

Plastic In Skincare Cosmetics: An Investigation of the Acceptance of Plastic Packaging and Micro-Plastics When Buying Skincare Products

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ABSTRACT

Never before has so much plastic existed within the environment as is currently the case. Cosmetics are a significant part of the plastic problem, both in terms of microplastics in the ingredients and through plastic-containing packaging.

Generation Y is often seen as being environmentally conscious and sustainable. Contrary to this, however, Generation Y has proven to be carefree when buying plastic cosmetics.

This article is intended to clarify the question of why German women of Generation Y buy plastic-contaminated, caring facial cosmetics, even though they are aware of possible damage. Results of an online survey (N=337) and a qualitative survey with experts revealed that the leading causes for the purchase of plastic-containing, caring cosmetics include the lack of plastic-free alternative products, the lack of transparency of product declarations and the enormous amount of time involved in the search for plastic-free cosmetic.

1. Introduction

The effects of plastic waste are well known, as is the use of plastics in the form of packaging and microplastics in skincare cosmetics. On the other side is Generation Y, whose actions are a mystery to many. This generation is continuously being researched further and is considered to be very self-critical and thoroughly environmentally conscious (Hurrelmann & Albrecht, 2014, 119pp.). There is also research on the specific effects of plastic from cosmetic care products (Schulz, 2018, sec 3). But why Generation Y, despite its self-critical attitude, buys plastic cosmetics, despite knowing the consequences, remains unexplored. This article is intended to investigate possible motives for the purchase of cosmetic products containing plastic, despite knowledge of the consequences.

2. Theoretical Background

2.1. Plastics and Microplastics

Plastics have been used in many different ways for decades due to their durability (Fath, 2019b). A distinction is made between macroplastic, mesoplastic, plastic, microplastic, mini-microplastic and nano plastic. Macroplastics, therefore, include every piece of plastic that is larger than 25 millimetres (Crawford & Quinn, 2017).

Microplastics play an essential role in the industry, e.g. as a polymeric blasting medium. It should be noted that 24 per cent of microplastics originate from private consumption, with microplastics from manufacturing industries lagging far behind at 14 per cent (Bertling, Hamann, & Bertling, 2018).

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Socio-economic developments in the past have led to increased production of consumer goods from cheap materials, favoured by the petrochemical industry. The packaging is always in the foreground with a share of the total plastics consumption of 30 to 40 per cent, which continues to grow exponentially (Galgani, Pham, & Reisser, 2017, p. 5).

The plastic cycle begins with the consumer using plastic in any form. For example, in a cleansing gel for facial skin, which ends up in wastewater when washed off. From there, the water from the wastewater treatment plants flows into larger rivers. Secondary microplastic parts are added there. If the unfiltered plastic parts end up in the sea, they are part of the food chain from microorganisms to fish, which may end up being sold in supermarkets (wdr.de, 2016).

Additives are released to the decomposing plastics only when they decompose, as they are not chemically bound to the plastic (Fath, 2019a, p. 16).

Scientists of the Alfred Wegner Institute examined the water in the Arctic Circle for microplastics in several places and found over 12,000 microplastic particles in one litre of water (Peeken et al., 2018).

Plastic particles were also found in the stomachs of various species of fish and seabirds, probably containing toxic chemicals (Bertling et al., 2018, p. 7).

Besides the adverse ecological effects, human toxicological effects are to be expected due to microplastics. Effects on organisms through strangulation are to be feared, as well as absorption and excretion through accumulation, translocation and transfer within the food chain (Bertling et al., 2018, p. 31).

Inflammatory reactions in mussels, as well as behavioural changes in fish, could be detected by the uptake of microplastics. However, it should be noted that these investigations were carried out under unusually high microplastic concentrations, which could not be found in nature before. Up to now, it has not been possible to determine the long-term effects of microplastics on the human organism in a comprehensive way (Schymanski, 2019, p. 1).

Scientists at the University of Vienna were able to detect microplastics in human stool samples. Plastics can also enter the human body via cosmetic products. Microplastics are excreted by the human body. In contrast, nanoplastics can enter the bloodstream and interfere with the absorption of iron or irritate intestinal cells, which can lead to inflammation (Schulz, 2018).

Laboratory studies have shown that microplastics in organisms influence the immune system, fertility and mortality (Bertling et al., 2018).

If many consumers switched to plastic-free products, further damage could be prevented.

2.2. Generation Y

Different literature defines the period of Generation Y, also called millennials, and its characteristics differently (Parment, 2013, p. 7). According to Hurrelmann and Albrecht, those born between 1985 and 2000 belong to Generation Y. This generation uses the internet without concern and is ambitious to perform well (Hurrelmann & Albrecht, 2014, p. 13). Severe events in adolescence can shape the whole life because people in adolescence react hypersensitively to their environment. As a result, nobody deals with their environment as actively as young people do. Generation Y experienced in its youth how the internet and social media established themselves and created a global change (Hurrelmann & Albrecht, 2014, 15pp.). The members of Generation Y are less strictly educated than the previous generations and have grown up in a more prosperous environment. Due to the high number of economic and social opportunities, Generation Y is often described as disoriented. This multitude of private and professional development opportunities often leads to a feeling of being overtaxed, the fear of having chosen the wrong path and thus missing out on something (Moskaliuk, 2016).

The shopping behaviour of Generation Y has also changed with the internet. They demand transparent advertising, and for them, cultural diversity is a matter, of course. The negative developments of climate change are well known to Millennials (Moskaliuk, 2016, p. 2).

Baby boomers often classify millennials as apolitical, although millennials see themselves as political (Hurrelmann & Albrecht, 2014, 119pp.).

So if this generation bears the name Y because they question so many things, why do they not take a critical look at their own consumption of plastic cosmetics?

2.3. Consumer Trend: Plastic-Free

One of the ten global consumer trends in 2019 is "I want a plastic-free world". The movement describes how the need of consumers for a plastic-free tarpaulin is continuously growing. Advertising campaigns about plastic waste in the sea also ensure that consumers understand the extent of the plastic problem. Plastic has never before been such an important topic for consumers and therefore, even for companies and corporations. This trend also means that there are fewer opportunities for 'greenwashing'. Consumers are willing to pay more for environmentally conscious products and recyclable packaging (Angus & Westbrook, p. 51). Despite increased research in the field of green marketing, Generation Y is still under-researched concerning buying green products. However, it is known that millennials represent a huge market potential of 54.3 billion dollars (Lu, Bock, & Joseph, 2013). Environmental awareness can also be reflected in a lifestyle called zero waste, which means that these people produce as little waste as they can (Augsburger Allgemeine, 2019).

2.4. Research Gap

After explaining the effects of plastics and microplastics, where the focus on cosmetics is also considered to be professionally researched, the area of Generation Y consumers in connection with plastics remains little studied. For this reason, the following will take a closer look at the reasons for consumption and purchase of the Millennials of plastic-containing cosmetics regarding the known effects of plastics on humans and the environment.

3. Hypotheses

3.1. Consumer Responsibility

According to the 2014 Environmental Awareness Study, 64 per cent of those surveyed believe that limiting their consumption is good for the environment. 86 per cent think that a change in behaviour in terms of the environment can lead to political and economic action. However, this attitude does not necessarily lead to sustainable behaviour. The "mind behaviour gap" describes the difference between philosophy and behaviour, which Johnstone and Tan investigated with the help of a focus group. Heidbrink and Schmidt also looked at the mind behaviour gap and described the following (Augustine, 2017, p. 14).

- Overflow of options
- Uncertainty/ Uncertainty regarding the information and products
- Sense of powerlessness regarding the consequences
- Too high financial expenditure
- Distorted perception due to missing information
- Lack of transparency between consumers and producers
- Renunciation as a core association for sustainable consumption
- Lack of sustainable alternatives

With political consumption, the consumer becomes a "consumer citizen". The consumer expresses themselves through various actions. These include a boycott, as a strong source of

power, and the purchase of products, also known as a "buycott" or "green growth" (Augustine, 2017, 14pp.).

The various causes of the mind behaviour gap thus lead to several hypotheses. On the one hand, the theory of a consumer citizen points to a political responsibility that the customer feels. This responsibility is crucial in answering the question of why women buy cosmetics containing plastic. Furthermore, it should be noted that female consumers can influence the consumption of plastics by making a targeted product selection at the point of sale (cf. Decker, 2018). This leads to the hypothesis:

H1: Women of Generation Y feel a political responsibility when buying cosmetics.

3.2. *Cosmetic Products*

Nourishing cosmetics include products that are intended to preserve the natural structure of external skin parts. This includes cleansing, care and protection. The aim should always be to maintain the condition of normal, intact skin. Accordingly, skincare cosmetics include skin cleansing products, creams, peelings, serums, masks and oils (Rähse, 2019, p. 2).

The cosmetics industry uses synthetic polymers as abrasives, binders, film formers or fillers. Also, microplastics are used both in particulate and liquid form. Once the particles end up in the sea through the wastewater, they cannot be removed (Bund für Umwelt und Naturschutz Deutschland e. V. [BUND], 2019, p. 1).

Despite the voluntary waiver, microplastics continue to be used in these articles, according to a study by Codecheck of over 103,000 cosmetic products. Microplastics are often not transparent for the customer. Nylon-12, acrylate copolymer or acrylate crosspolymer, as well as other plastics, are microplastics according to a scientific definition. However, these substances do not have to be declared as microplastics by the manufacturer (BUND, 2019).

The most common plastics used in cosmetic products include polyethene, polypropylene, polyethene terephthalate, nylon-12, nylon-6, polyurethane, acrylates copolymer, acrylates crosspolymer, polyacrylate, polymethylmethacrylate, polystyrene and polyquaternium (BUND, 2019, p. 2). The names of these plastics give an idea of how difficult it can be for consumers to unmask these questionable ingredients (BUND, 2016, p. 1). To this extent, this lack of transparency leads to another hypothesis:

H2: Women of Generation Y do not pay attention to plastic packaging and microplastics in the ingredients due to lack of information when buying cosmetics

There are certainly possibilities for the consumer to inform himself about microplastics within the field of care cosmetics. The BUND provides consumers with assistance for plastic-free cosmetic purchases by listing the exact plastic names in a brochure. This list shows that some differentiated brands only use microplastics in isolated products and others use microplastics in every product. Thus, it is not possible to say in general, which brands for plastic-free cosmetics should be avoided (BUND, 2019).

For consumers, the information source is hugely time-consuming. Besides, the consumer would have to obtain updated continuously shopping guides to continue to find out which items contain microplastics, even for newer products.

For this reason, this could also be a motive to buy cosmetics containing plastic, despite the knowledge about the harmful effects of plastic. Therefore another hypothesis is:

H3: Women of Generation Y do not pay attention to plastic packaging and microplastics in the ingredients when buying cosmetics due to time constraints

3.3. *Price*

Nurturing cosmetics, which are packed in plastic, can be purchased for little money. A peeling gel in plastic packaging, which contains microplastic, costs from 1.45 euros. Also packed in

plastic and containing microplastics, day or night care is available from 1.95 euros. Compared to this, the choice of plastic-free skincare cosmetics in drugstores is minimal. Plastic-free face creams are also available from 1.95 euros, but the selection is much more manageable. This is due to the lower price of plastics, which in turn can be used in many ways (Pörschke & Eloo, 2016). Serums and oils are easily available with or without plastic for a few Euros. Finding plastic-free cleaning products in the drugstore can be a real challenge. The majority of all articles are packed in plastic tubes or jars. A few plastic-free products are available from ten euros. Similar problems arise when looking for a facial peeling. A plastic-free peeling is available from around 9 euros in the drugstore (dm.de, 2019). It becomes clear how difficult the search for alternative products can be. This leads to the assumption that customers buy cosmetic products containing plastic due to a lack of alternatives and thus leads to the hypothesis:

H4: Women of Generation Y buy cosmetics with plastic packaging and microplastics in the ingredients for lack of alternatives

Since many alternatives are more expensive than their plastic equivalent, this could be a decisive argument for women of Generation Y to buy plastic, skincare cosmetics. Millennials are often still students, trainees or young employees, which suggests limited financial possibilities. The additional costs of plastic-free products could be another reason to buy plastic-containing cosmetics. The hypothesis is, therefore:

H5: Women of Generation Y do not pay attention to plastic packaging and microplastics in the ingredients when buying cosmetics for financial reasons

4. Method

4.1. Research Design

To collect the data, a quantitative analysis was carried out in the form of an online questionnaire. Surveyonline.com was used for this purpose, as it offers a wide range of options for creating and subsequently evaluating questions. Using social media such as Instagram, Snapchat and Whatsapp, only women born between 1985 and 2000 were asked to participate in the survey. The survey period extended over four weeks from 25.07.2019 to 25.08.2019. To prevent a reactance, the participants were guaranteed anonymity. Also, the introductory text asked for complete answers to the questions, the year of birth and provided information about the various products in the field of skincare cosmetics. The years between 1985 and 2000 were divided into three categories. For all other respondents, the column "Other" was used. The 18 questions were exclusively asked in closed form and were scaled nominally, ordinally or at intervals. Some additional fields for other answers were given. This should cover optional gaps within the hypotheses. Besides, the participants were allowed to enter their own answer options in the free text. To avoid misunderstandings, a small pre-test was conducted with three participants. This showed that the survey was valid, and the questions were understood.

4.2. Sample

The final sample consisted of 338 women who completed the questionnaire in full. All questions asked were mandatory questions, so that early abortions of the bow could be prevented. Within the sample, only one answer was invalid because the person did not belong to Generation Y. 15 participants could not be considered further when testing the hypotheses, as they did not buy any skincare cosmetics. The majority of the sample, almost 65 per cent of all participants, were born between 1996 and 2000 and were between 19 and 23 years old at the time of the survey. Slightly more than half of all participants, 50.9 per cent, were students and just under 28 per cent were apprentices.

4.3. Expert Interviews

To verify the results of the quantitative study, three face-to-face expert interviews followed in September 2019, the first interview being with a cosmetics expert in a personal interview (Expert A). The expert has already worked in sales for various cosmetic companies.

Expert B is a lecturer at a German business school in subjects focusing on strategic ethics and the ethics of virtue. Expert C has been advising well-known companies from the fashion, retail and beauty industry for several years.

5. Results

5.1. Online Survey

Of the 337 valid votes, 120 participants believe that the customer has political power by buying or boycotting certain products. Nearly 55 per cent of the participants partially agree with this, and almost nine per cent do not believe in the political power of the customer. All results were published as part of a bachelor thesis at ISM 2019 with the help of [umfrageonline.com](https://www.umfrageonline.com) (Vogt & Mehn, 2019). One hundred twenty-four participants believe that the purchase or boycott of certain ingredients can have political effects, and almost 50 per cent agree in part. Practically 35 per cent answered yes to this question, and over 55 per cent feel partially responsible. More than half 51 per cent, said that they were aware of the environmental damage caused by plastic and more than 42 per cent said that they were mostly aware of it.

More than 95 per cent of all participants buy face care cosmetics. The remaining 15 participants will be excluded from the results of the upcoming questions due to their non-consumption. Of these participants, more than 62 per cent still feel responsible, and more than 31 per cent feel partially responsible for the products they buy in terms of sustainable aspects.

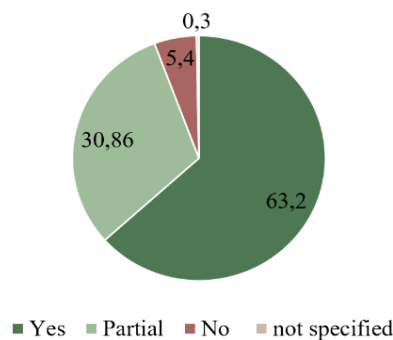


Figure 1. Customers' sense of responsibility when buying cosmetic products regarding sustainable aspects in percent (own illustration)

Of the 322 participants, 111 spend zero to ten euros, and 107 spend eleven to 20 euros per month on cosmetics. Almost 20 per cent spend 21 to 30 euros per month, and almost nine per cent spend 31 euros or more. Eighty-three per cent said that a plastic-free future is essential to them. Nevertheless, only 31 per cent think about plastic when choosing their skincare cosmetics. Nevertheless, almost 78 per cent stated that they find microplastics as an ingredient in skincare facial cosmetics questionable. One hundred sixty-five participants are critical of the use of plastic packaging for skincare cosmetics. In comparison, only nine per cent of all women questioned to make sure that the cosmetics they buy are not packaged in plastic.

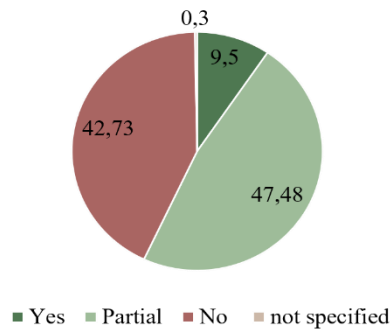


Figure 2. Ensure that skincare products are not plastic packed when purchasing in per cent (own illustration)

Thirty-three per cent pay partial attention to microplastic ingredients, and 45 per cent do not pay any attention at all when buying skincare cosmetics. Almost 65 per cent of the participants answered that they often do not know whether microplastics are hidden in a product because of the product declaration. Three per cent of the participants are aware of this. Concerning the packaging, however, 49.7 per cent stated that they were based on the product declaration whether the respective article is packed in plastic, and almost 31 per cent agreed with the partial.

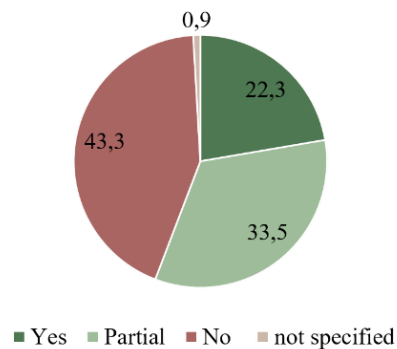


Figure 3. Consideration of microplastic-free ingredients when buying skincare cosmetics in per cent (own illustration)

The survey showed that 101 women are intellectually engaged with the topic of plastic in terms of packaging or as an ingredient. Of the 25.2 per cent who did not think about this, 60.5 per cent think that a future without plastics is essential and 35 per cent think that it is important in part. Now the question arises as to where the dissonance between the participants' attitudes towards plastic and their buying behaviour comes from. 64.6 per cent of the respondents answered that they do not know whether microplastics are hidden in cosmetics because of the product declaration. Of the 145 women who said that they do not pay attention to microplastic, 85.5 per cent said that they do not recognise whether microplastic is hidden in the product because of the product description. Besides, 32 per cent of the 140 women who do not pay attention to plastic packaging answered that they do not know whether the products are packed in plastic because of the product declaration.

The last question asked explicitly for reasons for buying cosmetics containing plastic, which should explain the difference between attitude and behaviour more deeply. As the participants were able to click on several answer options, the answers were accordingly over 322 and over 100 per cent respectively. 52.2 per cent of the women answered that they lack plastic-free alternative products. 48.8 per cent explained their behaviour with reasons of ambiguity regarding the ingredients and packaging of the products. 25.5 per cent said that the right products were too expensive for them. No woman explained that *green stigma* is a reason for

buying cosmetics containing plastic. Eight women said that they did not have enough evidence of the harmful effects of plastic. 17.4 per cent said that they already value plastic-free cosmetic products.

The last question clearly shows that almost half of the participants buy cosmetics containing plastic due to the lack of plastic-free alternative products. The second most frequent reason, with 48.8 per cent refers to the non-transparent product declaration. Furthermore, there is a positive correlation between the 168 women who lack plastic-free alternative products and the same respondents who take too long to find out about all ingredients and products. Here, 56 participants, who answered both questions, were in agreement. Only slightly more than two per cent of those questioned felt that the evidence was insufficiently proven. Although slightly, it is nevertheless relevant that women think that their buying behaviour has no effect on the reduction of plastics. Also, just over five per cent answered that they did not feel responsible for their purchases about sustainability aspects. However, these are not the same people who answered in the last question that they assume that their purchasing behaviour has no influence on the reduction of plastics. Only two out of 18 people gave a negative answer in both cases. This could indicate an error variance. Forty-seven per cent of the women who said that they were partly aware of plastic packaging or ingredients containing plastic also noted that this was due to a lack of information. Almost 65 per cent of these women justified their behaviour by the lack of plastic-free alternatives.

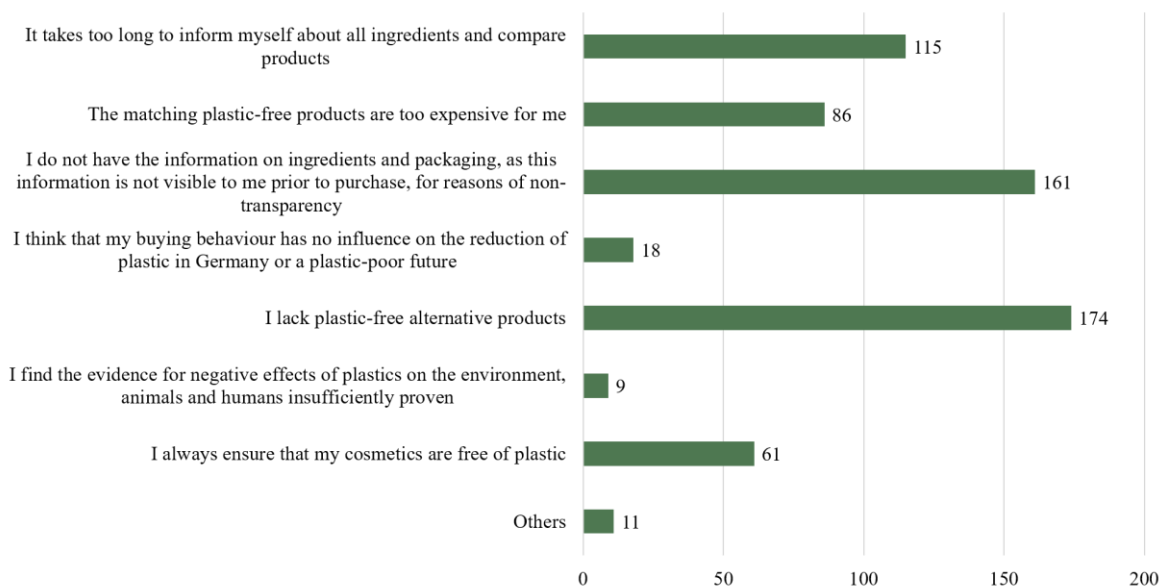


Figure 4. Reasons for not considering plastic-free cosmetics in absolute figures (participants were able to give several possible answers) (own illustration)

5.2. Qualitative Survey

After the survey, three additional experts were asked about the possible reasons for Generation Y to buy cosmetics containing plastic. Expert one initially suspected too little choice of plastic-free alternatives and also explained that glass bottles would be a disadvantage for women who travel a lot due to their high weight. Besides, the expert explained that she saw the cost of natural cosmetics as a relevant reason and then gave an insight into the cosmetics industry by explaining how important trust is in the field of skincare cosmetics. She suspected that some women have the impression that their behaviour cannot change the overall result. The customer advisor added that some customers were not concerned about the effects of their waste consumption. Finally, Expert A added that genuinely sustainable companies do not advertise it enough. She explained that often not even the employees knew precisely which projects the

company was currently supporting because the companies did not want to brag. Many large cosmetics companies claim to be green and sustainable, but no one checks this out. This is how she substantiated her assumption that the lack of or even wrong marketing could be a reason. Expert 2 answered the question of why Generation Y buys cosmetics containing plastic with other guesses. He believes in the power of the customer by boycotting products, but only if the company is publicly damaged by negative headlines, for example. One person can do this. Expert B emphasised the transparency that is also at stake here in our society. Also, he drew attention to the so-called transaction costs in hypothesis four. These describe how much effort the respective person has to make to obtain the necessary information. If these costs are too high, then many people do without them and prefer to rely on brands they know. About green products, Expert B made it clear that these are only beneficial if the product continues to offer the core advantages.

Moreover, greenwashing is one of the reasons for lack of trust in companies. The expert compared nanoparticles with noise. Because of the noise was visible, like garbage, people would remain calm. Then the consequences would be visible and immediate, but if much plastic is used, there are no acute consequences, and so it is better to think away. The expert also explained that some people feel overwhelmed by the responsibility of the entire product supply chain. In conclusion, he added that plastic could be socially abolished by making it unacceptable.

In the course of the interview, Expert C explained the buying behaviour of the millennials by stating that beauty and cosmetics have a stabilising effect on the psyche in an ever-changing world. She also made it clear that beauty is crisis-proof and is given higher priority by most women than political responsibility since the cosmetics industry is almost the only sector that has not felt the effects of the global economic crisis. The expert stressed that there are few alternatives to conventional plastic tubes or jars on the current cosmetics market and that the other options are more price-intensive. In a price-driven market such as the German market, it isn't easy to pass on the additional costs entirely to the consumer. Besides, she revealed that conventional plastic packaging was perfectly justified because it was cheap, protected the contents well and did not mix with the product. Up to now, there has been a lack of suitable alternative packaging, as glass has the disadvantage that it is easily breakable, very heavy when travelling and it is not known how harmful it is. Regarding the micro-plastic ingredients, it is difficult and very time-consuming for customers to trace the seals of the various manufacturers.

5.3. Assessment of the Hypotheses

After the examination of the experts, it remains open whether the hypotheses can be verified or falsified:

H1: Women of Generation Y feel a political responsibility when buying cosmetics.

The questionnaire shows that 90 per cent feel at least partly politically responsible for the purchase of their cosmetics. Also, 86 per cent think that boycotting or buying certain ingredients can have at least partial political consequences. According to Expert C, many women want to reject this responsibility and may feel overwhelmed to take on responsibility for the entire supply chain. This could indicate that political responsibility is only partially felt. Expert B added that although the target group feels politically responsible when it comes to a decision between beauty and cosmetics or political responsibility, beauty almost always prevails because it is closer to people than the effects of plastic. This in no way contradicts the results of the questionnaire. Thus, hypothesis H1 can be verified.

H2: Women of Generation Y do not pay attention to plastic packaging and microplastics in the ingredients due to lack of information when buying cosmetics

Since 64.6 per cent of the respondents did not know whether micro-plastics were hidden in cosmetics due to the product declaration and 145 women said that they did not pay attention to

micro-plastics, this can be attributed to a lack of transparency. Of the 140 women who do not pay attention to plastic packaging, 32 per cent said that they do not know whether the products are packed in plastic because of the product declaration. In addition, 48 per cent of the women justified their purchases containing plastic with the lack of information due to the lack of transparency regarding the ingredients and packaging of the products. Expert C explained that although companies are committed to transparency, the seals are often not understood by customers. Thus, hypothesis H2 can be verified.

H3: Women of Generation Y do not pay attention to plastic packaging and microplastics in the ingredients when buying cosmetics due to time constraints
107 out of 323 valid responses from women stated that this was a decisive reason for buying cosmetics containing plastic. The ethics expert, Expert B, also explained this behaviour with the lack of involvement. The statement of Expert C, the time-intensive research into the meaning of the seals on sustainable products, could also serve as an explanation. Based on the questionnaire and the expert interviews, the hypothesis H3 can be verified.

H4: Women of Generation Y buy cosmetics with plastic packaging and microplastics in the ingredients for lack of alternatives.
52.2 per cent of the women interviewed answered that they lack plastic-free alternative products, which is why they consume cosmetics containing plastic. Expert A stated that there are many suppliers of natural cosmetics, but then advised that they also use partially degradable plastic and thus do not offer completely plastic-free alternatives. Expert C revealed in the interview that there are hardly any alternatives to conventional plastic tubes and jars for the cosmetics industry. The H4 hypothesis can be verified by the questionnaire and the supplementary interviews.

H5: Women of Generation Y do not pay attention to plastic packaging and microplastics when buying cosmetics for financial reasons
Plastic-free cosmetics can hardly be bought in drugstores for less than ten euros, and 37 per cent of the participants said they spend a maximum of ten euros a month on skincare facial cosmetics. So, there would not be enough budget available for cream, cleansing and serum. Since 25.5 per cent of the participants stated that they use cosmetics containing plastic because the plastic-free alternatives are too expensive for them and since the natural cosmetics Expert A also considers the financial aspect to be relevant, thus hypothesis H5 can be verified.

5.4. Recommendations for Action

The German Association for the Environment and Nature Conservation is calling for a Europe-wide ban on synthetic polymers in cosmetic products. Recent years have shown that a voluntary withdrawal of the cosmetics industry cannot be relied upon, while the source of environmental pollution could easily be avoided (BUND, 2019, p. 1). The behaviour or boycott of plastic-containing products from the consumer side could be the solution for a future with less plastic. The quantitative investigation showed, however, that the lack of alternative products and the ambiguity of the ingredients makes it very difficult for consumers to buy plastic-free. A simplification of the terms and thus a saving of time on the part of the consumer could be a remedy.

This will require necessary changes on the part of politicians for companies and plastics manufacturers. For example, rules on the clear labelling of products containing plastic through appropriate seals could help to make it considerably easier to buy cosmetics without plastic. Algae could offer another possibility to work without plastics. In contrast to plastic, algae are sustainable, multiply quickly and do not produce any waste products. So far, no disadvantages

could be found. The solid and at the same time, flexible structure can be used as an optimal packaging material (quarks.de, 2019).

6. Conclusion

Part of the criticism of the excessive consumption of plastic is blamed on the consumers of cosmetics containing plastic. The evaluation of the hypotheses has shown that the lack of alternatives, the lack of transparency in product declarations and the high expenditure of time for information are among the leading causes of non-consumption. The additional costs of plastic-free alternatives also tend to deter consumers from choosing alternative products. The supplementary qualitative surveys conducted by the experts confirmed the results of the quantitative analysis and could also provide suggestions for further research. However, the experts also spoke out in favour of very different motives: wrong marketing approaches, a lack of awareness of injustice and, of course, the desire for safety and beauty of the young target group.

With the help of the questionnaire as well as the expert interviews, almost all the goals formulated in the objective were achieved. On the one hand, the research question could be answered; on the other hand, the sub-goals could be achieved.

Nevertheless, the quantitative survey, concerning the sample, must be viewed critically. Since the survey was advertised on various platforms with the help of only one social media account, it is relatively likely that the majority of the women questioned come from North Rhine-Westphalia in Germany. To nationwide research, this point should be critically assessed. Also, most of the interviewed women probably come from a similar social class. The age distribution of Generation Y within the questionnaire should also be critically examined. This distribution can be traced back to the contacts of social media advertising.

Furthermore, the sample should be critically scrutinised, as there was no security question to check whether only women participated in the survey or whether some men left the previous briefing to the discretion of the interviewees and thus took part in the survey. In addition, there were indications of variance in the last question of the questionnaire regarding the political responsibility of women clients. There were one general question and one regarding cosmetics. Out of 18 women, only two participants had answered both questions in the same way.

Already during this work, the subject of plastics, also about cosmetics, received increased attention. With a view to the future, this increased attention could also be accompanied by a further increased desire for a plastic-free future on the part of consumers.

As the beauty industry itself thinks that there is no way around a plastic-free future and the pressure to innovate tends to increase with social pressure and the desire of consumers to live a plastic-free life, it can be assumed that female consumers will have more choice of plastic-free products in the future. The growing trend of striving for a low plastic future could be exploited, especially concerning the cosmetics industry, in that plastic-free skincare products that are also used in public could lead to a green attitude for customers. This means an improved social status by emphasising one's own sustainable lifestyle using obviously sustainable cosmetics.

The extent to which the marketing of natural cosmetics companies influences the purchasing behaviour of the millennials in terms of skincare cosmetics remains to be clarified. It remains to be seen how much women of Generation Y are willing to pay more to acquire plastic-free cosmetics. It also remains to be seen whether the high current pressure on the 'plastic industry' can be maintained and whether a social rethink will be initiated—a difficult undertaking, especially for beauty products.

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