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ADVANCES IN GLOBAL SERVICES AND RETAIL MANAGEMENT

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The Impact of TikTok's Plastic Surgery Content on Adolescents' Self-Perception and Purchase Intention

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Abstract

This paper analyzed the impact of plastic surgery related content generated by patients and by medical professionals on the self-perception and purchase intent of TikTok users. Doing so, this research project focused primarily on the short video platform TikTok, which displayed over 6 billion relevant content views, as well as a high demographic user-relevance to the main recipient of plastic surgery, females. Building upon an extensive literature review, insights and concepts from beauty, self-perception and influencer marketing research were conceptually related to frame the conceptual model for this project. Relevant user data was gathered by means of an online survey and the network sampling technique. This resulted in the receipt of 314 valid datasets. Successive data analysis revealed that patient generated plastic surgery related content negatively impacted the self-perception of TikTok users, whereas plastic surgeon created content positively moderated the impact on purchase intent, through surgeons' status as medical professionals or experts. The latter provided user legitimization for surgical procedures. Findings have been discussed in the light of platform banned plastic surgery related advertising and potential implications for regulatory bodies.

Keywords: TikTok, plastic surgery, self-perception, purchasing intention, advertising literacy, influencer marketing

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Introduction

Over the years 2019 and 2020, TikTok has manifested itself as the shooting star on the social media horizon (Sbai, 2021). Judging by the platform's download statistics of 2.6 billion app dowloads (Zheng, Mulligan & Scott, 2021), as well as its global user growth to over 800 million monthly active users since its launch in 2017, TikTok holds the title of the fastest growing social media platform on the planet (Vàsquez-Herrero, Negreira-Rey & Rodríguez-Vázquez, 2021). TikTok's demographics are however heavily skewed towards the younger end and have shown a slight overdistribution of the females vs. males (Kennedy, 2020). This female creators' dominance has shaped and influenced much of the app's content, although TikTok has considerably evolved from its lip-sync oriented beginnings to a multiverse of content categories (Rach & Lounis, 2020). Recent studies have found over 28 different content categories on the app (Shutsko, 2020), ranging from comedy and jokes over beauty, dance, fashion to even food and nutrition. These categories have been assessed by the impact of gender on its relevance, as

such, the category of beauty, which ranks as the third most represented content category by volume, is largely dominated by female creators with a ratio of 9 to 1 to their male counterparts.

Therefore, it does not come as a surprise, that TikTok has established itself as a new and interesting venue to market and advertise products and services to its growing pool of users, particularly to Generation Z (Ma & Kim, 2021). Brands have thus been flocking towards TikTok to run direct TikTok advertising, or to work with influencers on the platform (Haenline et. al., 2020). Particularly the latter is a very interesting opportunity for brands to reach the platform's very young and often advertising-illiterate audience (De Veirman et. al., 2019). This so-called embedded advertising makes it much harder for teenagers to perceive the potential commercial nature of the presented content (Hoek et. al., 2020). A further difficulty is grounded by the fact, that some of TikTok's advertising formats, such as Hashtag Challenges, likewise to other forms of user engagement targeted advertising formats, stimulate the creation of user generated content (UGC). This content, although in direct relation to a paid advertising format, does not require advertising disclosure due to its third-party status. This increases its effectiveness and impact on other users (Zheng et. al., 2021).

The medical field has also recognized the reach and opportunities presented on the app, which has led to two very distinct uses of TikTok by the medical community. The first use, which has already received scholarly attention, is the use of TikTok to disseminate facts, or dispel medical myths (Comp, Dyer & Gottlieb, 2020). Most studies in this regard focus on either COVID-19 related content, or center around dermatology. The latter has seen a strong growth in content. Early 2021, one can find dermatology professionals with millions of followers on the app (Presley et. al., 2021), which manifests the broadness and variety of both TikTok content categories, as well as the relevancy of medical content to the app's user base. Dr. Sandra Lee MD, also known under her TikTok handle @drpimplepopper, has amassed over 3 million followers and 33 million Likes on the app (Presley et. al., 2021). Although parts of her content could be classified as entertaining, resembling a reality tv show, factual medical content and information is also being communicated.

Further, TikTok has played an important role in disseminating factually correct information around the global COVID-19 pandemic (Ostrovsky & Chen, 2020). Particularly the importance of wearing masks to protect against the spread of COVID-19 has been found, by various studies, to be positively impacted through TikTok content (Basch et. al., 2021; Baumel et. al., 20201).

However, not much research has yet focused on the impact of TikTok's content, UGC or commercially induced, on other areas of the wider health profession, including cosmetic or plastic surgery. Although TikTok does not allow advertising of plastic surgery related content on the app (Zitser, 2021), both surgeons and users seem to have found a way to bypass this very restriction by the platform.

This does of course raise the question of ethics with regards to non-advertising content dissemination by plastic surgeons (Smith & George, 2018; Gupta et. al., 2020). For the scope of this research project, ethical considerations have been excluded.

Continuing, particularly app-safe forms of plastic surgery, such as rhinoplasty procedures receive a lot of attention, evidenced by the hashtag #NoseJobCheck. At the time of writing this paper this

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very hashtag shows a stunning 1.6 billion views, the hashtag #plasticsurgery even more than 3.8 billion views.

Considering that the vast majority of TikTok users are below the age of 24 and beauty standards have been proven to impact self-perception (Wilcox & Laird, 2000; Oranges et. al., 2016), as well as purchasing intent for beauty products or services (Vermeir & Van de Sompel, 2014), this seems a very troubling development, justifying further scholarly attention.

Literature Review

An in-depth literature review has been conducted via ScienceDirect to capture and assess the current body of knowledge in the following areas: TikTok, self-perception, beauty, intent-impact of social media content, influencer beauty marketing, and plastic surgery. Alternative terminologies, such as cosmetic surgery have also been taken into consideration. Findings have been filtered by their time of publication. As such, only literature published from 2017 to 2021 for TikTok related content and from 2015 to 2021 for all social media influence studies on the previously mentioned constructs have been considered as foundational framework knowledge.

A total of 228 results were found within the TikTok filter criteria, with 23 academic works relating to studies concerning the medical field. The majority these papers were spread between COVID-19 impact studies, using social media for medical training, or the use of social media to disseminate factually correct information and thus present a new frontier for healthcare communication as exemplified through much research on the subject area of dermatology. The latter represents a total of 7 papers, most of which assess the opportunistic side of content communication (Kassamali et. al., 2021), with only one piece highlighting potential ethical considerations (Muzumdar, Grant-Kels & Farshchian, 2021). More importantly, a letter to the editor of the British Journal of Oral and Maxillofacial Surgery even highlights the need for medical practitioners in the field of cosmetic surgery to regard the potential of TikTok to reach an adolescent audience on various marketing related topics (Walshaw et. al., 2020). This letter specifically promotes the showcase of preoperative and postoperative content, e.g., for jaw surgery, emphasizing the physical transformation of the patient, which was assumed to target future patients on social media, potentially being enlisted to similar surgeries in the future, as a point of reference. The letter further details the importance of content creation by healthcare professionals to reach current generations. The heightened interest in cosmetic surgery, as exemplified by a 2012 study that received over 16.000 social media related user responses in a single day (Domanski & Cavale, 2012) was further quoted to emphasize the importance of social media for the healthcare sector.

Additionally, the impact of influencers on the content category, as well as the perception of beauty has been found highly relevant on TikTok and on other social media platforms (Cuevas, Chong & Lim, 2020). Beauty influencers have been found to be amongst the leading influencer categories on social media and those having some of the highest impact on its followers (Cuevas, Chong & Lim, 2020). Particularly the effect of beauty standards, as communicated through social media content, regardless its source, has been evidenced to have a high impact on the self-perception of content consumers (de Lenne, et. al., 2021; Eggerstedt et. al., 2020; Septianto, Kemper & Choi, 2020; Farivar, Wang & Yuan, 2021). The latter gains particular importance when viewed in relation to the impact influencers have on beauty standards, purchasing intent,

and self-perception through their para-social relationship with their often-large follower base (Khodabandeh & Lindh, 2020; Anuar et. al., 2020; Evans et. al., 2017; Jiménez-Castillo & Sánchez-Fernández, 2019; Hughes, Swaminathan & Brooks, 2019; Lim et. al., 2017).

Particularly visual media, such as Instagram, has been found to a have a stronger effect on both self-perception and its very relation to plastic surgery related content (Mullens et. al., 2020). TikTok thus much fulfills these findings with regards to visual content. However, TikTok differs much from traditional social media platforms in the sense that any post can go viral and reach a large audience, thus the effect of reach is independent of the number of followers an account has (Bandy & Diakopoulos, 2020). This justifies the assumption of this paper, that influencers play a sub-relevant role with regards to the spread of content on TikTok, as compared to other platforms.

It has to be noted, that the construct of an influencer is, despite the above discussion somewhat fluid, however often measured by the scale of influence exerted by user numbers. For this reason, this study assumes that every creator, thus every user creating content on TikTok, can have the status of being an influencer. This relates much to the research of Bakshy et. al. (2011). The number of followers plays a role to the notion of influencer credibility (De Vries, 2019), thus the elevation of the social status and credibility of source, which has been found to impact preference building in various predating studies. To manage the scope of this paper and to assume the non-follower relevancy of content dissemination on TikTok, the impacts on the formation of social media influencer has not been further considered as part of the conceptual model.

The use of social media in general by plastic surgeons is nothing new and has been receiving attention from both surgeons, as well as researchers (Rohrich et. al., 2020). Much research has found that plastic surgeons capitalize upon their expert status as medical professionals in two ways (Sorice, et. al., 2017; Montemurro et. al., 2015; Siegel et. al., 2020; Gould, Grant Stevens & Nazarian, 2020; Dorfman et. al., 2019; Economides, Fan & Pittman, 2019). First, surgeons reduce patients' fear of surgery and associated risks by providing first-hand information, insights and transparency of various procedures, the healing process and even costs of surgery. This relates much to fact-checking or myth dispelling nature of general medical content on social media, as stressed by Comp, Dyer & Gottlieb (2020). Some research has already found a positive relationship of plastic surgeon social media content on the decision-making process to consider receiving plastic surgery (Arab et. al., 2019). No study was identified, that related the interplay of the users' and surgeons' content on potential patients in this regard.

Second, surgeons legitimize plastic surgery by providing social proof of the extensive use of plastic surgery. The concept of social proof does not just include celebrities, but everyday people. This is understood to bridge the framing context of beauty standards as found in previous research, thus the subjective perception of beauty (de Lenne et. al., 2021). This very concept seems of high importance with regards to the perception of UCG on social media. Contrasting oneself to the beauty standard of others within similar demographics and appearance, reduces the perceived reachability of those standards. Contrasting oneself to classical celebrities, seems in contrast often unattainable and extremely distinct. Furthermore, research by Djafarova & Rusworth (2017) found, that particularly female users are prone to react positively to the influence of other users, portraying positivity and foremost personal experiences. Other studies

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conclude that the most followed females online all portray a stereotypical beauty standard of a thin and attractive female (Brown & Tiggemann, 2020). Thus, exerting the impact of this beauty standard through reach. It has to be noted, that all of the mentioned studies relate to a general concept of beauty.

To conclude, the conducted literature review confirmed the notion of a research gap on the impact of plastic surgery related content on TikTok's adolescent user base. This includes both content created by users, defined as patients, non-medical professional influencers and the very content created by medical professionals. No study was found to address the underlying research question of this paper. Further this paper extends some of the findings and research suggestions of previous works. Further the literature review confirmed the behavioral altercation effect social media, its content, influencers, and brands can excerpt on users. Thus, the importance to understand these effects on both an emotionally and advertising literacy vulnerable audience has been presented.

Methods

This paper builds upon an extensive literature review, which manifests the assumed research gap before setting the ground for subsequent empirical research. The following empirical research is based on the network sampling technique, which has proven successful in other social media related research projects (Balgus, Šubelj & Bajec, 2017; Heckathorn & Cameron, 2017).

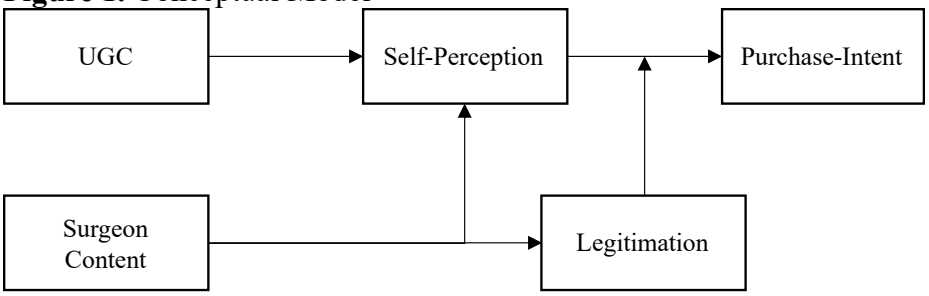
Empirical Research

To analyze the above and to put existing findings of self-perception and purchase intent into perspective, the following research questions were formulated on the grounds of the conducted literature review:

- What is the impact of plastic surgery UGC on users' self-perception and purchase intent with regards to plastic surgery?
- What is the impact of plastic surgery related content by plastic surgeons on users' self-perception and purchase intent with regards to plastic surgery?
- Do UGC and plastic surgeon created content have an impacting relationship?

The conceptual model to capture these research questions is shown in figure 1.

Figure 1. Conceptual Model



The conceptual model captures the stated research questions and is based on the findings of the conducted literature review. It adds the very important notion of the existence of plastic surgeons

on TikTok in their function of experts. This expert status entails an assumed influence on the perception of risks, dangers and other purchase intent hindering emotions. Through the portrayal of facts and by providing social proof of the extent of plastic surgery in society and particularly the increase in life quality of respective patients, plastic surgeons are assumed to legitimize plastic surgery as a mean to increase self-perception to their followers subjectively framed perception of beauty standard.

It is important to note, that the formatting of beauty standards and the various impacts thereon have been excluded in this research to manage the scope and assure focus on the content aspect.

Sampling

The sampling method chosen is the network sampling technique (Jalali, Rezvanian & Meybodi, 2016). Based on the findings of the conducted literature review and to further limit the scope, the sampling for this research project has been limited to female adolescents. Since females makeup over 94% of plastic surgery patients (Sinno et. al., 2016), this limitation seemed justifiable. In TikTok terms, these are users from 13 years of age, thus the minimum age to use the app per the app's terms and conditions and age rating, until legal adulthood. The upper limit has been set to 21 years to include the age of legal adulthood in most western societies. Further, the sampling has been restricted to US TikTok users, which represent with over 100 million users the largest western TikTok population (Sherman, 2020). The US TikTok population is further female skewed and over 60% are considered to be within the set sampling criteria (Zheng et. al., 2021).

To also reduce the scope of understanding and thus breath of the term plastic surgery, the top 5 terminologies per TikTok hashtag usage have been selected to tailor the survey instrument to relevant cosmetic plastic surgery fields and thus avoid confusion with medically necessary plastic surgery, such as those for burn or accident victims. Mixing medical relevant surgery with purely cosmetic drivers is understood to dilute the relevancy of results and has therefore been actively avoided. The list of the most common plastic surgery procedures has been retrieved from the John Hopkins University (NA, 2021). Some terminologies have been explored using their various synonyms. Findings on the most common plastic surgeries on TikTok per hashtag use are shown in table 1.

Table 1 provides relevant insights to the use of TikTok with regards to plastic surgery. These insights span much beyond the sampling criteria setting. Since TikTok is a visual medium, but somewhat restrictive to the nature of allowed content by TikTok's community guidelines, the portrayal of breast, butt or other surgery types, which require content falling under the restricted content categories due to forms of nudity, are therefore underrepresented. This underrepresentation of certain cosmetic surgeries, due to platform's restrictions, has been considered for the creation of the survey instrument. Some plastic surgeons have critiqued the strict handling of plastic surgery content by the app. Examples of the latter include Dr. Schulman (@realdrschulman) with 511k followers, Dr Simoni (@simoniplastic) and Dr. Youn (@tonyyounmd) with 4 million followers.

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Table 1: Hashtag View Count on TikTok

Hashtag	View Count (million)	Main Content Creator
nosejob	2300	users
nosejobcheck	1600	users
botox	926.1	plastic surgeons
lipfiller	850.3	users
tummytuck	591.8	plastic surgeons
implants	513.2	plastic surgeons
lipfillercheck	454.9	users
liposuction	360.8	plastic surgeons
facelift	331.2	plastic surgeons
breastimplants	271.1	plastic surgeons
boobjob	166	users
breastimplant	140.8	plastic surgeons
nosejobchallenge	125.9	users
botoxchallenge	54.7	users
tummytuckjourney	49.4	plastic surgeons
implantsurgery	40.9	users
igotaboobjob	1.4	users

Survey Instrument and Data Collection

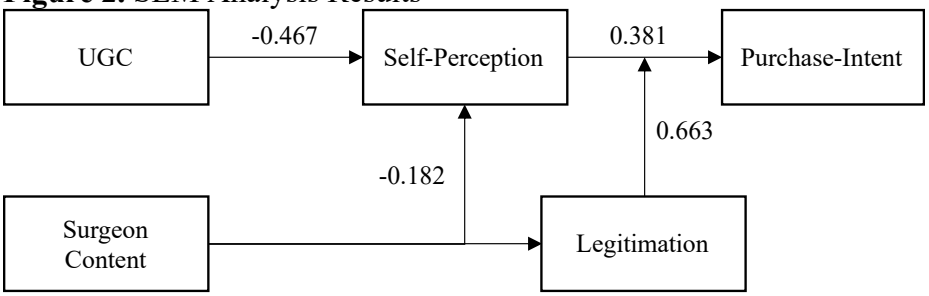
The survey instrument has been designed using constructs from identified literature, adapted to the sample and scope limitations set by this paper. The survey was conducted using an online survey method through the earlier mentioned network sampling technique. A pre-test returned a Cronbach Alpha Score of 0.903 over the 20 survey items, thus a score well within the acceptable range to assure internal consistency of results (Brown, 2002).

The survey was conducted in Q1-2021 and returned a total of 314 valid responses. All data was collected anonymously without the inclusion of usernames, addresses, or contact information. Users were mainly targeted in Facebook discussion groups, since plastic surgery related user groups could be identified on the platform, assuring a high sampling relevancy. For quality purposes, filter-questions were included to assure the active use of TikTok, besides defined sampling criteria. The active use of TikTok was assumed by at least a daily app usage frequency of participants. Received data was then analyzed using STATA 14's SEM package.

Results & Discussion

Based on the conducted SEM analysis, the following results were retrieved, refer to figure 2.

Figure 2. SEM Analysis Results



For the interpretation of factor loadings, the definition of cut-off values by Comrey and Lee (1992) has been applied. As such, the minimum cut-off range is 0.32 and below. Conducting the goodness of fit test, the model resulted in the following parameters. P-value of 0.028, RMSEA of 0.051 and CFI of 0.954. Thus, and although the model does not provide a perfect fit by these measures, all are within the acceptable range and the P-value allows to reject the null hypothesis.

Considering accumulated findings, it is interesting to remark, how little content created by plastic surgeons affect the self-perception of adolescents. Even for a discussion in social sciences, a factor loading below 0.2 must be considered insignificant and thus be neglected. Contrary, the impact of UGC on the self-perception of single users is considered significant with -0.467. It shows a decreasing effect on self-perception, which is understood to be linked to the concept of beauty framing (de Lenne et. al., 2021). The split of UGC to influencer content and non-influencer user content did not provide any significant results. For this reason, influencers have been defined as users with at least 100'000 followers. This missing influencer-effect is largely attributed to the fact that plastic surgery advertising is not allowed on the platform and thus no influencer campaigns, relating to plastic surgery, could be found. Further, only a few instances of influencer content related to plastic surgery could have been identified, the most prominent being the nose surgery of the most followed person on TikTok, the 16-year-old Charli D'Amelio (Glaze, 2020). The teen having over 100 million followers in 2021, documented her plastic surgery over various platforms and content forms, even with a film of the surgery itself. For this very research project, an effect of her content release to either self-perception or purchase intent could not be identified. It is therefore argued that the concept of framing, that of observing peers mirroring owns beauty standards, has a more profound impact on self-perception and thus resulting purchase-intent. It remains however to be seen if a potential spike of influencer related content impacts the overall perception of beauty and thus creates a more distinct concept of framing. A recent article highlighting plastic surgery becoming the norm seems to suggest this from a practitioner's perspective (Brooke, 2021). Nevertheless, follow up research is highly suggested around this concept to better understand the impact of influencer vs. user content on the perception of beauty, self-perception, peer-pressure and thus purchase-intent.

The other interesting finding is the impact of plastic surgeon related content as a form of surgery legitimation, positively moderating self-perception to purchase intent. This finding is of high relevance as it showcases that plastic surgeons are being perceived by adolescents as medical professionals and thus experts. Their perception of content generated by plastic surgeons has both a fact checking, as well as a rumor or myth reducing implication.

An example to the latter is the very many instances of TikTok videos relating to the hashtag of #implants. This hashtag is largely dominated by plastic surgeons who excerpt their expertise and fact checking by demonstrating various strength and durability tests with implants. These range from punching implants, explaining their material composition, their durability, driving over implants with a car, injecting, or cutting them and much more. Although this very example does not relate necessarily to a surgical procedure, it elevates the level of knowledge and reduces patients' fear of implants breaking and thus related negative health effects.

This has been found to have a major implication on the purchasing intent by lowering the action threshold to actively seek to tighten the self-perception gap to the ideal beauty standard. From this angle, the use social media marketing by plastic surgeons proves effective, despite a

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potentially countering perspective of ethics by the medical profession, the platform's anti-plastic surgery advertising policy and of course regulatory frameworks in place. It is important to note, that the author of this paper does not value effectiveness as either positive or negative, but solely states empirical findings to the further judgment of the reader and interested stakeholder groups. As an implication to the TikTok platform, the frequency of content creation by plastic surgeons did not show a significant impact on the construct of legitimation, this is attributed to the non-time sensitive nature of TikTok content. Thus, a content piece being 1 hour old, 1 day old, or 1 month could equally appear on any given user's TikTok feed, called For You Page (FYP). Since TikTok's algorithm matches a user's behavior with content, the time of creation of that content does not necessarily hold much relevance.

Conclusions and Implications

Discoveries of this paper mirror, at least partly, some of the findings presented in the literature review. This includes the framing of beauty standards, the use of social media by medical professionals, as well as the impact of social media content on various behavioral traits of adolescents.

Substantial evidence has been found suggesting a negative impact of UGC on the self-perception of adolescents. This is mostly because adolescents become conscious about perceived beauty imperfections, compared to influencers' beauty standards, but furthermore peer-group comparisons. The latter applies to the framing concept of beauty perception, which only increases the impact on the self-perception of someone's own beauty. Furthermore, plastic surgery related UGC enforces this perception by the focus on common imperfections and the very insight that these imperfections can be medically corrected with relative ease. Although content of plastic surgeons had no significant impact on the level of self-perception of adolescence, it showcased a moderating effect on the relationship of beauty self-perception and purchasing intent to correct potential imperfections. Particularly pre- and postsurgical comparisons of patients, from the perspective of plastic surgeons as well as the perceived transparency of procedures, methods, and practices, legitimized the use of plastic surgery to correct beauty imperfections and thus increased the purchase intent to do so.

Although the purchase intent has not been verified with regards to the actual acquisition of the services of a plastic surgeon, it can be reasonably assumed that this intent is only being intensified over time, as the user perceives an increasing number of plastic surgery related content. This is due to TikTok's user centric algorithm. The more plastic surgery related content a user consumes, the more related content will be shown, manifesting both the decrease in self-perception and likewise increase in purchase intent to correct the gap between perceived beauty standards and the self-perception.

The implications of these findings are vast and provide the grounds for discussions ranging from ethical considerations in the medical field and its use of social media, stricter user content regulation requirements on TikTok, the protection of advertising illiterate users by either the platform or authorities, to the general understanding of how both user generated and non-advertising supported but commercially driven creator content drives purchase intent, particularly in the area of plastic surgery. It can be reasonably assumed that at least parts of these findings can be extended to wider beauty industry, thus grounds for the needs of discussions

around user protection find even stronger support. From a marketing point of view, neglecting potential ethical and societal implications, the interplay of non-paid user generated content and creator content with underlaying commercial interest has been positively proven. This finding supports pre-dating research on the general impact of UGC on brand relevance and purchase intent yet extends these findings into services and particularly the medical field. As such, the interplay of debranded content, such as through non-disclosed content-partnerships of influencers and brands, or non-branded content by brands forms further interesting venues for research.

It is hoped that this paper sparks a discussion around what constitutes advertising, branded or debranded, particularly for products and services which are deemed harmful, or age-inappropriate, for adolescents. Furthermore, a discussion on what frames advertising of plastic surgery is highly suggested to mitigate the wealth of non-paid content forms, not classified as advertising, but with a proven effect on purchasing intent, as shown by this very study.

Further Research

This paper encourages further research in numerous fields to broaden the body of knowledge in the following, non-exhaustive areas. Related to the scope of research of this paper, additional research is required to extend the scope of research from females to all recognized gender forms. Understanding the potential existence of a gender bias in both content impact on self-perception and purchase-intent forming would proof interesting. Furthermore, these insights could extent potential measures to be more specific and thus enhance the protection of adolescents. Extending the sample size, which was a limiting factor to this research, in both quantity and sample makeup, by extending the scope to not only other genders, but other geographic-cultural demographics, could manifest regionally, or culturally, caused perception biases. This notion leans on the perception of privacy, which differs for example largely in culturally adverse demographics. These research extensions could both validate findings presented and extend the scope.

Lastly, a non-directly related research suggestion has also been suggested for further research. The concept of framing requires further research and understanding, particularly with regards to the forming of opinions, believes and from a commercial perspective brand preference and purchase intent. This paper relied on previous research around the concept of beauty framing, however it can be reasonably implied, that framing occurs in a much wider and thus much more generalist context.

Limitations

Although all reasonable measures have been taken to quality control this research project, the following limitations must be noted. A sampling bias through participants' self-selection of the use of social media, particularly the Facebook group sampling applied as part of the network sampling technique. Further, a potential interpretation bias, based on the interpretative complexity of known or unknown construct relationships, cannot be fully excluded.

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