



Psychological and Behavioural Science

**Beauty lies in the eyes of the beholder, but sustainability lies in the
interdependent activity of every stakeholder**

Saransh Ahuja

Valeria Dibisceglia

Grace Roberto

Zixin Xu

London School of Economics and Political Science

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Course convenors: Dr. Fred Basso & Prof. Saadi Lahlou

Other teachers: Dr. Maxi Heitmayer

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Background

The beauty industry generates more than €300 billion worldwide, and Europe leads in market size (Solistica, 2022). Consumers in the beauty market increasingly demand organic, ethically sourced, and environmentally friendly products (Larson, 2022). This rise in demand makes the beauty industry an important area of investigation into environmental, social, and economic sustainability.

Key definitions pertaining to this essay:

Organic: Production system excluding usage of artificial materials (Maghirang et al., 2011);

Sustainability: System's ecologically, economically and socially viable ability to prosper (Edwards-Jones & Howells, 2001);

Fairtrade: Arrangement guaranteeing that specific standards are met throughout production and supply such as workers' rights (Fairtrade Foundation, 2022);

Ecosystem: Representation of plants, animals and organisms that work together (National Geographic, n.d.);

Beauty Products: Applicable to the body, i.e., makeup, soap, shampoo, etc.

Greenwashing: Misleading promotion of an organization's environmental performance or environmental benefits of its products (Delmas & Burbano, 2011).

The discrepancies between organic, fair trade and environmental regulations challenge the adhesion to and cohesion of sustainable principles. The organic cosmetics market is estimated to grow by 8.9% annually (Grandview Research, 2020). Although organic products are safer for human use, their farming is worse for the environment than nonorganic soil (Leifeld, 2012).

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Also, organic products are not required to consider working conditions (Department for Environment, Food & Rural Affairs, 2016). Organic farming uses biological nitrogen fixation and crop rotation to replace pesticides and synthetic fertilizers. This reduces water pollution and harm to farmers (O'Brien, 2019) but the resulting organic soil decreases productivity, deteriorates soil, and creates more carbon dioxide emissions through soil respiration than nonorganic soil (Leifeld, 2012). The increased demand also incentivizes producers to expand cultivatable land or extract more tree-based raw materials for organic cosmetics, which causes deforestation (Foster & Retallak, 2023).

Fairtrade and environmental sustainability are not written into law like “organic,” but they are taken into consideration when developing beauty products. Fairtrade beauty certification emphasizes social, economic, and environmental sustainability, but does not make organic farming mandatory (O'Brien, 2019). This is a problem insofar as fairtrade products do not have to take into account potential harm to humans from unnatural ingredients. Indeed, the manufacturing of fairtrade products is not obliged to consider the chemical ingredients' effects on human health (Sellare et al., 2020). As far as environmental sustainability within the beauty industry, packaging, carbon and water footprints are the biggest concerns. L'Oréal has developed its own sustainability assessment and a labelling tool called SPOT (Sustainable Product Optimisation Tool), but there is no industry standard for assessing sustainability (L'Oréal, 2020). SPOT is the first innovative tool in the industry which considers social criteria alongside environmental ones (L'Oréal, 2022). This tool permits simulating various designs to measure their environmental and societal impact and point out prospects for improvement. It also allows us to measure the impact reduction of every product's feature and track the progress on the packaging, the formula's footprint, the proportion of sustainable and renewable ingredients and the social impact. As this paper continues with its aim to improve the sustainability of the

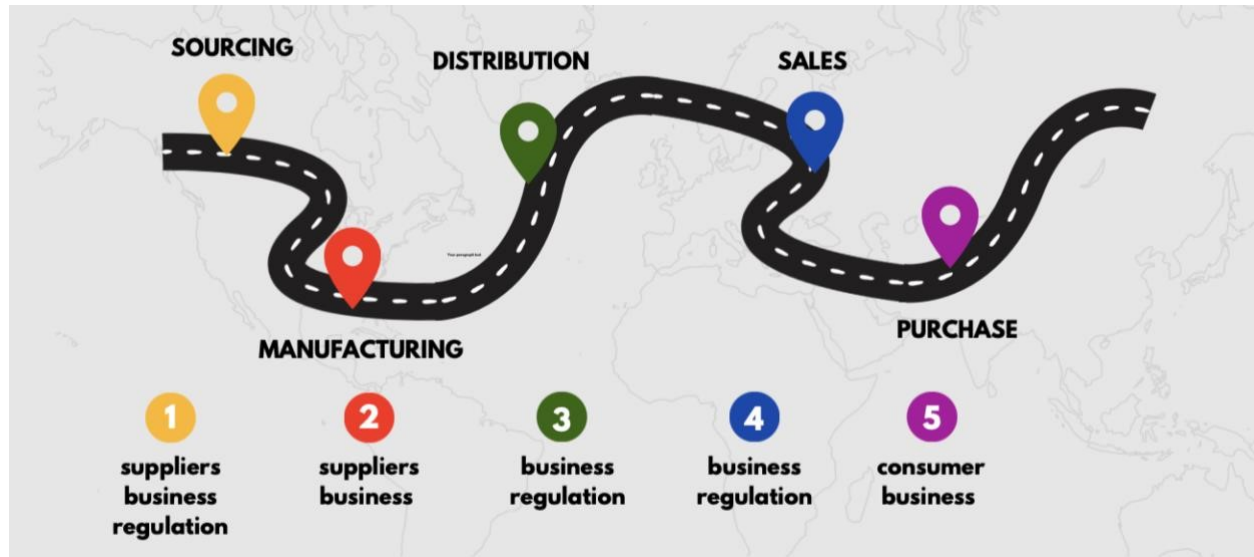
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beauty industry, it will address harmful discrepancies between environmental, social, and organic beauty. It will also use existing tools like SPOT and independent certifying bodies to suggest a holistic, realistic intervention.

Introduction

Conventionally, the value chain of the beauty and cosmetics industry is viewed as a succession of five steps: (1) *sourcing* “inputs to production” from the suppliers which include raw materials and product ingredients (aromatic plants, essential oils, synthetic chemicals, alcohol etc.) as well as packaging material (glass, plastic bottles and caps, stickers, boxes), (2) *manufacturing* the product and executing other related tasks like accounting, business administration, legal compliance, design and marketing, (3) large-scale wholesale *distribution* of the finished cosmetic products, (4) *sales* of the finished products through individual vendors, retail outlets, drugstores and online marketplaces/websites, and (5) *purchase* by consumers, who are at the end of the value chain buy these products from their preferred sales channel (Colipa, 2018; Solistica, 2022). However, we zoom in on this seemingly linear and sequential value chain to identify the various stakeholders involved at different steps (some of whom might be obscured from a macro viewpoint). We will analyze their interdependent activities to explore how their respective roles are shaped and/or influenced by each other, by social and institutional regulations and by their own affordances and competencies. For a summary of which stakeholders are involved at each step of the conventional value chain, see Figure 1 below. As per Cosmetics Europe’s (n.d.) resource - ‘Good Sustainability Practice for the Cosmetics Industry’, in addition to companies adopting positive sustainability practices within their organization and other parts of the supply chain under their control, for more effective sustainable consumption, the industry, regulators, consumers and important stakeholders should be considered together. The goal should comprise not only mentioning relevant environmental information about products but also educating consumers about their role in this transition towards sustainability, capturing the whole of a product’s lifecycle (Cosmetics Europe, n.d.).

Figure 1. *The stakeholders involved at each step of the value chain.*



Taking this lifecycle approach to extend the scope of the conventional value chain, this paper uses Multilayered Installation Design (MID) (Lahlou et al., 2022) to first identify the tasks and activities involved in the lifecycle of beauty and cosmetic products (see Appendix, Table A, for a non-exhaustive list of tasks and activities). Four tasks – regulation, sourcing raw materials, marketing and consumer journey, are chosen for an in-depth analysis in the second step of MID, with each task analyzed from the perspective of one of the main stakeholders: regulatory institutions, suppliers, businesses, and consumers. Activity theory is used to identify the motives, goals, actions and rewards of each activity. Installation Theory (Lahlou, 2018) is used to examine the physical affordances, embodied competencies and social regulation that channel behaviour at every point during the activity. The ‘activity grids’ (see Appendix, Table B) structure the analyses for the four shortlisted tasks and activities. Pain points within the shortlisted activities are discussed in greater detail with respect to the lack of physical affordance, embodied competence and/or social regulation. Finally, two novel installations addressing all the pain points along with relevant stakeholders are discussed as solutions, each elaborating on the three layers of

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Installation Theory (Lahlou, 2018) that make the proposed installation resilient by appropriately constraining and scaffolding behaviour within the beauty and cosmetic industry.

Stakeholder Activity Analysis

In this section, we will elaborate on the activities (see Appendix, Table B, for the activity grids of the four shortlisted activities) with special attention to the pain points that can be addressed using Installation Theory and behavioural and psychological approaches.

Regulatory Institutions

The main goal of regulatory institutions is to create rules and certifications to ensure the safety and sustainability of the beauty industry. This activity is distributed across many different types of regulatory bodies. For instance, the first subgoal – to create a legal standard – involves the government. Regulation 2009/1223 and the Cosmetic Products Enforcement Regulations 2013 Great Britain ensures the safety of products entering the market by requiring processes such as the submission of new cosmetic products to the Secretary of State, a Product Information File and compliance with labelling guidelines (UK Government, n.d.). As demand for organic products rose, an organic law came into effect: 95% of a product's agricultural ingredients must use natural inputs rather than artificial ones (UK Government, n.d.). There is regulation for safety and organic labelling. The main pain point is that “organic” cannot stop the use of all the other words that advertisers have begun to use to communicate that a product is borderline organic even when it does not meet the legal standard. For instance, “natural” is not written into law and can thus be put on any label. The next subgoal is to create certifications for farms and products using existing laws about organic and self-created standards for sustainability and fair trade. This activity is distributed to a new agent, or rather agents – independent certifying agencies. The biggest and oldest one in the UK is called Soil Association, which is one of only six approved regulatory bodies (Soil Association, 2021). The pain point here is that there is no industry standard for what it means to be sustainable. The certifying bodies must each create

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their own criteria, creating different meanings of sustainability from one certification to another. Other certifying bodies do not even have a sustainability label despite stating that as their main motive. For Soil Association, there is no certification for sustainability, but according to its board of trustees, sustainability is a main motivator for working for Soil Association. The pain point is therefore the disconnect between wanting to assess sustainability and being capable of properly doing it because only organic is written into law. An additional pain point lies within the nonprofit certifiers' subgoal to help consumers know what they are buying. They fail in this subgoal because any single, small certifier's label is not standard enough across the industry to communicate to be easily recognizable and trustworthy for consumers. Also, these independent certifiers do not have the agency to investigate the product and the supply chain properly. In totality, the absence of a central regulatory body like the Food and Drug Administration (FDA) for the beauty industry has led to the emergence of multiple different independent firms and associations with unique certifications that are based on their own criteria (natural, organic, fair trade, etc.) and assessment methods. The lack of a standardized method to assess the sustainability of the entire value chain (based on a lifecycle approach) and a standard label to inform the consumers about the level of sustainability of a product is reinforcing the industry-wide problem of sustainability.

Suppliers

Next, the suppliers of raw materials focus on two main goals, the first one being compliance with market demands, and the second one being compliance with the legal requirements of their clients, the beauty and cosmetic companies (Giroto, 2013). First, we will analyze the former – complying with market demands. The cosmetic industry faces a rise in consumer demands regarding the use of natural resources and sustainable practices. Such demands impacted supply chains with the development of cultivation farms and wild areas

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(Wieteska, 2018). Indeed, the main goal of a successful supply chain is to satisfy consumer demands and requirements using resources (Giroto, 2013). Therefore, manufacturers faced the need of reducing their environmental impact and promoting sustainable cultivation and use of natural resources. To enhance the use of plant-based ingredients, manufacturers needed to cooperate with first or second-tier suppliers of natural, organic and certified materials (Wieteska, 2018). Such cooperation also entailed a change in demand among initial-tier suppliers. Therefore, one may observe an increase in certified farms, an increased use of genetic resources from plants under protection and an increase in initial suppliers located further from production sites. Regarding the latter, Skalinska-Najenow (2001) noticed a rising demand for novel and attractive cosmetic ingredients such as vegetable oils from America, Africa and Australia (Giroto, 2013). Furthermore, additional warehouses and transportation processes were developed to adapt to these novel supplying sites (Wieteska, 2018). Still, the location of these farms may entail certain regulations regarding biological diversity and access to protected plant species (Wieteska, 2018).

We will now analyze the suppliers' second main goal regarding complying with the cosmetic companies' legal requirements and demands. Following the pressures and demands from consumers, different stakeholders, such as the government and cosmetic companies have introduced sustainable practices into their brand policies (Giroto, 2013). Therefore, they transfer such pressure on the supply chain level through new legal requirements. Such requirements may entail technical quality, safe working conditions and a preserved environment (Urbaniak, 2018). For instance, Natura – a Brazilian beauty company – requires their suppliers to perform selfevaluation processes which are based on the respect for social, environmental and quality aspects including human rights safeguard, non-discrimination rules and certification systems for environmental safety practices (Giroto, 2013). Therefore, as discussed above, suppliers need to

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comply with these new legal requirements and certification standards to ensure long-term partnerships with beauty companies. For example, the European Union requires approving and certifying the high quality of new oils entering its market (Giroto, 2013). However, several political, social and economic legislations influence the supply chain since suppliers are located in different countries.

One may notice multiple pain points in the suppliers' trajectory towards their main goals. Giroto (2013) outlined that the supply chain is mainly focused on minimizing costs and maximising the efficiency of the supply. Hence, this may foster issues of traceability and transparency. Indeed, the sourcing of raw materials represents 30-50% of greenhouse emissions in the supply chain (Foster & Retallak, 2023). Besides, only three out of the world's ten largest beauty companies (L'Oréal, Unilever, P&G, Estée Lauder, Shiseido, Beiersdorf, LVMH, Kao, Coty and Johnson & Johnson) have set the target of eliminating deforestation from their supply chains. Deforestation increases harmful carbon dioxide in the environment and contributes to biodiversity loss (Foster & Retallak, 2023). Thus, the lack of regulatory pressure pertaining to sustainability on beauty and cosmetics companies permeates the supply chain in the premanufacturing phase in the form of irresponsible environmental practices that potentially disrupts the local ecosystems.

Marketing

Beauty and cosmetic companies generally operate on business-to-consumer (B2C) or direct-to-consumer (D2C) models, and therefore, their products become the most important elements of their brand with the consumers directly interacting with them; this makes beauty companies engage in product-led marketing (Roberts, 2022). The *product-led marketing mix* (McCarthy et al., 1979), involves the 7Ps (product, price, place, promotion, people, packaging and process) that guide the marketing strategy of beauty and cosmetic companies. The mix of all

these marketing elements in a company's marketing strategy is targeted towards attracting a suitable audience for the beauty company's product and making them purchase the product. From the initial state, we will now analyze the marketing activity of a beauty company towards the final goal of attracting target consumers and influencing their purchase decision. The first subgoal of marketing is to gain an in-depth understanding of the product category and its market. This involves the beauty company's target consumers and their requirements, existing competitor beauty products, design and features based on current trends in the industry, and market positioning of the beauty product. To fulfil this, thorough primary and secondary market research must be conducted by the beauty company (Cint, 2022). Once the beauty product's formulation has been finalized, tested and approved as per the mandated safety and quality standards, the marketing department must define the unique selling proposition (USP) for this product to use in their marketing campaign (Gough, 2017). Next, combining market research insights and the USP of their product, a marketing strategy is developed. At this stage, the price of this product is finalized based on market saturation, competition, positioning of the product as premium or affordable, and brand perception (Heath, 2021); the places (retail outlets, online marketplaces etc.) where the product will be available are also considered (Jafari et al., 2020). The following subgoals require the packaging design of the beauty product to be carefully decided as it determines product appearance and underpins perceived durability (Gómez et al., 2015), strategizing for product launch and the development of subsequent omnichannel strategies for promoting the product through offline and online channels (Chiang et al., 2018). After the launch and alongside ongoing online (social media, influencer marketing, Google ads, etc.) and offline (billboards, Tube stations, pamphlets, etc.) marketing, the beauty companies continuously monitor and evaluate their strategies to optimize resources for further marketing. Lastly, they engage with potential and existing consumers to expand and strengthen their brand communities

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(Laroche et al., 2012; Schau et al., 2009). This marketing strategy with the interplay of the essential 7Ps (McCarthy et al., 1979) helps a beauty or cosmetics company reach its goal of influencing the purchase decision of consumers.

Picking out the pain points from this trajectory, the task of developing a marketing strategy seems most problematic from a sustainability standpoint as it solely focuses on the product and its USP to increase its appeal and demand but does not educate the consumers about the ecological impact of sourcing, manufacturing and consuming that product (Cosmetics Europe, n.d.). Even when companies do want to leverage the ‘organic’, ‘natural’ or ‘fair trade’ qualities of their beauty products and focus on educating the consumers, the sheer multiplicity of labels in the beauty market can be overwhelming and confusing for the consumers (GiordanoLabadie, 2012) and education about choosing wisely by one brand may not generalize to other products which the brand does not manufacture (Bozza et al., 2022). Therefore, the marketing strategy must incorporate a plan to equip the brand’s consumers with the general skill of identifying an ethical product, using it responsibly and disposing of its packaging post-use properly. This process can be enhanced if the market research, in addition to exploring the product’s market, also conducts qualitative research to understand consumer attitudes and purchase intention towards sustainability. This deeper understanding of how consumers evaluate sustainable products can inform the marketing strategy to not only sell the products but also fashion more sustainable consumption patterns within their brand communities (Kasemsap, 2017).

The second pain point is the packaging of the product (Cinelli et al., 2019). Though it is the functionality (performance) of the packaging design that intuitively seems most important (Grundey, 2010) but of equal importance are the constituent elements of the packaging material

and its resource recovery, that is, the re-usability, recyclability and biodegradability of it (Cosmetics Europe, n.d.). Predominantly, plastic is used as a packaging material in the cosmetics industry with little focus on raising consumer awareness regarding the appropriate disposal technique; these plastic containers are rarely reused, and recycling becomes a problem due to inefficient post-use collection mechanisms and contamination of packaging due to its greasy cosmetic contents (Cinelli et al., 2019). Apart from revealing a shortfall in physical affordance, these pain points also highlight the potential of marketing strategy in educating consumers about choosing, using and disposing of products ethically, thus boosting their embodied competence.

Consumers

Adopting the framework of the Theory of Buyer Behaviour (Howard & Sheth, 1969) in the context of beauty products, the consumer's journey involves the following steps: identify a need to improve their appearance, search for information about the products, identify their purchase intentions, make the purchase decision, use and post-purchase evaluation, and disposal or refill.

In the pre-purchase phase, the process of need identification and information search are not independent and linear. Consumers are constantly influenced by packaging design (Silayoi & Speece, 2004), display (Behe et al., 2013), user-generated content (Nosita & Lestari, 2019) and recommendation algorithms (Banker & Khetani, 2019), which may lead to unintended purchase. For example, products with “eco-look” packaging are seen as having higher quality (Morrison, 2016) and digital sensory marketing with jungle and the sound of wind displayed makes consumers perceive the products are more organic (Kumra & Arora, 2022). However, due to the lack of standardized regulation, beauty companies may take advantage of consumers' perceptions to promote products that are not necessarily sustainable; this becomes a pain point in the consumer journey. Nowadays, marketing is not solely done by the business's internal marketing

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team. User-generated content, like cosmetics tutorials on YouTube, short videos and photos on TikTok and Instagram, can also elicit consumers' desire to purchase (Evangeline et al., 2020; Nosita & Lestari, 2019). Influencer marketing is prevalent in the beauty industry with over 1,000 beauty influencers operating across Instagram and YouTube (Geyser, 2022). In fact, consumers are more likely to seek information about beauty products prior to purchasing from social media influencers than from company advertisements (Gerdeman, 2019). They feel more connected to influencers and see third-party reviews as more trustworthy than company advertisements (Gerdeman, 2019). Therefore, simply being online, with the algorithm recommendation in play, consumers are constantly exposed to different types of advertisements, which can shape their beauty product consumption behaviour. These marketing strategies, however, could be used wisely to promote truly sustainable purchasing practices.

With an increase in consumer awareness of sustainability, one of the intentions of purchasing sustainable beauty products is to signal (Douglas & Isherwood, 1996) their concern for the environment and to satisfy their need for a sense of belonging to that social group (Baumeister & Leary, 1995). However, due to a lack of regulation, not all "green" products are sustainable. If the labelling is standardized and accurate, consumers' intention of being socially desirable can facilitate sustainable beauty product consumption.

In the post-use phase, the fact that irresponsible packaging disposal is causing huge environmental pollution with 95% of cosmetic packaging thrown away becomes another pain point (British Beauty Council, 2023). Beauty product packaging is made of many different materials and not all of them are equally recyclable. For example, some packaging is made of composite materials or non-recyclable materials (Boots, n.d.-a), which makes it impractical for consumers to recycle at a local council. To combat this issue, Boots launched a recycling scheme

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in 2020 September (Boot, n.d.-b) and has partnered with different organizations to manage different types of empty packaging to minimize their negative impact on the environment. Consumers are rewarded Boots Advantage points for disposing of empty packaging at Boots (Boots, 2021), which can be redeemed as money for future purchases. However, the small monetary reward may not incentivize consumers enough to spend time and effort to sort and dispose of the packaging. Another way to reduce the pollution of packaging is to promote multitime uses. The Body Shop has its refill scheme (2023) where consumers can bring their empty bottles to refill at the store from the pump, but it is only available at certain stores. The refill pouches that most brands offer are usually with plastic packaging which is not always recyclable (Bubba organics, n.d.) and thus may not reduce the environmental burden. It is promising, nevertheless, to improve the recycling and refill system building on the existing facilities.

In the next section, we consider the interdependencies among these stakeholder activities to propose plausible solutions that address the larger problem of unsustainability within the beauty and cosmetics industry, suggest solutions that cater to these interdependencies in an efficient way and provide an actionable plan to implement the suggested solutions.

Solutions

Our set of solutions, like our analyses, take a lifecycle view of any beauty product. We first recommend a top-down approach that starts with an actionable plan to introduce a standardized regulatory mechanism within the beauty industry. It focuses on two important elements in the value chain – raw material supply and product packaging. The regulatory mechanism is complemented by a consumer-oriented and novel installation called *the Beauty*

Bag which encapsulates the industry-wide changes to empower consumers to choose, use, and dispose of beauty products more sustainably.

1. Unification and Standardization of Regulatory System

To address the pain points of (1) a lacking central authority focusing on regulating the beauty and cosmetics industry, (2) no standardized certification of products for sustainability upon assessment of various sustainability-constituting elements across stakeholders in the value chain and (3) a lack of transparency from the suppliers' side in the supply chain, we propose an installation that could potentially create a ripple effect within the beauty industry. Following are the steps to implement the change (Figure 2) and the three layers that scaffold and constrain this change.

- A. A pre-requisite for this installation would involve convincing the European Commission (EC) to make a standardized label for sustainability (e.g., L'Oréal's SPOT label) mandatory to be displayed on beauty products before launching in the market. This label will indicate the level of sustainability for that product alongside conveying its sustainability certification. Only the certifying agencies licensed by the EC will be allowed to issue such labels upon a standardized sustainability assessment. [Since L'Oréal's SPOT is backed by robust research and is an established tool for the measurement of 14 sustainability-related impact factors, it would be advisable for the EC to partner with L'Oréal to lead this regulatory change and propose the adoption of SPOT by all certifying agencies.]
- B. The EC must facilitate a forum for the representatives of all recognized certifying agencies to convene and unify them under a life-cycle view of beauty products. The coalition will be required to agree on the factors contributing to making beauty and

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cosmetic products truly sustainable (like the 14 impact factors identified by L'Oréal's SPOT).

- C. Upon coming to a consensus about the impact factors, comprehensive measurement criteria would be established for each impact factor. A standardized system for aggregating scores across impact factors to produce a single rating (like the SPOT rating) that indicates the level of sustainability for a product would also be created.
- D. All impact factors must be defined and explained comprehensively in a guide along with the method to assess and measure each of them; this reference resource will be used for training and licensing certifying agencies who join the coalition and guide their officials in the certification process.
- E. The licensed certifying agencies would charge a fee from the cosmetics companies to certify different products and issue a sustainability label depicting the product rating. Since this rating and label can only be evaluated and issued, respectively, by certifying agencies licensed by the EC, the cosmetics companies will only seek the services of licensed certifying agencies. Therefore, to stay in business, more and more certifying agencies will be compelled to join the coalition, adopt the standardized measurement tool and obtain a license from the EC.
- F. The standardized methodology would consider all relevant impact factors at two points of the value chain:
 - i. Pre-production (Suppliers) – Certifying the ingredients/material procured from the farmer/raw material supplier. It is the job of the supplier to get their supply certified by an association licensed by the EC. The suppliers will have to provide their production's degree of biodegradability, bioaccumulation potential, level of aquatic toxicity from used raw materials and data on energy consumption and

carbon footprint. The cosmetics company would consider this supply sustainability certification a prerequisite to purchasing raw materials since it would contribute towards the certification of its final product and improve the sustainability rating.

- ii. Post-production (Manufacturers) – Once the product has been tested for safety of formulation, use and disposal, manufactured and packaged, its samples are sent to any of the EC's licensed certifying agencies; these samples would be tested for the various impact factors pertaining to chemical composition and safety of use, water usage, the carbon footprint of the product and its packaging, packaging material and its re-usability/recyclability/biodegradability, etc. Additionally, an expert from these firms would visit the manufacturing facility to assess various relevant impact factors like workers' safety and governance of the company.

A holistic sustainability assessment in the post-production phase would necessitate the provision of a pre-production sustainability certificate ensuring that the raw materials have been procured sustainably; this would compel a beauty company to purchase their raw material supply only from certified suppliers, which in turn, would pressurize suppliers to incorporate sustainability within their farming practice and obtain a sustainability certificate.

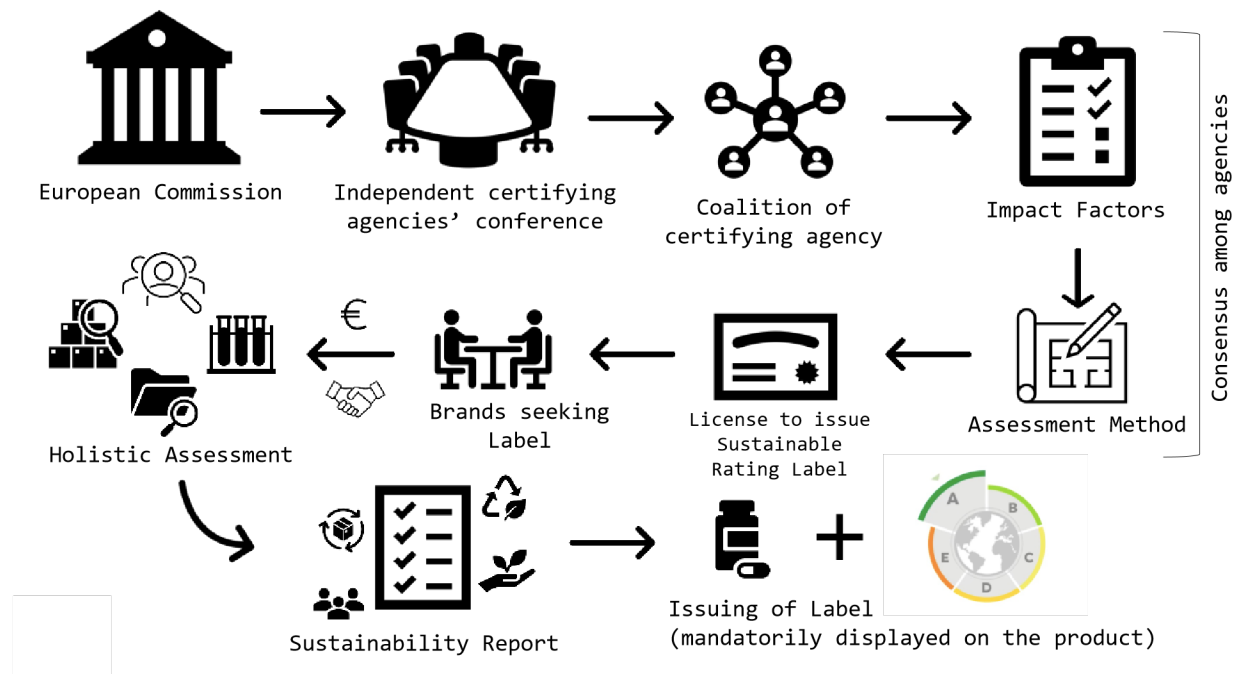
- G. Upon this holistic assessment, a final sustainability report will be generated addressing all relevant impact factors for the product under consideration. A corresponding label (conveying the sustainability rating) will be issued to the company seeking certification for that product.
- H. Since companies will be investing resources to get each of their products certified, they might also be inclined to improve the sustainability of their value chain for their entire

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product range to outperform competitors. The sustainability level will be measured on a standardized scale, making it easier for consumers to compare and choose the most sustainable product. Additionally, this will necessitate the incorporation of education in their marketing strategy as they will need to educate their consumers to identify sustainable products and acknowledge the company's effort to become sustainable, facilitating their brand image and consequently increasing their sales. In the second half of this 'Solutions' section, under the title 'Beauty Bag', we will propose an actionable plan for informing, educating and empowering the consumers through product design and the suggested sustainability score label.

Figure 2. *A flowchart representing the steps involved in regulating the beauty/cosmetics industry.*

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One important application of the regulatory system is to address the packaging issue, given its significant negative environmental impact (British Beauty Council, 2023). The two main elements of packaging are the material and the design. Certifying agencies and beauty companies would work closely to address the issue of unsustainable packaging material; the design of packaging would empower and educate consumers to purchase, consume and dispose of it more sustainably.

The standard reference guide created by the coalition of certifying agencies could dedicate a section outlining packaging criteria (material, design and information to be provided on the product exterior). Before products can be put on the market, they must be evaluated based on standardized criteria as a part of the holistic sustainability assessment by a licensed certifying agency to issue a sustainability rating label, mandated by the EC.

In the European Union, the packaging is mainly regulated under the Packaging and Packaging Waste Directive (EUR-Lex, 2020) which establishes common rules for packaging.

However, the “Essential Requirements” proposed by the directive lack measurability. Similar to the practical guide that has been developed by European Organization for Packaging and the Environment (EUROPEN) on how to use the standards set by European Committee for Standardization (CEN) (EUROPEN, 2005), we suggest that the Packaging and Packaging Waste Directive can be consulted by the coalition of certifying agencies to create a more concrete and practical reference guide for beauty products’ packaging, which would be an important determinant of their sustainability rating.

The sustainability rating label could use English alphabets from A to E to display the sustainability rating and code them with corresponding colours to indicate the level of sustainability of the product. This aligns with our conventional knowledge that level A is better than level B and the green colour demonstrates more eco-friendliness than red. Understanding the label thus does not require much cognitive processing and thus aids consumer understanding and decision-making.

Installation Layers in Unification and Standardization of Regulatory System

a. Physical Affordances

- A licensing system, headed by an appointed official in the EC, assesses applications by independent certifying agencies for obtaining a license.
- A comprehensive guide to measuring impact factors and issuing a corresponding sustainability rating.
- The mandated sustainability rating label on every beauty product.

b. Embodied Competences

- Training of licensed certifying agencies’ officials to conduct sustainability audits.
- Measuring impact factors according to a standardized tool – such as L’Oréal’s SPOT, and issuing an aggregate sustainability rating.

- Identifying sustainable products by easily comprehending the sustainability rating labels on them.

c. Social/Institutional Regulation

- A mandate by the EC for beauty/cosmetics companies to display the sustainability rating label on their product.
- Companies must opt for a licensed certifying agency to issue a sustainability rating label as per EC's mandate.
- Pressure on the independent firms to join the coalition by adopting the common standard prescribed by the EC and obtaining a license to assess and issue the sustainability rating label.
- Companies must integrate an educational component in their marketing strategies and advertising campaigns to educate their consumers about the identification and consumption of sustainable products and their disposal post-use.

After proposing an action plan to the European Commission for regulating the beauty industry, we further propose a novel installation, called the *Beauty Bag*, to private beauty and cosmetics companies that address the way consumers interact with their products. Although the effectiveness of the Beauty Bag would be enhanced by the implementation of the proposed regulatory mechanism, the novel installation is deliberately conceptualized as a self-sufficient solution that is robust and possesses merit regardless.

2. Beauty Bag

The Beauty Bag is a virtual experience that enables the customer to understand the sustainability of their purchases. Simultaneously, it allows beauty and cosmetic companies to display a standard product sustainability rating and incentivizes consumers to buy sustainably and form a relationship with the brands. In-store, the Beauty Bag can be accessed via a QR code

on the packaging. The QR brings up information about the beauty product and contains a link to log in or create a Boots account for the Beauty Bag, which summarizes the sustainability of all past and potential purchases. Additionally, it can be accessed online anytime via the icon at the top right of the page, as a page in between viewing the cart and paying, or via the links in the cart. It addresses pain points of (1) regulatory bodies lacking a sustainability standard, (2) consumers who experience information overload (Gross, 1968) due to the variety of sustainability labels, (3) beauty and cosmetic companies who struggle to gain consumer trust due to widespread greenwashing (Warn, 2022). It entails the collaboration between Boots and L'Oréal because they have already come together with 50 beauty companies to form the "EcoBeautyScore Consortium." The consortium's goal is to "develop an industry-wide environmental impact assessment and scoring system for cosmetic products" (L'Oréal, 2022). While the Beauty Bag has been designed for Boots, this same intervention could be used with other beauty retailers who join the consortium. See the Beauty Bag in Figure 3 and how to access it in Figure 4.

Figure 3. *Beauty Bag*

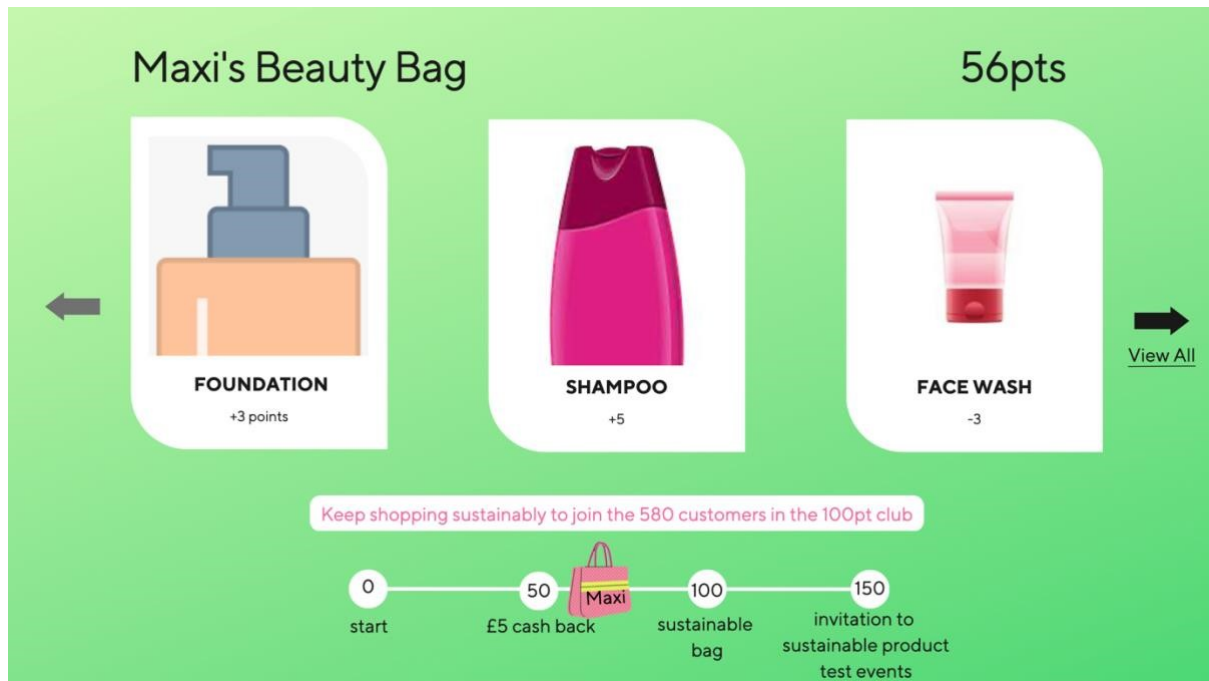
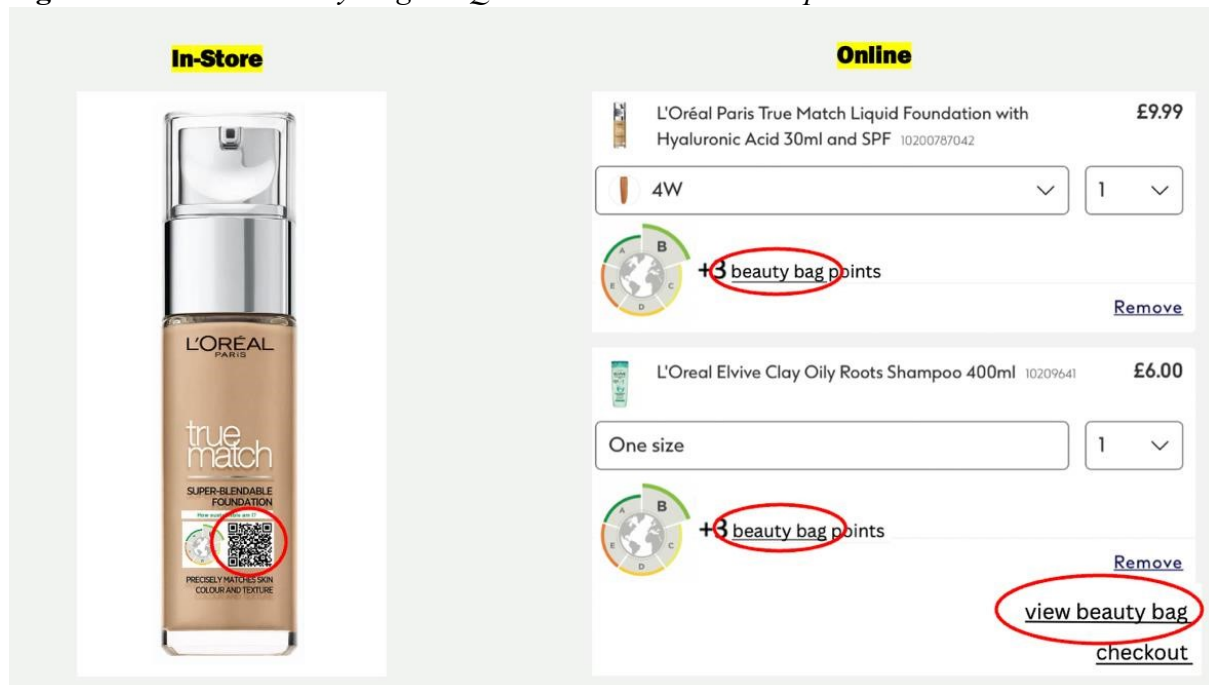


Figure 4. Access to Beauty Bag via QR code in-store & touch points online.



Installation layers in the Beauty Bag

- Social Regulation

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Data protection, signaling and evolutionary motives provide social regulation in the context of the Beauty Bag implementation. In an ideal world, the Beauty Bag could show the customer all their beauty products but that would require sharing data across Boots, Sephora, The Ordinary, etc. Data protection provides regulation, hence the suggested partnership between just one retailer, Boots, and L'Oréal's SPOT tool. Social regulation also comes from the people around us, namely other consumers (social reassurance; Zollo et al., 2021) and influencers, who play a major role in increasing people's purchase intentions towards the product they are marketing and also make people more likely to recommend the product to others (Abraham et al., 2022). People are influenced by norms and want to signal positive character traits to others. The Beauty Bag should take this into account to increase sustainable purchases. It does this through the incentives and the design elements of the virtual page. The sustainable bag after 100 points creates an opportunity for customers to signal their sustainability, and the exclusive product testing event after 150 points triggers the evolutionary motive to attain status (Griskevicius & Kenrick, 2013). The line on the page that says "Join the 580 customers in the 100pt club" creates a static social norm, which has been shown to increase sustainable behavior (Goldstein et al., 2008). An important social influence in the age of social media is influencers. Therefore, this intervention should include partnerships between Boots and influencers that will promote sustainable beauty products on their platforms. Lastly, social regulation will affect beauty companies that have not joined the EcoBeautyScore consortium. The pressure to only produce products with an "A" sustainability rating and to have Boots incentivize customers to buy sustainable products will encourage the entire beauty industry to shift in a more sustainable direction.

b. Physical Affordances

The existing online and in-store infrastructure constitutes the physical affordances that must be considered when implementing the Beauty Bag. In-store, Boots has had a recycling running since 2021. To better manage the empty packaging after consumption, in addition offering Beauty Bag points from the sustainability rating alone, Boots is advised to modify its recycle scheme (Boots, 2021), replacing its monetary reward (Boots Advantage Card points) with Beauty Bag points. Another way to manage the empty packaging is to encourage refills by standardizing the bottle size for all beauty products of the same kind by adopting the beer industry's practice (Beer bottle, 2023). If such regulation passes or Boots adopts refill stations on their own, then consumers can refill bottles in-store to attain Beauty Bag points. Due to the standard bottles, consumers can rinse and dry the bottle and refill either a different product or the same product. The challenge is the space limit to install refill plants for every product in the store. A practical start could be to offer a refill for the most popular products. Online, the existing cart provides an infrastructure with which to work. The cart already provides a summary of one's selected products, therefore the Beauty Bag should be incorporated into that. However, displaying information regarding the sustainability of beauty products along with their price and applicable discounts can pit the values of ethicality against frugality, leading the latter to dominate invariably (Carrington et al., 2016). Therefore, the Beauty Bag also shows up as a popup before completing the check-out window in order to avoid a potential conflict between values of frugality and ethicality.

c. Embodies Competences

In-store, we suggest using the embodied competence of scanning a QR code and checking packaging for information to remind consumers to purchase and use beauty products sustainably. For instance, a curiosity-inducing question such as "How sustainable I am?" attracts consumers' attention and encourages them to explore the information on the packaging (Daume & Hüttl-

Maack, 2020) and scan the adjacent QR code. It reminds them to consider ethicality when making a purchase decision.

Online, consumers already have the embodied competence to look for a shopping cart at the top right of the web page and to understand it properly. The virtual Beauty Bag thus looks similar to a shopping cart to provide ease of understanding and accessibility. If the Beauty Bag uses an existing competence of navigating online shopping websites by operating the cursor and moving it to the top right to view their purchase summary, customers will find it natural to understand and use. Therefore, the link to the Beauty Bag will appear in the top right corner next to the link to the shopping cart.

Limitations

The successful implementation of an industry-wide regulatory mechanism is contingent upon the EC mandating the inclusion of a sustainability rating label on all beauty and cosmetic products, and of course, possessing the motivations that bring about a system-level change towards sustainability within the beauty industry. The unification and standardization of the sustainability certification process under the product lifecycle approach would not be possible if the EC does not have a vested interest in the transition and initiate it. An additional hurdle for the regulatory mechanism to develop would be the consensus on impact factors and the adoption of a measurement tool if L'Oréal's SPOT is not accepted by the coalition of licensed certifying agencies.

Another limitation is the potential difficulty getting customers to sign up for an account in order to use the Beauty Bag. We want to incentivize customers to sign up at little to no cost to Boots. Therefore, we suggest that Boots offer early access to sustainable beauty products for account holders. Without incurring an additional cost, this provides an incentive for customers to sign up and encourages them to buy sustainable products.

In the suggested solutions, the packaging issue is addressed both by regulation in the production phase and the Beauty Bag in the consumption phase. However, with current techniques and knowledge, most beauty products' packaging is still plastic. A more radical next step could be taken to develop affordable and scalable biodegradable packaging materials that can at the same time satisfy the functionality and performance of packaging. With easily degradable packaging material, the damage of irresponsible disposal or inappropriate recycling on the environment could be ameliorated. It is not saying that consumers should not be educated and incentivized to dispose of it responsibly, but the degradable material can serve as a buffer. Developing and applying degradable material to beauty product packaging is possible and promising. For example, Poly (vinyl alcohol)-Based Supramolecular Plastics (Fang et al., 2022), a material that satisfies the functionality of beauty product packaging has recently been developed. We appeal that the beauty industry and environmental organizations could invest more in research and development of more sustainable packaging materials that can solve the packaging issue fundamentally.

Conclusion

The beauty and cosmetics industry in Europe poses an enormous and complex problem of unsustainable operations at different points during the lifecycle of a beauty product. We provided a breakdown of the problem using the MID method to analyze four pertinent activities as a part of our stakeholder analysis, identified the pain points within each analyzed activity and ultimately leveraged the interdependency among different stakeholders to propose two installations to address the pain points – a unified and standardized regulatory mechanism and the Beauty Bag. Though the two installations are inherently robust for exclusive implementation, each may enhance the other's effect when implemented in conjunction. Thus, this paper tackles

the complexity of the enormous unsustainability problem within the beauty industry by reorganizing the existing elements in the value chain and making minor additions to channel an industry-wide transition towards sustainability.

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Appendix

Table A. A non-exhaustive list of activities involved in the lifecycle of beauty products (adapted from (Lahlou et al., 2021))

Task	Activities
1. R&D	Creating, experimenting, and testing new formulations to develop new products that meet consumer needs and expectations.
2. Regulation Compliance	Examining if the newly created product meets the regulatory requirements of overarching regulatory institutions and the company's standards.
3. Sourcing Raw Materials	Procuring raw materials: product ingredients and packaging materials.
4. Manufacturing	Producing using the raw materials, including mixing, blending, filling, and packaging.

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5. Design & Marketing	Advertising based on brand strategy, product placement in retail outlets, promoting sales. Creating awareness and consumer demand through communication Building brand communities.
6. Distribution	Moving products from factory to point of sale (warehouses, distribution centres, retail stores).
7. Sales/Customer Service	Selling products at retail outlets and online marketplaces. Collecting customer feedback and addressing grievances.
8. Consumer Journey	Understanding the need for a product, shortlisting and selecting the brand/product, deciding the desired quantity, purchasing the product, and successfully using and disposing of it.
9. Supply Chain Management	Coordinating activities like inventory management, transportation, logistics. Ensuring that products are delivered to the right place, right time and in the desired quantity.
10. Monitoring and Managing Footprint/Waste Disposal	Paying attention to water use. Disposing empty packaging. Recycling and refilling or directly disposing.

Table B. Activity Grids

Table B.1 Activity Grid for regulation of beauty products, distributed across numerous regulatory bodies

Task	Actor's Motives and Goals	Contributions from Actor	Actor's Rewards	Installation: Affordance	Installation: Competence	Installation: Regulation
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Create legal definition of labels	Set standards that can be enforced	- UK cosmetic standards including labelling regulation - UK legal organic definition - EU organic rule, anyone trading in the EU has to follow it - U.S. federal food, drug, and cosmetic act and the fair packaging and labeling act	Lack of standards leads to confusion and difficulty of regulation.	The enforcing legal bodies.	Knowing how to enforce the law.	Pressure from industry to not have much regulation pressure from consumers to want legal standards of labelling.
Create certification for farmers/players early in the supply chain	Help enable ethical sourcing and help the early players signal that their supplies are sustainable, fair trade, or just minimally compliant materials.	Investigate farmers and provide certification	Companies are happy with them. Ethically happy because board members care about sustainability.	Be able to investigate what farmers are really doing.	- Understand sustainable, organic, and basic farming - know how to reach the right farmers who might want to be certified	- Trends - Companies requiring certification
Certify products	Help consumers know what they are buying. Help companies make their products look good.	Investigate product and provide certification EU eco label	Punishment could be companies not being happy with them (they need companies to pay for such certification).	Be able to analyze the product properly and reach the products that need certifying.	- Understand what is needed to get the certification - understand what consumers want to certify	- industry trends - consumer demand/expectations

Table B.2 Activity Grid for sourcing raw materials from the viewpoint of the suppliers

Task	Actor's Motives and Goals	Contributions from Actor	Actor's Rewards	Installation: Affordance	Installation: Competence	Installation: Regulation
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Increase sustainable cultivation & use of natural resources	Comply with market demands.	Use of ingredients with plant origin in products' formulation, instead of raw materials of animal, mineral or synthetic origin. Increased cooperation with suppliers of organic and natural materials and certified ingredients.	Increased supply demand from beauty companies focused on sustainability.	Increased number of farms & certified farms. Use of warehouses for stocking and transportation processes (increase in initial suppliers situated further from production sites).	Knowledge & research of market demands.	The location of the farms may entail certain regulations on biological diversity and access to protected plant species.
Present technical quality, safe working conditions & preserved environment	Comply with companies' new legal requirements and demands.	Perform processes of self-evaluation that are based on the respect of social, environmental and quality aspects.	Guarantee of long-term partnership with beauty companies presenting these new legal requirements.	EU's approval system of new oils regarding high quality & certification standards.	Knowledge of updated legal requirements.	Political, social and economic legislations influence the supply chain links present in different countries.

Table B.3 Activity Grid for developing and executing marketing strategy from the viewpoint of the company

Task	Actor's Motives and Goals	Contributions from Actor	Actor's Rewards	Installation: Affordance	Installation: Competence	Installation: Regulation
Market Research	Understanding the landscape for the product and the target consumers	Conducting thorough research on the target consumer, competition, and market trends to identify the needs and preferences of the consumers.	Knowledge about the market and a more informed opinion about how the product should be marketed.	Access to survey and research tools, existing database and consumer insights	Research skills, data analytic and interpretive skills	Research ethics and guidelines pertaining to research involving human subjects or their behavioural data

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Defining USP	Differentiating the product to invoke the feeling of uniqueness	Identifying the unique features of the product and its USP to differentiate it from existing products in the market.	The satisfaction of setting one's product apart from the rest.	The product formulation information, insights from the R&D process about product benefits, marketing strategy	An informed understanding of what currently appeals to consumers and the market trends	Prescriptive social norms within the target consumer demographic determining what is acceptable and what is not
Developing Marketing Strategy	Have a plan for marketing the product with set methods to achieve a desired outcome	Choosing a product name, creating infographics, and developing a brand image that aligns with the target consumers and the company's vision.	The feeling of stability provided by a structured approach to the process of marketing to achieve the company's targets.	Access to market and consumer trends through data, information about product, company's vision and sales targets, financial resources and marketing budget	Analytical and interpretive skills, awareness of current trends, company's vision and targets, budget management capability, intuitive and informed understanding of consumer needs, preferences, beliefs, thought processes and behaviour	Ethical issues, Prescriptive social norms within the target consumer demographic determining what is acceptable and what is not, company guidelines and policies, advertising rules within the country
Product and Packaging Design	To increase the appeal of the product to the consumers and impact purchase intention	Creating a visual and tactile impression of the product that is differentiated and recognizable. Conveying important	Swaying the consumer's preference in favor of one's product and positively impacting the quality perception of one's brand.	Packaging material, existing designs, machinery, moulds, stickers	Knowledge about design, ergonomics, sensory marketing, packaging material and its compatibility with the product	Mandatory information disclosure about the product contents on the packaging, packaging material and product design should be

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		information about the product, such as ingredients, usage instructions, product benefits and sustainabilityrelated information. Evoking emotions and creating an emotional connection with the target consumers, making the product more appealing and desirable				socially and culturally accepted
Launching Product	Make a conspicuous entry into the market to grab consumers' attention	Planning the launch by setting a launch date, selecting the channels of distribution, and creating an advertising plan.	Buzz created among consumers about the product.	Physical space, online web domain, online marketplaces, retail stores	Time management and planning ability, organizing and coordinating skills, communication skills	Meeting legal guidelines for registering and launching the product, cultural appropriateness of launch date
Advertising Offline	Building brand and product presence in the physical world and creating awareness	Advertising the product to create awareness about it among the target consumers through television ads, billboard ads and various other advertising platforms/spaces.	Awareness about the product is created among potential consumers which could result in increased sales of the product.	Monetary resources, camera equipment, editing software, billboards, rental advertisement spaces on bus stops, buses, tube stations, tube trains, sponsorships	Budget managing ability, coordinating and scheduling advertisements, ability to discover advertising opportunities and spots, strategic relationship management with advertisers	National, social and cultural norms for advertising, legal guidelines for what can be advertised, contracts with advertisers/space providers, Television guidelines for commercial ads

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Advertising Online	Building brand and product presence in the virtual world and creating awareness, especially among a younger demographic	Building a strong online presence through a website, social media platforms, influencer marketing and online advertising (personalized Google/Facebook ads)	Awareness about the product is created among potential consumers which could result in increased sales of the product. An aspirational value might get attached to the product as	Monetary resources, camera equipment, editing software, Google/Facebook ads support, online marketplace, brand website, contact with influencers and celebrities,	Budget managing ability, coordinating and scheduling advertisements, ability to discover advertising opportunities, strategic relationship management with	National, social and cultural norms for advertising, legal guidelines for what can be advertised, contracts with influencers and celebrities, social media platform guidelines,
			influencers and celebrities are seen using it, enhancing brand desirability.	followers on social media, existing consumer mailing list	advertisers, influencers and celebrities, figuring out target audience on social media for running targeted ads	Google and Facebook ad guidelines and contract
Product demonstration and free sampling	Removing the cost barrier for the consumer to make them try the product and ignite demand	Providing opportunities for target consumers to try the product through sampling programs at retail stores	The potential consumers might like the product after trying it for free, resulting in increased sales	Smaller product samples, budget, stall/space for distributing samples, retail stores	Strategizing and calculating quantity of free samples, identifying potential consumers at retail stores	Adherence to the social norms while interacting with consumers
Monitoring and Evaluating Strategy	Optimize the marketing strategy to direct resources to the most effective methods	Continuously monitoring and evaluating the success of marketing strategy and making changes as needed	Optimal utilization of the marketing budget and increased focus on the better strategies, resulting in greater outreach and sales.	Consumer insights, database for the impact of each strategy, analytical tools, idea bank	Understanding impact by interpreting consumer and sales data, remaining unbiased during evaluation process, budget managing skills	Company's confidentiality and data protection guidelines

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Customer engagement	Create a positive brand perception among satisfied consumers and increase brand recall and customer loyalty	Continuously engaging with customers through social media, email marketing, and other communication channels to build brand loyalty and customer retention	Strengthening of brandconsumer relationship, increasing return customer percentage, an overall positive brand image.	Mailing list, helpline and customer care phone service, feedback forms, social media posts, promotional events and competitions	Communication skills, relationship building and management, soft skills, empathy, knowledge about products, understanding consumer feedback and insights	Adherence to the social norms, Company's confidentiality and data protection guidelines, legal guidelines pertaining to advertising and organizing promotional events
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Table B.4 Activity Grid for the consumer's journey from the viewpoint of the consumers

Task	Actor's Motives and Goals	Contributions from Actor	Actor's Rewards	Installation: Affordance	Installation: Competence	Installation: Regulation
Identify a need	Improve appearance	Identify specific requirements for functions.	Narrow down the product range	Many similar products that satisfy the same need. Virtual try-on.	Not fully aware of the marketing tricks. Understanding of social norms	Social norms around beauty standard
Info search	Get credible info within short time	Search on/ be exposed to social media; influencers; brand's website; beauty/ health product retailer's websites. Search in store: display; situational factors; packaging; ads	Gain info	Algorithm recommendation. Too much information.	Not knowledgeable enough to distinguish inaccurate info. Be influenced by display, packaging, ads.	Regulations on online info & product info
Purchase intention	Health consciousness. Environmental consciousness. Status. Self-expression	Influenced by authoritative info. Read labels. Contribute to creating the social norm.	Think about why they buy it	N/A	Belief: natural products are better for health, environment; signaling.	Lack of clear definition and regulation on labeling

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Purchase decision	Get the perceived benefits	money	products	Online: anywhere, anytime, one click. In-store: so many stores and products available.	Believe their purchase will lead to positive outcomes (personal/ environmental). From experience, know this will derive immediate gratification.	Consumer protection law
Use	Be more beautiful	Pollution. Water use. Creating social pressure/norm.	Improve appearance. Fit into the social norm.	Water; Complementary products. Instructions on the package/online	Past experience. instructions from acquaintances. social norm	N/A
Post purchase	Dispose. Evaluation	Recycle vs dispose. Write online review. Word of Mouth	Collect points. Build or maintain social connection.	Empty bottles recycle scheme. Refillable products. Online review.	Awareness of the importance of recycling/ sustainable behavior; Ability to write informative review.	Weak social norm/incentive of recycling the bottle (mainly for monetary reward)