Sustainable consumption and the internet

Does online advertising stimulate overconsumption?

Alongside its many potentials for sustainable consumption, digitalization also bears considerable risks. Online marketing strategies may increase consumption levels. New results of an experimental study provide multifaceted insights for future research and marketing practice.
By Vivian Frick, Maike Gossen and Sara Elisa Kettner

Advertising is the main financing model on the internet. As online marketing exposure increases and advertisements become more effective through personalization and data analytics, the question of advertising's influence on consumption gains new relevance in sustainability debates.

Revisiting an old debate

Research into the effects of marketing on consumption and consumerism has repeatedly indicated that advertising stimulates and perpetuates materialistic values (e. g., Richins 2017). Since it increases consumption desires or "aspiration levels", advertising has often been criticized as a barrier for sustainable lifestyles (Kasser/Kanner 2004; Thogersen 2014). Some authors even argue that advertising is one of the main drivers of environmental degradation through unsustainable lifestyles in the Global North (Latouche 2009, Stoeckl/Luedicke 2015). Although there are sustainable, even sufficiency-promoting forms of marketing (Gossen et al. 2019, Gossen/Kropfeld 2022), the vast majority of advertising content promotes the purchase of conventional consumer goods and services, and is, thus, directed towards consumption increase. Correspondingly, advertising spending is correlated with economic growth and increased consumption on a societal level (e. g., Molinari/Turino 2018). Deloitte (2017) calculated that, for every euro spent on advertising, the gross domestic product (GDP) rises by seven euros.

Before they had internet access, people were exposed to advertising on TV, billboards, in print, and radio. Now, online advertising has been added to these marketing channels, leading to a huge increase in daily exposure for the average person. In 2020, 780 billion dollars were spent on online marketing, 51 % of total media advertising expenditures (Statista 2021). For 2021, online advertising expenditures are expected to record a growth of more than 15 % (ibid.). Moreover, not only the quantity but also the quality of advertisements has been changing. Efforts to increase the efficiency of advertisements in creating purchases are manifold and include search engine optimization (SEO), personalization, big data, and machine learning, among other strategies. For example, banner ads personalized by retargeting – advertising products or shops people recently visited online – receive more clicks than non-personalized banner ads (Bleier/Eisenbeiss 2015). Online marketing was thus shown to have higher returns than traditional advertising (Dinner et al. 2014).

Another characteristic of online advertising is the internet's growing dependence on it. Because users do not pay for using most websites, many service providers, for example search engines, social media platforms, and other digital services, are dependent on advertising revenue. In other words, users pay for online services by way of their personal data, and ultimately, viewing ads (Kingaby 2020). In sum, with the ubiquity of internet advertising, the debate on advertisements' detrimental impacts has been revived, and the stakes are rising: The characteristics of online advertising do not only intensify the risk of unsustainable overconsumption but also pose threats of mass surveillance, the spread of misinformation (Kingaby 2021), and decreased well-being (Dittmar et al. 2007).

Online advertising influences product choice – but what about consumption levels?

In a systematic literature review, we summarized findings concerning the effects of online advertising on consumption levels. We identified SEO marketing, banner advertisements, social and influencer marketing, and content marketing as the most relevant forms of online advertising.

As a fairly established format, banner advertising has a significant effect on online purchases, specifically, exposure to banner advertising increases the probability a customer will purchase (Manchanda et al. 2006). Social media use generally correlates with materialistic values, status consumption, and purchase intentions (e. g., Taylor/Strutton 2016). In a survey, respondents reported an increased desire to buy clothes after seeing posts on fashion blogs or social media (Wahnbaeck/Roloff 2017). Influencer marketing on social media also has a consumption-stimulating effect. 88 % of a recent survey's respondents said they had already bought a product because influencers recommended it (Rakuten Advertising 2019). Another

study showed that support for a product from famous people correlates with a higher purchase intention (Ertugan/Mupindu 2019). Such marketing can also help to arouse and increase consumer desires through the aesthetic presentation of consumer goods on Pinterest or Instagram (Denegri-Knott/Molesworth 2013; Kozinets et al. 2017). Among the marketing techniques of online shops, sales are increased, in particular, by up-selling, namely explicitly offering a higher-quality product alternative instead of a (cheaper) option chosen by customers (Heidig et al. 2017).

Even if, as outlined above, there is increasing research on the effects of online marketing on purchase decisions, findings are not unequivocal, and the quality of a substantial number of studies is relatively poor. In addition, most of the empirical studies investigate advertisement awareness, brand awareness, and purchase intentions, whereas the relationship between advertising exposure and actual consumption levels has not been researched so often. Furthermore, most research was conducted in marketing, where a certain product choice is the target behaviour rather than consumption levels. A few other studies found correlations between advertisement exposure and consumption levels (e. g., Frick et al. 2021). In sum, research to date has not yet determined whether online advertisements' effectiveness simply shift product choice or whether it increases consumption levels. With the study at hand, we, therefore, address the question of whether online advertising increases consumer aspiration levels and thereby consumption levels.

A multimethod approach to measuring effects

To answer our research question, we used interviews, a survey, and an experiment. This multimethod approach was necessary to shed light on the topic from several perspectives: those related to qualitative and quantitative empirical insights and those from actors, namely marketing experts and consumers. First, we conducted qualitative expert interviews with practitioners from online shops, marketing consultancies, and industry associations. The focus of the eight interviews lays on receiving deeper insights from marketing practice. Additionally, a cross-sectional survey and a behavioural experiment were conducted, both with the same sample of n = 1,000 participants in Germany, to gather data on whether online advertising increases perceived consumption needs and individual consumption levels. Specifically, the cross-sectional survey aimed at investigating the relationship between the frequency of perceiving an online advertisement and – in comparison with a traditional, analogue advertisement – individual consumption and aspiration levels. Hence, it focused on the long-term, accumulated effect of online advertising. Furthermore, an incentivized behavioural experiment was conducted to test the short-term, spontaneous effects of online advertisements on consumption behaviour. In the experiment, six experimental conditions in a 2 × 3 design were tested. We tested two types of online advertisement: A fictional news website including advertorial banners

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and an Instagram feed including posts from influencers (influencer marketing) and companies (social media advertisement). Next to an advertisement-free baseline condition, for both advertisement types, experimental conditions contained either product-specific advertisements for products (that participants could purchase in the experiment's online shop) or general advertisements on lifestyle products. The effects on purchasing behaviour were subsequently measured in a fictional online shop for consumer electronics and home furniture, where participants could choose products and win them through a lottery. In the next three sections, we briefly summarize the results of the empirical investigations.

The interviews: Impact on consumption often remains unclear

To estimate the practical relevance of online advertising, the interviews first addressed the types of strategies mainly implemented by the interviewed consultancies and companies. The interview partners emphasized as particularly relevant in practice not only strategies such as website or e-mail marketing but also personalized advertising, social media marketing, and content marketing. The various strategies of online shops, such as dynamic pricing, up-selling, or cross-selling were mentioned less frequently.

When asked what purpose the interviewed companies and consultancies were pursuing with online advertising, three central goals were mentioned: Acquisition of new customers, building customer loyalty, and increasing sales. Social media and influencer marketing play a major role in acquiring new customers and in building customer loyalty. To increase loyalty, marketers further use a newsletter or e-mail marketing and offer discounts or access to temporary sale promotions. Strategies such as banner advertising and (re-)targeting are particularly relevant for increasing purchases, but companies also use SEO or price comparison website as well as special offers via e-mail newsletters or apps. To effectively rollout online advertising and, in particular, personalized content, marketers need the personal data of their target groups. Collecting this data in-

volves analyzing data the company itself possesses (purchase history, interactions) but also accessing data provided by social media platforms and other digital services that track user data. The interviewees considered compliance with data protection rules to be extremely important, but in some cases, they also perceived it as an unwelcome limitation to personalized advertising.

Measuring success and impact in marketing has become easier through digitalization, and many metrics abound: For example, the conversion rate of products, clicking behaviour, views, dwell time, and bounce rates, and analytic models such as the recency, frequency, monetary-ratio (RFM) segmentation model. In social media marketing, marketing success is measured using other metrics, including the number of followers and the degree to which followers are active on the platform and interact with posts and comments. Despite the high number of indicators and models measuring the success of online advertising, the interviewees stated that they knew little about the actual impact of specific campaigns on consumption behaviour. Especially for more recent marketing strategies such as personalized advertising, a lack of experience and doubts about the effectiveness were evident.

Overall, the interviews showed that marketing strategies appealing to customer emotionality (e. g., content-marketing) will be applied even more frequently in the future, as will social commerce, that is, making purchases directly from social media platforms or apps, with both facilitating purchases. These trends will most likely continue to increase consumption.

The survey: People who perceive more advertisements have higher aspiration levels

In the cross-sectional survey, we investigated whether the frequency with which people perceive online advertising is related to their consumption aspiration level and their consumption level, namely with them wanting and purchasing more products. Mediation analyses were conducted to predict the consumption level of both consumer electronics and furniture

(Figure 1). In both cases, analyses revealed positive effects of online advertising on aspiration levels for furniture, $\beta = .25$, and for electronics, $\beta = .31$ (standardized recoefficient, β of path a_1) as well as of traditional advertising for furniture, $\beta = .16$, and for for electronics $\beta = .11$ (path a_2) . These higher aslevels predicted higher conlevels in both sectors of furniture, $\beta = .18$, and electronics, $\beta = .14$ (path b). In sum, we found a significant indirect effect of both advertising formats on the individual consumption level, mediated via the aspiration level.

More frequent awareness of online marketing, as well as that of traditional advertising formats, was related to increased perceived consumer demand, and this, in turn, predicted higher levels of product consumption. Whether this correlation means that advertising increases consumption levels and needs, or whether individuals particularly interested in certain products simply perceive this advertising more often, cannot be clarified with certainty by a cross-sectional survey design.

It should be emphasized that the perception of online advertisements and traditional advertisements could not be separated by factor analysis, and they correlated very highly with each other. This correlation means that people who reported seeing online advertising more often also saw more traditional advertisements.

The experiment: Online advertisements' acute effects are hard to measure

The behavioural experiment aimed at measuring the short-term, spontaneous effects of different types of online advertisements on consumption levels. After displaying either no, product-specific, or general advertisements on a news website and Instagram feed, consumption was measured as the number of purchased products, the monetary value of the purchases in euro, and the share of advertized products in the shopping cart. Furthermore, the relationship between likes in the social media feed and purchases in the online shop and the reasons for purchases were investigated.
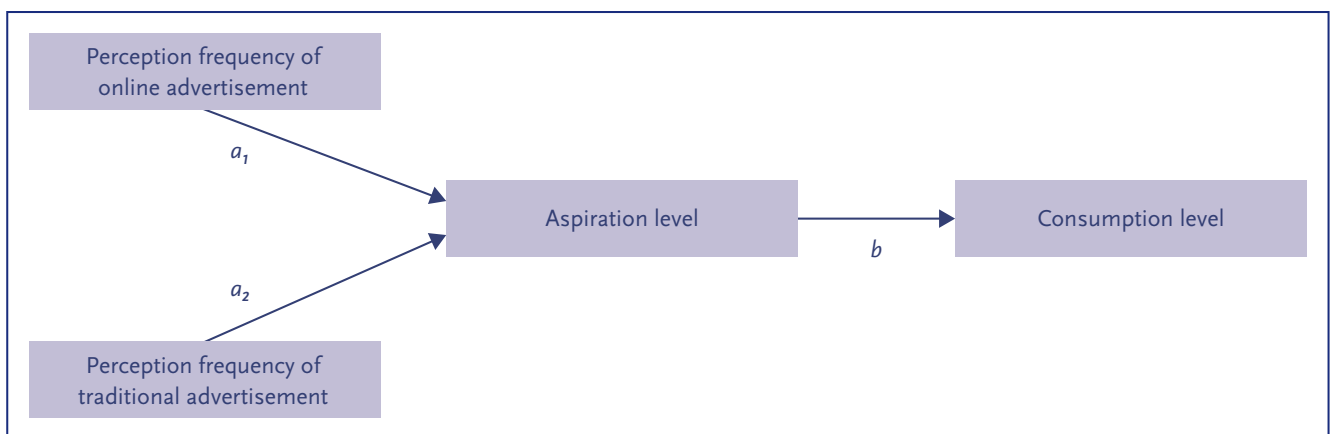

Figure 1. The mediated effect of perception of online and traditional advertising on consumption levels

The results show that the experimental conditions – banner on the news website and product-specific and influencer advertisements on Instagram – did not provoke an increase in consumption compared to the advertisement-free baselines. Furthermore, product-specific and general advertisements had the same effect on consumption levels. However, the experiment reveals a relationship between product-specific advertisements on social media feeds and the actual purchase of products, in other words, participants who saw specific advertorial posts and "liked" them also purchased the product at a later stage, whereas product posts that were not liked were generally not added to the shopping cart. In conclusion, product-specific advertisements correlated with actual purchases, but with general advertisements or banners, other purchases were substituted in the shopping cart.

The experiment also provides further insights into reasons for purchases. One reason arose from a general tendency towards excessive consumption, for instance, 28 % of the participants said that they selected products because they enjoyed the experience of shopping. Furthermore, a rational reason for purchases was enunciated, 24 % of respondents indicated that they would have purchased the products irrespective of the experiment. Lastly, 34 % expressed avoidance of unnecessary consumption as a reason for not purchasing specific products. In conclusion, these results show that the participants were motivated by a wide range of factors, some of which increase and some of which decrease consumption levels.

The pitfalls of measuring online advertisement's effects

Our study offers new insights into the debate on advertisements' influence on consumption levels. Our contribution can be divided into methodological aspects of how the influence can be detected and content-related aspects of how effective or detrimental advertising is. The actual effect can only be interpreted in light of the methodological robustness of the assessment, which is why we thoroughly discuss methodological weaknesses and learnings of our empirical investigation in the following. The fact that our literature study revealed that most studies do not address consumption levels, but rather product choice, is the starting point for the subsequent discussion and comparison of our results.

In our multimethod study, we became aware of each empirical method's specific limitations, which reduce the ability to address the research question. Cross-sectional surveys (both in our study and in the literature, Frick et al. 2021) cannot determine causal directions. We found that perceiving more online advertisements predicts higher aspiration, and thereby higher consumption levels. Yet, it remains unknown whether the online advertising causes a consumption increase, or rather, whether a general interest in certain consumption goods explains both a higher exposure to an online advertisement and a higher consumption level.

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To explore causality, we applied an experiment. This method is considered the "golden standard" for identifying a causal direction, yet operationalization can be challenging. In our experiment, we could not measure any effects in which social media, influencers, or banner advertising were able to increase purchasing behaviour in the short term. There are several possible explanations for this lack of effect, one of which is, of course, that these online advertising strategies simply have no effect. In light of past research and marketing practice, this explanation is relatively unlikely. More probably, the following three explanations play a role. First, our fictional news website and social media posts might not have created a realistic scenario in the laboratory. Second, due to the high prevalence of advertising on the internet, there might be a habituation effect, and individual advertisements only unfold a weak effect. Third, this lack of effect might also be due to the difference between methodological approaches to measure effectiveness in online marketing and those in social science research. Marketing data analytics can detect even very small changes in the buying behaviour of the very large audiences of the advertising, for example in A-B-testing: Due to the large audience, small effects already produce relevant revenue. Such small effects, however, would not be detected as significant in a scientific experiment with a few hundred participants. In the case of social media marketing, influencer marketing might not have had an effect in our experimental setting because it may only work if the addressed person has an actual interest in the influencer who runs the Instagram account. To avoid methodological limitations such as the ones we experienced and to create more realistic research conditions, more collaboration between sustainability science and marketing practice is recommended.

Advancing the debate on the role of online advertising for society and sustainability

Under the methodological limitations given, we interpret our findings as follows. The literature analysis and the cross-sectional survey confirmed a long-term correlation of the perceived frequency of online advertising with individual consumption levels and perceived consumption needs. We thereby replicated the findings of existing studies for the product categories of home furniture and consumer electronics.

Although there is no doubt that advertising will spread even further in digital spheres in the future and that it will find new ways to convince users to buy new goods, it is also indisputable that ethical use of online advertising is essential. In light of affluent consumption being one of the key drivers of the stress on planetary boundaries (Ivanova et al. 2016; Wiedmann et al. 2020), the potentially detrimental effects of online advertising (Kasser 2020) should not be taken lightly. Our results must be considered in the context of the central importance of advertising for financing the internet. The internet needs independence from marketing as long as there is evidence that online marketing may cause social or environmental harm. To reach this independence, policy measures to curb the power of large (monopolized) platforms and to establish financing models without advertising and data collection are needed (Frick et al. 2021). In the end, what is already established for sustainable consumption should also become evident for marketers: To create value not only for profit, but also for people and the planet, oftentimes, less is more.

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