 3) What drives or pushes away a customer from purchasing tech-based and customized solutions?

Part 2. Literature Review

I. Emerging Mixed Realities

Imagine a world in which the physical and the digital are blended – that is a mixed reality environment, and it is one we are living in right now. Achievements that could only be dreamt of a couple years ago are now possible thanks to "the advances in graphical processing power, computer vision and other technology" (Marr n.d.). Mixed realities are highly resourced to in the world as we know it and we can see clear applications of it everywhere, whether it is in media, medicine, education, and mostly *consumer products*. The use of technologies such as AI and AR is growing by day, even though most consumers are unaware of it, not making the connection between how Instagram or Snapchat filters have such great performance, for instance. The emergence of these new technologies goes back a handful of decades, and they have undergone a constant development, being now more reliable and realistic than ever. Looked upon as a "dynamic concept" (Müller & Schneider 2019), they are constantly changing and are associated with innovation, novelty, and growth (Rotolo et al 2015). AI and AR are the technologies that are the most prominent in the beauty industry, providing a range of customized solutions and exciting, realistic try-ons, delivering an "extra layer of analysis that allows the customer to make the best suited purchase possible" (Salsky & Ezra 2020). Likewise, a deeper look at each of these technologies is needed, as they are the ones that are more directly connected to the scope of this project; as so, the following topics will deepen us into a better understanding of these technologies and the value they can provide.

Artificial Intelligence (AI)

The term AI was invented in 1956 by John McCarthy, who defined it as "the science and engineering of making intelligent machines" (Manning 2020) "on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it" (Marr 2018). McCarthy's major goal was to understand if there was a way to create a machine that had the ability to mimic humans in their fully abstract way of thinking (Chakraborty 2021), which was accomplished over the years as AI has become a "powerful tool" that "allows machines to think and act like humans" (Manandhar 2019). Accordingly, the Encyclopedia Britannica defines AI as "the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings" (Copeland 2022). Moreover, Machine Learning (henceforth, ML) stands out as the most significant among the various AI-related subfields, entailing the development of sets of computer algorithms that may "be applied to many diverse situations and data sets" due to their ability to recognize and evaluate large amounts of information and services (Van Duin

& Bakhshi 2017). Through ML, a computer recognizes a specific pattern and follows the commands that it should, as predicted by the programmer (e.g., as it happens with the spam e-mails, which are automatically directed to the junk e-mail box). Huge advancements in this area of technology have been made in recent years, so the creation and emergence of AI has fundamentally revolutionized the definition of innovation and invention, elevating it to a new level (Pandya 2019). In this way, AI has become a highly powerful tool, capable of influencing decision-making, supporting human beings to perform certain tasks more rapidly and, at the same time, contributing to the evolution of business models (Saratchandran 2019) by being able to predict multiple scenarios (Baierle et al 2019). Indeed, AI has been positioning itself as being a focal cutting-edge technology for the coming decades across all sectors (Iberdrola n.d.). Moreover, the economic impact of AI can build up at an accelerating pace (Appx. 1) as "AI has the potential to deliver additional global economic activity of around USD 13 trillion by 2030, or about 16% higher cumulative GDP compared with today. This amounts to 1.2% additional GDP growth per year" (Bughin et al 2018). At the end of the day, "AI will make us more efficient and allow us to perform actions that we could never have undertaken due to their complexity. Can you imagine exploring parts of the universe that are totally hostile to humans? One day this will be possible thanks to AI" (Iberdrola n.d.).

Augmented Reality (AR)

What if there was no distinction between our imagination and the real world? Looking back a few decades, everything started in 1968, when the computer scientist Ivan Sutherland and Bob Sproull built the world's first head-mounted display with primitive computer graphics. In 1990, Thomas Caudell, a one-time Boeing researcher, finally gave it the AR name and from there, the technology has advanced in such way that in the foreseeable future "AR is predicted to skyrocket" (Virsabi n.d.). According to Azuma (2001) definition, AR "combines real and virtual objects in a real environment; runs interactively, and in real time; and registers (aligns) real and virtual objects with each other" (Azuma 2011). By leveraging multimedia, 3D modeling, real-time tracking and registration, intelligent interaction, sensing, and other tools, the AR technology combines virtual information with the physical world by modifying the real-life environment through digital features (Smith 2022). Its core element is the application of computer-generated virtual information – such as text, images, 3D models, music, and video – to the real world after simulation (Chen 2019). AR, in contrast to Virtual Reality (henceforth, VR), "does not create the whole artificial environments to replace real with a virtual one", instead, it adds sounds, videos, and graphics to an environment that is already present (Sokhanych 2022). Apple CEO Tim Cook is very clear on this point: AR is "larger than" VR "because this gives the capability for both of us to sit and be very present talking to each other, but also have other things visually for both of us to see. It will be the next revolution, as was the smartphone during its time" (Iberdrola n.d.). Many different types of hardware, such as screens, glasses, handheld devices, mobile phones, and head-mounted displays, are able to display AR. It employs Simultaneous Localization and Mapping (SLAM) – that uses a mobile robot detect the environment, create a virtual map of that environment, and trace the position, direction, and path of the robot on that map –, depth tracking – which uses sensor data to calculate the distance to objects –, and other technologies such as cameras and sensors – which locate actual objects and build 3D models –, processing tools – which can measure speed, angle, direction, and orientation in space –, and several additional instruments for projection and reflection of digital content (Sokhanych 2022). Furthermore, four different types of AR can be distinguished: the (i) marker-less AR, that uses location-based data based on the user's location to determine what content the user receives in a specific area (Sokhanych 2022); the (ii) marker-based AR, that makes use of a camera and a marker (a singular visual object, such as a sign or printed QR code) to produce digital animations and 3D models (Sokhanych 2022); the (iii) projection-based AR, in which artificial light is projected onto real-world surfaces to track user interaction (Sokhanych 2022); and, finally, the (iv) superimposition-based AR, which modifies or replaces the original view with an augmented view.

Positioning AR in the global market, it is worth mentioning the estimated size of the global augmented reality market in 2021 was USD 25.33 billion, and it is anticipated to increase at a CAGR of 40.9% from 2022 to 2030 (Grand View Research n.d.) (Appx. 2). In line with the numbers, offering to end consumers a distinctive and interactive experience is anticipated to fuel market expansion throughout the forecast period. At the end of the day, "AR has the potential to connect people around the globe in an instant, provide tools for various industries, and change the way we interact with both the virtual world and the real one. The only place to go from here is up, and it appears the sky is the limit" (Amos 2022).

Business Applications

It is often said that we are living in a digital age and so, we are going through major digital transformations, which can be defined as processes "that aim to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies" (Vial 2019). As an attempt to keep themselves ahead of the curve when it comes to market innovation, companies have come to re-structure their strategy, integrating new technologies, tools that boost companies' productivity, sales and consumer engagement (Matt et al 2015). The new mixed realities trend can significantly help businesses grow, as these firms can now take advantage of it, empowering themselves with digital technologies (Vieira 2020). A various range of technologies are now being leveraged by said firms, who are building their strategy around technological development to build a competitive positioning in the market (Brucculieri 2018) – looking back, AI and AR can clearly check these boxes, offering "revolutionary possibilities in this domain" (Vieira 2020).

More so, this works around a "first-come, first-served" model, as the quicker companies are in adopting these technologies, the more disruptive they are seen as, gaining an innovative leadership status (Schwab 2018). Companies all around are “embracing a digital transformation strategy” (Vieira 2020), based on mixed realities as key factors to be able to adopt a dynamic, real-time, and self-organized company (Tay et al 2018). The AI industry, for instance, is expected to increase by 13 times in the next 8 years, so there are no signs of it slowing down (Howarth 2022). Within specific industries, the global investment for AI, including Cosmetics and Beauty, is said to grow to USD 7.3 billion by 2022, changing the way brands operate, providing 10 times more efficient tools and services (Launchmetrics Content Team 2019). In a way, it is a merge of the technological domain and the industry that takes advantage of it, currently focusing on beauty– this industry “has integrated innovation and digital transformation, improving its online presence changing their previous brick-and-mortar business model” (Vieira 2020).

Technology is a key asset in the beauty industry specifically, as it is changing the relationship between consumers and brands (Beddoe 2019), providing a major shift in the way beauty brands interact with their target and the revolutionary solutions they offer them. Major industry players are now able to funnel their recommendations of new products to their consumers, adding value by using technological processes that provide custom-made advice without the need of a physical interaction. Beauty is constantly being redefined by the consumers (Mintel 2018) and a future that takes a mandatory route through technological development means that brands will have to adapt and adjust their consumer approach. AI and AR processes have the ability to advise consumers on what their skincare routine or ideal make-up go-to products should be, based on a simple analysis of their age, skin, hair type, diet, among other factors.

So, mixed realities are on an exponential growth of global usage, as it is now clear to them that in order to make themselves up-to-date on consumer trends, they need to resource to consumer-centric approaches by “adapting to the individuality” of each consumer, “creating tailored products for each one”, ending up “putting these consumers at the core of their product creation process" (Vieira 2020). Beauty giants such as L'Oréal, Estée Lauder and Sephora are already putting this mindset into practice, applying AI and AR in multiple different ways, resulting in disrupting and reinventing the way said companies operate, with more efficient services, as consumer behavior is now a top priority in beauty product development (Launchmetrics Content Team 2019).

II. Beauty Tech

In a market with a wide range of products, consumers seek customized solutions to meet their needs (Kidecha 2022). Indeed, "71% of consumers expect companies to deliver personalized interactions. And 76% get frustrated when this doesn't happen" (Arora et al 2021) (Appx. 3). As a result, technology experts and beauty brands' representatives have been working to close the gap between the digital and physical, providing consumers "with a more personalized and tailor-made approach to beauty" (Kidecha 2022) – that is Beauty Tech, which can be defined as the working force between cutting-edge technologies, such as AI and AR, to produce disruptive beauty experiences addressed to consumers (Forbes 2022).

Major companies as L'Oréal, Shiseido, and Estée Lauder (Kidecha 2022) have been adopting technologies in their business models (J.P. Morgan 2019), intensifying their technological offer (Kennedy 2022), which includes AI and ML, big data, AR and VR (Kavde & Taduri 2022). Tech "algorithms can use customer data and behavior analysis to determine the best marketing strategies for certain segments and demographics" (MacLeman 2021), enabling brands to provide routines and recommend products tailored to each consumer (Corina 2021) and modifying a real-life environment through digital features (Smith 2022). Likewise, these emerging technologies – AI and AR – empower brands to access multiple data on consumer behavior, and to develop highly targeted and effective products and campaigns (Sheep 2018). Providing real evidence of how deep these technologies influence beauty brands, (i) Sephora increased its revenue by 11% for customers experiencing virtual try-on products through Sephora's Virtual Artist App in the first quarter of its launch (Troyer 2022) and (ii) Tarte observed a 200% increase in sales for consumers experiencing virtual try-on, a triple-digit increase in time spent on the website, and a 30% jump in add-to-cart using virtual try-on (Fjermedal 2022). In this sense, the collected data on Beauty Tech proves that online demand for these technologies is increasing exponentially (Vanzella 2019) which is key for beauty brands to develop in their business models' disruptive strategies to reach out to new consumers and to strengthen linkages with the already existing consumers (Salsky & Ezra 2020).

An Overlook into Modern Beauty

As chemistry and medicine advanced, the beauty industry progressed significantly, and the global beauty market underwent major changes that reflected the various economic, social, and cultural transformations in the modern, interconnected world (Loboda & Lopaciuk 2013). In the beginning of the 21st century, sales in the beauty sector grew steadily, but the 2009 recession hurt all business sectors. After major improvements, 2020 brought the Covid-19 pandemic, with a significant impact on businesses all over the world, namely the beauty industry, which had to quickly adjust to a new mindset. The beauty market – including skin care, cosmetics, hair care, fragrances, and personal care (Arora et al 2021) – is expanding as an outcome of "the lifestyle of consumers, the increase of brands created, and the development of new ingredients" (Vieira 2020). As a result, it generates over USD 532 billion annually and it is expected to reach more than USD 800 billion by 2024 (Danziger 2019).

The beauty industry is known for being "profitable, innovative, and fast-paced" (Vieira 2020), which is key to meet all consumers' needs and expectations regarding beauty. To stay competitive and succeed in this market, the beauty industry's strategy is flexible and adaptive in the development or replacement of personalized-brand-new products. As a result of the global e-commerce phenomenon, beauty companies are using their online presence to raise awareness, generate revenue, and scale more quickly (Vieira 2020). They are also moving in a distinctive omnichannel direction, combining the advantages of offline and online interactions through websites, retailers, and physical stores, as well as incorporating the technologies that are most dominant in the beauty industry to provide tailored solutions and brand engagement.

Emerging Trends

The beauty industry is almost a synonym of *change* and *adaption*, by now having solidified its position as the leader of e-commerce innovation. Throughout a handful of challenging last couple of years, highlighting the Covid-19 pandemic as the biggest deal-breaker in changing practices and strategies on firms around the globe, beauty companies have shifted; like so, at the moment, there is a focus on sustainability, digitalization, customization and inclusion, making it clear that "beauty retailers are always looking to enhance their customer experience" (Yeldify 2022). Studies show that the next years will only enhance that digital will continue to rise, through direct-to-consumer e-commerce, shoppable social media, and marketplaces accelerating and becoming of a greater importance (Gerstell et al 2020). Moreover, if before the pandemic, these brands were pressured to minimize the product-innovation pipeline as short as possible, the need for speed is now greater than ever (Gerstell et al 2020), as every key player in the industry wants to achieve a title of greatness and pioneer innovation. As of the last decade, *inclusion* takes the spotlight when it comes to representation in beauty brands and products, leading us to the inclusive beauty trend. Generally, beauty is something that is resourced to as a way of both feeling and looking nicer, acting as a confidence booster – in fact, "makeup appears as a holistic technique that modifies not only one's appearance, but also helps one to cope with self-image, emotions, and mood" (Korichi et al 2008). However, minorities have it difficult, as the amount of colors in foundation lines (or the lack of), for instance, has never been known to fulfill everyone's skin tones needs; it is as daunting to find haircare products that understand the "unique needs of Black hair" (Radford 2022) and even more difficult to find items that allow consumers with disabilities to take advantage of the beauty industry, with a small range of adaptive products (Chitrakorn 2018) – as a matter of fact, in 2019, Procter & Gamble noticed that only 4 per cent of companies “are actively creating accessible products and services” (Procter & Gamble 2019). An underrepresentation is felt all around and lately brands have started to tackle this with added undertones of products and items catered to each costumer’s specific needs. Yet, there is still a long way to go – “diversity shapes the globe in its image” (Roberts 2022) and variety is now mandatory. Switching our focus to *sustainability*, this portrays a huge area of impact within the beauty industry, and so it is a given trend that developed into multiple sub-trends. As of lately, brands all over the industry are being held accountable when it comes to their contribution on better social practices, resulting on an exponentially bigger switch to sustainable businesses, whether this is coming from major key players or beauty start-ups (Fait avec Coeur 2021). Sustainability is shaping the industry, given that consumers are now growing their expectations, whether it is in terms of packaging (Lagarde 2022), product ingredients or overall steps on their make-up and skincare routine (Mayo 2021). Beauty is a trendsetting industry in so many ways that it only makes sense for it to lead “much of the innovation around clean and sustainable personal products” (Mayo 2021), contributing for this to become the general norm. Consumers are seeking authenticity and transparency more and more (Bourne 2022) and a Nielsen study shows that most attributes valued by beauty users are the use of natural ingredients, the respect for the environment, as well as the use of reusable and recyclable packaging (Mayo 2021). Like so, this is a concern that affects Gen Z consumers the most, as they are “1.3 times more likely to want to try environmentally friendly products” (Mayo 2021). *Skinimalism* is a term created by the beauty industry dedicated to “condensed beauty, where simplicity is at its finest” (Bourne 2022). People are looking for simpler routines, with 2-in-1 products and easy swipes that make for beautiful and effortless looks – it is a seek for quality over quantity. Minimizing the number of products in beauty routines ends up accounting for a sustainable practice, as well (Downer 2022) – “seeking quality over quantity”, *skinimalism* is a “relief to our skin and the planet” (Bourne 2022). *Clean Beauty* has part of the spotlight too, as products that are filled with toxins are now being thrown out of the equation due to a disrespect for sustainable living and there is now a big focus on products free from harmful ingredients (Mayo 2021) – clean beauty is shifting the narrative and this holds the beginning of a new era for eco-conscious beauty, as big brands such as Chanel and more authentically sustainable brands are put into the scene. *Refillable Products* are also a huge hit, as they allow for a minimization of material waste, ensuring that “new packaging isn’t created unnecessarily” (Downer 2022). Zero-waste or *sustainable packaging* have been leading the change, as the smallest of changes in environmentally friendly practices is ensuring that there is little to zero waste of unnecessary materials in something that will eventually be placed in the trash. Brainstorming the future of beauty means taking a mandatory path through the technological advances that shape today’s world. As the beauty industry continues digitally transforming itself, *Beauty Tech* is “developing at a fast pace and there are plentiful opportunities for brands to play into this space” (Culliney 2022). Tech trends make a promise to disrupt the industry as we know it with multiple developments focused mostly on AI and AR, evolving to become key players in omnichannel shopping experiences and processes made to fit everyone’s needs. Another tech trend is the uprising of *AI skin tech*, as this reality allows players to provide hyper-customized recommendations based on skin analysis that are detailed to a point that has never been matched before (Fjermedal 2022). The future also goes through *full circle omnichannel solutions* that disrupt a customer’s shopping experience. As Perfect Corp claims, a “successful direct-to-consumer strategy must digitalize product try-on, engage consumers with personalized experiences, and enable cohesive digital inter-activities across all consumer touchpoints including retail, web, in-app, and across social” (Fjermedal 2022). *Technology for* *sustainability* is a tech trend that impacts two of today's top concerns, and it is set to stop, or at least minimize, beauty product waste; by adjusting to virtual environments, companies can reduce overconsumption and lower their eco-footprint. Additionally, although Beauty Tech has only made advances on limited beauty categories until now, it promises to *expand into new categories*, promising to impact nail color and men's grooming. Furthermore, *smart skincare tools*, like mirrors and portable tools, are highly promising as well, examining customers' skin and rating it, providing personalized tips based on everyone's skin condition (Kidecha 2022). Lastly, *hyper-personalization* is the major key advantage that tech advances in the beauty industry provides – most people find it difficult to choose which products are the right fit for them (Yieldify 2022), so personalized services, experiences and products are in high demand and are extremely appealing to all sorts of customers (Kidecha 2022), making the correct steps in *providing more inclusive solutions and adopting sustainable practices*. Data-driven processes have been leading the Beauty Tech revolution and big players have only been taking advantage of it, making personal connections with their customers, tracing a more appealing customer journey that shows that brands listen to their consumers and their pain points.

Product Innovation

The beauty industry has experienced remarkable changes over the years. AI and AR have been able to create disruptive beauty products, gadgets and apps that have resulted in exceptional results. Providing real-world examples, *AI Skin Analyzer* technology allows a skin analysis to be performed on a person's skin, delivering detailed information about the health of their skin, as well as personalized recommendations (Maliavina 2022). Similarly, *Hair Scanner*, through the camera of a device capable of analyzing the user's hair, performs hair diagnostics and then recommends the appropriate products (Evans 2021). Likewise, the *Foundation Shade Finder* tool "simplifies the process by utilizing AI technology to detect your skin tone and recommend the best shades" (Team YouCam 2022). It identifies the user's skin tone through selfies, recommending the appropriate make-up color for that same person's skin tone (Corina 2021). "When AR meets AI" (Corina 2021), innovative and revolutionary technologies such as virtual try-on and magic mirrors lead to incredible results that provide better consumer engagement and satisfaction (Maliavina 20222), and thus the success of beauty brands. Virtual try-on technology has been widely used by several makeup and cosmetic companies by enabling users to virtual test beauty products – such as lipsticks, eye shadows, foundations, and different hair colors digitally (Maliavina 2022) – through the camera of their personal device (L'Oréal Paris 2020). Moreover, magic mirrors allow the users to augment the space or objects around them, "with digital objects, typically using public devices such as TV screens that may or may not disguised as normal mirrors" (Scholz & Smith 2016). Furthermore, "the user can see himself as part of the augmentation, either in direct view in a digital mirror or by watching his actions on a screen from the perspective of a third person" (Scholz & Smith 2016). Accordingly, many beauty brands are using smart mirrors in the form of Apps, e-commerce tools and as physical mirrors in shops (Ulriksen 2019). L'Oréal has launched apps such as *Style My Hair*, which allows consumers to digitally change their hair color before committing and undergoing this change in 'real life' (Marr 2019). YSL surprised the world by adapting its iconic lipsticks to these innovative technologies (L'Oréal Groupe n.d.) through three methods: (i) the *Shade Wheel* method, which delivers thousands of color possibilities and enables the consumer to try the shades virtually and convert them into real lipsticks (L'Oréal 2022); (ii) the *Shade Match* method, which enables the consumer to download within the app a photo of the outfit that is being used by the user and afterwards the app generates a shade of lipstick that highlights and matches with that outfit (L'Oréal 2022); and (iii) the *Shade Stylist* method, which gives the consumers the opportunity to consult color trends, in real time, provided by YSL experts, allowing them to make the final choice of color based on the trends given to them by the experts

(L’Oréal 2022). By choosing one of these methods, the consumers press the ‘create option’ and the machine automatically generates their product choice (Parmanand 2021) (Appx. 4).

Pioneer in tech, L’Oréal also launched the *Colorsonic,* a portable device that “uses a custom mixer mechanism to combine a precise amount of developer and formula to create a hair color. The device then dispenses the right dose of hair color and applies it to the hair via an oscillating nozzle of bristles as they move in a zigzag pattern to evenly distribute it on the hair” (L’Oréal 2022) (Appx. 5). Lastly, consumers have been given the chance to perform dermatological treatments through the emergence of smart home devices (Dr. Rachel Ho 2022) capable of responding to consumers’ needs in a completely innovative and intelligent way. Foreo is the perfect example of a brand that has been making a difference with the *Foreo UFO 2* device, a smart facial treatment mask, which features a full spectrum LED light therapy as well as combines three different technologies namely, cold, warm, and sonic pulsations. The device connects to an app and allows the user to select the most suitable treatment for their skin type and condition, guiding the user through the entire treatment. As a result, Foreo has managed to take Beauty Tech to a whole new level and to bring in-clinic treatments closer to the consumers’ smart home devices (Skin n.d.) (Appx. 6). Going hand-in-hand, as AI, AR, big data, and disruptive technologies continue to evolve, so will beauty and cosmetic brands and products, as well as the consumer’s relationship with them (Kavde & Taduri 2022)

Disrupting the Retail Experience

Over the past few years, there has been a tremendous amount of innovation and entrepreneurship in the beauty industry (Marr 2019). With the Covid-19 pandemic, retailers have been shifting their strategy to a digital and e-commerce approach across geographies (Marchessou & Spagnuolo 2021). Accordingly, the pandemic forced many beauty retailers to temporarily close their stores and refocus their efforts on facilitating increased online sales, which accelerated the e-commerce expansion among specialty retailers within the beauty industry (Deloitte 2021). As a result, beauty retailers have been improving their customers' mobile and e-commerce experiences and integrating cutting-edge AI and AR tools and technologies into their business strategy sphere to “increase attraction and retention of consumers” (Deloitte 2021). Furthermore, the value of the customer's word has increased, and retail has changed to satisfy customer demand (Deloitte 2021).

Beauty retailers have been upgrading their physical stores and their digital platforms, as well as creating an omni-channel presence to position themselves for the future (Deloitte 2021). To offer a modern shopping experience, retailers have been incorporating digital components, beacons (Bluetooth-based hardware transmitters for interaction purposes) and try-on hotspots “to provide a seamless shopping experience tailored to consumers’ individual preferences” (Deloitte 2021). Consumers still prefer to “try on products, match the colors to their skin tone, and compare textures”, which is why AR product try-on is one of the most popular e-commerce trends among beauty retailers by simulating a realistic full-face appearance (Deloitte 2021). Virtual try-on enables the end user to virtually experience the products with any device or channel. After seeing a realistic rendering of the final product, the user can add their preferred items directly to the shopping cart, which helps to predict that this trend will quickly gain popularity as AR technology develops (Deloitte 2021).

Overall, and despite all these advancements, it is crucial to bear in mind that for beauty retailers to gain a competitive edge, they must not only fully acknowledge the current product trends, but also the “problematic flaws” (Maya 2021) that still exist within the beauty industry. This will enable beauty retailers to build a “world that fit everyone's needs” (L'Oréal 2021) and to be in line with the “observable trend towards natural and organic products and ingredients as well as eco-friendly packaging” (Deloitte 2021) that deeply impacts consumer behavior.

III. Inclusive Beauty

"Beauty is a universal aspiration that crosses time, countries and cultures" (L'Oréal 2021), meaning an ideal world would cater products and services that fit *everyone's* needs. Surprisingly, the term *inclusion* is rather new to the beauty industry (Appx. 7). Simplifying what inclusive beauty means leads to an understanding of minorities' pains and the obstacles that people with rare skin types feel, as a starter – like so, let us define inclusive beauty as the "beauty that caters to all individuals, regardless of their gender, age, religion, skin tone, skin type" (CB Insights 2021). For inclusive beauty to come to life, there needs to exist solutions for everyone, from people with severe skin conditions who don't feel as if their problems have a harmless or non-addictive addiction to their skincare, to disabled individuals that feel left-out of *feeling beautiful* out of an unavailability of accessible products for their motor and mental needs. The beauty world has been shifting towards a more inclusive mindset in the last couple of years, with steps as little as a more spread-out range of foundation shades. Assuming 2017 as the beginning of our inclusive beauty timeline, as it was the year when Rihanna's Fenty Beauty brand disrupted the industry and created a whole movement, this is rather new – it is less than a decade of efforts towards accessible and representative products, services, and initiatives. Understanding the reasoning behind Fenty Beauty, it is said to have "answered a widespread consumer need for individuals who don't normally see themselves in beauty products or advertising" (M_use n.d.), with an initial launch of 40 different shades of foundation, from light to dark, as an effort to represent everyone's tones and undertones, and a bonus of an extra diverse model casting. However, this was only the foundation, the beginning of a movement that still, to this day, holds a *to-do list* that will occupy the next decades to come – there is still a long way to go, although it is important to keep in mind the efforts that have already been made towards a shift of mindset. Consumers have been "demanding diversity and influencing brand decisions to tackle these issues" (Kalendra & Qesja 2021) for many years now and we can see its impact in media and such: advertisements have become more inclusive, targeting a wider range of consumers, packaging that strive towards accessible beauty, greater and more detailed ranges of foundation shades, men cosmetic lines or even unisex products that "focus on specific skin concerns or conditions" (CB Insights 2021), an understanding of aging consumers with design that is easier to understand and even children skincare "with an emphasis on safety and efficacy" (CB Insights 2021).

Lack of Representation within the Beauty Industry

Although clear efforts have been made towards a more inclusive eco-system when it comes to beauty, it is difficult to ignore that "the industry has, for many years, successfully glossed over its many problematic flaws" (Maya 2021) and it is of the most importance to understand how deep of an effect a lack of representation can have in non-standard consumers. After all, a lack of diversity is set to have a negative impact on "individuals of any ethnicity, causing them to feel excluded and generating feelings of anxiety, frustration and low self-esteem" (Kalendra & Qesja 2021), which is worrisome, given that only 1 out of every 5 beauty purchases admits feeling represented in the advertisements they encounter (Morris 2021). Like so, this leads to a perception of beauty to *conform*, rather than a form of self-expression, causing insecurities and a lack of self-love (Maya 2021). There are so many demographics with "untapped potential" that consumers are demanding accountability from companies who are creating an unrealistic standard for what beauty truly means (CB Insights 2021); the same consumers admit having "felt the need to follow a Eurocentric standard of beauty to be recognized" (Maya 2021). Disabled people "navigate a world that isn't made for them. They face obstacles" (M_use n.d.) and there has been drawn a very little of a path to fight this; inclusivity goes through the disable-bodied, but "it remains a realm exclusively created and designed for the able-bodied" (M_use n.d.). Many concerns are also caused by the mediacy of this kind of topics, as minorities fail to understand whether inclusion is set to be a temporary hot topic and so, something that is dropped as soon as it is not as relevant anymore, or something that will prevail, aiding everyone in their representation struggle. Lastly, it is a challenge for brands to take on, helping raise awareness based on their consumers' pains, ensuring inclusive beauty is respected, making "a concerted effort to represent all types" (Morris 2021).

Why Customization Matters

As consumers' mindsets change and there is a priority in ingredient lists, product efficacy and meeting beauty requirements, there is reasoning to believe that customization in product offerings is the way to go, to assure that everyone feels represented in beauty appliances. With consumers "demanding products that are more tailored to them" (CB Insights 2021), it is expected to see brands struggling to reach the perfect algorithm that allows them to develop customized services and products – D2C brands are "looking to solve and treat problems from an entirely new perspective" (Nielsen 2022). According to McKinsey & Company, most of them are still developing a subset of their offering that is a customized offering indeed, which is seen as a major challenge. But is it a challenge that is worth competing against? Customization is a lot more difficult to implement that it appears at a first glance; "it takes a lot of work on the back-end, from analyzing data to asking customers the right questions" (Salpini 2021) and it essentially follows the mindset that "data can either help a customer find a better product or can create a better for them" (Salpini 2021). As seen with indie beauty brands, such as Proven and Function of Beauty, that are now competing with beauty giants, the results of adopting customized procedures are majorly positive and reinforce customer relationships – they have confirmed that personalization is something to relish in, as it is a way of convincing the customer they are part of the process, tailoring every step of the way and realizing what they need, what is good for them and knowing what works best for them. Key players as YSL Beauty have begun to step up too, with lipstick revolution Perso, and as customized solutions are key to making sure everyone has their beauty needs assessed, incentivizing purchase repetitions, the future of beauty goes has to go through this path – only like this will inclusiveness reach everyone, making sure everyone feels as beautiful as they should. Nevertheless, customization relishes in technological developments, as the best way to tailor processes and items for customers' specific needs.

IV. Sustainable Beauty

In the last few years, the focus on sustainability has proved to be a priority. More than ever, there is a huge concern regarding the impact that our actions have on the environment. Consumers are becoming increasingly aware of social and environmental causes, and therefore, looking to adopt more sustainable solutions. Accordingly, 90% of Gen Z and Millennials are making efforts to reduce their impact on the environment, and yet, 64% of Gen Z would choose to pay more for a product that is environmentally sustainable (Deloitte 2022). Reshaping companies' business models by implementing sustainable practices has been a challenge for the beauty and cosmetics industry. Additionally, consumers are more than ever aware of the impacts of sustainable practices (Bourne 2022) and are enquiring brands on how they contribute to reduce the environmental and social impact caused by the raw materials of their products, as well as looking for sustainable packaging and products that contain natural ingredients (Team YouCam 2022). In this context, many beauty brands have been adopting several key sustainable practices (Perfect Corp 2022) that have become a trend within the beauty industry, such as i) saving water, ii) using clean ingredients in beauty products, and iii) finding environmentally friendly packaging solutions. Given that "almost two thirds of the world's population experience severe water scarcity for at least one month each year" (Unicef n.d.), *Waterless Beauty* appeared to produce beauty products that do not contain water (Radin 2020). As Clare Varga – director of beauty at trend forecaster WGSN – stated "alternatives are emerging in the form of waterless beauty, from solid formulas to alternative natural oils, and products that don't require water to work" (Ibraheem 2022). As these products do not contain water in their composition, they come in the form of bars or powders (Fisher 2022), having a longer duration when compared to products containing water (Turner 2021). Another benefit of removing all water from beauty and personal care products is the reduction of the volume and packaging of a given product, which decreases carbon emissions (Kovaleva & Chai 2021). Furthermore, consumers are becoming increasingly concerned about their health and therefore the impacts that some beauty products can have on them. According to a study conducted by the Environmental Working Group, "since 2009, 595 cosmetics manufacturers have reported using 88 chemicals, in more than 73,000 products, that have been linked to cancer, birth defects or reproductive harm" (Faber 2020). The referred study has identified as well "1,517 cosmetics and personal care products that contain octinoxate and 460 that contain oxybenzone", which are "some of the most environmentally destructive UV filters on the market" (Young 2022). As a response to these problems, brands are adopting a clean beauty strategy, implementing, or reformulating products with natural ingredients absent of unhealthy ingredients as well as choosing to use ethically sourced ingredients derived from renewable resources, non-animal and cruelty-free (Jelena n.d.). Additionally, bearing in mind that the beauty industry "produces over 120 billion units of packaging annually, most of which is not recyclable" (TerraCycle 2021), several beauty companies are implementing the use of recyclable and biodegradable packaging produced only with recycled materials. Other companies have been creating multi-purpose products, avoiding the need to buy several products and packages, as well as making refillable packaging options available for their products, giving them a new life (L Makeup Institute 2021) and hence reducing packaging production and waste to a great extent. With that said, the natural cosmetic market is expanding rapidly (Martinez 2022). Indeed, consumers seek beauty products that "use natural ingredients (40.2%), respect the environment (17.6%), and use reusable and recyclable packaging (7.9% and 15.8%, respectively" (Mayo 2021)

(Appx. 8), which corresponds to the growth of the global natural cosmetics market, which is expected to reach USD 54.5 billion by 2027 (Roberts 2022) (Appx. 9).

The Beauty Industry's Eco-footprint

As we are all aware, there are significant environmental issues affecting the planet today, from plastic waste to the more obvious effects of climate change. The use of chemicals and plastic in cosmetics products and packaging, as well as the promotion of excessive consumption, have earned the beauty sector a reputation as one of the sectors that most contribute to environmental degradation (Moon 2020). Numerous beauty products, such as shower gels, eye shadows and scrubs, include microbeads in their composition (UNEP n.d.). These plastic particles are so small that cannot be recycled, do not dissolve, and do not decompose when wastewater is treated, which has a serious effect on the environment (Matthews 2021). As a result, "if we do nothing, by 2050, our world's oceans will have more plastic in them than fish" (General Assembly of the United Nations n.d.). Furthermore, the beauty industry is one of the major contributors to water scarcity phenomenon (Turner 2021) as it is the most used ingredient in the composition of beauty products (Young 2022). According to Dr. Madhuri Agarwal, dermatologist, a cosmetic or personal care product may contain, on average, 80% water in its formula, and most of the times it serves only as filler, not adding any benefit to the product (Sachar 2020). As if it was not enough, this has been significantly contributing to the intensification of deforestation and loss of biodiversity, considering most of the raw materials used in this sector come from forests which not only encourages the under-exploitation of the soil and trees but also contributes to desertification (Benson 2020). One of the most used ingredients by this industry is palm oil, which is well known for the damage it causes to ecosystem. This oil is a very affordable emollient that is well known for its versatility and ability to extend the shelf life of products (Embleton 2022), but it also contributes to the habitat loss of threatened and endangered species and seriously contaminates the air, soil, and water, accelerating the global climate change phenomenon (WWF n.d.). Furthermore, deodorants, hair sprays, and perfumes contain volatile organic compounds – chemicals that have been found in these products – (Martinez 2022), which can emit as much air pollution as motor vehicles (Pierre-Louis & Tabuchi 2018). As a result, this industry is largely to blame for the emission of carbon dioxide from beauty products (Young 2022). Lastly, the beauty has long been renowned for subjecting its goods to animal experimentation. Brands take animals out of their natural habitats to test thousands of products and components, which significantly adds to resource waste and consumption, including the use of energy, ventilation, lighting, and temperature control, among many other resources (Young 2022).

Having this said, it is crucial to end this section in the same manner that it began. There is still a lot of work to be done despite the sustainability trend (British Beauty Council n.d.). This industry is still one of the industries that contributes most to environmental degradation, which is clearly at odds with the sustainable goal that Beauty Tech seeks to accomplish by providing beauty brands with new virtual tools that are crucial for them to adopt eco-friendly business practices and to change what is still a reality for the beauty sector.

V. Consumer Behavior within the Beauty Industry

For a very long time, researchers, academics, and brands have been interested in the consumer behavior across industries to adapt to changing consumer lifestyles and spending patterns. When creating a marketing and sales strategy, it is critical for businesses to have a solid understanding of consumer behavior and overall needs. Indeed, data-driven marketing helps to identify the different consumer behavior patterns (Deloitte 2021) because “all marketing decisions are based on assumptions and knowledge of consumer behavior” (Hawkins et al 2007). For that reason, this section will take a closer look at the consumer behavior within the beauty industry through the lens of its expectations, drivers, and obstacles.

Expectations and Drivers

Human psychology has a significant impact on consumer preferences and likes and dislikes for products and services (Sai Lakshmi & Suresh Babu 2019), and these preferences and attitudes are constantly evolving over time (Sai Lakshmi & Suresh Babu 2019). The beauty industry was already undergoing a change even before the pandemic affected businesses in general. Everything has moved online due to the significant changes in global social interactions, which has led to a new set of consumer expectations and drivers. These customers now expect “the best of *phygital* - seamlessly integrated physical and digital experiences” (Rawat 2020). Customers expect brands to roll out services that make use of the convenience of digital procedures. The ease of digital processes is something that consumers expect brands to offer in their services (Rawat 2020). They desire a wider range of options, which they can get from online and in-store interactions that empower them to make informed decisions. Accordingly, consumers are particularly interested in skin-scanning devices, virtual try-on services, smart mirrors, and data-driven recommendations for beauty products as key tech-enabled beauty services (Rawat 2020). The convenience these solutions offer is the main factor encouraging consumers to embrace them (Rawat 2020). After making their purchase decisions, customers want to be able to easily purchase the item from the application itself (Rawat 2020). Therefore, a crucial expectation is for there to be close integration between the high-fidelity, AR-driven selection experience and the e-commerce-based buying experience (Rawat 2020). Consumers also expect more personalization from all online experiences in the beauty sector because they want to stop using the “trial and error method” (Rawat 2020) to find a product that fits specific needs. These two expectations are inextricably linked. Indeed, consumers' perceptions of the brand's level of care and service are enhanced as a result of personalization, which in turn encourages them to associate more with the brand (Rawat 2020). Having said that, the brand's capacity to develop and implement data solutions will almost entirely determine its ability to meet this customer expectation. Furthermore, by influencing both the macro perceptions of the brands and the micro perceptions of their products and services, the content that the brands within the beauty industry post on their social media accounts has a significant influence on purchasing decisions (Rawat 2020). In fact, consumers are relying more and more on social media as their main source of information when looking into new brands and products within the beauty industry (Deloitte 2021). According to a GlobalWebIndex survey, social media posts, recommendations, and advertisements account for 70% of all beauty buyers' brand discoveries (Rawat 2020). Indeed, consumers within the beauty industry, and Gen Z, want to associate brands with inclusivity, sustainability, and clean product formulations because sustainability has grown in importance as a factor in consumer decision-making (Rawat 2020). There is a discernible trend towards natural and organic products and ingredients as well as eco-friendly packaging as consumers' health and environmental awareness rises (Deloitte 2021). For that reason, the desire for outer beauty and awareness of wellbeing both affect consumer behavior and raise the demand for these products (Deloitte 2021).

Obstacles

Despite the expectations and drivers that affect consumer behavior within the beauty industry, this sector still needs to overcome some obstacles to truly succeed on a global scale. “The beauty industry is present from drugstores and brick-and-mortar stores to almost every form of online shopping, including e-commerce sites, platforms, or social media selling” (Banasik 2022). Due to the boom in new products over the past ten years and the growth of e-commerce, businesses in the beauty sector face some challenges in providing customized products and services (Banasik 2022). Accordingly, “we face two major challenges. Number one being overcrowding and proliferation of products. Secondly, we need to strive to educate consumers on what makes a product different, how it works and what makes it effective” (Hessel 2020).

Given that two-thirds of consumers consider that “affordability is an important factor when purchasing beauty products, rising to 73% among females”, the development of an omnichannel strategy, along with price wars, a plethora of rivalries, and pricey marketplaces, do in fact pose a significant challenge to the beauty industry (Rawat 2020). For that reason, beauty companies are providing a wide range of special promotions, discount coupons, in-cart discounts, and loyalty programs (Banasik 2022), but as competition rises, it is getting harder to stand out. Moreover, a major challenge for brands in the beauty industry is to change consumers' perceptions of tech-enabled beauty solutions as luxury services that efficiently provide effective solutions (Rawat 2020).

Building strong customer loyalty is another challenge within the beauty industry, particularly in an online sales environment. “The challenge with brand loyalty today is that there is a plethora of choices. We are creating a culture where everything is disposable – if you try and don’t like it, you dispose it and that becomes a continuous cycle” (Hessel 2020). Accordingly, today there are many different cosmetic options and ways to buy them, and since consumers are always experimenting with new products and trends, customer retention is getting harder and is a major challenge for the industry (Rawat 2020).

For that reason, customization – which has been described throughout the aforementioned sections –, is “no longer a trend. It is a clear demand from the market” (Rawat 2020), which makes it difficult to keep up with. Overall, being transparent and authentic with consumers would be the best way to secure brand loyalty (Hessel 2020), in addition to offering tailored solutions through products that enable customers to “achieve beautiful and desired results” (Hessel 2020) that are in line with their expectations.

Part 3. Methodology

Within the aim of the present Work Project and having understood the current state of Beauty Tech – the opportunities it represents on the development of inclusive and sustainable beauty, as well as changes on consumer behavior –, it becomes of a crucial importance to comprehend exactly what possibilities does it represent from an industry's professional point of view, consumer perceptions and what their expectations towards this theme are, alongside actual business applications that could potentially combine all three of the main areas of focus within the project. So, a well-planned out research was traced out in order to understand all variables mentioned above. This exploratory research was drawn out in two different main phases: (i) secondary data, in which we dived ourselves into the theme as an attempt to better understand the dynamic of the Beauty Tech concept and the aggregating concepts, with multiple sources of information; (ii) primary data, gathered from interviews with experts, in this specific case Beauty/Technology experts, quantitative research focused on consumer expectations; and lastly, (iii) qualitative research based on quick chats with beauty advisors at different stores.

Holding onto our qualitative insights from active professionals in this industry, for discussion purposes, we took the liberty of dividing the beauty market into four different segments that will be analyzed separately during our topic discussion, as each of them implies different visions, business models, expectations, drivers, needs, and overall, consumer-types and behavior: (i) Mass Market (in which beauty products are lower in pricing and easier to access, distributed mainly in supermarkets, hypermarkets and drugstores, with brands such as Maybelline, NYX, L'Oréal Paris, Rimmel, Cover Girl and Nivea); (ii) Active Cosmetics (focused on pharmaceuticals and highly specialized advice from experts, distributed mainly in pharmacies, with brands such as Vichy, La Roche-Posay and Neutrogena); (iii) Luxury Beauty (a higher pricing and more exclusive product offering, distributed mainly in branded stores, department or specialist stores, with brands such as YSL, Lancôme, Tom Ford and Guerlain);

and (iv) Professional Products (focused on hair specialists and haircare, distributed in hair salons, with brands such as Kérastase and Tresemmé).

Data Collection Procedure

As a way of guaranteeing a highly diverse and valuable range of data, used to analyze and furthermore discuss the previously stated research questions, the primary data was collected through three different approaches:

1. Open-ended interviews with industry experts from the work project's areas of interest – beauty and technology. These interviews' goal was fundamentally to comprehend Beauty Tech from a professional's point of view, in a way that would give us crucial feedback to understand certain business choices from industry giants and upcoming players, and also to figure out how some business ideas that would make sense across multiple features can be developed (see Appendix 12-19 for detailed transcripts of the interviews). For these interviews, a prior selection of qualified professionals was made, with a multiple brand presence, as well as a diverse sample when it comes to demographic data of the interviewees – so, age and gender, mostly. Likewise, after the initial contact was made, we took the liberty of interviewing the respondents – each interview started off with a brief explanation of the reasoning behind it and, after asking the interviewee to present himself and explain what his day-to-day is, a set of three themes of questions was made, focusing on the three areas of study of the present work project. In total, 7 interviews were made, each of them rounding 45-60 minutes total.

2. A quantitative questionnaire was carried out and applied to a total sample of 514 consumers of beauty products. After laying ourselves across consumer behavior in theory and learning companies' motivations for technological development, it was fundamental to comprehend, in practice, consumers' expectations and drivers on beauty products, as well as thoughts and opinions on inclusive and sustainable beauty and the industry's tech developments.

3. A brief qualitative research was conducted, directed towards beauty advisors at renowned beauty stores at the shopping mall, with the specific goal of understanding consumers' behavior towards the underlying thematic.

The Sample

In order to select a suitable sample for the undergoing investigation, the data collection undertook diverse criteria:

1. The open-ended interviews were made to a total of 7 beauty or tech professionals, with diverse backgrounds and demographics: Carlos Moreira, Director of Business Development at Perfect Corp, the leading company in Beauty Tech as a provider for renowned companies in AI and AR beauty services (New York, U.S.A.); Rita Paiva dos Santos, Founder of Beauty Bible, an ever-growing Portuguese brand who prioritizes natural ingredients in their production, respecting sustainable processes (Lisbon, Portugal); and L'Oréal employees, given that it is the world's beauty giant and major key player in the industry: Marta Maia, Global E-Commerce Manager Assistant at Kérastase (Paris, France); Matilde Borges Tito, Product Manager at Vichy (Madrid, Spain); Rodrigo Fiuza Sanches, Content & E-Commerce Activator for the Consumer Products Divison at L'Oréal (Lisbon, Portugal); José Passarelli, Brand Activation Specialist at Lancôme, YSL and Biotherm (Lisbon, Portugal); and Dorothée Choussy Serzedelo, Sustainability and CSR Manager at L'Oréal (Lisbon, Portugal).

2. The quantitative questionnaire (Appx. 10) was applied to a total of 514 people – the population under investigation was filtered out to correspond only to beauty consumers of ages, from 18 to 64 years of age, with diverse shopping habits and perspectives on beauty.

3. The qualitative research directed towards retail workers was applied to a total of 4 beauty advisors at Colombo Shopping Center, at different stores: Sephora, Clinique representatives at Perfumes & Companhia, Kiehl's and The Body Shop.

Part 4. Discussion

Consumer Behavior

Given the research conducted throughout the present project, we attempted to answer the previously stated question of what drives or pushes away a customer from purchasing tech-based and customized solutions.

On a preliminary level, it has become unquestionable that we live in a global *phygital* world that represents the consumers' expectations as "seamlessly integrated physical and digital experiences" (Rawat 2020). Relying on our qualitative insights, 43,6% of the given sample of beauty consumers buy their products both online and in store, which means we can no longer assume that consumers in general consider both options as alternative (Appx. 11). Instead, consumers consider them as complementary and conciliate both online and in-store when making a purchasing decision, which leads the way for the rise of the omnichannel purchasing experience.

When it comes to consumer behavior, it is identifiable across all beauty sectors a customer predisposition to buy tech-based and customized solutions that fit their needs and to receive data driven recommendations for their convenience. Accordingly, and relying, once again, on our qualitative insights, 86,9% of the given sample of beauty consumers would be willing to pay extra for products that would be fully customizable to their skin needs, independently of the beauty segment, which is aligned with the percentage of 92,4% of consumers that actually acknowledge the ability that tech has when providing highly customizable products and devices (Appx. 11).

Moreover, consumers expect brands to be inclusive and to solve minorities' pains, which explains why 87,6% of the consumers of our sample would like to see more diversity on brands' advertisements (Appx. 11). This means that, when making a purchase decision, the inclusivity factor drives beauty consumers from buying tech-based and customized solutions, as they analyze if the product (or service) they are buying are inclusive enough to solve minorities' obstacles that are yet to overcome.

The same rationale can be applied to the sustainability factor, as beauty consumers are willing to pay extra for a sustainable product. Aligned with this tendency, when making a purchase decision, more than 50% of our sample of beauty consumers consider how sustainable a product is before buying it (Appx. 11). Indeed, between two products, product (A) with a cost of EUR 34.99 – but free of parabens, cruelty-free, packaging made of recycled plastic and a B-Corp certification –, and product (B) with a cost of EUR 19.99 – but contains parabens, sulfates and microplastics, as well as plastic packaging –, 71,8% of our sample of beauty consumers would buy product (A) despite being more expensive (Appx. 11).

As already pointed out, consumer behavior depends on the market segment within the beauty industry we are referring to, as consumers require very different levels of customization depending on the sector from which the consumer is buying. Therefore, it is key to make some specific considerations on the various ecosystems that exist in the different market segments, namely within the (A) Mass Market segment, the (B) Active Cosmetics segment, the (C) Luxury Beauty segment, and the (D) Professional Products segment. Each of these segments has its own customer segment with implied specifications and consumer behavior patterns that differ among them all.

(A) Mass Market segment

As stated by Rodrigo Fiuza Sanches, Content & E-Commerce Activator for the Consumer Products Division at L'Oréal, one "cannot talk about the Mass Market consumer without mentioning one specific word – promotion" (Appx. 17), meaning that the nature of these consumers is, essentially, a switcher that is constantly balancing different brands and products. When it comes to consumer behavior within the Mass Market segment, "we usually say that it only sells whatever is in promotion, and if in Spain we have a *low-low* market, in the sense that prices are mostly flat, in comparison to us, and they are low, then in Portugal we have a *high-low* market – one day the price is high and then you add a promotion on it and it gets low, and then you remove the promotion and it gets high. It's a lot of juggling all of this, so it is a big market and consumers are very attracted by promotions". Due to the switcher nature of Mass Market consumers, it is extremely difficult to hold on to consumers and make them loyal to a specific brand, as their choice will depend on which brand has the lowest prices or the most beneficial promotion at the time of purchase, whether it is a brand they have tried several times, or one that is new to them. Accordingly, the consumer journey until the point of sale within this sector is constantly tested through the performance of "some tests removing promotion, increasing promotion, and seeing the consumer behavior regarding all of this" (Appx. 17), allowing Mass Market brands to gain a better knowledge of pricing wars.

So, knowing this, how can massified brands make a difference with technological services and tools? Relating consumer experience to developed topics such as inclusion and sustainability, Mass Market brands have been becoming fonder of virtual try-ons, as a way to reduce the quantity of in-store testers – how? By using virtual try-ons and providing a nicely designed UX for testing products through the online environment. However, contrary to popular opinion, tech services and tools do not necessarily need to be placed on the online stratosphere exclusively, but rather making its way through retail space, adding benefit to an offline experience. Effectively, after the pandemic, what we see is an offline increase, and although it wouldn't be obvious for Mass Market brands to add tech elements to their retail space, after qualitative insights were gathered, we can point out that some brands have been testing this concept with surprisingly positive results. As we know, "everything in the Mass Market segment is a lot more competitive" (Appx. 17), for instance in terms of in-store space, so adding disruptive elements based on technology, such as Smart AR Mirrors, would not be doable, at all. Instead, and despite that, virtual try-ons are making a difference on the purchase side with a rather alternative approach – as mentioned by Sanches, L'Oréal tries to "find ways to make up for it with our try-on services at the point of sales" (Appx. 17) – how? Their product labels "have a QR code that you can scan and access the virtual try-on, in store" (Appx. 17) for every product (Appx. 20). Besides the key aspects of minimizing the number of physical testers dramatically, this allows consumers to try out the products without touching them, which "ends up being better being better, because you can screenshot, share with friends, and it's more personal and intimate because you're the one who's looking at it. But that is the reason why a mirror wouldn't make as much sense in Mass Market, for space reasons" (Appx. 17). Essentially, this provides consumers with an omnichannel purchase experience, combining online testers at an offline point of sales, disrupting the retail experience with Beauty Tech and providing tools that allow for a more inclusive, sustainable and personal shopping.

(B) Active Cosmetics segment

The Active Cosmetics segment, according to Matilde Borges Tito, Product Manager at Vichy, works "to sell to the pharmaceutical, and for him to be able to advise and sell to the consumer", which is why pharmaceutical brands, such as Vichy, Avène, La Roche-Posay, among others, are "very connected to a B2B2C business model" that implies a close contact between the consumer and the pharmaceutical in a concerted "synergy between all these players" (Appx. 15).

The consumer within this market segment seeks for "excellent scientific results and dermocosmetic excellence" always within the pharmaceutic scene, which is the main communication channel with the consumer (Appx. 15). Underpinned by concrete scientific results, and aligned with consumers' expectations, customers within this market segment are becoming more interested in health, as well as safe, effective, high-performance products that come highly recommended by professionals.

As e-commerce grows, customer connections are evolving in tandem with new consumer purchasing habits, which does not necessarily imply that technology services and solutions must be confined to the digital environment, but rather provide value to both online and offline experiences. However, when it comes implementation of tools like try-on mirrors within the Active Cosmetics segment as part of the consumer journey, Tito remarks that "contrary to a Luxury division, in which brands have their own corner, brand space at a pharmacy is something that is very volatile" (Appx. 15), which does not necessarily mean that it does not make sense, it just means that "it is something that is not on Vichy's radar yet. It is super visionnaire and revolutionary, but for pharmacies it is more complicated" (Appx. 15).

Knowing this, how can brands within the Active Cosmetics segment make a difference with technological services and tools? Today, new technologies are an opportunity to offer more personalized products and advice, taking it to a new level, making the most of the latest Beauty Tech innovations to provide consumers with augmented services. Despite the importance of investing in pharmacies and in providing the pharmaceutical with the necessary tools to effectively advise customers when they reach out a pharmacy, Tito highlights the benefits of having virtual try-ons and digital diagnostic tools in this segment (such as the QR codes for Vichy's Skin Consult or La Roche-Posay's Acne Tool), considering the predicted consumer behavior as "you might not have a dermatologist in your area or your regular pharmacy, but you have access to this content platform that is created by us and will give you all the necessary tips" (Appx. 15).

This emphasizes that Active Cosmetics, as a segment, might benefit from using services linked to a strong expertise in Beauty Tech as a way to reach the consumer, even though there is always and consistently the part taken by the pharmaceutical or dermatologist, who is a key player in this segment's consumer experience.

Accordingly, in contrast to the Mass Market segment, where "everything that is done is for the consumer because it is the consumer that makes the final decision", in the Active Cosmetics segment, "on average, 70% of sales that are made in pharmacies have some kind of influence from the pharmaceutical, meaning only 30% of them depends on the consumer, that gets there with his own preference and does the shopping alone" (Appx. 15).

So, although brands' efforts on most Market segments are directed towards the final consumer only, what we see happening in the Active Cosmetics, in specific, is different. There is a predisposition of brands to make Beauty Tech developments and tools available for both the consumer and the pharmaceutical, whose part is crucial for a positive customer experience, and final conversion. How? Instead of developing services and tools for the consumer, there are specific Beauty Tech based tools (such as the capillary AI device that Vichy provides pharmaceuticals with so that a precise capillary diagnostic can be made, in-store, by a professional) that are meant for the pharmaceutical, or health specialist, to use and perform on the consumer, emphasizing exactly how Active Cosmetics can make use of the Beauty Tech trend and adapt it to fit their market specifications.

(C) Luxury Beauty segment

The Luxury Beauty segment is being driven by a rising demand from high-end consumers for customized premium and high-quality cosmetic and personal care products. As mentioned by José Passarelli, Brand Activation Specialist at Lancôme, YSL Beauty and Biotherm, "anything that is personalized will tend to be better seen by the luxury consumer" (Appx. 18), given it is, essentially, a type of customer that always wants to be ahead of the trends and purchase items that are as exclusive as possible. Understanding this type of consumer's hunger for customization means interiorizing that this is where technology and Beauty Tech can come to play a part, in the luxury segment.

As a result, luxury brands in the beauty industry strive to provide consumers with something personalized that other brands do not provide, as a way of gaining competitive advantage, which "ends up being a marketing game" (Appx. 18) in which Beauty Tech-driven tools are critical to satisfy luxury consumers who are more than willing to try multiple products and have no price restrictions. Indeed, the luxury consumer is “extremely worried on not letting a product finish in order to get a replacement, meaning that the purchase driver is not the end of the product” (Appx. 18). Passarelli adds that this consumer “doesn’t need for it to be the end of the month or a specific time concerning financial reasons to purchase new products”, being “very worried about its appearance and always looking for results”, whether it is a luxury clothing consumer, a luxury skincare consumer or a luxury haircare one; generally, “it is a loyal consumer who already knows what to purchase whenever he goes into a store. It is not a person who buys products everyone in a while and has a limited budget whenever he goes shopping” (Appx. 18).

Furthermore, the Brand Activation Specialist illustrates the demand that has been proven to exist in the case of Lancôme, which seeks to become more technological than ever before, “because it is the pioneer brand in the technology business and, mainly, by the results that the use of technology brings to the brand and to the clients” (Appx. 18). Accordingly, Passarelli agrees that technology is getting more and more space in the marketing and becoming “more of a requirement, a pre-requisite”, so adding disruptive elements based on technology, such as Smart AR Mirrors “would be the perfect asset for the Luxury market” (Appx. 18), acting as an upgrade for the luxury consumer.

Aligned with Passarelli’s perspective, despite the undeniable trend of online shopping and more modern consumers becoming more digitalized, going to a physical store is always present and it is essential” within the Luxury segment, so “we shouldn't forget about the physical, I think there is always a need to go to physical stores” (Appx. 18). Likewise, what is recommended, based on our qualitative findings, is an integration of tech-based services and tools in the offline retail space. How? Let’s take a look at what has already been done only by Lancôme, “the world’s leading luxury beauty brand” (L’Oréal Groupe n.d.) and pioneer in tech developments within this market segment. Striving to enhance and, overall, level up customer experience, the brand launched a Parisian Flagship Store (Appx. 21), in which technology meets beauty. Entering this Lancôme location, consumer experience is driven by the latest tech innovations, with an offer of a personalized and immersive visit – “Personalization is at the heart of the services offered by Lancôme in its flagship store. From Artificial Intelligence to image recognition and Augmented Reality, the development of Beauty Tech brings beauty into a new era: more flexible, more digital and more personalized than ever before” (L’Oréal Groupe n.d.). This store location is the perfect example for an answer to our previously stated Research Question (What drives or pushes away a customer from purchasing tech-based and customized solutions?), showing that consumer experience can, and needs to, be enhanced by Beauty Tech developments, with customizable foundation creators, robotic fragrance applicators, digital mirrors, among many others.

Furthermore, because luxury brands, whenever they do not have their store, still often "have their own corner" within this sector, in department stores, for instance, as noted by Matilde Borges Tito (Appx. 15), adding Beauty Tech innovative features based on technology, such as Smart AR Mirrors, not only in an online environment, but especially in the offline, is critical for this market segment. Aligned, Passarelli believes it is critical to maintain a focus on physical and offline whilst looking at online (Appx. 18). With this said, it has become extremely clear that rewarding online purchases while disregarding retail purchases, as has been a trend for some time, is neither the way forward nor in line with consumer expectations within the Luxury Beauty market segment.

(D) Professional Products segment

The Professional Products segment, like any other, has its own specifications and particularities; but it might very well be the one that is the most different, as it is essentially based on professional beauty establishments and the way to cater to their needs and, consequently, their consumers.

Likewise, consumers within the Professional Products segment are typically looking for haircare products, which is the majority of items offered in this regard. When asked about what drives consumers to purchase a haircare product that can be inserted in the Professional Products segment, rather than just buying something massified, from the Mass Market segment, Marta Maia, Global E-Commerce Manager Assistant at Kérastase, shares her insights: when purchasing these products, the reasoning behind it is seeking for a solution to a specific problem, thus they are looking for the best fit between themselves and the brand that supplies them with that product or service – and this problem solver tends to fit under the professional product offering. Like so, according to Maia, "a customer's first purchase is typically a problem solver; you go on vacation and come back with hair fall and you're getting worried, so you buy a Kérastase product because you have seen it is very good, and it is the first time you're buying it" (Appx. 14). Purchase channels for these customers tend to correspond to either salons, hairdressers, estheticians and department stores, on the offline, or specialized retail platforms, on the online sphere. If you look at this too deeply, another type of consumer, or rather, a key player that takes part in the final consumer's decision journey, can also be the hairdresser or hair stylist itself.

Confronted with how, exactly, can technology add something to the customer experience in this market segment, it is easy to understand how the answer is not obvious. But still, although this segment being mostly focused on haircare products and solutions, it may also benefit from digital technologies, improving the brand-consumer interaction, as highlighted by Maia, considering "sales are happening more and more on digital e-commerce, so the habit of going to the salon to purchase haircare is slowly dying, as well as the average age, which has been lowering too, given the brand representatives" (Appx. 14).

The initial development regarding technology is pretty easy and straightforward – virtual try-ons could, once again, add something to this segment, and some brands are already on it. Actually, the more you think about it, the more sense it makes, considering hair colors, for instance – a virtual try-on is key here, as the consumer can get a glimpse of how they could look with a different hair color. Like so, the virtual diagnostics are also resourceful here, as consumers most definitely benefit from having their haircare routine filtered out for them, as a way of getting customized recommendations that are drawn out exclusively for them. Faced with this, Marta Maia shares that the brand she is actively taking a part on, Kérastase, has already implemented its own digital tools – a virtual haircare diagnostic, which is actually "one of the things that works best" in Kérastase's website, "meaning, one of the things that generates the most traffic" (Appx. 14).

Additionally, haircare brands in the Professional Products segment can also benefit from Beauty Tech related customization as a way of adding to the consumer behavior and increase the brand loyalty – how? Holding onto the insights that are drawn from hair diagnostics, tech developments can be put into action here, creating unique and customizable formulas for each customer's hair type and specifications. As this market segment ends up being rather massified in terms of production, the customizable aspects of haircare products could be nailed down to a range of pre-defined features about the product, that would be proportionally mixed, ending up creating the best possible product formula for a specific consumer. As a way of ensuring the intermediary player, as in the hairdresser, has a presence in this process, this could be a process available at haircare establishments, making sure the consumer has the most premium experience, learning everything about his product and the best ways to apply it.

Besides, Beauty Tech can also enhance consumer behavior from the point of view of hair salons, with tools that allow them to be the ones to upgrade the consumer experience, in the offline stratosphere – smart AR-powered mirrors could be put into place at specific locations and establishments, although an idea like this one obviously has added obstacles that need to be thought through before its implementation. Even so, innovations like these most definitely have the means to ensure a positive consumer behavior and an overall positive experience, which results from the implementation of tech developments in the consumer purchase making habits.

Furthermore, because consumers are "moved by crowds" (Appx. 14) if a product or service is well known for being good at solving a problem (for example, a shampoo for dyed hair or for hair fall, or a conditioner recommended for blonde hair), consumers will be interested in trying it out with the expectation that their related issue will also be successfully solved – this is why virtual try-ons and diagnostics have been getting more and more popular over the time, and the perfect proof as to why it makes sense for this segment to keep on investing in tech-based, innovative tools that do nothing less than enhancing consumer behavior.

Part 5. Main Limitations & Directions for Additional Future Research

(A) Limitations

Despite having concluded that if beauty firms implement customized, inclusive, and sustainable digital solutions into their business plans, consumers are willing to experiment them, regardless of the market segment we are referring to, there are certain factors that remain to be conquered.

The proliferation of products and rivalry/pricey marketplaces are an obstacle to bear in mind within the beauty industry, as tech-based and customized devices are obviously higher in pricing. Given this, and relying, once again, on our qualitative insights, we can say that high-tech devices for skincare, for instance, would only make sense in specific market segments, namely within the Luxury Beauty market segment, as its consumers have a higher budget and typically make purchases out of trying out new things just because. If proven to make sense, devices like these could also be implemented in the Active Cosmetics market segment, but never in the Mass Market segment, as it positions itself to promotion-driven consumers that are most definitely price sensitive, Moreover, it would also be much more difficult to accomplish high-tech devices in a segment that is essentially massified, with a lower budget than the Luxury Beauty segment, for instance. Indeed, 93,8% of our sample of beauty consumers consider price as a decisive factor to bear in mind when purchasing a new beauty item or device, emphasizing the segmentation that high-tech devices rely on, as it is not a purchase option for the general consumer, but rather a specific one (Appx. 11).

Additionally, our sample of beauty consumers enabled us to understand which factors stop beauty consumers from relying on virtual try-ons and diagnostics: 37,5% said lack of realism was stopping them from virtually trying products on, 18,9% mentioned lack of physical touch, and 9,6% stated on the lack of physical advice and 34% pointed out lack of accuracy, which is directly connected to the difficulty that still exists in changing consumers' perceptions of tech-enabled beauty solutions as luxury services that efficiently provide effective solutions (Appx. 11). Specially in cosmetics, as pointed out by Passarelli, “you won’t be able, for instance, to smell a fragrance, you won’t be able to feel the texture of a certain lotion, the texture of a certain foundation. You might have a super clear vision of it on online but feeling it and actually touching it is something else” (Appx. 18). Despite, when it comes to diagnostics within the beauty context, after providing our sample with real data from major Beauty Tech companies such as Perfect Corp have Skin AI Analysis – that have recently been classified has such compete diagnostics that provide better results than one performed in a dermatologists’ office –, 70,8% of our sample of beauty consumers consider changed their perspective on virtual try-ons, but 29,2% still kept their opinion (Appx. 11).

(B) Directions for Additional Future Research

Given this, an interesting future research path within the Luxury market segment would be to physically visit a store where technology meets beauty, such as the Lancôme Parisian Flagship Store, and directly observe the consumer behavior towards the latest tech innovations, ranging from AI to image recognition and AR (L’Oréal Groupe n.d.).

Furthermore, having the opportunity to observe pharmaceutical, or health specialists performing in-store diagnostics within the Active Cosmetics segment, such as the capillary AI device that Vichy provides, would be the best fit for comprehending consumer behavior towards Beauty Tech innovations in this market segment, as well as verifying the real final results that would outcome of these diagnostics.

Additionally, having the opportunity to perform in-store observations would be interesting not only in the Mass Market segment, but also in the Professional Products segment, as a practical tool to understand, on a first-hand methodology, what truly drives and pushes consumers away from purchasing certain beauty products and devices.

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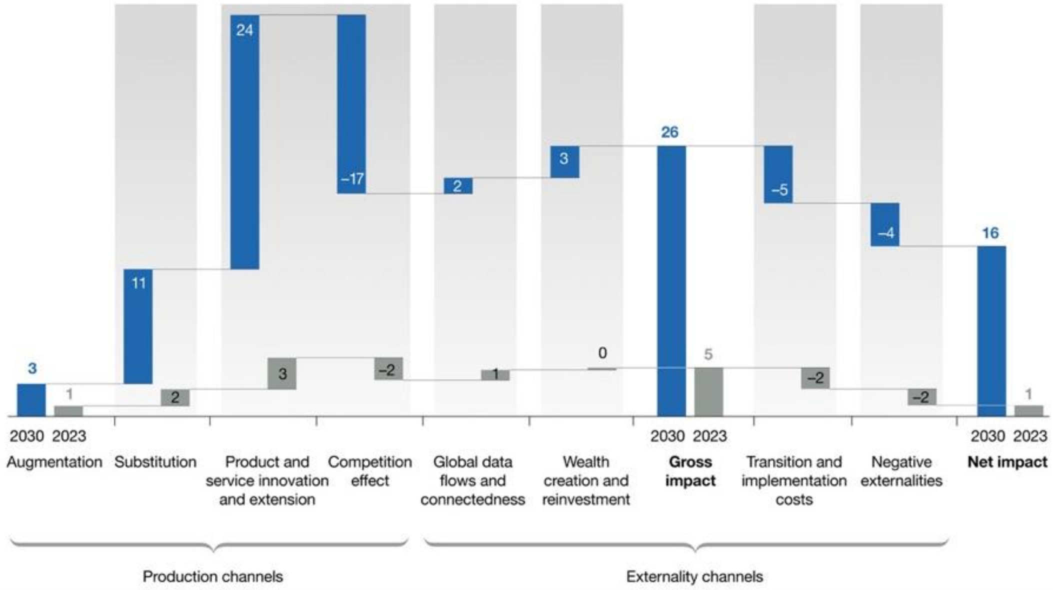
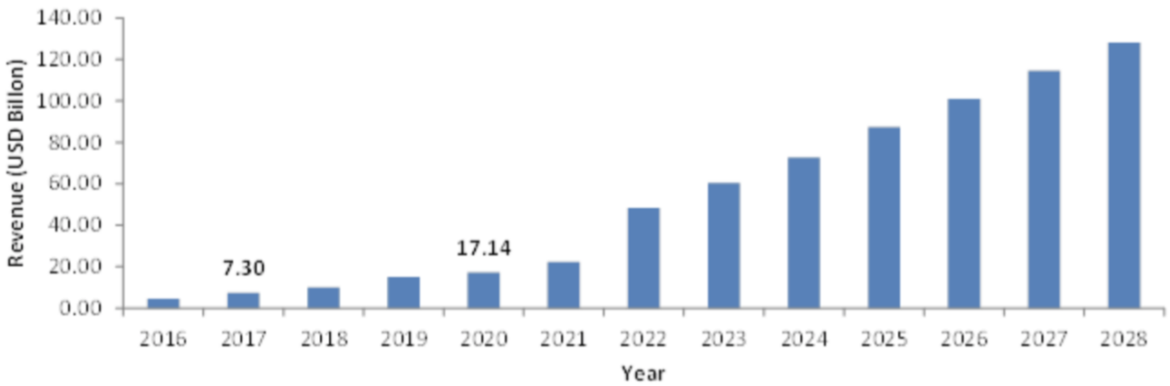
Appendix

Appendix 1: Breakdown of economic impact, cumulative boost vs today (McKinsey & Company 2018)



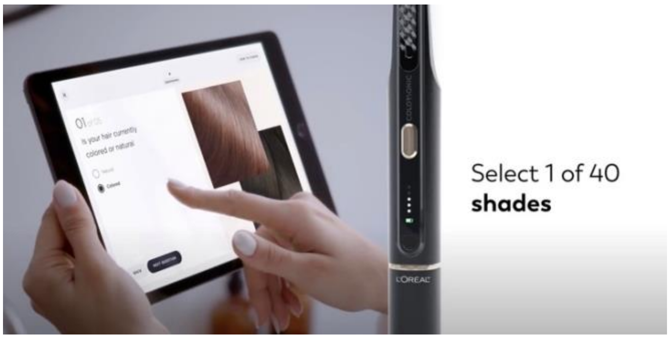
Appendix 2: Global Augmented Reality Market (Zion Market Research 2021)



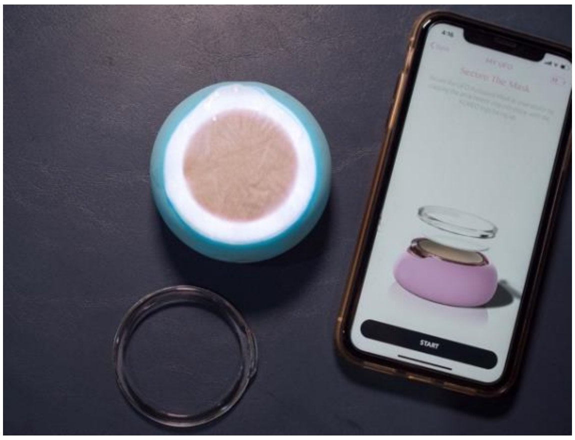
Appendix 3: Beauty Tech Consumer Expectations (McKinsey & Company 2021)

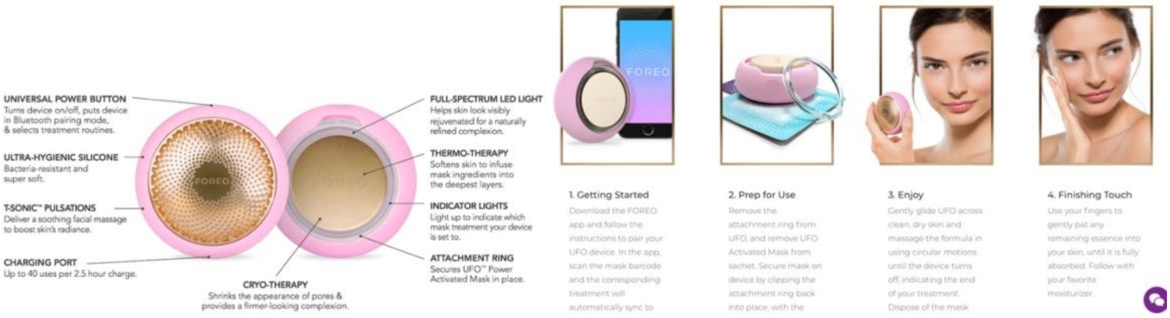
Appendix 4: *YSL Rouge Sur Mesure* powered by Perso

Appendix 5: *L'Oréal Colorsonic*

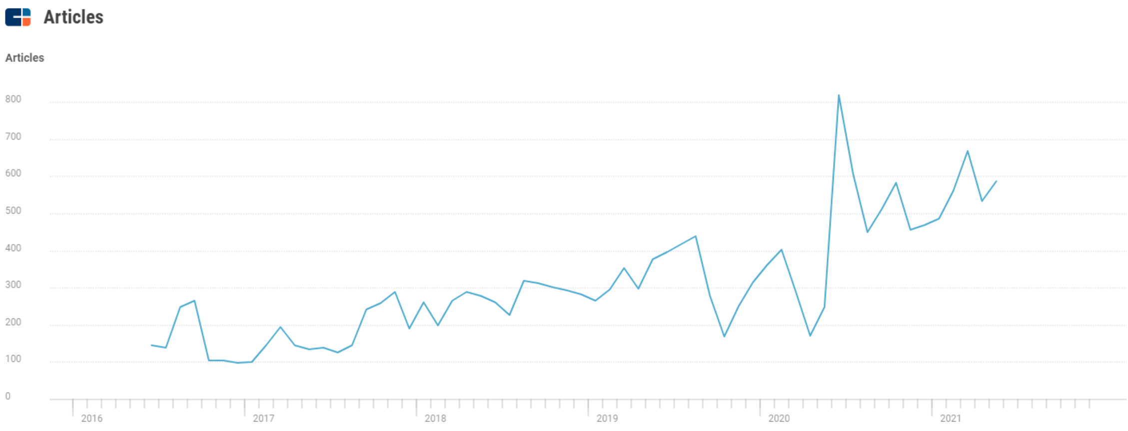


Appendix 6: Foreo’s UFFO 2

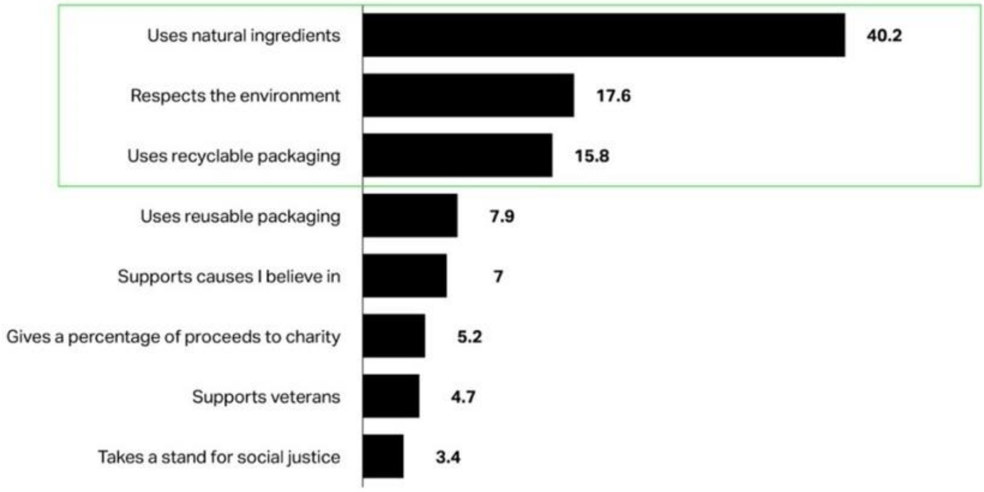




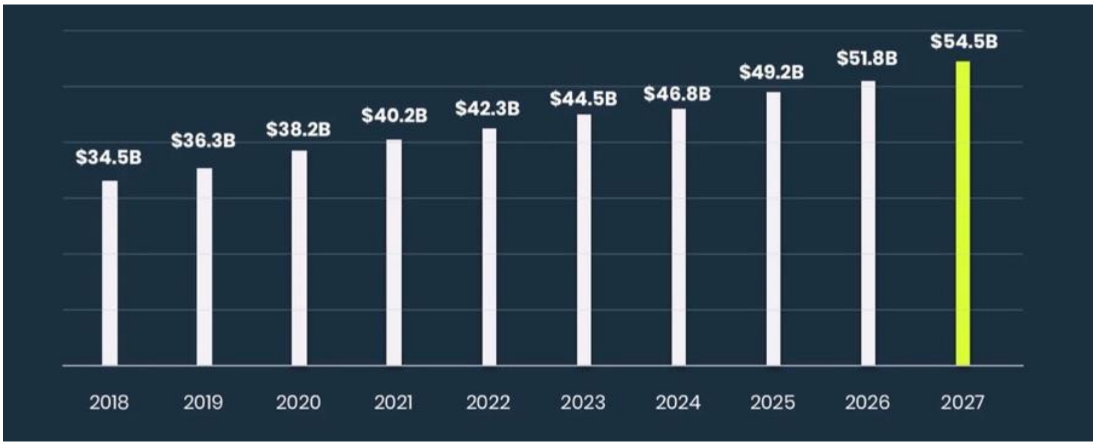
Appendix 7: The evolution of mentions of "beauty", "inclusive", "inclusivity" or "diversity" across time, spiking ever since June 2020 (CB Insights 2021)



Appendix 8: Consumer's current main purchase drivers when buying cosmetics (Mayo 2021)



Appendix 9: Global Market Value for Natural Cosmetics (Roberts 2022)



Appendix 10: Quantitative Questionnaire | Questions

Source: Work Project's authors

Do you know what Beauty Tech is? *

- ○ Yes
- ○ No

Where do you usually buy new beauty products? *

- ○ Online
- ○ In-store
- ○ Both

How often do you purchase new beauty items? *

- ○ Only when I run out of a product and need a replacement
- ○ Whenever I see a new product and want to try it out
- ○ Whenever I'm not happy with the results of a current product

What are some decisive factors to you when purchasing a new beauty item or device? *

- ☐ Price
- ☐ Ingredients
- ☐ Packaging Materials
- ☐ Packaging Simplicity (as in, easiness of use)
- ☐ Brand Image and Reputation
- ☐ Brand Advertisements
- ☐ Customization Option
- ☐ Influencers' Reviews and Feedback
- ☐ Friends' Reviews and Feedback
- ☐ Pleasant Shopping Experience
- ☐ Advice from Beauty Specialists in Store

Do you feel as if every customer, considering everyone has different skin types and tones, has products available to them that fit all their needs? *

- ○ Yes
- ○ No

Would you like to see more diversity on brands' advertisements? *

- ◯ Yes
- ◯ No

Would you be willing to pay extra for products that would be fully customizable to your skin needs? *

- ◯ Yes
- ◯ No

Do you think the future of inclusive beauty is directly connected to technological developments and the ability that tech has to provide highly customizable products and devices? *

- ◯ Yes
- ◯ No

Do you consider how sustainable a product is before you buy it? *

- ◯ Yes
- ◯ No

Looking at these two products, which one would you buy? *

- ◯ Option A
- ◯ Option B

When making a repurchase of a product, would you prefer to buy the whole packaging of the product or simply a recharge of the content of the product? *

- ◯ The whole packaging of the product
- ◯ A recharge of the content of the product

For sustainability issues, would you be willing to virtually try-on products as a way to save quantities of the product itself, cotton pads, plastic, among others? *

- ◯ Yes
- ◯ No

When you shop for beauty products in person, do you go to the beauty advisors in store for advice? *

- ◯ Yes, I like getting a professional's advice
- ◯ No, I don't want to be bothered

Would you like to be able to perform a virtual diagnostic of your skin that would indicate which products to include in your routine? *

- ◯ Yes
- ◯ No

What is stopping you from relying on virtual try-ons and diagnostics? *

- ◯ Lack of realism
- ◯ Lack of physical touch
- ◯ Lack of physical advice
- ◯ Lack of accuracy

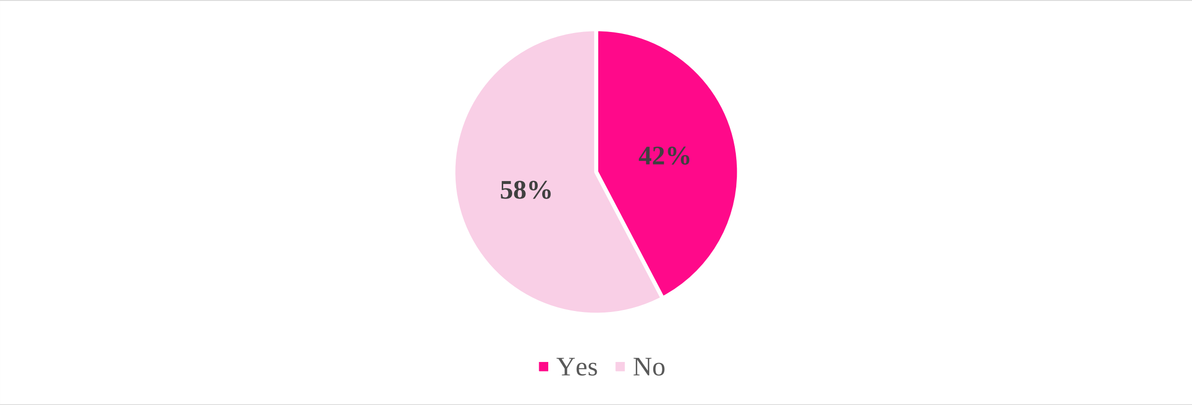
Major Beauty Tech companies such as Perfect Corp have Skin AI Analysis that have recently been classified has such compete diagnostics that it's actually better to perform a diagnostic like this than to go to an actual dermatologists' office. Does this change your perspective on virtual try-ons? *

- ◯ Yes
- ◯ No

Appendix 11: Quantitative Questionnaire | Answers

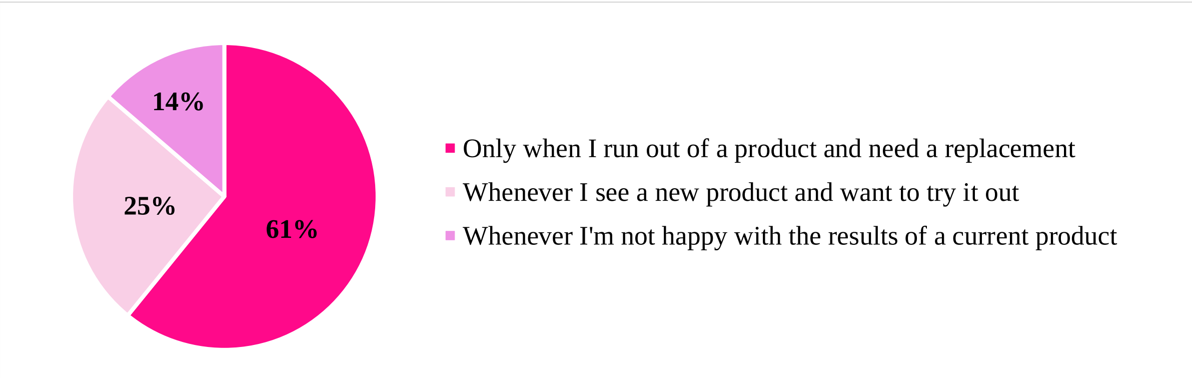
Source: Work Project's authors

Q1: "Do you know what Beauty Tech is?"

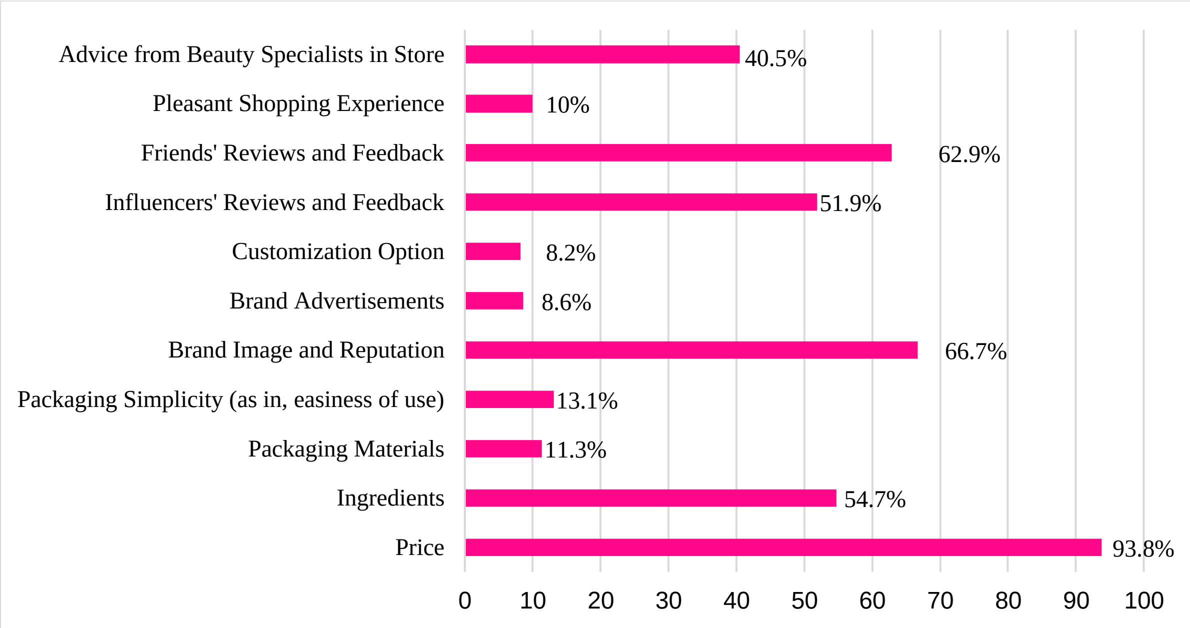


Q2: Where do you usually buy new beauty products?

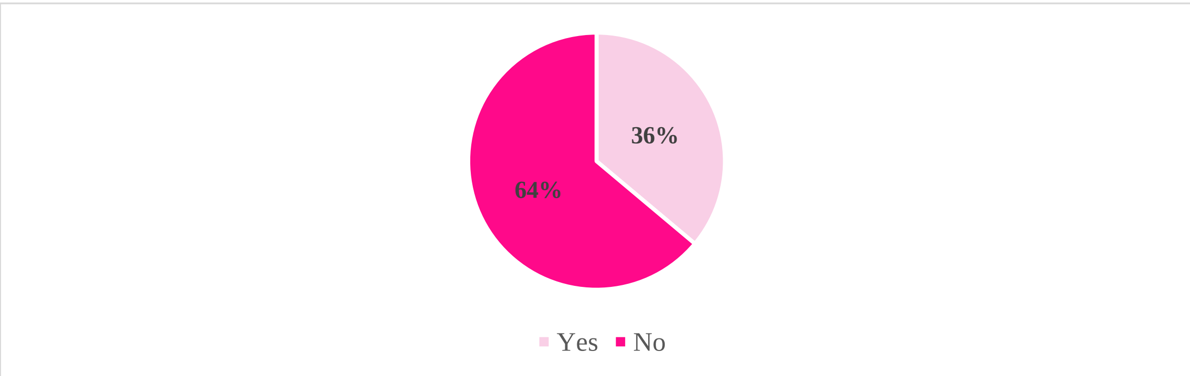
Q3: How often do you purchase new beauty items?



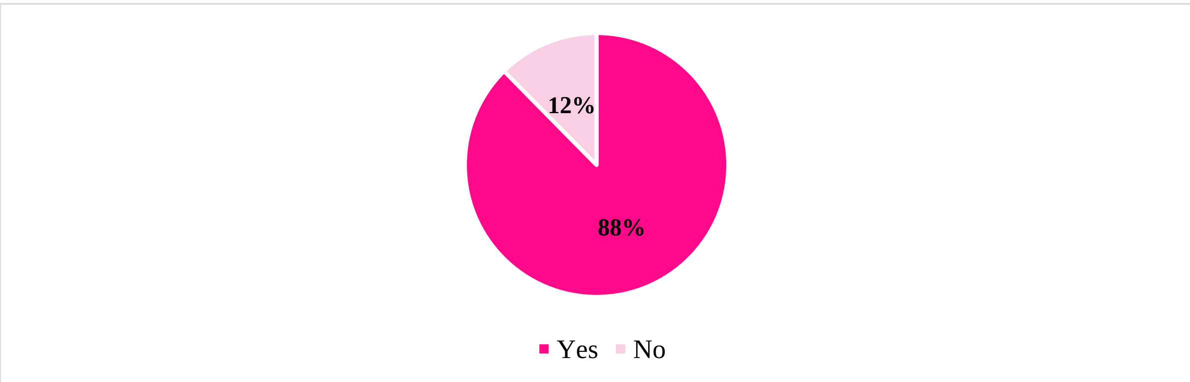
Q4: What are some decisive factors to you when purchasing a new beauty item or device?



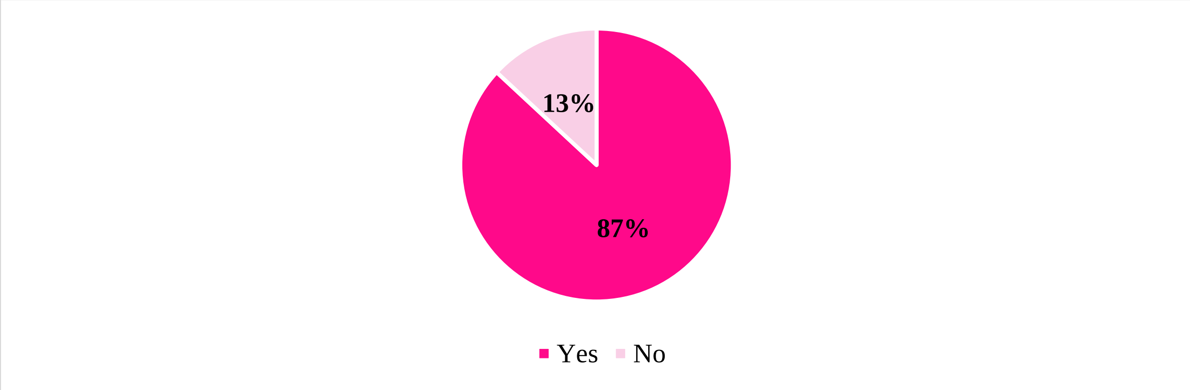
Q5: Do you feel as if every customer, considering everyone has different skin types and tones, has products available to them that fill all their needs?



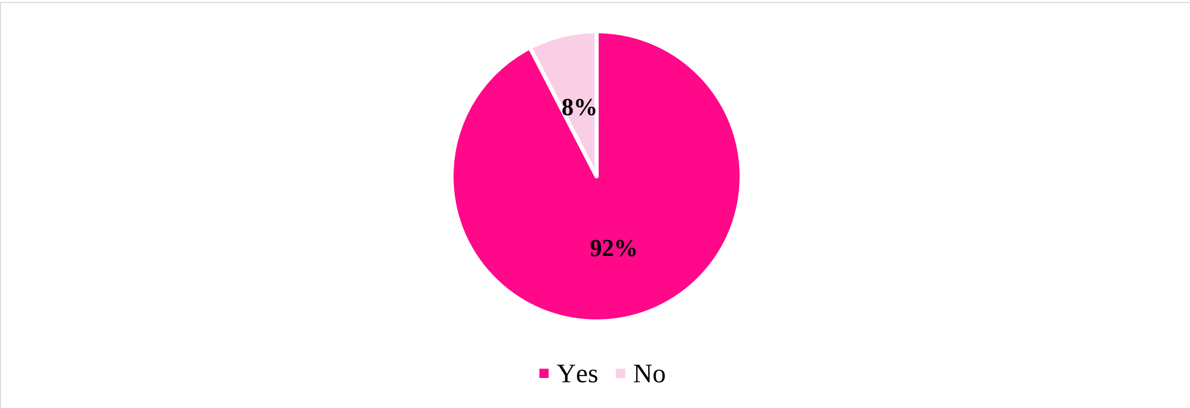
Q6: Would you like to see more diversity on brands' advertisements?



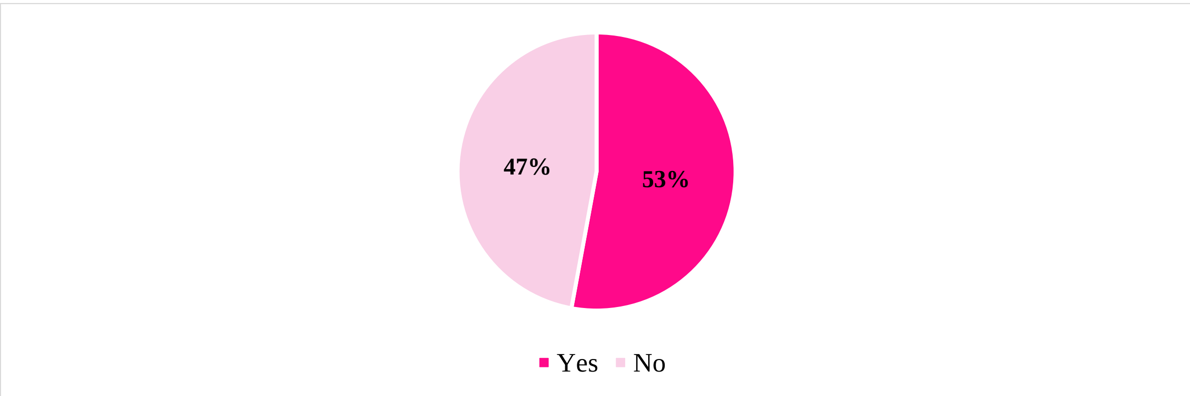
Q7: Would you be willing to pay extra for products that would be fully customizable to your skin needs?



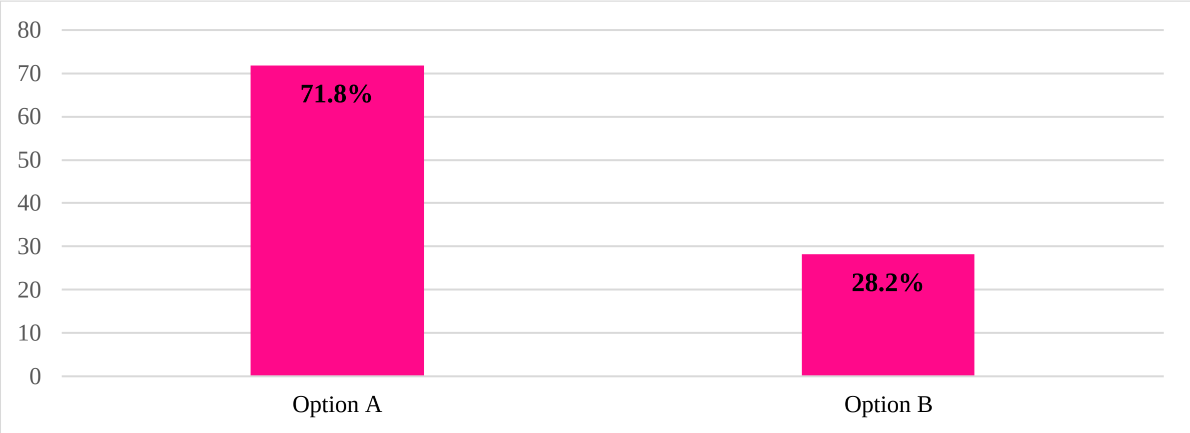
Q8: Do you think the future of inclusive beauty is directly connected to technological developments and the ability that tech has to provide highly customizable products and devices?



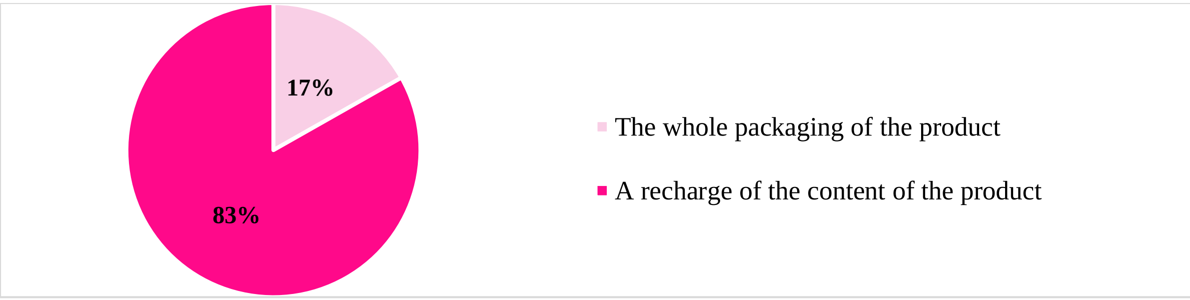
Q9: Do you consider how sustainable a product is before you buy it?



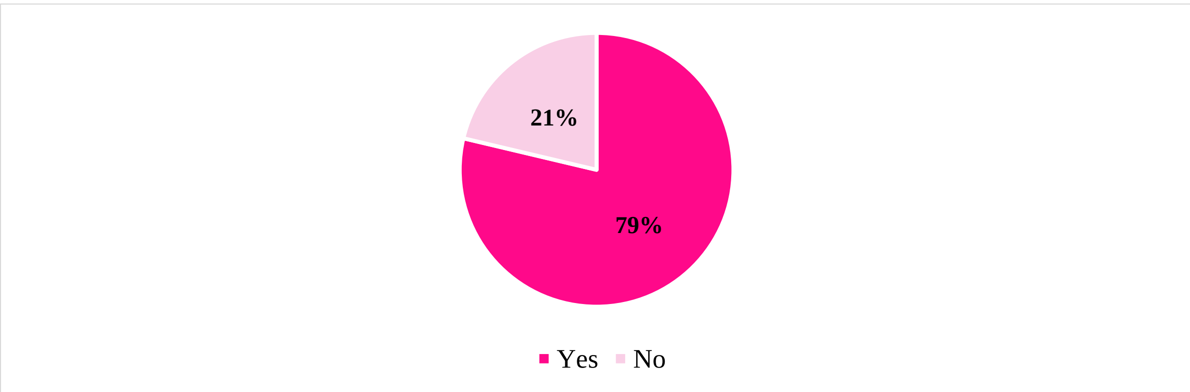
Q10: Looking at these two products, which one would you buy?



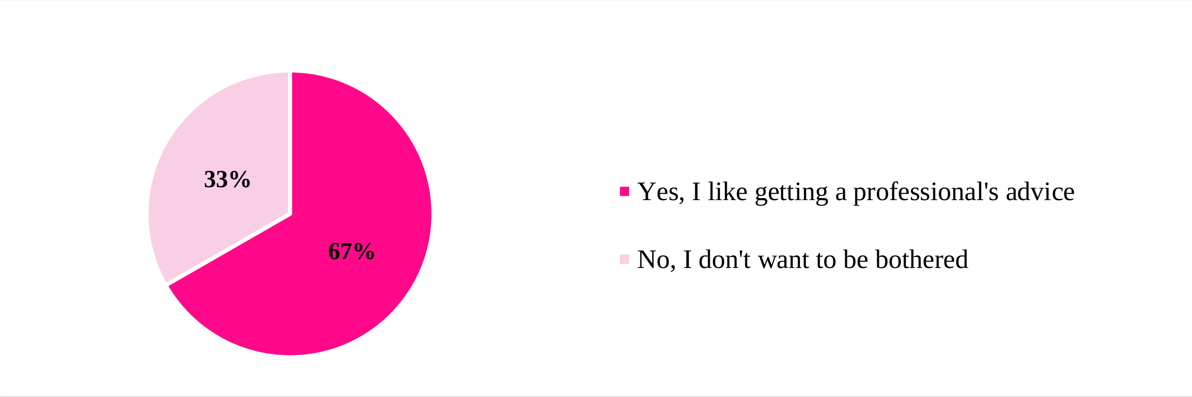
Q11: When making a purchase of a product, would you prefer to buy the whole packaging of the product or simply a recharge of the content of the product?



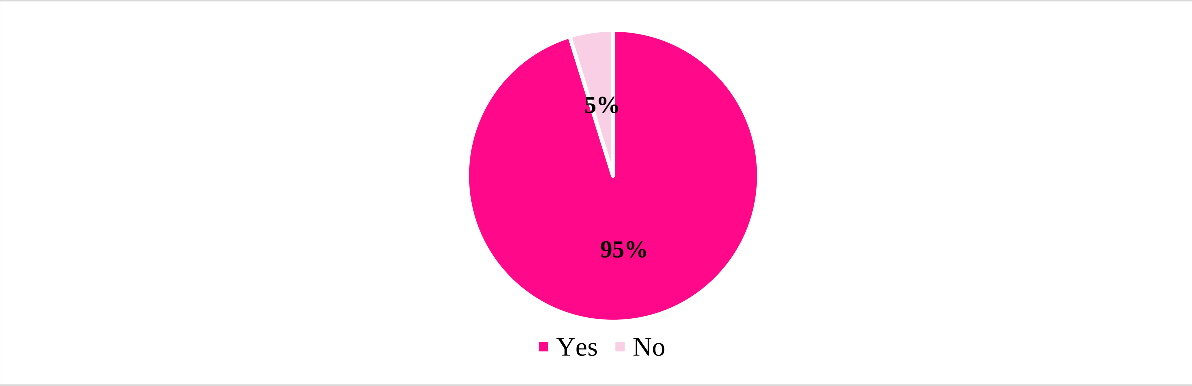
Q12: For sustainability issues, would you be willing to virtually try-on products as a way to save quantities of the product itself, cotton pads, plastic, among others?



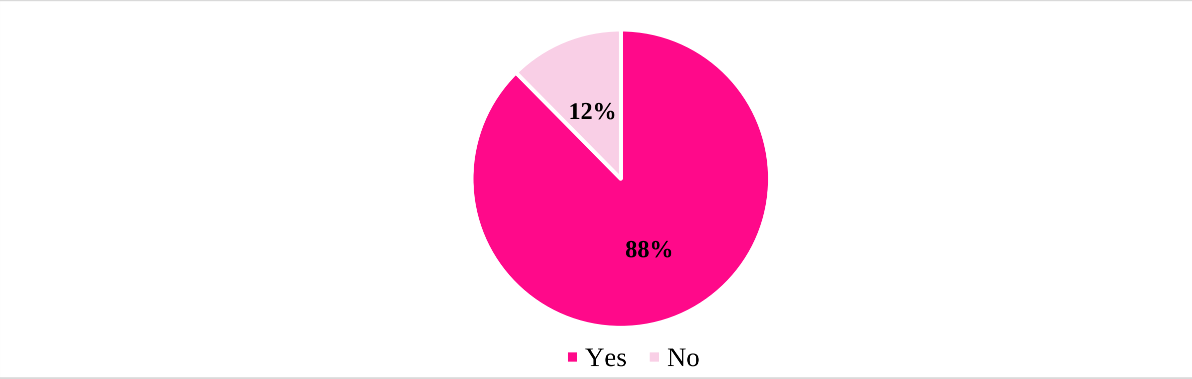
Q13: When you shop for beauty products in person, do you go to the beauty advisors in store for advice?



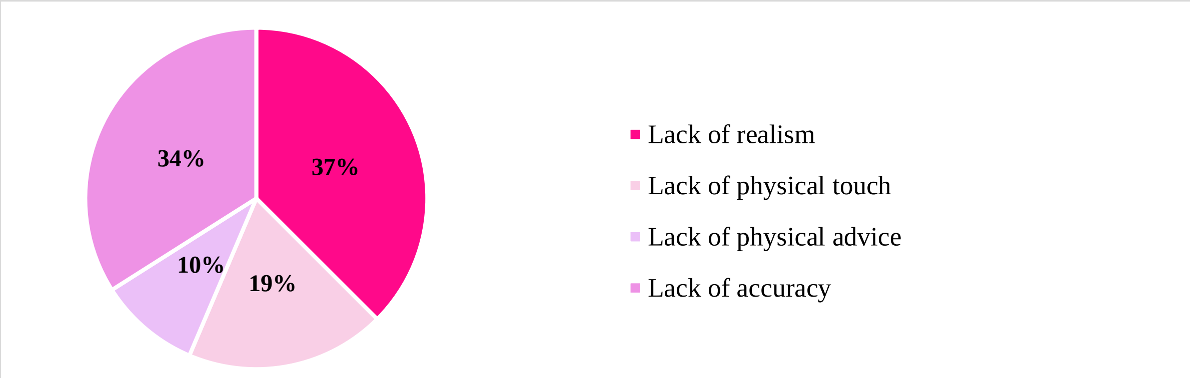
Q14: Would you like to be able to perform a virtual diagnostic of your skin that would indicate which products to include in your routine?



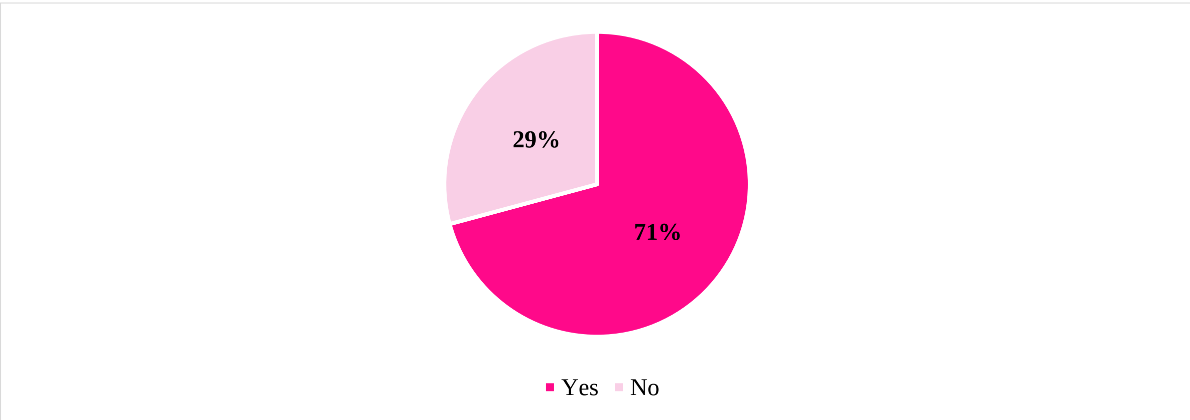
Q15: Would you like to have a mobile application that would track your skin and provide advice to take care of it, as well as warnings when your skin suffers changes?



Q16: What is stopping you from relying on virtual try-ons and diagnostics?



Q17: Major Beauty Tech companies such as Perfect Corp. have Skin AI Analysis that have recently been classified has such compete diagnostics that it's actually better to perform a diagnostic like this than to go to an actual dermatologists' office. Does this change your perspective on virtual try-ons?



Appendix 12: Interview Transcript with Carlos Moreira, Director of Business Development at *Perfect Corp,* performed on October 14th, 2022.
Source: Work Project's authors

Q1: At the moment, we are seeing an enormous technological development with mixed realities such as Artificial Intelligence and Augmented Reality emerging themselves into different areas of business. While we are studying Beauty Tech, we are focused on understanding how technology can make an impact on customer experience and behavior, ending up providing a more inclusive and sustainable business model, at the same time. Throughout our research, we understood that Perfect Corp was a leading company in providing AI and AR services for companies to implement Beauty Tech and digitally transform their businesses. So, to start, maybe you could talk to us about what is the current state of Perfect Corp? What are your responsibilities and how do you personally connect with the Beauty Tech theme?

Perfect Corp is basically the pioneer company on AI/AR applied to Beauty Tech. It started off as a Consumer Facing App called YouCam Makeup, which was and still is an application that, when the company was launched, in 2015, had people try-on make-up products over the phone. We, as a company, did everything by ourselves in the beginning. We would put, for instance, a MAC lipstick color directly in the app, and people could experiment, share, etc. Then, we started working directly with beauty brands that wanted to create that Social Engagement over a direct way, and they would put directly the products they wanted on the app, which then redirected the users for other websites. What happened was that what started almost as a social media app that we had created, was desired by those other beauty brands, that wanted to start offering that same experience to their customers, through their channels, on their apps, stores, websites, etc. So, we started expanding to a B2B side of the business, in which we understood that we could offer that same virtual make-up try-on, not only on our app, but also on MAC's app, on Esteé Lauder's website, etc. So that was when we started our now most profitable business component. We started working with brands and increasing our technology team, to understand what our partner brands needed, what they were looking for, what they wanted. We started expanding virtual make-up try-on – from lipstick to face products, foundation – and from then we expanded into virtual hair color try-on and most recently, into skin diagnostic. At the end of the day, we try to resource to the device's camera to perform a deep analysis on skin, hair, face shape and from then we recommend products, haircuts, make-up looks, etc.

We are constantly trying to understand how we can grow Perfect Corp, how we can acquire new customers, and to this day, we have solutions that we try to release on a regular basis, that allow us to have a virtual appointment with a beauty associate from a brand or with a retailer who will try, for instance, a lipstick on a person's face and it will instantly, virtually, show up.

Q2: Is Perfect Corp feeling that more companies are striving towards Beauty Tech at the moment? In which ways?

Yes. I mean, we don't implement Beauty Tech on our businesses, we are the very own Beauty Tech Service Provider. There are many other Beauty Tech companies in the Market. I think the most relevant ones are ModiFace, which started around the same time as Perfect Corp, and *because it has always been very connected to L'Oréal, as it's the technology that is behind L'Oréal's Makeup Genious App, it was bought by them in 2018, I think. Today it's basically an intern service provider for L'Oréal companies. There is a Finnish company called Revieve that has some expression when it comes to skincare and haircare, as in skin and hair diagnostic and analysis. Then what happens is there are a lot of small virtual make-up try-on companies because it's arguably what is easier – a lot of companies simply make a filter saying it's a virtual make-up try-on. What is so special in our technology, what is it that makes us different? Our technology has the ability to identify over 200 focal point on someone's face – the tip of the nose, the upper corner of the lip, the exterior corner of the right eye, etc. – and from those points we can create a network of over 3900 networks on the user's face, 3D and 180º - if we change the face, the network will adapt. To give you an example, Google's network has 900 networks, so it's a lot less detailed. The companies that have more detail than our own are just companies connected to facial recognition, biometrics and security, etc. So not exactly apps with relevance in the work of beauty and retail. Having the ability of being as precise on the consumer's facial recognition allows us to apply a lipstick in a more precise way, for instance, so not like those Instagram filters with small precision; altering its color, according to the person's skin tone; adjusting it based on light and luminosity. We work with competitors such as Esteé Lauder, Shiseido, Chanel, which are our public clients. We are not an integrated product on a company that is serving their own personal needs, we need to be constantly innovating and offering a superior product.*

Q3: We saw that Perfect Corp has already worked with major companies such as Estée-Lauder and Benefit. What are both sides' feedback on this partnership and how do you think it improved customer experience on these brands?
As a Company, we create a lot of content. If you go tour website, there is a section where it shows a section of Resources Success Stories, in which it's displayed case studies from brands that work with us, like Esteé Lauder and Benefit. I don't know it by heart, but there are brands that report an increase of 300% in consumer engagement. Looking at our slides, for instance, Esteé Lauder increased their website conversion rate by 40% and their virtual lipstick try-on in 250% conversion rate; Benefit noticed an increase of 101% on the time their clients spend on their website after implementing their virtual eyebrow try-on. We don't have access to the numbers of every single one of our partners. In fact, as every technology or marketing service, the benefits are as high as the effort that the client puts into promoting the technology on their website. Besides beauty technology, we also have virtual try-ons of watches and glasses, which are more widespread; however, if you compare our technology with the market average, ours is way above average.

Q4: Our work is focused on the customizable aspect of these technologies. What is your opinion on customization as a key feature in Beauty Tech?
It depends on what you define as customization. For me, or rather for us, customization is UI/UX, as in, user experience. When you go to websites like Nars, Chanel, Esteé Lauder, or to our own website, the technology is the same as when you try on a lipstick; however, by using UX, what the user sees in the area where the experience happens is completely different. And then small companies will invest very little on it and use our turnkey ready-to-sell solution, and

big companies that value the importance of branding and image, like Chanel and Nars, as in brands with a very strong brand identity, will execute a very highly customized experience and their customers will pay high for it, being a big initial cost driver on the first year. How does our business model Works? We are a SAS (Software as a Service) company and usually what happens is an initial set-up fee that is not a major cost driver, and then an annual license fee, that you pay every year and that is what makes our company have a very high valuation regarding stock exchange, as it's recurring revenue. We have a very high contract failure rate, I think above 90%, meaning that each company that pays us USD 50k or USD 100k yearly will realistically pay that a lot of times and then does a customer lifetime value analysis. Then, there are UI/UX customization rates and that normally might have a high initial cost, but it's not recurring. Image this, you initially pay USD 100k or USD 250k so that everything that happens is in line with your branding and highly customized, but then you only keep on paying the yearly licensing rate. Now, in terms of skincare, things are a bit different. We have a few partners that want that the wat our technology works to be slightly different. I'll give you an example – our AI Skin Diagnostic uses the computer or smartphone's camera to detect, analyze, provide a score and evaluate 14 skin problems: acne, wrinkles, oiliness, hydration, etc. that evaluation is made according to the way that we train or AI motor, and how does the training work? We insert dermatologically marked photos of what a wrinkle is and then technology will be able to identify the wrinkle on the customer's face and say "this is a wrinkle" and then it will compare the quantity of wrinkles you have with the population of images the motor has, and that subset of the population is of various ages, skin tones, global geographies, so that it can be a very inclusive think, as you were saying in the beginning. Now, what happens? We have a few customers that consider wrinkles only below the eyebrow, and above the eyebrow, it's called a different thing. For acne there is usually a specifically scale of how to measure it. And ours, image it goes from 1 to 6 and for that we consider three inputs: black heads, white heads and dilated pores. But, there can be a company that wants acne to be just pimples and not black heads and we are the ones who will adjust the technology and train the motor to decide that "okay, we don't want pimples to count for the acne score, but for them to count for a different specification's score".

Q5: That type of skincare service is one of our biggest focuses, even so because we developed a draft idea of something that can combine the 3 main impact areas we are focused on, as in: inclusivity, sustainability and consumer behavior, which necessarily goes through skin diagnostic. The question we have next walks towards that – how do you feel about a customizable service that allows a consumer to get their own skin analysis, for instance, and produces a customized product to match their skin needs afterwards?

So, I won't give my opinion; instead I will state facts. The skin diagnostic basically tells you "Carlos has a very low redness score", meaning that that is a problem I have and something I need to solve and, at the same time, I have a high score of eye bags, meaning this is not a problem of mine. So, according to that, we send each skin diagnostic's result to each brand. What that brand or retailer will do is grab that information and decide "okay, the people who have a low redness or oiliness score will receive product x, but if these people also have an oiliness problem they won't get product x, they will get product y instead", and that algorithm and product recommendation logic is a bit arbitrary. Clinique will recommend their products, *Esteé Lauder will recommend their products and maybe some brands will recommend their one iconic product that is the same for everyone. So, we as technology providers only communicate the results. Now, in terms of customization or personalization of products according to the result, it's a bit on the contrary of what most of our competitors are doing. For instance, I'm working on a pioneer project about what you are taking about. We have a UK customer that is going to use our technology to identify, I think 12 of our 14 skin problems and then will communicate that information to their laboratory and say "client A has these scores" and according to that they will create one or multiple customized products for them, meaning, it's not only product combination; for instance, "use this cleanser and this moisturizer" but it will actually change each product's already existing formula according to each client's skin type. I have been working on this industry for over 10 years – customization is a very hot topic and something that everyone has been talking about for a while, but there are not many, or even none, brands that have done it on a world-changing level. Now, not every brand needs to have a billion-dollar valuation and it's not for every consumer – maybe it's for you but not for your best friends who wear some random products and it works. If you look at companies like Functional Beauty or Prose, they are companies that create customized products for hair, like shampoos, conditioners – they resource to a bit of arbitrary information, gotten from self-diagnostic, as in "I have dry hair, I have this and that…", so a company that can bring technology and basically a seal of approval of "we are doing this diagnostic not only with arbitrary information of thinking I'm very or little oily" is amazing. Because in reality, my measurement of oiliness has to do with what I know. I might think I'm oily but if I go to other countries where most people are oilier than me, the reality will be different. So yes, I think there is a great market opportunity in that sense and I am very happy to be working with a pioneer company in that area.*

Q6: Throughout our Work Project, we always make the connection between Beauty Tech and Sustainability and we were able to observe that Beauty Tech has been contributing for brands to become more sustainable. This way, we would like to understand what is your opinion on this and what has been Perfect Corp's role on sustainability?

I will be honest with you, one of the reasons that made me want to stop working for a brand or being a buyer was that I was a bit tired of sitting down with Sephora, for instance, and have everyone talk to me about sustainability. Why? Because in reality this is an industry where most of the time, products come in small plastic packages, which yes are recyclable a good amount of times, but the US reality is that small plastic packages are not recycled – they are recyclable but companies don't recycle them, so why are we all sitting down together and lying? I know this will end up in the bottom of the ocean, you know it, if there was someone who would change that… but it's the reality of today. I worked in sampling for a lot of years at Glossy Box, I'm perfectly aware of how a sampling is produced, I know it makes a lot of waste; however, it also allows for people to test their products beforehand. And I think Beauty Tech allows people exactly that – being able to try their products before purchasing them and trying them out at home. Or, when it comes to makeup, it gives you the possibility of trying out and seeing how it looks without leaving the house, without going to a store and using a cotton pad to apply the product, so it will create less waste in itself and also less pollution, as you don't make the trajectory from home to the store; also wasting less of the product itself because *if there are less testes packages, generally there are created less products, yes it's true, and in terms of skincare, it possibly allows for less mistakes to be made and people actually buy less products that they won't like, so in terms of sustainability it's something positive. I just think I have a major problem with the word sustainability in general. I don't know, and no one knows, and I just think everyone sits around at a table and says everything is just so much better because you're only looking at one side of the equation, so that's why I think it's problematic for me. Because I think a lot of times people discuss these things as if they were about to change the world, when in reality they are only looking at things from one angle, and they are lying to other people's faces without the need for it. In these cases, I prefer not to express myself instead of inventing things. But it's my personal opinion, not my company's. However, I think it's (sustainability) valuable to this day, at least with the data we have as a company and how we can measure it as consumers, yes, Beauty Tech is positively weighed in sustainability but I think in general, in sustainability, there are a lot of factors not being weighed in.*

Q7: Another thing we are also connecting with Beauty Tech is the fact that it's helping brands to become more inclusive by providing adaptable devices and more diversified items. So, we would like to know what your opinion is regarding the merge of Beauty Tech and Inclusion.

That is a question that is asked to me a lot, being based in the USA, a country that is way more diverse, where the diversity theme is way more talked about than maybe in European or Asian countries. We are lucky enough to be a global company that Works with partners that offer the same type of virtual makeup try-on technology in South America, North America, Africa, in a lot of countries from Asia and Europe. So, for us, inclusivity is and Always was, since the beginning, a very important thing. Every time we train our AI and AR motors, we use images of people with various skin tones, ethnicities and ages to be pretty inclusive. A very interest thing, our Foundation Shade Finder – our technology that allows to recommend the color that is most similar to your skin tone from a brand's foundation shades – allows us to identify color in the product's 3D space. I mean, image a brand with foundations like Clinique; Clinique has, let's say, 50 foundation shades and there are 86 thousand skin tones that can be identified digitally, our technology is able to identify those 86 thousand skin tons, which is something pretty difficult and advanced to do. Other companies that make skin tone identification, what do they do? They group the various skin tones in 200 or 5 thousand, but we can identify you skin tone in space, the so called LAP Value and then each brand that we work with, in this case, Clinique, will send us all of the products they have and we insert the product in a special machine that removes that tone's LAP Value, and in space it will find your skin tone, which tone from that brand is the closer to yours in order to reduce Delta I (the color difference, the mistake, let's say), between your skin tone and that product's color. This way, it will recommend the foundation shade that is closer to your skin tone, which allows less mistakes and also for the brand to offer your best match, the one that is above it and the one below. Why? Because there are people who like to apply the color that is relatively darker so they look tanner, in Portugal it's super common and, in other countries, people want a lighter shade so they look lighter, in Asia it's perfectly common. And that is something that has always been very important for us in terms of inclusivity, for instance, making sure that everyone has access to their best recommendation, depending on skin tone or age.

Q8: We saw that Perfect Corp still has a very little focus on apps for men, with only one beard app. In the future, do you think about developing more men-focused frameworks and why is there still such a strong disproportion?
I am responsible for men's grooming so I'm the only person in the world in our company that is responsible for that area. It's a bit… the tech solutions are there, now there are very little brands that are men exclusive and that is something that I noticed when I started out, I didn't have any experience in men's grooming. I had experience in skincare, makeup… when I got to the company on the first day of being responsible for men's grooming, I got a bit confused. If we look at the market, what happens? There are very little brands for men, in terms of skincare, there is a very little product range offer. They offer those 5 products that you, "cavemen", should use. This serum is the one product that will solve every problems of your life and it's the same for every man in the world. Now, if you look for specific ingredients, most of time you will have to look for brands that are way more focused on women. So, our technology, in terms of recommendation, ends up having a little less logic; of course, we can discuss here about the power it can have, namely in online engagement, but if brands offer very little products, it ends up being little redundant. A lot of times brands offer the same products, but with different scents, because it's like "cavemen, here you have something so you can smell different". It's always a bit of the same thing in the grooming industry, in my opinion. Now, in terms of beard, for instance, regarding dye, we work with the market's biggest player, which amounts for 94% US Market Share. So yes, we could work with the remaining 6%, but it's not worth it. In terms of hair, it's an area that we will be able to focus more in the future, but if you look at the industry focused on men only, it's a bit similar to treating men in a primitive and basic way.

Q9: How do you think Beauty Tech can play a role in providing devices that help the disabled in feeling more beautiful? As in, people who suffer from blindness or Parkinson's, for instance, and encounter multiple barriers in typical beauty processes.
A very interesting thing is that our technology in itself needs to be built in a way that, if our partner wants it to be an accessible solution, it works. Even a visually impaired person can virtually try on products, which is confusing but it has its logic. In terms of product itself, I don't really know how to answer that. A lot of people, if they are mobility reduced, created a lot of skin issues in their bodies due to the lack of movement. Nowadays, our technology doesn't analyze bodies, for tech motives and questioning. But yes, it's something that is very important and we are happy to provide solutions like that, which are adjustable for people in wheelchairs, for instance, and maybe technology allows that a person that has less locomotion can have the possibility of trying something without going to the store. But I haven't thought about it long enough to reach a conclusion.

Q10: Lastly, we have developed a draft of a device that we think could concentrate inclusive and sustainable beauty, as well as improvements on customer experience. Very generally, what is your opinion on it? Could this develop a more inclusive, sustainable and consumer-centric business model with the obvious help of technology? How so?
First things first, I love La Roche-Posay, in terms of technology that the brand has been launching in the last few years. I'm lucky enough to meet some people from L'Oréal's innovation laboratories. Looking at your project, one thing I agree with is the fact that the

client doesn't have to go anywhere to perform the analysis. It's a lot more logical, and that is something our technology allows. If you look at our recent studies with Dr. Feldman, who talks about our AI Skin Diagnostic, you can see that it's better than going to a dermatologist and better than using machines placed in dermatologists' practices. A few years ago, Neutrogena launched 360º Skin App, which in the beginning had a device that the consumers had to buy for their phone and eventually they changed to our technology because people having to leave their house will always reduce conversions. I think in terms of everything of what a customization is, you have it limited: you have a cleanser which is standard, a moisturizer, which is standard, one out of 3 or 4 or 5, and then a serum which yes, is customized. So, you are basically entering the market with something that is customizable but not overly customizable, so it is a very nice way to create customization, as you have two basic parts, the standard ones from the product catalog, and then a part that is customizable, and that is a great approach. Using the device to convert and promote something from the brand's catalog would be my priority – how to use it to sell more quantity of a certain product.

Q11: One last question, are there any insights you can share about Perfect Corp's consumers?

It is very different. We don't have access to that data, because it's our partner's and he is the one who will know which of their clients or website visitors will experiment and spend more time on our solution and eventually provoke a conversion. We know, however, that the feedback our clients give us, who our client is, on average, is older than what people usually think. It's not exactly a Gen Z consumer, most of the times it's a Millennial consumer. Our tech solution that most people are willing to try is the Haircoloring Virtual Try On. It's the solution that we have in which people experiment and play with more colors and play with different products; now, depending on the brand is and the reason behind them using our solution, you will have different clients, because there are brands that use our solution with an acne focus. You will probably have a higher age average lower than if you consult a brand with USD 1000 lotions highly focused on anti-aging.

Appendix 13: Interview Transcript with Rita Paiva dos Santos, Founder of *Beauty Bible*, performed on October 20th, 2022.
Source: Work Project's authors

Q1: To start, maybe you could talk a bit about your brand Beauty Bible?
I founded Beauty Bible in 2020. Basically, it was a project that I always wanted to have, to own my own brand. I studied Economics and then I got my Master's in International Business, in London. When I was in London, I noticed that every girl always wore make-up, and we didn't wear make-up in Portugal, mainly at that time, we just applied a bit of bronzer and that was it. And I thought, "how is their make-up so nice and mine isn't?", so that was how my passion for beauty was born. I started learning everything on YouTube, how I applied my make-up, with which products, so I started gaining a lot of interest for beauty products. I was an avid YouTube user, so I started getting addicted to make-up, skincare, beauty products generally. When I got back from my Master's, I went on to take a short course on make-up and immediately started working on that are, as a make-up artist. But I always had a thing for Business and Economics, so I started trying to create Beauty Bible in 2016 – back then it wasn't even Beauty Bible, but rather By Tecas, linked to me. So, I started developing more make-up formulas, not only skincare, but also a lot of make-up. I was working with manufacturers here in Portugal that still didn't have the know-how, they didn't have the machinery, no raw materials, so it was very difficult. This started in 2016 but I only got to accomplish it in 2020; in between, I continued on working on other things but got distracted from this project. Later on, in 2019, I changed the whole strategy, changed providers, changed my name, everything and got to launch Beauty Bible. Nowadays, Beauty Bible is a brand that I can say has some recognition – we are present on Well's, on El Corte Inglés digital platform under "Portuguese beauty brands". We are a brand with the goal of producing beauty products for the whole body, make-up, face, beauty products in general. We never set ridiculously high prices and always want to keep ourselves on a budget, doing it in a more natural, ethical and sustainable way; not setting such high prices on products, because nowadays everything is so expensive, and truly making a difference when it comes to price/quality proportion – having a very clean and feminine image, but still under what is accessible.

Q2: Focusing on the Beauty Tech theme, there a lot of brands that are already including technology in their business models. For instance, on Vichy's website you can perform a skin diagnostic that is completely virtual and understand what the most indicated product for your skin problem is. I would like to know your opinion on this – do you think it makes sense? What do you think of brands that are striving towards tech development?
So, for instance, when it comes to make-up, I think it makes a lot of sense. We can use a filter and try-on something that is not real, but we can see how it looks on and don't have to go to the store, so it's a more practical option. I don't know if you've seen it but there a lot of websites – image I want to try a Nars foundation and don't know my shade, I can add a foundation in a shade I already own from other brands, and then they give you a match that is similar to the foundation colour I inserted. So yes, I think it makes a lot of sense and I think it's a great option because really a person going to the store and trying on a bunch of products is very boring. When it comes to skincare, I might be wrong but I'm not sure it makes as much sense, because

I fear that sometimes we can be misadvised, because it's an automatic robot, meaning that if you have dry skin go here, mixed skin over there, oily over here, and it's not that simple. I think a person always needs to check with their dermatologist first, someone who is knowledgeable. I think in skincare, I'm not sure it would be viable. But I might be wrong.

Q3: What is your opinion on products that are 100% customizable? For instance, a customizable service that allows a consumer to get their own skin analysis (virtual skin diagnostic) and afterwards a customized product is created which matches their specific skin needs.
Being realistic and working on this area, I think that is almost impossible to make – if we think of a brand like Vichy, Biotherm or Avène, you have so many consumers that you can't create a formula for each specify and for each consumer. So, the only way that would work is how it works nowadays, but really, that way is not viable, unless they make combinations of products: "if your skin is like this, you should wear x cleanser + y moisturizer + z tonic" but a specific product is very difficult. Unless it's a product that is made through ordering, but even that way is complicated, having knowledge of how long formulas take to develop, it's a process that is very time-consuming. I don't go to a sizing point and then they give a specific solution, it require much more time, more raw materials, knowledge and investment because in the formulas you make in the laboratory, you can't make a small batch for a person unless you make it by hand, but as big brands work with labs, they would need to produce a bigger quantity, so no I don't think it would be realistic.

Q4: Do you feel as if there is a bigger concern from beauty and cosmetics brands that are becoming more sustainable?
I think not only brands, but also consumers, as well as regulatory bodies, there is definitely a bigger worry about it. When it comes to sustainability, ingredient quality, everything is now made in a more natural way and the more chemically affected ingredients are starting to get forbidden in the market. Every once in a while, we get e-mails from Infarmed saying "this ingredient is being taken off the market, so every product that includes it in its composition needs to be taken off the shelves", so there are investigations being carried out every month to analyze everything that is not ethically.

Q5: Nowadays, the topic of sustainability is being widely discussed and, this is one of the topics that we address throughout our study. I know that Beauty Bible products are vegan and cruelty-free. Do you feel that there is a growing concern for beauty and cosmetic brands to become more and more sustainable?
"I think that not only brands, but also consumers and regulatory entities are generally concerned about this. In terms of sustainability, of ingredients quality, everything is made in a more natural way, the ingredients that were very chemical, are starting to be forbidden in the market. We from time to time receive e-mails from Infarmed saying "this ingredient is being taken out of the market, so all the products that have this ingredient have to be taken off the shelves", so, constantly, every month they make investigations to remove everything that is not ethically taken out or extracted from nature, everything that is bad quality, etc. I think that people are increasingly concerned about sustainability and the way things are done because,

actually, the beauty market is a highly competitive market, it is a market that has a lot of sells, a lot of plastic, a lot of singular product use, many samples, it is a market that makes a lot of waste. So, I think that brands, nowadays, are increasingly implementing the refill, where you have the packaging and you go to the shop and make the refill, I think there is a concern not only of customers, but also of brands in keeping up with the market. Let's be honest, it is not only a concern but also a trend and as the consumers themselves are looking for that, the brands are also already trying to adapt, it is not like "I won't use plastic in my packaging because people don't like it now", it is not because it is not cheaper and it is not better for the brand, not all brands are concerned but there is really a general concern with sustainability and because it is also very fashionable and trendy and everyone ends up trying to follow a little bit of that trend. And nowadays, people are more and more informed, in the past you used to have people that didn't know how to read labels, be it of food or of raw materials, and nowadays I have people that come to my packaging and they know and, that is not written with the name "coconut oil", it is written with the name of the ingredient itself, so it is in a more complex way and, I notice that people already know what it is about. So, people are much more informed and more and more picky, they know what they want, and they know they want something clean. We, also in Europe don't have much choice, because we are a very regulated market, outside it's easier, but we have many rules here in terms of ingredients, in terms of sustainability and everything, but it's a trend and I think more and more we are moving towards that end".

Q6: Do you feel like your consumers care about and value the ingredients that you use in your products? Do you think one of the biggest motivations for making a purchase is the fact that you use natural ingredients and create products that are vegan and cruelty-free, and that you are a brand which is transparent about this?

"I think people are not going to search for vegan and cruelty free, unless they are really vegan. However, seeing that on the packaging and on the website, is always a plus. It is even a contradiction, in Europe you can't use ingredients in your formulas that are tested on animals, in any European country and, they even tell you in the laboratory that you don't need to put on the packaging that the product is cruelty free because, since you are selling the product inside Europe, all the products are already cruelty free, you don't need to mention it. But you end up including it because, of course there are people who are not so informed and do not know about this and, because it ends up being a stamp. Vegan ingredients are always good because they are more natural, they don't have those hard-core chemicals for the body, with those fake aromas, chemicals, more aggressive ingredients, which can cause irritation and everything else. But yes, I think people are looking more and more for natural, plant-based ingredients, essential oils, things that come more from nature and not use silicones, to do make-up of course it's always necessary, but for skin care and everything else it's not necessary because it's a more natural thing".

Q7: What is a typical Beauty Bible consumer like?

I was just talking the other day with Laura, who is my new intern, and we don't really have one type of consumer, which is good. Older people come to us, like my mother or my aunt, or people my age, so in their 30s, or a considerably younger person who is already starting to look after their body, for example an 18/19-year-old girl. So, I think that we, with our products, which *are not very strict neither to anti-aging, nor to very young things, I think we manage to reach several types of consumers and, therefore, when I look at Beauty Bible's customer I can't identify one, it's not a 20 or 30 year old girl, but women from 18 to 60, because there you are, these are products that are for many people.*

Q8: I was actually going to ask you that next, do you feel that not-so-obvious groups (e.g. very young or very older people) are buying your products? Do you feel that it's not just typical age women (from 20-35) looking for your products?
Of course, but I have much younger girls that really like Sun Tanning Oil, because maybe they don't understand yet the impact that the sun has on wrinkles and on skin ageing, although our oil doesn't do anything like that, but, younger girls love the sun and to be sun burnt, so they look for that product a lot, so between 18/20 years old. Then, older people really like the scrub, because it's self-care or the dry oil and, also, they love the Shimmer which was something they used a lot, the Nuxe oil and their mums always have it. In the middle age, from 20 to 30 years old, they also like a little bit of everything, either the Sun Tanning, as the Shimer that is always a great success, or the scrub, so, I think we have a range that is quite inclusive. We are not making very specific products, because we don't have the know-how for that, neither we are dermatologists or medical doctors, we want to make products that are good and that can give to several people and, that are practical. We don't want to compromise neither our brand, nor our clients. We don't want, to say "look this product will take away your acne or rosacea or, this will make your hair grow", that is not our goal. Our goal, is to make women feel good with our products and, that it's a routine thing, to use on a daily basis and, that they are easy steps.

Q9: Lastly, we have developed a draft of a device that we think could concentrate inclusive and sustainable beauty, as well as improvements on customer experience. Very generally, what is your opinion on it? Could this develop a more inclusive, sustainable and consumer-centric business model with the obvious help of technology? How so?
I think it would make sense and, it's even a product that reminds me of Foreo because, I think they also have an app where you connect and, you can do the diagnosis and the skin monitoring. But there it is, as I was saying, I don't know if it would be 100% viable, to make a formula for each person, but it says here that you have partnerships with dermatologists with an online presence. It would be something that after making the diagnosis, you could have to wait some time to receive the products, but I think it would be possible, without a doubt and, being that you have dermatologists and are associated to a brand such as La Roche Posay, which has several scientists behind it and people really specialized in the area. What I was saying to you before was that, for example, I go to the Vichy website and write that I have dry skin and they give me the results, without making a specific analysis, just based on what I said. But, here it's different, this will go through your skin and evaluate the texture and, it ends up having those infra-red and, things that give the device the ability to see internally, I think this is much more feasible. Now, going to a shop's website and doing a questionnaire where I say that my skin is dry, maybe I don't find it so viable. I think it would be something more niche, which means, it wouldn't be for all consumers, I think it would have to have a higher price because you would be doing something specific, it would have to be for a certain target public, but, I think it is a good idea!

Appendix 14: Interview Transcript with Marta Maia, Global E-Commerce Manager Assistant at Kérastase (L'Oréal) performed on October 22nd, 2022.
Source: Work Project's authors

Q1: At the moment, we are seeing a enormous technological development with mixed realities such as Artificial Intelligence and Augmented Reality emerging themselves into different areas of business. While we are studying Beauty Tech, we are focused on understanding how technology can make an impact on customer experience and behavior, ending up providing a more inclusive and sustainable business model, at the same time. Throughout our research, we understood that L'Oréal is one of the companies that is leading this movement, by using internal technologies across their multiple brands. To start off, could you introduce yourself and maybe explain what your responsibilities at Kérastase are, meaning your daily tasks in Paris?
I started working at L'Oréal in July this year. I got my Master's in Madrid, at ESCP, in Digital Marketing, and in order to finish the program, I had to do an internship, so I applied here and thankfully got in; I'm here until late December. Basically, I'm working at L'Oréal's Digital Department, in the E-Commerce area. It's really what I like doing so I'm loving it, and just to give you a little context, in the Digital area, Kérastase has a section dedicated to services, as in technological services, for instance developing cameras for hairdressers, to detect problems, so basically CRM (Customer Relationship Management), newsletters, consumer engagement, etc. And I'm on the other section, of e-commerce, so I basically act on Kérastase's B2C e-commerce, and also B2B, with e-retailers, such as Douglas and Sephora. We work in the International Department, so we have to give every country Kérastase works on their guidelines, I think 6 months before projects are launched. For instance, in July I was working on the Christmas content, which will launch in a month, a month and a half. We also have a new line that is launching in January, and we have been working in that line until now. And then we have to communicate every country all of the guidelines, meaning, as they should proceed in terms of e-commerce, so everything they should have on product pages, on landing pages, everywhere, so we can reach a cohesive state between every country. I'm loving it, it's a great opportunity, to work at the headquarters here in Paris.

Q2: Researching the brand, we noticed Kérastase claims to be a pioneer haircare brand in multiple themes, namely in the use of disruptive technologies. How do you feel that the brand resources to these tech developments?
Kérastase is the biggest brand in the L'Oréal group, when it comes to e-commerce, meaning that we work with every country to develop coherent content, so that when a person visits Kérastase's Thailand website, it has the content as France's website, for instance. And in that, Kérastase is the best brand, it's the best working brand in e-commerce. For instance, in terms of services, it's the first brand to develop a service that is called Fusio Dose, which got a re-push from the brand, with a new look, new contents, etc., and as you know, Kérastase works for professional clients – hairdressers – and there has recently been a launch of the Fusio Dose Profit Calculator, which is a technology that allows hairdressers to understand how much they will make, what the profit will be if they invest in this product. This still doesn't exist in any of the other brands of the group, regarding the Professional Products division. It's the first one,

and this allows the professional to really have data, numbers, to know if it's profitable or not to invest; this was just launched, first on a UK test, and the truth is, Kérastase was pioneer in this digital stratosphere, because this is a digital app, a mobile page in which you can calculate the implementation's profit.

Q3: So Kérastase ends up having a central positioning regarding innovation?
Right. For instance, we have a website called NGL, which is a website that is used by us to develop everything ourselves and then pass it on to the other countries. And there are very few brands of the group that use this software, and with this you can show these countries how they should implement everything regarding strategy – we develop a "fake" website, and they are told to implement everything exactly the same, only on their specific channels. It's a very low quantity of brands that work with NGL and Kérastase is one of them – it's the only Professional Products brand that works with it. And one thing, Kérastase is essentially a luxury brand that is identified in the PP division, as it works with professionals, so it has a lot less budget than other luxury brands. The budget it has is not the same, but there is a massive and constant trying to equal the other luxury brands; Kérastase is the only PP brand that works with this kind of software, and it can always reach the best results. Even on NGL, what happens a lot of times is the company doesn't want to pay to implement some upgrades we want to add to it, but then they understand it actually works, so they end up implementing them. Kérastase is the leading brand in a lot of things so it ends up tracing the path for other brands to follow.

Q4: Still on a tech level, on Kérastase's website, there is a virtual diagnostic in which the consumer gets their correct recommendations for their own hair type and a customized hair routine. What is your opinion on this?
That diagnostic is one of the things that Works best in our website, meaning, one of the things that generates the most traffic. For instance, a lot of times I have to develop the structure of a page or an article, whatever, and we always have to include a block of content for that diagnostic, because people actually use it and truly want to know what the best products for their hair are and basically this enters the customization field, which at the moment is super important; it's like I was telling you, we always have to perform a push for this service, because it's super important and it works super well and something consumers truly enjoy – customization is today's trendiest topic.

Q5: Do you think tools like these can, from a certain way, promote inclusive beauty? I mean, making sure that everyone has access to the right products for their type of hair?
Yes, definitely. Kérastase has a product offering for literally every type of person, and even if there is a niche that doesn't feel represented, the brand always finds a way to make sure product X works for person Y, I can guarantee you that. We have been working on our Christmas strategy, and one of the things we have worked on is a Christmas animation which will be launched in November. It's called Gift Finder and people need to participate on a quiz in which they have to answer different types of questions and they see which coffret is the best choice for people they want to give a gift to. One of the first questions is "how would you describe the person you're gifting?", meaning we try to make it inclusive by understanding whether that person is more confident or more on the shy side; this way, we try to test the

products with more personal characteristics from your friends or relatives. It's very inclusive and at the same time I think we have already moved on from the phase in which we are simply trying to sell the product, because people no longer fit in with that formula; people need to have more in terms of personality of the product and a connection to their own personal characteristics – it can no longer be only flat or curly hair, it needs to be more personal and people definitely have an amazing reaction when you show some interest on them. So, with this Gift Finder, we try to captivate the consumers on a personal level and provide answers for their kind of needs. Customization with these tools shows very good results; even so, as it's an industry that is so connected to empowerment and making people feel confident, it's super important to customize – so, not only selling the product, but also interact with consumers when it comes to providing them with compliments, content on a personal level is super important, and this is obviously one of the industries where all of this works best, the cosmetics industry.

Q6: These Recommendations, even if they are customized, offer only choices regarding the brand's already existing product portfolio. Do you think Kérastase would benefit from a diagnostic that would allow, for instance, to create a shampoo or a conditioner that would be completely customizable and customized?

It's something extremely complex. It's not easy, it's impossible, do you see? It's impossible to create a unique product for only one person, it doesn't work. It's a giant market and it's impossible when it comes to matrixes and the brand wouldn't even profit from this, not even the own customer would, as people don't have enough knowledge to produce a product. I think that wouldn't have a good outcome and it would have to be something more limited; for instance, within these x products, try to do something with it, but going from stake 0 and letting the customer create their own product, it's very complicated, in cosmetics and the beauty industry in general. It's not beneficial, whether it's about profit or brand image.

Q7: We know that Kérastase is pretty active socially, regarding women's confidence and self-esteem. What kind of initiatives have you been developing, moving towards more inclusiveness towards women?

5 years ago, Rosa Carriço, now Kérastase's Global Brand Director, joined the brand and revolutionized everything, making the brand what it is today. Before, Kérastase was seen as a very outdated brand, turning towards hairdressers; there was no e-commerce, so you couldn't find the products online, only at hairdressers. The brand image was very outdated, the models were very stereotypical, blonde, white, skinny, and from the moment Rosa joined Kérastase, it literally changed everything. Now we have product lines for curly hair, which are mostly for African consumers, we have women of colour, which we didn't have before, the models aren't all skinny or white or blond. We have models that are more extravagant and different, so at Kérastase everyone can identify with something on the brand; the way Kérastase addresses their customers is very connected to a personal feeling… everything is about empowerment and empowering people, the brand is definitely growing day by day directed to that level. And when Rosa brought Emily Ratajkowski to be the face of the brand, it was very difficult at the time, as she is a very controversial personal, but right now she gives the brand the idea that anyone can belong to this community.

Q8: Wasn't there an event about this a while ago?
We had an event called Power Talks, which was basically focused on female empowerment; we had 5 or 6 people speaking and providing their point of view, regarding how they used to feel before connecting with the concept of empowerment. Emily was there and Ester Expósito too and they were talking about their insecurities and how hard it is to be a woman. Kérastase is really focused on this theme and we will have more Power Talks in the future, throughout the whole year, to provide empowerment to every woman and promote this theme.

Q9: Nowadays, Sustainability is a hot topic and one of the themes we are focused on. Do you feel that there is a big worry by big brands and consumers, regarding this?
Yes, definitely – Sustainability is a topic that it's not worth trying to avoid and from what I can tell you, when a product line is produced at Kérastase, the plastic levels have to be below x; if not, the product can't be produced and, for instance, each person that works on product development has to reach a certain percentage of plastic reduction on the brand, throughout one year, and if that reduction happens, they win a bonus. But this is only for you to understand how the company is worried about sustainability, every L'Oréal brand has this purpose, every worker has to keep on lowering the footprint. At Kérastase, we launched refillables, which are shampoos, I think 500ml of shampoo, and an aluminum bottle, and because of that you don't need to be constantly buying new shampoos.

Q10: Regarding the consumer, do you think you can give some sort of insight on what Kérastase's consumer is?
The typical consumer is a Luxury one, who is willing to spend over EUR 20 on a shampoo; but nowadays, keeping in mind that the brand is younger by day, I would say the typical consumer is around 30 years old and a bit of purchasing power. It is not the typical consumer from 5 years ago, so our mothers who would go to their hairdressers and purchase the product. The sales are happening more and more o digital e-commerce, so the habit of going to the salon to purchase haircare is slowly dying, as well as the average age, which has been lowering too, given the brand representatives. People are moved by crowds; if the brand image is changing and there are people who start accepting it and there is a voice, in this case Em Rata, people are moved by crowds and today yes, it's working and it has definitely had some good results – people are changing Kérastase's mindset, because there are these people behind a brand that are able to move it; if this didn't happen, we would still have old and outdated images that would still shape Kérastase's customer perception, with the same consumer from 5 years ago, an older one that would go to hairdressers and not resource to the Internet. The age has been slowing down because brands have younger representatives, which are known by the younger audiences, so all of this leads to a development of the brand regarding technology and e-commerce.

Q11: When it comes to shopping habits, do you have any feedback on how people buy Kérastase products? Not only when it comes to channels, but also motives.
A customer's first purchase is typically a problem solver; you go on vacation and come back with hair fall and you're getting worried, so you buy a Kérastase product because you have seen it's very good, and it's the first time you're buying it. People start by solving a problem

but then start to really enjoy the brand and become loyal to it. What has been happening, from a year ago – Kérastase launched a line that is called Chrome Absolut, for people with colored hair, and it used to be not very promoted nor communicated. There used to be a line like this before but from one moment to another, this is the most profitable line in all of Kérastase, because its purpose was to solve something that people needed – how to take care of it? Nowadays it's one of the highest selling products; I think it Always starts with problem solving and then you start loving the brand and stick to it.

Q12: We saw that the brand launched a men line, but at the same time there is the female empowerment – do you feel like, at Kérastase or generally, there has been a bigger adherence by men? Or is it still a very feminine brand?

I think it's complicated to enter the men segment, because Kérastase is a brand that is very connected to women, so... I think the line came out and it already had a push from the same line but for women, and that is why it was so easy to reach the consumer, but even so it didn't work so well, because this is a brand for women, connected to women, so trying to bring men into the equation is more complicated.

Appendix 15: Interview Transcript with Matilde Borges Tito, Product Manager at Vichy, performed on November 6th, 2022.

Source: Work Project's authors

Q1: At the moment, we are seeing a enormous technological development with mixed realities such as Artificial Intelligence and Augmented Reality emerging themselves into different areas of business. While we are studying Beauty Tech, we are focused on understanding how technology can make an impact on customer experience and behaviour, ending up providing a more inclusive and sustainable business model, at the same time. Throughout our research, we understood that L'Oréal is one of the companies that is leading this movement, by using internal technologies across their multiple brands. To start, could you maybe introduce yourself and, if possible, explin a bit of what your responsabilities are within Vichy, meaning, your tasks and a bit of your daily routine in Madrid?

I'm Matilde and I have been working at L'Oréal for 3 years. I started as an intern at NYX Professional Makeup and at the time I used to do a bit of everything: paying support to brand management, taking care of merchandising, managing social media… it was a very recent brand in Portugal so I got to contact all different areas. Then, in the following year, I went to Vichy, from the Active Cosmetics Division, as in the pharmaceutical and dermatological brands, and now I am a Product Manager at Vichy. I moved to Madrid, in Spain, almost a year ago, because of the L'Oréal Spain & Portugal merge. In Portugal I used to work all the smaller categories: solar, makeup, deodorant, etc. and here in Spain I'm responsible for haircare, deodorants and men. I work in Marketing, meaning I manage those sides of the brand in detail, we plan media campaigns, activation and strategy for those divisions inside Vichy in specific.

Q2: By doing some research, we inevitably discovered that L'Oréal is one of the pioneer brands when it comes to technology in the beauty industry – how do you feel that Vichy, in specific, takes advantage of technology when it comes to brand innovation?

We are a pharmaceutical brand that is very connected to a B2B2C business model – we work to sell to the pharmaceutical, and for him to be able to advise and sell to our consumer, but we also work a lot of Direct Consumer. We don't have our own stores or distribution channels, so we always rely on an intermediate player, and a lot of our work efforts go into working the pharmaceutical so that he recommends our brand. But at the same time, we have to work the consumer. Our business model, out of all of the divisions from L'Oréal, is the most complex. We always have the pharmaceutical, health professional, doctor, etc., but everything we do regarding the consumer already has that impact – we have a digital skincare diagnostic tool, the Skin Consult, that you can find on our website, and you can, through a photograph, and Artificial Intelligence, get a diagnostic that is based on your skin, and that is something that we always try to promote to the maximum, given that not everyone has access to a pharmaceutical or dermatologist's dianostic, so this is a tool that helps everyone getting that diagnostic and expert counseling – when it comes to inclusion, everyone, through Internet or points of sale, by accessing the QR codes we have on our pharmacies' touchpoints, can reach that expert diagnostic and discover which skin problems they have and which products to use to work against them. For instance, we have that tool, that is exclusive to Vichy, but we also *have other types of tools on other brands from the Active Cosmetics division. La Roche-Posay also had one, more specific to acne, and it told you what your problems were, the recommended products for them, and Skinceuticals also has a whole process with an actual physical device… it's all the technology that is linked to the specialists' advice and it's important to have access to it, given that it acts as a substitute for an actual medical figure. At Vichy we have that Skin Consult and we also have an online diagnostic for haircare, which is actually the category I work on – you answer a series of questions and the platform gives you your own haircare routine.*

Q3: Do you have any feedback from the consumer side on those kinds of diagnostics?
For us, tools like these are essential because every time the pharmaceutical is not available to advise the consumer, that tool is there – meaning the consumer always has the option to have an expert counseling that other brands within our group don't have. Imagine you are at a Well's store and the pharmaceutical is not available – you can use one of those tools; on our e-retailers, it works the same. You access the link and you have access to a routine and expert counseling. We communicate these tools a lot of times in campaigns we have with influencers, meaning what we want is to distinguish ourselves from other brands in Mass Market for being dermocosmetical brands that are developed by dermatologists to be prescribed; meaning, a big part of our business model is based on having the pharmaceutical on our side, and that mandatorily covers that counseling.

Q4: This diagnostic also allows the consumer to directly contact a dermatologist, right?
It's not going to be a doctor that is directly connected to the website, but rather questions and answers and so on, because these digital diagnostics that we have are also connected to pages that we have with a lot of articles about a lot of issues, like acne, dandruff, etc. all about giving knowledge to the consumer and not just saying "you need to apply this just because", but mainly educating. Because our division, contrary to other brands, has the function to educate the consumer, that contacts the pharmaceutical, the doctor and others, meaning it's a synergy between all these players. For our division, these digital tools allow us to keep on educating, giving knowledge on skin, active ingredients, that in other divisions might not make as much sense, but are very important for us nonetheless.

Q5: Still on inclusion, how do you feel that Vichy tries to include every type of person in their product offering? Meaning, in this case, consumers with all skin types.
One thing that we have versus other brands from the L'Oréal group is that the majority of our products are tested on every skin type, with all phototypes – there are 6 different phototypes, from the lightest skin to the darkest one, and more and more our launches are testes on all 6 of them. Because we know that, for instance, with our products that contain exfoliating acids and other kinds of ingredients, there are more sensible skin types that tend to cause reactions, and everything that is prone to that, we try to test on all phototypes – on both men and women each time it's a unissex product, expand testing to the maximum because that way we prove that products work for everyone. Regarding digital tools, at Vichy we don't have makeup, but there are a lot of L'Oréal brands in which having a tool that helps you know your skin tone and the makeup that is most adaptable to your skin is super useful, because we have a lot of

products that people can't test, and through these tools consumers realize what works or not for them. Once again if we think about inclusion from the point of view of democratizing the access to this medical advice, it's about that – you might not have a dermatologist in your area or your regular pharmacy, but you have access to this content platform that is created by us and will give you all the necessary tips. And we apply this to a lot more of our advocacy campaigns – more and more there are the habits to discard influencers and celebrities for profiles that are more on the expert side, meaning pharmaceuticals that represent a big community. More and more the shift is to use this type of profiles with a scientific base, than lifestyle influencers and celebrities.

Q6: Nowadays, sustainability is a hot topic and so, it's one of the themes we are focused on. Do you feel like there is, in general, a lot of worry by brands and also by consumers, regarding that?
Nowadays, that is a fact. For us too, L'Oréal being such a big company with a huge responsibility, it's a work that has been doing for a lot of years now, and more and more, in a more conscious way, we try to reflect on offer improvements, whether it's about supply chain, or about recycling programs, on the products themselves being more sustainable, and this year there only there have been a lot of changes already – for instance, I don't know if you know the product Mineral 89, which is a Vichy product on which the whole packaging has been reformulated to be lighter, meaning, to have less glass, and it used to have a small plastic tip that got taken off. So, we have been working towards this theme of bettering the products for them to be as sustainable as possible, whether it's on supply chain or on the formulas – cleaning those ingredients that consumers consider to be more controverse. On category innovation, we already have a lot of refill stations, products that can be refilled, and we are going to need that in the future. We have an internal program that is called L'Oréal for the Future, that is a whole internal company program that aims, until 2025, to reduce x% of wasted water and actual check-ups are done on it. Even on the materials we produce for pharmacies, exhibitors and etc., we have been having an internal alignment that says that, for every moment of the year, only x materials are going to be allowed to be produced, because eventually pharmacies are going to lose their storage availability. Essentially, trying to do things in a wasteless way. We use less and less plastic on promotional packs and even our providers are also aligned to be able to get proposals that are as sustainable as possible.

Q7: In which ways do you feel this worry, from the consumer side?
We can actually tell that consumers are getting more educated and have more knowledge on the ingredients and labels and it leads to the democratization of knowledge, specially in skincare. The other day we had wrong information on our website and we got a message saying that the ingredient list had mistakes – we went to check on it and it was true and it was thanks to this consumer that we figured it out. Our consumer is super watchful and more and more we notice pharmaceutical and dermatological influencer profiles that democratize knowledge on skin ingredients, which formulas to use, what is good and what is bad… the truth is, the consumer always wants the more sustainable option, but it depends on a lot of factors – pricing, whether it's reusable or not, if it's accessible or not, but in theory yes, the consumer always wants the most sustainable option.

Q8: Do you think that the resource to tech developments might have any impact on the sustainable side of the brand?
Every effort that is made in implementing technological solutions in this sustainable program are focused on reducing waste. Internally, we have a limit and are penalized every time we destroy products that end up not being used for stock excess and we have goals on reducing destruction. I don't have the vision between Beauty Tech and sustainability so I can't add much on that. But yes, more and more we can optimize brand processes with information we get, and a lot of reductions are made – we have brands like Garnier, which are very positioned on sustainability with their solid shampoos and reusable disks, they have refillables, it depends on what we can incorporate. There are divisions that are more easily awarded regarding these initiatives – Garnier can work on these trends a lot because they were the one of the first brands to launch solid shampoos in supermarkets. In pharmacies, we have other challenges.

Q9: Regarding the consumer, do you think you can give me some insights on what Vichy's consumer is like?
Vichy is a very specific brand that has a very clear purpose – to offer solutions for a healthy skin, for all phases of life, for men and women. It's one of the most broad brands you will find at L'Oréal, because it offers solutions since puberty, for more acne-prone and youthful skin, until the menopause – we have a very specific range for menopause and are one of the few brands that focuses on it. We have a lot of territory for over 30s and accompany consumers on all phases of their lives. We have products for men too, our goal is to reach every consumer, contrary to La Roche-Posay, which is focused on sensitive skin. At Vichy we have solutions for all skin types, so I can't define a specific persona but it's a consumer that is worried about science and looks for excellent scientific results, everything that is dermocosmetic excellence, always within the pharmaceutic scene, which is our main communication channel with the consumer. It's always a person that looks for dermatological care and all of this pharmaceutical evolvence – it might be a men or a women, 18 or 70 years old.

Q10: We noticed Vichy has specific products for men. How do you feel that the demand has been increasing and what does this consumer look for in a product?
We are leaders in the men pharmacy market, in Spain and Portugal. Theoretically yes, but if you look at the men market weight in dermocosmetic versus other markets, it's very small, super niche. So, in pharmacies, yes, we are the most sought after brand, but it's a very niche segment still. It's a lot bigger in Mass Market, but we have product offerings for men, for young ones that look for hydration and for older people who look for anti-aging products.

Q11: Regarding shopping habits, do you have any feedback on how people buy Vichy products? Not only when it comes to channles but also quantity and shopping motives.
We have e-retailers, we don't have B2C, but we sell through Skin.pt, Well's online, etc. When people perform their Skin Consult, it acts as a driver for those channels, even if on our division, our main channel in which we always want to invest in is pharmacy; we are a pharmacy brand, and as much as e-commerce is growing, we can never abandon our roots – for some reason we have the diagnostic connecting to the e-retailers. We have specific content for e-retailers, media advocacy campaigns redirecting to e-retailers, but for us everything that is e-commerce

will always act as a back-up for what we do in pharmacies. We have QR codes for the Skin Consult in pharmacies and a lot of times what you can find on our website, after doing the diagnostic, is the nearest pharmacy where the recommended products are available at, instead of redirecting you to an e-retailer. This will depend on each division, but our focus is pharmacies. We can never abandon e-commerce, it's where the younger consumers buy from the most, and it's something that brutally grew during the pandemic. In the end, our goal is to work in a tactical way so we can online profit more than our competition without ever cannibalizing pharmacies.

Q12: What is your opinion on try-on mirrors that are being implemented by some brands?

I think it makes sense yes, but it's something that is not on Vichy's radar yet. It's super visionnaire and revolutionary, but for pharmacies it's more complicated – contrary to a Luxury division, in which brands have their own corner, brand space at a pharmacy is something that is very volatile.

Of course mirrors can be worked with specific clients that you can develop a more fixed relationship with. It's something that makes sense but it's still not on our radar. We always prime for a pharmaceutical's advice – when people go into pharmacies, it's what they look for. For other brands it might make more sense, for instance we were pioneers with Skin Consult – as it was something that we wanted to include everyone on all different phases of their lives, we got to diversify the investment to make sure everyone can use it. But mirrors, for pharmacies, are very limitative because we can't place them everywhere. Everything our division works very in is giving the pharmaceutical the right tools, and we want the consumer to not work through the product range alone, because it's not our focus – we want him to go to the pharmaceutical. On average, 70% of sales that are made in pharmacies have some kind of influence from the pharmaceutical, meaning only 30% of them depends on the consumer, that gets there with his own preference and does the shopping alone. On the other hand, in Mass Market, everything that is done is for the consumer because it's the consumer that makes the final decision. Each division has its own ecosystem and ours is very B2B, much more than Mass Market, Luxury and Professional Products.

Q13: What is your opinion on customizable products?

I think that is something that makes a lot of sense but will depend on the brands and the circuit you are in. For instance, I know Skinceuticals, which is one of the most expensive brands with the biggest level of scientific knowledge, sells a lot of specific products, it's very medical-based, and I know they had a service like that a while ago, called Dose. It was a customized skincare but in pharmacies it doesn't make a lot of sense – as much as it's important, for us it's more important to work through the most combinations that we can make with the product offering we have. For instance, use this cleansing gel with that moisturiser and the other serum, in which we can create a customized routine for your needs. I don't think it would make sense in pharmacy, only for super advanced brands.

For make-up I think it makes a lot of sense, customizing skintones for foundation and things like that. All of these services make a lot of sense, but it depends on brand and context – a brand that has its own stores in which you can create that ecosystem makes a lot of sense *because everything is concentrated on your own management. But in B2B it's more complicated to have that kind of offering. If you look in the market, few or none brands are doing that – if you have your own store in which you an do whatever you want, you can really take advantage of all this customization, of this customizable service for each consumer, because then you can create all your message, you do what you want. But when you're dependent on your business clients, it's super complicated – you would be able to implement it in only few places and it wouldn't add much to your business. I'll be honest – for makeup it makes a lot of sense, but in skincare you have so many offerings that I'm not sure it wouldn't be too redundant for the consumer.*

Appendix 16: Interview Transcript with Dorothée Choussy Serzedelo, General Counsel Portugal, Member of the Executive Committee at L'Oréal Portugal, Sustainability & CSR Manager, performed on November 7th, 2022.

Source: Work Project's authors

Q1: At the moment, we are seeing a enormous technological development with mixed realities such as Artificial Intelligence and Augmented Reality emerging themselves into different areas of business. While we are studying Beauty Tech, we are focused on understanding how technology can make an impact on customer experience and behaviour, ending up providing a more inclusive and sustainable business model, at the same time. Throughout our research, we understood that L'Oréal is one of the companies that is leading this movement, by using internal technologies across their multiple brands. To start, I would like you to introduce yourself and, if possible, explain a little about your responsibilities within L'Oréal, your tasks and a part of your daily life.

Before I start I would just like to say that, all questions are managed from France. Here in Portugal, we are a subsidiary, of a subsidiary, of a subsidiary. So, about sustainability I can explain a little bit but, about Beauty Tech I'm not very comfortable. Then, I can tell you where you can look for information about this area. In Portugal we are more limited in that area, we work as distributors only.I'm the legal director of LÓréal Portugal, I've been at L'Oréal for 3 years and recently, I'm also in charge of our Social and Environmental Responsibility programme, which is called L'Oréal For The Future, which is a programme that has objectives up to 2030. Goals focused on transforming the way we do business, to be in a more sustainable way taking into account all the limits of the planet. The first pillar, is an internal transformation programme. The second pillar, is to move our business ecosystem, so this means talking and sharing best practices, talking to our suppliers, customers, universities, journalists, to explain what we do and also to seek information from our customers. For example, we have what we call the Green Join Business Plan, where we are developing projects with our most important clients, to try to do things in a more sustainable way. The last pillar of this L'Oréal For The Future programme is a fund, there are 3 funds actually, so there are funds to help women with difficulties. For example, in Portugal we already have five associations that support women in vulnerable situations and we provide monetary support to these associations with international funds. This is globally a programme of sustainability, environmental and social responsibility supported by these three pillars. So, what I do here in Portugal is try to adapt these pillars to our reality, because we are a very small subsidiary, we have no factory, for example.

Q2: Which brands are the most innovative in this technological sense?

It is not really my area. Obviously all brands innovate, but there are innovations that are not so much brand-related. To give you an example, in the first pillar, which is internal transformation, we have KPIs in relation to water, the way we use water so, in the countries where we have factories we developed a concept called Waterloop. This means that in our factories, we reuse the water that cleans the machines and we use municipal water only for employees to wash their hands or drink water and for manufacturing the products, but everything else comes from recycled water that was used to clean the machines. All the rest, every water used to administer the factory comes in the form of recycled water in local loop.

These are transformations that are not so much linked to a brand itself.Then about the packagings. Regarding plastics, we are very much involved in the tactics of the brand indirectly, but it is also all the logistics of the group in terms of, for example, we have some people who specialize in packaging, so there are people who study how to make the packaging more sustainable, lightweight, with recycled plastic, recyclable and compostable. There are several aspects that are not so much related with brands. And then, obviously, there are brands that are innovating. What brands do, also, has to do with what we call brand causes, it means that, brands go after an important theme, for example, domestic violence. YSL works with APAV against domestic violence, so, here the brands are very active. Garnier for instance, which is a very green brand, is working with associations to limit plastic waste and then YSL with domestic violence, there are several brand causes.

But in terms of more technological innovation, I can give you an example, we have a partnership with a start up called Gjosa. A start up that has developed a shower, which uses much less water, so, we in partnership with this start up are developing this shower for better water management. L'Oréal's professional products division is becoming increasingly aware of environmental issues and is therefore creating more and more sustainable solutions, basically it's a shower head that uses a proprietary fragmentation technology to reduce the water flow, I don't know precisely how much, compared to a normal hairdresser's shower head. We also have other programmes with ModiFace. For example, ModiFace is a start-up that L'Oréal has invested in. L'Oréal has an investment fund where it makes acquisitions with start-ups. With ModiFace, the brand has made it possible for people to try out make-up online or, also, at the hair salon to have the possibility of trying out different hair cuts and colours.

On the level of plastics. We have innovations made in partnership with Carbios, which is a start-up dedicated to recycling plastics. Carbios is a company that uses enzymatic bioprocesses to work with recycled plastic. Carbios primarily employs biotechnology to develop substitutes for the plastic used in packaging. Using the enzyme technique developed by Carbios, L'Oréal introduced the first bottle made from recycled plastic last year. This collaboration will have a significant positive impact on the environment, advance innovation, and help L'Oréal achieve its sustainability goals. L'Oréal and Carbios are working together to create the enzymatic recycling technology. Brands in the luxury sector will be the first to adopt these bottles. For example, Biotherm was the first company to supply a bottle using enzymatic technology. Still within the inoavations involving plastic, I can mention LanzaTech, basically it's another partnership made with L'Oréal that has proved to be a technological and industrial success. Basically, LanzaTech is a carbon recycling technology, which uses a gas fermentation technology to convert pollution into bacteria, fuels and substances. What I mean is that, through a unique biological process that has at its base the technology, it is possible to transform pollution into sustainable materials. So, many brands have been adopting biotechnology in their production processes. This is because biotechnology is an innovation, which has allowed sustainable materials to be replicated. In other words, they are elements created in laboratories with the aim of creating synthetic substitutes for scarce natural resources, while preserving the ecosystem. And, this is only possible to be done due to the enormous technological advances. We can say that it is the perfect union between nature and technology. But, there are several innovations at the level of plastic. But, these are some innovations. What I wanted to say is that it goes beyond just technological innovations. For me *innovation on plastics, on packaging, the fact of removing the secondary and third packaging from the market for instance, are things we do, or even, the change of the packaging from plastic to carton. At garnier, for instance, the solid shampoos have a carton packaging, there is no more plastic.*

Q3: Still in terms of technology level, we noticed that there are several brands in the group with virtual diagnostics or try-ons. What is your opinion regarding this type of platforms? Do you feel that they provide any benefits for brands? And for the consumer?
Well, here I don't have so much knowledge. But I think yes, it's more teconlogical. Yes, definitely but, the group invests a lot in this kind of alternatives. Developing digital, it brings a lot of benefits.

Q4: Do you think that tools like this are able to promote, to some extent, inclusive beauty? Do you feel they are able to ensure that everyone has access to the right recommendations for whatever their problem may be?
Yes. I know that we, L'Oréal, have many different colours of foudations. But, is it really digital innovation that can bring all these pallets? It's not just this, I think digital innovation walks hand in hand with other innovations. We have innovations and investments that are very important in terms of product manufacturing, it's one thing that goes together with other industrial innovations. It's a set of things.

Q5: Regarding the topic of inclusion, how do you feel that L'Oréal seeks to include all types of people in its product offering, from all brands? That is, in this case, consumers with all types of skin or hair.
Yes, without a doubt. Inclusion and diversity are values that are absolutely paramount for us today. We do this, not because everyone else is doing it, but we also have an interest in having answers for all forms of beauty. For example, we have, I don't know how many thousand, shades of foundation available so that, also, we can respond to all forms and profiles of beauty.

Q6: Nowadays, sustainability is a hot topic and so it is one of the subjects on which we focus in the thesis. Do you feel that there is, in general, a major concern among the big brands? How are they dealing with it?
So, yes without a doubt sustainability is becoming a priority in companies, there are movements that are emerging which are very interesting. I think there is more and more transparency and more willingness to change. If we look at the organogram of people in the L'Oréal group who work on these subjects, it is one of the sectors that recruits the most. It is without any doubt a priority. Here there are several aspects, speaking on the variant of transparency. Here in Portugal, I think it is only Garnier, for the time being, and not all the products, but at least on the skin care area, it was developed a tool which is called Product Environmental and Social Labelling, a technological tool implemented through the website of the brand in question. So, if you go to Ganier website you will be able to see that we, in fact, internally already made an evaluation of the whole impact of the carbon of our products, it is an internal evaluation and, it is very heavy to make this kind of evaluation because we go since the extraction of the ingredients until, to the transport of the same, to the production of the product, transport until

the clients and even, to the consume of the product and, we evaluate all the carbon impact of our products. So now, after having done this internal exercise for all our brands, we are moving to the transparency phase and we are sharing it with our consumers, this will be implemented in each brand. Garnier, as I said, was the first brand to do it in Portugal, so the consumer when sees a product on the website will be able to verify, as it is done in the food industry, in which scale the product X is integrated according to its carbon impact, in this case, the scale is A to E. So, a product that has a C impact will have to be redesigned in order to reduce its impact. This way, there is a whole policy of transparency that did not exist before. There are also brands that are using a QR code technology as a way to offer their customers details about the ingredients used in a product X. By scanning the code on the product packaging, the consumer will have access to a full list of ingredients, along with information on where the product was made, product origin, control and quality information. Then, everything that has to do with packaging. As I had mentioned before, all brands have KPIs. Within this L'Oréal For The Future program, we have more than 40 KPI's, all the brands have the obligation to have a lighter packaging, to be more transparent about the products and the ingredients are all tested. There is always a desire to improve the environmental performance of our products. We are also taking a Green Sciences approach to our business, and we are trying to improve the carbon impact of our products, It is only possible thanks to the most advanced extraction technologies, this approach focuses on obtaining natural ingredients created through biotechnology, which allows ingredients to be created that will help preserve the environment. For example, in terms of ingredients we're going to try to move away from an economy created on petrol, to go to a more circular economy. So we have a commitment to use ingredients that are derived from vegetable sources, renewable, abundant minerals or curcular processes, and not in large quantities.

Another example, at L'Oréal Research & Innovation, clinical experts are dedicated to looking for leftovers from the pharmaceutical industry, and they will see if it's possible to reuse these leftovers and produce cosmetics with them, just like competing brands do. Caudalie does this a lot, using leftover grapes, I think. But you can do this with various cosmetics and L'Oréal, by doing this on a large scale, will have a great impact and will go from a linear economy to a circular economy, with a view to reuse.

Q7: And what about consumers?

We have internal reports, done by people who are dedicated to studying consumer preferences and sustainability, that prove that it is really a trend, notified as such. We have internal reports, done by people who are dedicated to studying consumer preferences and sustainability, that prove that it is really a trend, notified as such. It is here to stay and, we have brands like Garnier, Kiehl's, or CeraVe, which are investing on refill, as well as perfume brands like, Prada and Thierry Mugler which are our brands, which we have in license and that invest a lot on refill. Maybe, in Portugal it is not yet so evident as in other countries but, it is something that with Covid came to intesify and, it is here to stay.

Q8: Do you think that the use of technological advances can have any impact on the sustainable factor of the brand?
Yes, absolutely. So, there is a lot of research that needs to be done but, yes of course. If it would be a very important investment, like I was talking about Waterlook, for example. We have 35 factories in the world and, we only have 4 or 5 that have this concept, it is an important investment and the group is very happy to do this because these are values on which are very important to us. With the necessary investment, in the end we win.

Q9: How do you feel that demand has been evolving from man and what does this type of consumer look for in a product?
Again, I'm not in this area. But I believe so. For instance, South Korea is one of the countries that uses more cosmetics, where men, also, use cosmetics and, also they will look for more sustainable products. But I confess that in Portugal the market is still very small.

Q10: How would you describe a sustainable shopping experience, from launch to the end?
It's very important to have enough information and sometimes we all, as consumers don't look for the right information. For example, sometimes I see people saying that we have to take all plastics out of the market but we have to take it very slowly because plastic is sometimes great packaging, it can be lightweight and it can be completely recycled. I'm not an engineer specializing in this, many times, the carbon impact of a glass jar can be greater than a very lightweight plastic, so sometimes, it is important to read and inform yourself in reliable sources. A sustainable purchase, in my opinion, is the purchase we need. I think that a good choice, an informed choice, transparency about brands, are aspects that help the consumer to choose the best products. L'Oréal group, is a company that invests a lot on science, it is a group that was created by a French chemist and, so, science for us is very important. We're always on top of the laws, so buying a L'Oréal product for me is more secure, since the weight of science in the group is very important and ends up giving security, at least for me it does.

Q11: What is your opinion regarding the try-on mirrors that are being implemented by some brands?
Well, I'm not from a very digital generation, nor am I a very digital-friendly person. But, I see from my kids that they are much more connected to digital and, I think there's quite a bit of demand, definitely. Personally I'm not a big customer, but I think there is demand.

Q12: What is your opinion towards customisable products? For example, the consumer performs a skin analysis and then creates their own serum based on the skin concerns that the analysis detected. Do you think this makes sense (creating a customisable product from the ground up or creating a customisable product from 6 active ingredients, for example, as some brands are already doing)?
Yes, here maybe we are touching a little bit on the medical field, which is not ours, because we are a cosmetics company and we are very careful with this kind of products. But, I think yes, nowadays there are medical and dermatological diagnoses done at a distance, by answering a questionnaire, or analysing skin pictures taken, so I think there may be answers through the digital world. Yes, definitely.

Appendix 17: Interview Transcript with Rodrigo Fiuza Sanches, Content & E-Commerce Activator for the Consumer Products Division L'Oréal, performed on October 14th, 2022.
Source: Work Project's authors

Q1: At the moment, we are seeing a enormous technological development with mixed realities such as Artificial Intelligence and Augmented Reality emerging themselves into different areas of business. While we are studying Beauty Tech, we are focused on understanding how technology can make an impact on customer experience and behaviour, ending up providing a more inclusive and sustainable business model, at the same time. Throughout our research, we understood that L'Oréal is one of the companies that is leading this movement, by using internal technologies across their multiple brands. To start, could you maybe introduce yourself and, if possible, explain a bit of what your responsibilities are at L'Oréal.
I started working at L'Oréal 2 years ago in Makeup Marketing, first with NYX and then with every other Mass Market brand, and since this year's January I have been on the E-Commerce team for Mass Market – haircare, skincare, men, hair color, makeup, I work everything concerning activation and campaigns and content for our clients, our e-retailers, Continente Online, Mercadão, Loja do Shampoo, Skin.pt. Just to give you a bit of context, my universe is totally e-commerce, and because I was in makeup, I'm very focused on beauty, but precisely in cosmetics and makeup, which was what I previously worked on. I only work Mass Market; I obvioulsy know other brands, but I have never worked them or currently do. So, which brands are these? L'Oréal Paris (Elvive, Excellence, Men Expert), Garnier (Frutis, Hairfood, Ultrasuave), Maybelline, NYX, Essie and that's it.

Q2: By doing some research, we inevitably discovered that L'Oréal is one of the pioneer brands when it comes to technology in the beauty industry – how do you feel that Mass Market brands, in specific, takes advantage of technology when it comes to brand innovation?
I think that now, with the global pandemic, we were faced with a challenge, and there are product categories that are easier than other ones, but what we were faced with was the impossibility for our consumers to test products. There are categories in which testers are more relevant than other ones – L'Oréal Paris, NYX, Maybelline – and in which we used to provide testers at selling points. In other categories, maybe it's more irrelevant, as is the case of haircolour – if you look at the packaging, you will most likely achieve a similar tone of hair. But, in makeup specifically, it's a big painpoint for us, the idea of a client not having the possibility to test a product. So, we created what we call a virtual try-on, which is a platform within the L'Oréal website in which you can test some of our products in yourself through Augmented Reality tools; here, the idea is to fight back the lack of testers and the impossibility for consumers to test products, within online shopping. On the other hand, in skincare, for instance, we have the Skin Genius – it's a L'Oréal Paris skincare tool that analyzes your face, through Virtual Reality tools from Modiface. Through that, the system performs a skin diagnostic and recommends you some of our products that will rectify skin issues you might have or eventually have, or even just skin needs. It's a bit of that – besides obviously using all digital materials, not only on our clients' online point of sales, but also on our own digital

platforms, we use them to capitalize our campaigns and innovations to the maximum. These 3 points, I would say are the most important ones, the ones we value the most – Skin Genius, the capitalization of all the mechanisms for our clients' online platforms, and virtual try-on, specifically with makeup.

Q3: Holding on to that, I noticed some of the Mass Market brands have virtual try-on services – Garnier has the Color Match for hair, NYX has a makeup virtual try-on and Maybelline also has a product try-on and a Foundation Finder. What is your opinion on them and do you feel like they carry along benefits, not only for the brand but also for the consumer?

This obviously relates to the impossibility to test, and what we see a lot of the times is that these try-ons don't necessarily mean an online purchase – a lot of the times people test a lot of products at home, whether it's makeup or haircolour or whatever, and then they go to the point of sales and effectively purchase what they previously tried on. It' the two strands – online testing + offline purchasing and also online testing + online purchasing. What we are trying to do is to even integrate these services to the consumer within retailers' websites; it's an idea for the future that we are going to try to implement, so that consumer experience can be even more centered on our retailers and there is no dispersion, and above it all, to redirect consumers immediately to conversion, which at the end of the day is our goal. But obviously, answering your question very briefly, it's about testing and experimenting, and besides it being very good because consumers, for some reason, can't go into the store, they can, on the other hand, test and see effectively how the applied product looks.

Q4: Do you think tools like these can promote, somehow, inclusive beauty? Meaning, whether it's in a try-on in which the consumers tries on product x, or diagnostics in which they get customized recommendations, do you feel as if they make sure there is a balanced and fair offering, whichever the type of consumer is?

At L'Oréal we try really hard to prioritize as many skin tones as possible, as much diversity, in our campaigns, in our TV ads, digital campaings. So that is already one of our main focuses – the virtual try-on can be a way to promote inclusion, yes, from the perspective that it's the own consumer that is looking at himself, meaning it's not some model, not anyone selected by the brand, but yourself; because a lot of times, in ads, digital campaings, outdoors, it's selected models and the consumer always thinks "of course it looks good on her because of so and so", so there are a lot of factors that make the consumer not adapt as nicely to certain products. Here, on these virtual try-ons, it's a tool that is adapted to the consumers and it's not based on some perfect skin tone, our on an amazing hair style that only specific models wear; so, in that perspective yes, it makes a lot of sense for these tech tools to promote inclusion, but this is a theme that is very special to us – for instance, at NYX, almost no photos are retouched, whichever the photo is, whether it's a lifestyle one or a "before and after" shoot – all photographs are published without retouches and that evidences a bit of the authenticity that we want to promote in our brands.

Q5: Nowadays, sustainability is a hot topic and so, it's one of the themes we are focused on. Do you feel like there is, in general, a lot of worry by brands and also by consumers, regarding that?
Obviously – more and more brands have the responsibility to be sustainable and worry about the environment. Garnier is our leading brand on sustainability, but there is a special care about it on all the brands, whether it's on 100% recycled packaging, not all of them but the most… we have a big commitment with Garnier of reducing the plastic we use, and I even have a goal of not using virgin plastic until 2025. We have pretty ambitious goals that we are keeping in mind and will work towards. And then we also as people try to avoid waste – we don't destroy product excess, we always try to donate or reuse. We have articles that, when they are discontinued, we try to distribute them among collaborators, meaning avoiding maximum waste on that sense.

Q6: And regarding consumers' worry on sustainability?
I think L'Oréal does a lot of things and initiatives connected to sustainability and not only that, but we also have support to institutions, things that are more philanthropic, but it's a bit about company ethic and not as much as a communication tool. A lot of the things end up not being public, but I feel like consumers are environmentally worried to the maximum, more and more. What I feel is that L'Oréal goes beyond what these worries are.

Q7: Regarding sustainability, in which way do Mass Market brands operate? Asking this because most of the times there might be a pre-conceived idea that brands like these, in which the majority sells at supermarkets, as they are more accessible, end up discarding the sustainability factor to be able to practice lower prices. How does sustainability enter the equation?
I think that, in a universe that is massified, it's a bit difficult and definitely a challenge, the waste reduction that is, because it's exactly that – it's massified and produced in a large scale, so it's very tempting for you to bet on a large scale and neglect consumers' environment worries. The question is, as it's the Garnier case, which obviously won't start discarding plastic from their packaging, or as you said, it's the cheapest – in a Mass Market universe, it's obviously what makes the most sense, but we will try to get other options and solutions, like using recycled plastic and develop an idea of plastic rotativity much more solid. The virgin plastic theme is one of the strategies that we have to connect sustainability to a world that by definition is not that much sustainable. Then, we have the solid shampoo worry, the ecopacks, which are the recharges that we have available on our more popular haircare formula; we have these options for consumers to choose from, and that way helping us become more sustainable.

Q8: Do you think that resourcing to tech development might have some kind of impact on a brand's sustainable side?
Yes, exactly like you were saying, our strategy ever since a few years ago is to reduce testers to the maximum, so from a sustainable point of view, we have the L'Oréal for the Future program – in makeup, the idea was exactly to reduce testing; to avoid waste, because it gets to a point where we have a lot of physical points of sales, and testers for every single product was

not an option, not only economically, but also sustainably. Testers were banned during the pandemic, and it was then that we got this idea and were able to reduce testers a lot – the main goal was to become more sustainable and avoid waste because, at the end of the day, it's a lot of products and it doesn't look like it, but it's in a lot of quantities; the need to restock is very big, because they either break of disappear for some reason, so it's almost a whole product circulation system that can be avoided, with the help from these new systems of consumer support, like the try-on.

Q9: Regarding the consumer, do you think you can give me some insights on who the Mass Market consumer is?

I can't talk about the Mass Market consumer without mentioning one specific word – promotion. We usually say that it only sells whatever is in promotion, and if in Spain we have a low-low market, in the sense that prices are mostly flat, in comparison to us, and they are low, then in Portugal we have a high-low market – one day the price is high and then you add a promotion on it and it gets low, and then you remove the promotion and it gets high. It's a lot of juggling all of this, so it's a big market and consumers are very attracted by promotions. How does the consumer purchase? Here we have a 360 to complete – what is this? When we have certain campaigns with certain products… everything that is in a campaign needs to be on promotion. Here, "promotion" is the keyword, because it's literally decisive; if a Mass Market product is not on promotion, it doesn't sell. We call it 360, which is to address all touchpoints until the final consumer purchases the product we want him to. Besides, point of sales materials that need to include exhibitors and pop-ups – and even on that, paper-based materials, we usually try to produce as little as possible, due to sustainability. In exhibitors, we always try to reuse, because at the end of the day, it looks like it's not a lot, but multiplied by all of Portugal's Continente's and Pingo Doce's, it's significative. So, the idea here is to perform that 360 with the offline point of sale, with the digital world through media campaigns; all of this completes the consumer decision journey, in television with ads that we call the TVC's – it's the consumer journey until he reaches the point of sale. There are products that are much more need-based, as deodorants, which is the product that is the most affected by promotion – between a lot of deodorants, most people choose the one that is on promotion; but, for instance, it's interesting for us to perform some tests removing promotion, increasing promotion, and seeing the consumer behaviour regarding all of this. But obviously all this strategy, until the point of sale, is long and very worked on until the point of sale – this is the last step where the consumer effectively purchases, having in mind all the work that was previously put into it.

Q10: Have online sales been getting more adherence?

I think that with the pandemic, online obviously went through the roof and ours was no exception, as we got great results. We are now observing, for a couple months now, the consumer's return to the physical store – Portugal is not a country that is very directed towards online, but it's very very competitive and there are market players that almost dominate, but what we are seeing is definitely an offline increase, in which we see the virtual try-on definitely making a difference on the purchase side – it's decisive, mainly in the younger generation. Online is growing but it's still not as expressed as in Spain, for instance. There is still a long *way to go until the Portuguese consumers accepts these platforms are sufficient enough to discard a store visit.*

Q11: What is your opinion on try-on mirrors that have been getting implemented by some brands, in stores?

In Mass Market it's a bit difficult, as you know. Everything Mass Market is a lot more competitive and one of the things that is very competitive in offline is the theme of in-store space. So, having a mirror, unless it's a multi brand one that is provided by the retailer, is very difficult. But we try to find ways to make up for it with our try-on services – at the point of sales, you have the product labels that have a QR code that you can scan and access the virtual try-on, in store. So, you can try it on without actually touching the product; it's the same mindset of the mirror, but on your phone, and it ends up being better, because you can screenshot, share with friends, and it's more personal and intimate because you're the one who's looking at it. But that is the reason why a mirror wouldn't make as much sense in Mass Market, for space reasons. This QR code thing is our alternative – we have it on L'Oréal Paris, Maybelline and NYX, I think.

Appendix 18: Interview Transcript with José Passarelli, Brand Activation Specialist at Lancôme, YSL Beauty and Biotherm, performed on November 17th, 2022.
Source: Work Project's authors

Q1: At the moment, we are seeing a enormous technological development with mixed realities such as Artificial Intelligence and Augmented Reality emerging themselves into different areas of business. While we are studying Beauty Tech, we are focused on understanding how technology can make an impact on customer experience and behaviour, ending up providing a more inclusive and sustainable business model, at the same time. Throughout our research, we understood that L'Oréal is one of the companies that is leading this movement, by using internal technologies across their multiple brands. To start, I would ask you to introduce yourself and, if possible, explain a little about what are your responsibilities within L'Oréal.

My name is José Passarelli, I'm 28 years old and I'm from Brazil, more specifically São Paulo. I've been in Portugal for 2 and a half years, I came to do my master's degree at Universidade Católica, in Business. During my Masters, I also participated in Brandstorm and we reached the national final, we were the only team from Católica to reach the final, at the time the subject was Create Beauty through Entertainment and we did the rebranding of a L'Oréal brand, called Studio Online, a brand of men's products. We did everything around the music and stuff, it was pretty cool and it was really nice, except we lost in the final against Nova. It was there where my first contact with L'Oréal started, it was from Brandstorm that I started to have contact with L'Oréal's HR and, it ended up arising a mutual interest from both sides, me wanting to work there and them wanting to hire me, that's how the opportunity came up to do an interview for Kérastase and Shu Uemura, which are hair care brands and are part of PPD - professional products division. That's how I got a one-year internship in L'Oréal. Kérastase is a highly technological brand and, as time goes by it is becoming even more so, it is a brand that is part of the luxury segment of PPD. That is to say, it is not part of the luxury division of L'Oréal, there are the fragrances, skin care and makeup but, within the division of PPD, Kérastase is considered to be a luxury brand. After that year when I was interning at Kérastase, the opportunity to move to the Luxury division came up, to work on the following brands, Lancôme, YSL and Biotherm. Lancôme, is the biggest brand of the house, YSL is the second biggest and Biotherm is the fourth biggest, so they are three big brands, in which basically YSL and Biotherm are not technological when compared with Lancôme for instance, but Lancôme is highly technological.

Regarding what I do on my daily work life, I'm Brand Activation Specialist, I make the connection between the commercial, the field - which are our beauty advisors - for instance, when you go to a shop like Perfumes e Companhia, you know those ladies that are there to give you advices about products? They are all divided by brands, i.e., you have 2 or 3 per shop and are beauty advisors of L'Oréal, are employees of L'Oréal and they are there to sell everything, but their commission, i.e., their bonus comes from selling L'Oréal brands, as well as there are beauty advisors of Sisheido, Clarins, among other brands and there are also the beauty advisors of the retail itself, i.e., Perfumes and Company also has its own beauty advisors. So, I'm responsible for this part, I work between the commercial department, which are the Key Account Managers, i.e. the people in charge of the main retailers. There is a Key Account for

Perfumes e Companhia, a Key Account for Douglas, another for El Corte Inglés, etc. So, my job is to manage these 2 areas and also to do activation at the point of sale, i.e. retailer activation. Whenever you go to a shop like a Douglas or a Sephora, you can see the decorations, in other words, many times these shops have an area, for instance in the perfumes and Companhia shop in Colombo, at the entrance of the shop there's a podium that is reserved for a brand, so there's always a different brand highlighted on that podium, and we are the ones who create those activations, we are the ones who make the decoration, we have the whole idea and, obviously, who will implement it afterwards are other suppliers, but we are responsible for having the ideas and making those activations at the point of sale, not only on the podium, as I said, but also on the shelves of Perfumes e Companhia, we make the decoration and we have the ideas of how the product will be exposed on the shelves, when you go there to see the launch of a new perfume by Lancôme, for instance now the new Christmas launch of Lancôme is very nice with the Christmas decorations, with a technological touch. Basically this is it.

Q2: When doing some research, we inevitably saw that L'Oréal is one of the pioneering brands in the use of technology in the beauty industry - how do you feel Luxury brands, and specifically those that are worked on by you, take advantage of these technologies? How do they innovate in a technological way?

Well, I think that, first they always follow the trends, the world is becoming more and more technological and the brands need to follow the market trends. I think that Lancôme seeks, more than ever, to become technological, because it is the pioneer brand in the technology business and, mainly, by the results that the use of technology brings to the brand and to the clients, which means, it is something innovative and that has demonstrated to have a lot of demand. I think that Lancôme, in specific, is a brand that doesn't repeat what is already being done by other brands, but rather focuses on finding gaps in the market, tries to find something that consumers need and that is not being covered by any brand, so Lancôme goes there and gets it, creates and innovates in technology because of that.

Q3: I've noticed that some Luxury brands have virtual try-on services, such as YSL and Lancôme, which also has a Shade Finder. What is your opinion about this kind of services? Do you feel that they are very well accepted by consumers and are perceived as being realistic?

It is very advantageous for the brand, for example, virtual try-ons allow brands to connect with their consumers in a totally digital way, that is, even without physically trying on the product, the consumer can create that connection with the brand. Most of the time when we buy this type of product online, we are often left with many doubts, wondering if that color we are looking at is going to look good on us, as we never know the result, there is always that doubt between one product or another. Through try-ons, we managed to create more trust, the consumer can try the product and make sure it looks good on their skin or not. It's something totally differentiating in terms of other brands that don't have this type of technology. And not only this, the consumer does his research online and finds that feature in Lancôme, then he goes there and does the try one, when he goes to the physical shop to buy that product, the chance of the consumer not buying Lancôme is much smaller, because he is already directed *to that color that he has already tried online and goes directly to the Lancôme section, he won't look to anything else, he goes focused in that product, makes the purchase and leaves, this is trustful data, it was something that was studied. So, I think that the try-on is very important. I think that Lancôme's diagnosis, allows consumers to better understand the needs of their skin, helps them to become more informed and aware of their needs. Many times, we don't know, nor have enough knowledge to know what type of skin we have, in this case, if it's oily, combination, sensitive, etc., and which product is the best suited for that type of skin. Of course, the diagnosis is not 100% certain, but it can read 6 different characteristics of the skin, such as wrinkles for example. It is very useful, and it is also a way of building loyalty with the consumer.*

Q4: On the other hand, I saw that there is also the possibility of virtual diagnosis - Lancôme has a Virtual Skin Consultant and YSL has digital consultations with specialists. What is your opinion about these services? Do you feel they bring any benefits to the brand? And for the consumer?

Yes, most of the times yes. Because it's something personalized, so anything that is personalized will tend to be better seen by the consumer. It ends up being a marketing game, the brand is getting into the consumer's mind, it's giving them something personalized other brands don't give.

Q5: Do you think that tools like these are able to promote, in part, inclusive beauty? In other words, both in a try-on where the consumer tries product x, and in diagnostics where you get a personalised recommendation, do you feel they ensure a balanced and fair offer for whatever type of consumer is concerned?

I think so, because it is online, it is available for anyone, there is no barrier for people to enter and, it is something that embraces all tones, in other words, it is made for everyone. There is no barrier regarding skin tone/color. So, I believe that yes, maybe it's not something that raises the flag of inclusion like other actions, but it is something that is inclusive, yes.

Q6: Still on the subject of inclusion, how do you feel that Luxury brands try to include all kinds of people in their product offer? That is, in this case, consumers with all kinds of skins. This is because luxury brands are often perceived as being more exclusive and not so easily accessed by all types of consumers.

It is a sensitive subject because it is exclusive. If we stop to think, there are different types of discrimination, there is gender discrimination and color discrimination, let's say these 2 principal ones. Regarding gender discrimination, I believe that it is a more inclusive market, especially for homosexuals, they are much more part of this world than other categories. Now for example, black people are a bit more difficult, although now brands are forcing black models and launching lines focused on darker skin tones. I think brands are trying to reduce this gap but, unfortunately, due to a social parameter, especially in some countries like Brazil, where I come from, most poor people are black, so this ends up affecting the type of consumer who can buy something more expensive, i.e., the consumers who have more money, unfortunately are white, the vast majority, and this is something that affects brands and that is *why some brands are trying to change, that is, within the selective group of people who can buy the brand, they are trying to reach as many people of all races as possible.*

Q7: So do you feel that the use of technology can fill inclusive beauty?
Yes, it is a way for brands to include those who want to be included. There are no barriers, even for people who can't afford it. In other words, these solutions allow everyone to experience and feel that they are part of that world, even if they can't afford it, which means that the brand isn't converting with these people, because they won't buy any product, but through this type of solution the brand is raising awareness, showing that the brand is for everyone and giving these people the chance to dream, and when they can afford it, they will remember that one day when they tried that lipstick on the virtual try on, they can buy it. In my opinion, it's something very valuable, it's a form of inclusion too.

Q8: With the data I have already collected, I have realised that product customisation is something quite difficult to achieve in FMCG, for example - do you feel it is something that can be done in the Luxury division, as it is a more exclusive and personal sector?
Yes, because the quantity of sales or product, is much smaller and, on the other hand, the price is much higher so it ends up being worth it. But because it is a smaller quantity, because it targets a more exclusive group, a niche consumer group, I think it is much easier to do this kind of customization. It is easier in the luxury sector and, I think it is something very well seen, it is a way of the brand to get consumer's loyalty and, specifically in luxury, loyalty is the key word. By creating loyalty, the brand will gain market share, will gain market by creating loyalty, which is something different of the mass market for instance, in which it is not through loyalty, but attracting in some way, because, one day the person goes to a commercial surface to buy a product of Nivea brand and, another day buys Dove, so these brands have to do something more, it is quite different the approach. But answering the question, I think yes, it is very doable in the luxury division.
I will give you an example: a few weeks ago it was Amoreiras Shopping's birthday and we did an activation at their Perfumes & Companhia store with Yves Saint Laurent Beauty. We got a podium at the front of the store with a huge golden YSL logo, in which we had an engraving machine for every purchase of the Libre perfume that was over 50ml. Customers would purchase the fragrance and win a bag, a brush and the engraving they wanted on the perfume – there was that type of customization, which is much more doable in luxury; you wouldn't be able to do that at a supermarket or with a Mass Market brand in general. So I think actions like this make a lot of sense.

Q9: Customization is at the center of inclusive beauty, right? Even so because customizing products makes me have a product that matches my needs to the maximum, so they are all included in the product.
Yes, in some way yes.

Q10: What is your opinion on in-store technological solutions as the smart mirrors that can include all the previously mentioned services?

I think it's a great ideia, it's something that attracts the consumer. It's a technology and technology has been getting more likely to gain more and more space in the market and becoming more than a competitive advantage, but more of a requirement, a pre-requisite. I have done a lot of research on those types of mirrors and I think they would be the perfect asset for the luxury market.

Q11: Nowadays, sustainability is a hot topic and so, it's one of the themes we are studying. Do you feel like there is, in general, a big worry from luxury brands, and also from the consumers, regarding that?

What I was saying about technology, I can say with much more emphasis on sustainability – it's not a competitive advantage, but a requisite. Meaning, the company that is not worried about it, will stagnate. In the end, if we look at the concepts of luxury and sustainability, they depend on each other, because at the end of the day, what is luxury? It's the optimized usage of its resources and sustainability goes along those lines; meaning, I believe luxury brands prioritize it a lot – for instance, we have Mugler, with a rechargeable fragrance fountain for over 30 years now. In order to reduce packaging waste on a large scale, Biotherme is implementing a refill technology to generate environmentally friendly packaging. Basically, it consists in a Refill machine, through which the consumer will be able to take its sustainable packaging and this same machine will refill the packaging in an innovative and automatic way. Other brands like, Armani - a brand that is super worried about sustainability, it has countless projects and defends a lot of causes, it worries about the optimization and rationalization of resources; Biotherm is one of the brands I work on and it's pure sustainability, it follows the principle of a cycle that is created, used and developed for the environment, in the less destructible way possible; Biotherm's product formulas are made like this – imagine you apply a product on your skin and go for a swim at the beach; that product will wear off and go into the environment, but these products are made in a way that allows these residues to be as little harmful as possible. At Biotherm, we have a Blue Biotech approach, which promotes the production of natural ingredients and fully sustainable products. This approach is based on science and technology as a way to make the world more sustainable, it is dedicated to creating ingredients and products, through biotechnology, that do not damage nature.It's a brand that worries about preserving nature and the ocean, it defends a lot of initiatives and is actively present on them.

I can mention the Airless Packaging Innovation, which has a strong focus on sutentability. This technology was designed for the Skincare industry and basically they are creating new types of Airless packaging where the main goal is functionality and product protection, in this case it is refillable and recyclable. Basically, the packaging contains an Airless pump, a tube and a bottle. They are created through technological processes with an ergonomic design. This packaging is able to protect the active ingredients of the product and is sustainable. They are made of sustainable materials and most of them are usually refillable. More and more sustainability and luxury go hand-in-hand; one of them depends on the other one, there is not a difference and we can't think that luxury excludes sustainability, because it's concepts that just go together. And that goes to the point of what the consumer wants – sustainability is a *driver for consumer choice, who is more watchful to factors beyond the product itself, at the time of purchase, and one of those things is sustainability; the causes a brand associates itself with, whether it does animal testing, whether it worries on preserving the environment… there are a lot of factors. A lot of people believe luxury is something that is super niche and segmented, and it really is, but there is the idea that, because of that, there is not a worry with sustainability. Nowadays, the luxury consumer has been worrying more and more with the environment.*

Q12: Regarding the consumer, do you think you can give me an insight on the luxury consumer? Maybe define a profile or a persona if you can.

I think the luxury consumer is extremely worried on not letting a product finish in order to get a replacement, meaning that the purchase driver is not the end of the product. This consumer doesn't need for it to be the end of the month or a specific time concerning financial reasons to purchase new products – he just goes to the store and buys products whenever he feels like it, or when he feels like there is eventually the need to. I believe the consumer is very worried about its appearance and is always looking for results, whether it's a luxury clothing consumer, or a luxury skincare, luxury haircare… he worries about his appearance a lot. He doesn't worry about the price of the product because what leads him into purchasing something is believeing it's a product that will have good results in his life, and that's when we can consider also other factors besides the end result that the product allows him to achieve. Meaning, if product x has results that are a little bit less visible than product y's, but x worries about social themes, then the consumer prioritizes product x. But, we have different types of consumers – the younger ones that are more worried about social themes, and the older ones, less worried about it, who have been buying the same fragrance for 10, 20 years, it's always the same product from the same brand. It's a consumer that is very worried about having the product and not running out of it, who doesn't worry about the price; generally, it's a loyal consumer who already knows what to purchase whenever he goes into a store. It's not a person who buys products everyone in a while and has a limited budget whenever he goes shopping; the luxury consumer goes straight to the brand he is fond of, that results in his point of view.

Q13: Generally, it is said that the use of technologies like AI can help leveling up consumer experience – what is your opinion on this? Do you feel like the modern consumer is more prone to shaping to a shopping experience that is more online?

I think that the need to go to a physical store is always present and it is essential, but this is a personal point of view. We shouldn't forget about the physical, I think there is always a need to go to physical stores, but I also think that the younger and more modern consumers ends up getting more digitalized; but, mainly if it's cosmetics, when we already have virtual try-ons and smart mirrors… whatever it is, you won't be able, for instance, to smell a fragrance, you won't be able to feel the texture of a certain lotion, the texture of a certain foundation. You might have a super clear vision of it on online, but feeling it and actually touching it is something else. I feel like it's important to keep the focus on physical and offline, whilst still looking at online; so, incentivizing the online purchase without neglecting the offline, which has been a trend for a while now – I don't think the way forward goes through that mindset.

Appendix 19: Interview Transcript with Beauty Advisors, from Colombo Shopping Center, performed on October 14th, 2022.
Source: Work Project's authors

SEPHORA:
Q1: When people go to you, do they already have a product in mind or do they just have a problem that needs solving?
They usually have a product in mind yes, a lot of the time the need for more than one product is created by us.

Q2: And how do you create and encounter that need?
Imagine this: the client wants a lipstick from Fenty Beauty; we are going to create the need with the lipstick and understand if the client also wants a lip scrub, a moisturizer... we never want to sell only what the client comes looking for.

Q3: For instance, if someone comes looking for a Benefit concealer but doesn't know what the right shade is, how does the consumer react to having to test multiple shades until getting the right one?
Usually they are super accessible. We always like to sit down with the client and apply the product, that's why we have our beauty advisors. We never try a lot of concealers, it's usually two shades, and three for foundation. And a lot of times when there is a product that the client has already tried on and doesn't recall the shade, we have the client history that can always be consulted.

Q4: Are there any cases of people who have bought the product and then complained about not solving their issue or not fulfilling their need?
Yes, that happens sometimes. That's why we usually try to understand how the consumer is using the product – if it's the correct way or not, and providing a solution within the need of other issues.

Q5: With which products does that usually happen?
Make-up, a lot of times the consumer tries the foundation in-store but when he applies it at home it doesn't look as good on his skin tone. It happens a lot with lotions and moisturizers – sometimes the consumer wants an anti-aging cream and when that doesn't happen, usually they come back and say that the product doesn't work. But the truth is, you never notice a lot of difference just by using one quantity of the product. When I have a client that already has a face that is super wrinkly, it's much harder for us to get the person to notice results.

Q6: Are there older consumers that go to Sephora and feel like the product offering is very small? For instance, products for older people are always focused on anti-aging, which won't work as good because those people have already aged, and wrinkle prevention. Do these people feel like there is a lack of products?
No, we have a lot of ranges and brand that end up matching that offer for clients with a more mature skin. We have prestige ranges that usually use for more mature skins. And then we also

need to evaluate the client's skin. We have clients of 80, 90 years old and obviously what the consumer prioritizes the most is comfort, because the wrinkles are never disappearing, so he won't get firm skin anymore but a lot of times what he wants is to feel comfort and for that it's necessary to hydrate and, for that, we always have ranges and products.

Q7: Have you been noticing a bigger worry regarding skin and cosmetics by consumer segments that are not as "obvious"?
Yes, more and more younger consumers. Nowadays TikTok also generates a lot of need for purchase by young people; a product is launched and in little time that product goes viral and sells out.

Q8: What about men?
Men don't look for products as much. They mostly look for fragrances.

Q9: What is your opinion on products that are 100% customizable?
I don't know if it's easier to achieve.

Q10: Do you think it would attract the consumer?
Yes. We try to provide a customizable client service as well. Maybe having a customized product might generate curiosity too.

Q11: People have started to look for more sustainable products? Like, refilling, sustainable packaging, clear ingredients list, etc.
No, I still haven't gotten anyone that comes looking for a sustainable product. Maybe one every once in a while, but still nothing significative. Perhaps, one or another client, but nothing significant. Often, we are the ones who alert the customer to a product that already has the refill function.

Q12: Do you sell Foreo here? There is a lot of demand regarding this brand?
In 2019 was the Foreo boom. There is year Foreo will have a huge launch, the Foreo Luna 4, which might cause that boom again.

Q13: In your opinion, why do you think people look for the Foreo brand and its products?
For the differentiation. They really have completely different products that you can't, at least in the market, find a lot of product variety with that kind of technology attached to cosmetics.

Q14: Do you feel that if a mirror with virtual try-on of products was installed here in the shop, there would be a great adherence from customers?
Yes, super interactive and very nice. It could work more in the phase we experienced during Covid 19, where we couldn't test the products, then I think it would have been a big success and the sales would have been higher. But, yes I think it is very interactive and, the customers would like that.

CLINIQUE (PERFUMES & COMPANHIA):

Q1: When people come to you, do they already have a product in mind or do they just have a problem they want to solve?

It happens both situations. People who already come with some product in their head, a few years ago it didn't happen so much, but now with the internet era, people already go searching for the product that exist, not all, but the vast majority already come with an idea of what they are looking for.

Q2: When they come with a specific problem, how do you try to solve it?

We identify the issue that the person has on their skin and, we recommend the product that best solves that same issue.

Q3: Do people complain that they have already bought and tried several products without any having solved their problem?

Yes, there are people who want immediate results, which is impossible. But, it depends on the situations. Sometimes, younger girls want results yesterday, and that's not how it works - it takes time before you see results. And then, a lot of the times, people see the results and then don't follow them. These complaints happen a lot in this type of situation, mainly in acne where they want immediate results and, which don't depend only on the efficacy of the products, also have to do with the hormonal part, with that adolescent age, it's more in these situations.

Q4: Have you noticed a greater concern about skin and cosmetics among groups that are not so "obvious" (e.g., men and very young people)?

Yes, men are becoming more and more concerned.

Q5: Do you think that there are products that meet that need?

Yes.

Q6: People have been looking for more sustainable products. Do you feel that people go to the shop and, for example, if you have two products and if one of them has a more natural ingredient list and the other is from a more well-known brand but with less sustainable ingredients, will the consumer opt for the sustainable product over the less sustainable one?

They are different customers. I would say that the new generations yes, they care more about the environment. Now, a client who has been using the brand for a long time, doesn't have that habit. But the brand itself is already starting to take this type of care.

Q7: Do you feel that brands are increasingly transparent about what they offer. And, do you feel that people would embrace initiatives, such as refilling, sustainable packaging?

Yes, that is already happening.

Q8: Do you feel that people are looking more for technological devices that help with skincare, such as Foreo? Why and why do you think people are looking for these kinds of technology-based products?
I think there has been a boom, everyone has searched for these products, but then in practice they end up not using them.

Q9: Do you feel that if a mirror with virtual try-on of products was installed here in shop, there would be a huge adherence from customers?
It already exists at Clinique.

Q10: But in-store?
When there are brand activations, yes.

Q11: And, what is the consumer feedback?
They like it, it's different from everything else. It gives immediately which product is the most recommended for the person. During the process you ask questions, what is the need of the person in question, what are their concerns and then the product that is most recommended for that person to use is given.

Q12: We are focusing on personalized options and, we note that Clinique has a product that is personalized - the Clinique iD.
It was when this line was launched, that we had in-store virtual try-ons, which would read the face and give the most suitable result. The product offers up to 15 different combinations.

Q13: Do people know about this product? How do they choose the combinations?
Yes, they do. The choice of combinations depends on the type of skin the person has, the age and the concern they have. It has a lot to do with the skin type, because there are several textures that are dependent on the type of skin the person has, then the concentrate is chosen according to the need.

Q14: If a person buys and then the product runs out, do you feel that the person returns to the shop to buy the same product? Are they happy with the product? The product is fully customizable, right?
Yes, it is customizable. Hence there are the various textures of moisturizing cream and, it's a practical and affordable product.

Q15: How much does it cost?
It costs EUR 62 - 125ml.

KIEHL'S:
Q1: When people come to you, do they already have a product in mind or do they just have a problem they want to solve?
It depends, people don't always know what it is they need.

Q2: When they come with a specific problem, how do you try to solve it?
In our philosophy, we don't create the problem for the customer. We ask how the customer feels and they have to tell us. Of course, we also have nice ways of making them understand what they need. But normally our diagnoses are precise, that is, after we have identified the problem, we give them the product that solves it. We give the samples and then the customer tests them at home, or, if he wants, he can try them out straight away. We always have samples, as long as we have them available.

Q3: Do people complain that they have already bought and tried several products without any having solved their problem?
No. We have a 28-day satisfaction policy. The customer if not satisfied, has 28 days to return or exchange the product. But, of course, it never satisfies 100% of people.

Q4: Have you noticed a greater concern about skin and cosmetics among groups that are not so "obvious" (e.g. men and very young people)?
Our customers are very eclectic. We have products for everybody, all the products are unisex and we have a shelf just for men. We have both male and female customers, although women have a greater weight due to social issues, we also have many men. I would say it's very balanced.

Q5: What is your opinion towards 100% customizable solutions? In other words, a moisturizing cream, for example, with ingredients mixed proportionally and exclusively for that person's skin
We have already had that. In Portugal, it doesn't work. But, we have had it, we made the solutions customized for the client.

Q6: But initially there was a huge adherence?
No that's why they discontinued that. But, with the products that we already have, we are already able to do it. I mean, we don't prepare, but with the products that we have, we already managed to reach a great precision level on the resolution of the skin problems, to conjugate with the kind of skin. We don't follow lines, for instance, a line for +50 or for +60, a line for oily skin, which means, we have the products that treat this kind of problems, but we won't recommend all the oily skin products to a person with this kind of skin, that won't solve the problem. With the products we have available in shop, we make the best combination for a personalized diagnosis, there are never two equal skin diagnosis, hardly two equal skin routines. At this point it is already personalized, because that is what we offer, luxury services. Kiehl's is in that sector, it is not just any cream shop, we really fit in the luxury sector.

Q7: Do you feel that people are looking for more sustainable products?
Yes, we also communicate that a lot as a brand and a company. We have the issue of natural ingredients. I think when people come to the shop, they already come looking for that. We constantly communicate all our social policies, the issue of ingredients being of natural origin, a lot of harvests are done supporting foundations, for example in Morocco we have argan that is collected by women and supports those women. We actively communicate that.

THE BODY SHOP:

Q1: When people come to you, do they already have a product in mind or do they just have a problem they want to solve?

Mostly, they already come with a product in mind.

Q2: When they come with a specific problem, how do you try to solve it?

People mostly come looking for a moisturizing cream and, through the scent that the person wants, whether they are looking for a face cream or a body cream. When the person wants a face cream, we ask what their skin type is. When the person is looking for a body cream, we see which scent they prefer.

Q3: Have you ever had a case, where the person bought a product and then didn't like the result?

Yes.

Q4: And, how you solve that?

When the person comes to the shop because they didn't like the result of the product, we don't do exchanges. It has happened, the customer has an allergic reaction and, in that case we return the money for the product.

Q5: Have you noticed a greater concern about skin and cosmetics among groups that are not so "obvious" (e.g. men and very young people)?

Yes. We have men who come looking for makeup and skin care products, there is more and more of that concern from men.

Q6: Is there a disproportion regarding the products that are offered to women and men?

No, our products are unisex and we still have the men's skin care part, but it will be discontinued. And, it will all be unisex, so there won't be that difference between men and women.

Q7: What is your opinion towards 100% customizable solutions? In other words, a moisturizing cream, for example, with ingredients mixed proportionally and exclusively for that person's skin

For instance, regarding the body, the person can combine the several lines of products that exist, because the skin also has different needs. In terms of face products, we already do that, we combine several different product lines.

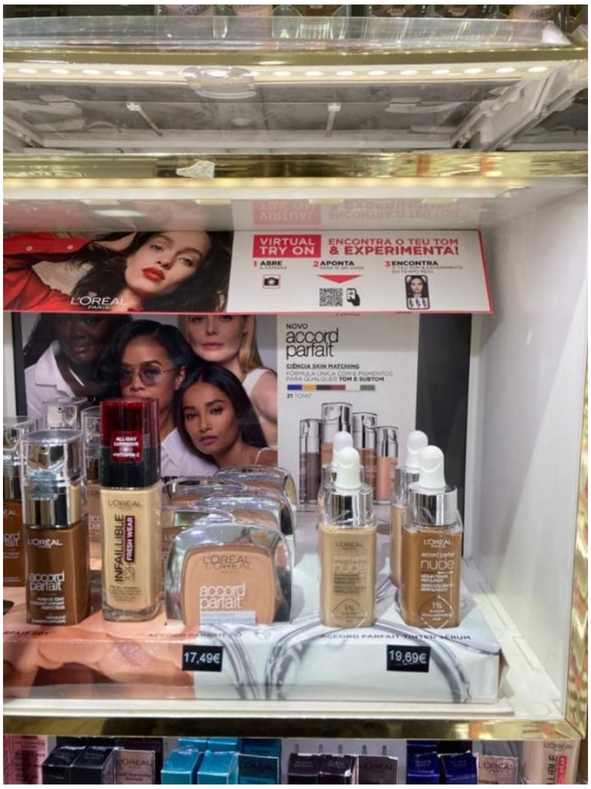
Q8: Did people start looking for more sustainable products?

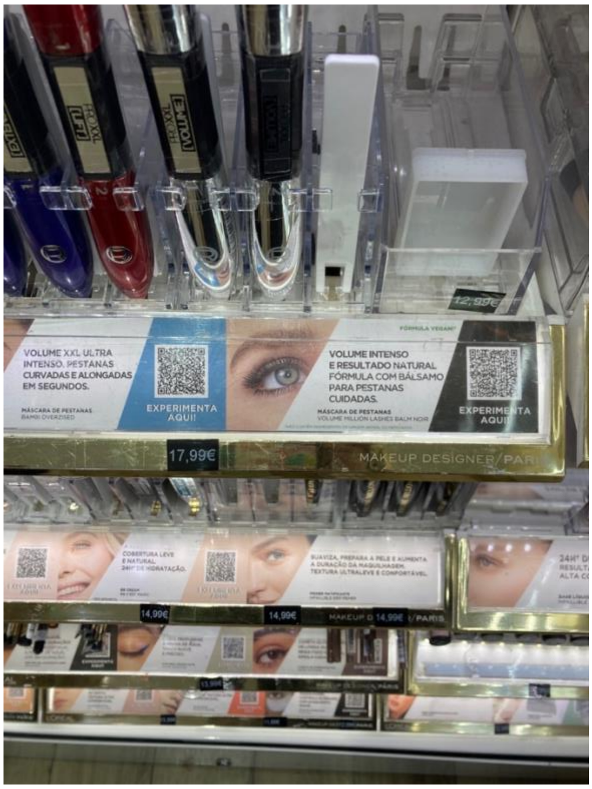
Yes, definitely.

Q9: We noticed that the Body Shop, provides the refill function, do people adhere to that?

Yes. People are searching a lot for moisturizing cream with the refill option, but we don't have it yet. We feel, more and more, that there is this concern with sustainability.

Appendix 20: QR Codes at L'Oréal's product exhibitors





Appendix 21: Lancôme Flagship Store in Paris