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The Revenue Model of Mainstream Social Media: Advancing Discussions on Social Media Based on a European Perspective Derived from Interviews with Scientific and Practical Experts

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ABSTRACT

Potential benefits and risks related to mainstream social media platforms and their revenue model are vigorously debated. However, a comprehensive framework of performance criteria to evaluate social media platforms and suggestions for transforming them are rare. Employing a transdisciplinary approach, the present work aimed to close these gaps through semi-structured interviews with experts from academia and industry, coupled with exploratory thematic content/topic analysis.

From the interviews, five pivotal performance criteria were extracted: transparency, protection of democracy, satisfaction of needs and preservation of well-being, networking capabilities, and absence of crime. Further, proposed transformations related to i) financing structures, ii) possibilities for users to protect their interests and data, iii) regulations, iv) possibilities for users to adjust platform design, and v) transparency are discussed.

Properly operationalized, both the criteria and suggested transformations hold the potential to facilitate negotiations among users, (mainstream) social media companies, and governments.

KEYWORDS

mainstream social media; transdisciplinarity; expert interviews; content analysis

1. Introduction

Generating revenue and profits is vital for most companies in a market economy. Yet a large number of online services, including mainstream social media, are offered to users free of charge in monetary terms. Instead, they generate revenue based on advertising.

While advertisement-based revenue models have been used for centuries, the distinctive features of these models as applied by online companies, particularly prominent social media companies, are novel. Given such unprecedented characteristics, experts are not only valuing potential advantages but also expressing concern about these new advertisement-based revenue models and associated potential negative side effects, also termed "unseens" (e.g., Zuboff, 2019). Although numerous online companies adopt such revenue models, the apparent promises and risks are debated primarily in the context of mainstream social media (Montag et al., 2021; Montag & Hegelich, 2020; Sindermann, Ebner, et al., 2021). The reason is that mainstream social media platforms have transformed society by redefining how people communicate, assess information, and live together. Consequently, the potential positive and negative aspects related to these platforms and their revenue model can have particularly far-reaching consequences for individuals and societies. The advantageous aspects were illustrated especially during the COVID-19 pandemic, as social media facilitated pandemic management in different sectors, and social media attitudes and use were related to social distancing and COVID-19-related knowledge (Azizi et al., 2021; Yu et al., 2022; Zhou et al., 2021). However, also detrimental aspects like excessive usage seem to have proliferated during the pandemic (DAK-Studi, 2020; Sun et al., 2020).

Based on the importance of mainstream social media described before, this present work focuses on the discussion of the advertisement-based revenue model in the context of mainstream social media platforms and the companies behind them. In addition, the present work focuses on the European and, more specifically, the German context. As such, a European, and more specifically a German,

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understanding of values, national culture, and (human) rights is applied (Hofstede, 2020; Hofstede Insights, 2022) when discussing social media. In more detail, the present work first provides a comprehensive overview of the general structures and discusses the apparent beneficial and detrimental effects related to the user-related, advertisement-based revenue model debated in the context of mainstream social media in previous work. Building on this, the work follows two aims: Given the absence of a consensus regarding performance criteria for social media platforms, the present work aims to i) contribute to the development of a unifying framework of performance criteria for social media platforms. Additionally, this work aims to ii) provide innovative ideas on modifications and transformations of both the structural aspects of (mainstream) social media platforms and their revenue model.

1.1. Mainstream social media platforms and the underlying revenue model

The term "social media platform" encompasses social network sites like Facebook and Twitter (now known as X; we use the name "Twitter" because this was the name when this study was conducted), as well as messaging services like WhatsApp, Signal, and Threema (Bayer et al., 2020; Carr & Hayes, 2015; Howard & Parks, 2012). *Mainstream* social media platforms, characterized by their large user base, include Facebook, YouTube, WhatsApp, Instagram, WeChat, and TikTok as well as Twitter. It is estimated that around 58.4% of the total world population uses social media, which is 93.4% of all internet users. With approximately 2910 million active users, Facebook has the largest user base worldwide, followed by YouTube (2562 million), WhatsApp (2000 million), Instagram (1478 million), WeChat (1263 million), and TikTok (1000 million) (We are social & Hootsuite, 2022b). In Germany specifically, next to Meta-owned platforms, Pinterest, TikTok, and Twitter are frequently used platforms (We are social & Hootsuite, 2022a). In line with the aforementioned broad conceptualization of social media, the business and revenue models applied by the companies behind social media platforms also vary.

Despite the variety of revenue models in the online context (Afuah & Tucci, 2003; Box UK, n.d.), advertisement-based revenue models are of interest in the present work. When applying such models, companies charge advertisers a fee to show their advertisements to the company's users or customers. In turn, the users or customers typically do not need to pay a (monetary) fee in order to be allowed to use the company's service (Afuah & Tucci, 2003). In the online context and on mainstream social media platforms specifically, how and to whom advertisements are presented is different as compared to advertisement-based models on TV or the printed press. This transition is related to the availability of massive amounts of data about each user and targeted advertising as described below.

There are two ways for advertisement-based revenue models to be successful and attractive to advertisers. Either a broad and large advertising audience is reached or a highly specific audience is targeted (Afuah & Tucci, 2003). For the first approach, the aforementioned user numbers of mainstream social media platforms serve as indicators showing the extent of the platforms' reach. Regarding targeting specific audiences for advertising purposes, mainstream social media companies have made great progress over the past two decades. In contrast to offline settings, online settings offer more data points per user (the advertising audience). These data encompass data from user profiles such as sociodemographic variables, content that is "liked," browser history, as well as GPS location and movement data from the smartphone, and sound recordings from the smartphone's microphone (Matz & Netzer, 2017). Beyond that, social media platforms can collect social data about users' connections to friends, family, and other acquaintances. A technical overview of how user data can be collected is provided by Skiera et al. (2022). Moreover, Trevisan et al. (2019) provide an overview that includes legal regulations in the European Union (EU).

From these data, information about users can be extracted using machine learning algorithms, for instance, to detect previously unknown patterns and relations. The process of collecting (and storing), cleaning, (pre-)processing, analyzing, and extracting useful insights from data is also referred to as "data mining" (Aggarwal, 2015). Based on the extracted insights from big data and data mining, highly specific audiences can be targeted for the presentation of different advertisements. Originating in the political advertising field, this process is also referred to as "microtargeting," which describes a method used to create personalized content, accurately estimate its effect (related to subgroups), and deliver it directly to individuals (Agan, 2007; Barbu, 2014).

The possibility of highly specific microtargeting directed at a large audience renders social media companies, especially those behind mainstream platforms, attractive collaborators for advertisers. Hence, advertisers are inclined to invest in this kind of targeted advertising, also referred to as user-related advertising (Bühler et al., 2015). As a result (monetary) charges for users for the allowance to access mainstream social media platforms are oftentimes obsolete. This model of creating revenue is named user-related, advertisement-based revenue model in the present work. The significance of this revenue model is underscored by revenues of prominent social media platforms that do not charge user fees but apply this revenue model (Cuofano, 2020a, 2020b, 2021a, 2021b, 2022b, 2022a; Pereira, 2020a, 2020b, 2021, 2022). For example, in 2021, Meta derived 97.5% of its revenue from advertisements (Meta, 2022); and Alphabet, the company behind Google and YouTube, reported an advertising revenue of 81.3% for the last quarter of 2021 with USD $8.63 billion (11.5%) in revenue from YouTube ads (Alphabet, 2022). The significance of this revenue model is further underlined by profits. Alphabet was ranked the third-most profitable, while Meta platforms were ranked the sixth-most profitable companies (based on profits rather than on revenue) in 2022, according to the Fortune 500 list (Fortune Media IP Limited, 2022).

In summary, i) a large user base plus ii) the availability of vast amounts of data, in addition to iii) the capability of presenting differentiated, personalized advertising content to individual users offer mainstream social media companies extensive opportunities to generate revenue and profit through user-related targeted advertising.

1.2. Opportunities and risks of the user-related, advertisement-based revenue model in the mainstream social media context

In general, social media platforms provide disadvantages as well as advantages, such as supporting the management of COVID-19-related challenges by providing a platform for informational updates and communication with others in times of social distancing (Zhou et al., 2021). Some more positive and negative aspects of social media are among others listed in Abbas et al. (2019). Similarly, the revenue model based on user-related targeted advertising appears to offer significant opportunities but also considerable risks. Both are controversially debated in scientific and public discussions.

A noteworthy advantage often mentioned by proponents of the revenue model based on user-related targeted advertising in the context of mainstream social media is the cost-free (in monetary terms) access to services. This can promote social equity and fairness because it ensures that services and functionalities associated with the respective social media platforms are not restricted solely to those capable of and willing to make financial payments. Especially since (mainstream) social media platforms serve as important sources for information and news (Newman et al., 2021), the advantages of free access to them appear to be valuable in societal terms. This assumption is based, for example, on the human right to freedom of expression and access to information set in the EU Charter of Fundamental Rights, Article 11 - Freedom of expression and information, Article 10 of the European Convention on Human Rights, and Article 19 of the Universal Declaration of Human Rights. A second advantage lies in the capacity of social media platforms to facilitate connections with people and groups on a global scale. The capability of providing opportunities to connect is supported by the large user base of mainstream social media platforms, which, in turn, is most likely among others due to the cost-free access for users. Consequently, (mainstream) social media platforms support the building of social capital, which is positively related to well-being (Liu et al., 2016; Trepte & Scharkow, 2016). Third, based on data collected from their users, mainstream social media companies can tailor content according to each user's assumed interests. This can be a positive aspect for users because it can increase encounters with interesting content and entertainment. For (mainstream) social media companies, aligning content with users' interests can also be beneficial, as it can induce users to spend extended periods of active engagement on their platforms (Montag et al., 2019), thereby increasing the amount of data collected. Further, the duration during which ads can be presented to users is also prolonged. Finally, the data collected from users can be utilized not only for microtargeting of advertisements but also to improve the social media platform service and user experience, accordingly.

The perils of the user-related, advertisement-based revenue model in the context of mainstream social media have also garnered substantial attention in both scholarly and mass media debates. These concerns revolve around privacy being compromised, threats to citizens' democratic capabilities, and diminished well-being of users. Related to privacy issues, the American economist Shoshana Zuboff (2019) explains how online companies like those behind mainstream social media platforms invade users' privacy to collect vast amounts of data. These data are subsequently harnessed to enhance profits, often *via* microtargeted advertisements. Especially in the EU, including Germany, the privacy-threatening aspect is prominently debated. This is reflected in various regulations and laws that have become effective since 2002. In fact, the EU framework on regulations for collecting personal data and their use in combination with the General Data Protection Regulation (GDPR) can be considered one of the most thorough regulatory frameworks (Trevisan et al., 2019). A second area of concern pertaining to the aforementioned revenue model involves threats linked to diminishing democratic capabilities of individuals. In this regard, terms like "echo chamber" (Jamieson & Cappella, 2008; Sunstein, 2004) and "filter bubble" (Pariser, 2011) are well-known. Experts fear that algorithmic filtering of information (i.e., content matching) in interaction with self-initiated and social filtering processes lead to information and news provided to individual users via online services such as (mainstream) social media platforms becoming homogeneous and attitude aligning (Geschke et al., 2019; Pariser, 2011). Similarly, the prevalence of mostly like-minded discussion groups on (mainstream) social media platforms raises significant concerns (Sunstein, 2018a). A high degree of homogeneity of information consumption and discussions on social media platforms, in turn, is feared to contribute to more extreme attitudes and the polarization of opinions (Pariser, 2011; Sunstein, 2018a). Particularly in the political context, this can be highly problematic (Bozdag & van den Hoven, 2015; Stroud, 2010). Similarly related to risks for the democratic capabilities of individuals, several experts have drawn attention to issues related to voter manipulation through the use of microtargeted political advertising and disinformation. This concern is illustrated in discussions related to Cambridge Analytica (Wylie, 2019), the study by Zarouali et al. (2022) on effects of political microtargeting, and issues related to free speech (Sorabji, 2020). A third risk extensively debated in relation to the here-discussed revenue model revolves around the presumed utilization of specific design elements by mainstream social media companies to extend users' active engagement duration on their platforms (Flayelle et al., 2023; Montag et al., 2019; Montag & Elhai, 2023). For example, push notifications, endless scrolling and streaming, and the personalization of content can lure users into spending increasing amounts of time on the platform, consequently fostering problematic or even pathological use (Sindermann,

Montag, et al., 2022). Such pathological use of the internet and social media specifically has been shown in different populations (Cheng & Li, 2014; Khazaie et al., 2023) and has been associated with reduced well-being and mental health (Boer et al., 2020; Huang, 2022; Lebni et al., 2020).

However, it must be acknowledged that empirical research conducted on several of the aforementioned negative effects is inconclusive. For instance, results on whether (mainstream) social media platforms are indeed homogeneous information environments or whether such environments contribute to more extreme and polarized opinions and attitudes are contradictory (Ross-Arguedas et al., 2022; Sindermann, Kannen, et al., 2021). Furthermore, proving causality in the relations between the user-related, advertisement-based revenue model and these risks is challenging. The difficulty in investigating the causal direction is in part due to the fact that most mainstream social media platforms are "black boxes." There are barely any possibilities for independent researchers to investigate them. Even prominent enterprises such as the Social Science One initiative to support independent social media research have been unsuccessful (Hegelich, 2020).

1.3. The present work

To advance the discussion of the potential impacts of social media platforms applying the user-related, advertisement-based revenue model, we believe four steps are necessary. First, a comprehensive understanding of the fundamental underpinnings of the aforementioned revenue model within social media platforms is imperative. Second, an exploration of the consequences of this revenue model through empirical scientific research is crucial, followed by transparent discussions of the findings. As demonstrated earlier, several experts have already engaged in executing these initial two steps.

Third, it is crucial to establish standardized performance criteria to evaluate social media platforms, an issue already discussed by Montag and Hegelich (2020). Definitions of quality and the importance of different performance criteria, accordingly, may vary across cultures. The present work aims to investigate these aspects against a European and more specifically, the German context. The choice of Europe and Germany as the normative framework for the present work stems from the prominence of the debates related to the user-related, advertisement-based revenue model in this area. To create a unifying framework (for the European/German context), performance criteria are mandatory to rate and compare platforms and to create a standardized basis for discussions on the impacts of social media.

As a fourth step, modifications, potential alternative structures, and transformations toward novel structures of social media platforms, including their revenue model, need to be created and debated. This discourse should focus on devising strategies for shaping social media platforms that align with designated performance criteria, as understood, for instance, within the German and European frames.

Taken together, the present work follows two aims: It aims to i) contribute to establishing standardized performance criteria to evaluate social media platforms based on expert knowledge. In addition, it aims to ii) enhance the discussion on transformations to social media platforms by providing innovative suggestions from experts.

2. Materials and methods

2.1. Study design

The present work is based on the broader DiDaT project. This project is based on expert roundtables on the digital transition conducted in Japan, the USA, Europe, and South America (Scholz et al., 2018; Sugiyama et al., 2017; Viale Pereira et al., 2020). Among others, the propositions derived from those roundtables addressed digital business models including the user-related, advertisement-based revenue model and how digital companies capitalize on this model's new opportunities (e.g., Proposition A3 in Viale Pereira et al., 2020). However, the specific context of the present work and its focus on social media were not implemented in those roundtables.

In detail, the present research project is part of a continuing project of the working group "Social Media" of the DiDaT project (Scholz et al., 2021; Sindermann, Ebner, et al., 2021). This transdisciplinary group discussed the unintended side effects of data collection and data use by social media companies. The present research project consists of three elements: i) six semi-structured expert interviews to generate in-depth knowledge from different scientific and practical perspectives on the user-related, advertisement-based revenue model in the context of social media; ii) the generation of a knowledge test and different scenarios, each describing a differently structured and designed social media platform; and iii) surveys to examine individuals' knowledge about and evaluation of the user-related, advertisement-based revenue model in the context of social media. The project was approved by the local ethics committee of Ulm University, Ulm, Germany (reference: 435/20). The proposal and approval mostly focused on the study with children and adolescents given its sensitivity. The project followed the latest revision of the Declaration of Helsinki. The present work focuses on the results of the first element of the project, i.e., the expert interviews. Various kinds of interviews with knowledgeable individuals are used in different fields in order to get an in-depth expert view on various topics; for instance in Abbas et al. (2019). All experts interviewed provided written informed consent before the interview.

The six semi-structured expert interviews included, for the most part, the same questions with an open-response format based on a predefined interview guide. Only the questions about legal regulations related to the user-related, advertisement-based revenue model were not answered completely by all experts. One expert did not feel qualified to respond to any of these questions and other experts were able to respond to only several of the questions. Each question was extensively answered by at least three of the

experts. Additional information about the interviews is introduced in the section titled "Stimulus material: Content of the interviews." In summary, the present work followed an exploratory and qualitative research approach.

Two researchers and authors of the present work (CS and RH), performed the interviews. One, the main interviewer, conducted the interview while the other one observed and controlled the interview. The researchers switched positions between interviews. All interviews were conducted *via* videoconferencing and were recorded after receiving written and recorded consent from the experts. All experts were offered the same monetary compensation for participation, 500€ (about $605 based on the Euro to USD exchange rate on 28 February 2021). Interviews were conducted in February and March 2021.

2.2. Participants: Expert interviewees

The six experts for the interviews were selected based on the following criteria: First, each expert was required to live and work in Germany, aligning with the research project's context. Second, expertise in the realm of digital advertising was essential for each chosen expert, as confirmed by their CVs, previous projects, and online publication records (in the case of scientists) before the interviews. Next to these two criteria that needed to be fulfilled by each expert individually, it was ensured that the following criteria were met across all experts chosen: First, a balanced representation of individuals from science and from practice was pursued to achieve complementarity in different fields of knowledge. This includes experiential knowledge from the practitioners and academic, methodological, and theoretically rigor knowledge from the scientists (Scholz, 2011; Scholz & Steiner, 2015). Second, it was ensured that both experts with a critical view and experts with a positive view of the digital economy were interviewed. This was crucial for the triangulation of different perspectives. This criterion was checked before the interviews based on information found on the experts' websites. Notably, the decision was made not to interview individuals working at mainstream social media companies because the mainstream social media companies are large, supranational actors with limited capacity to focus on the German context specifically. Furthermore, individuals willing to be interviewed are hardly those who have a say in the respective company. The following experts described in Table 1 were interviewed.

By integrating the knowledge and opinions of experts from academia and industry in the present work, this article follows a (mode 2) transdisciplinary approach (Scholz & Steiner, 2015).

2.3. Stimulus material: Content of the interviews

All interviewees were informed about the topics to be included in the interview before their appointment via email. Each interview was divided into five parts as depicted in Figure 1.

2.4. Data availability

It is not possible to make videos or sound recordings of the interviews available to others. Further, it is not possible to share the complete transcripts of all interviews with others as the interviewees did not provide consent. However, on reasonable scholarly request, some parts of some responses can be shared after anonymization to prevent re-identification of the expert interviewees.

2.5. Data analysis

After each interview, the respective expert's responses were reviewed based on the recordings by the main interviewer and transcribed into a standardized evaluation table. Additionally, a third person and author of the present work (NL) independently completed the same evaluation table

Table 1. Description of expert interviewees.

Nr.	Science/practice	Highest educational degree	Major of studies	Position	Description
1	Science (activist)	Dr.	Politics and social sciences	Chief evangelist at a Startup; author and speaker	Democracy scientist, publicist, and activist; among others part of the discussion group "digitization and responsibility" at Meta
2	Social activist with scientific background	*unknown*	International communication	Member of a think tank; publicist and politician	Publicist, activist, and politician with a focus, among others, on digital politics
3	Science (activist/ facilitator)	Prof. Dr.	Political science	Associate professor at a German university	Among others part of the discussion group "digitization and responsibility" at Meta
4	Practice	Master of Laws	Jurisprudence/ Law	Partner at a law firm focusing on media and IT laws and rights	Expertise in copyright, competition, publishing, youth protection, general terms and conditions, and IT contract law
5	Practice	Diploma in Law	Jurisprudence/ Law	Data strategy director	Focusing on communication, advertising, and data
6	Practice	Degree in Political Science	Political science	Senior expert public and regulatory affairs	Focusing on topics at the intersection of politics, economics, science, and society

Note. Scientists were labeled as "activist" (i.e., someone whose scientific work is framed by social values) or "facilitator" (i.e., someone who wants to relate all social value perspectives) based on Scholz (2017). All interviewees were male; we did not ask for the age of the interviewees.

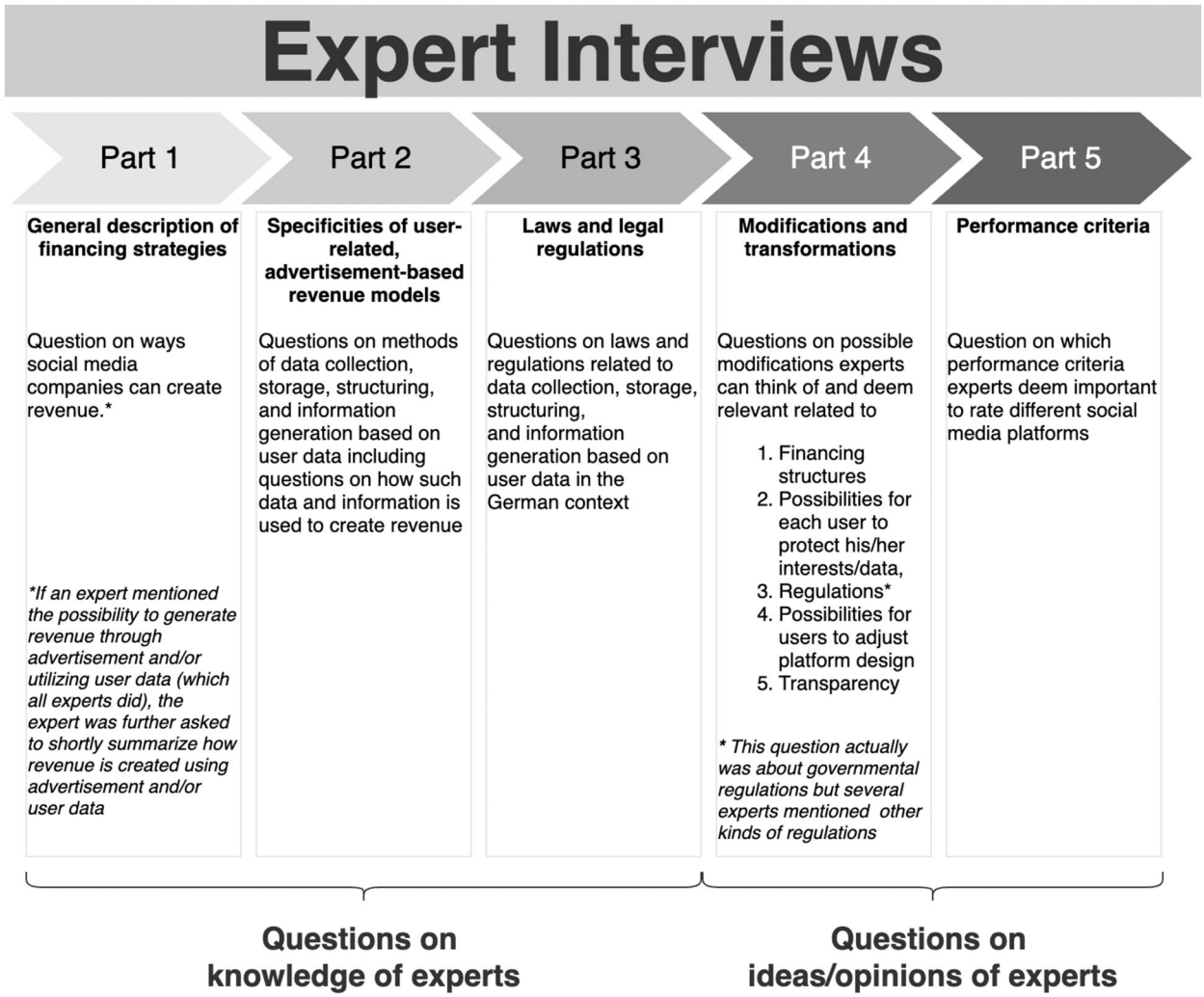

Figure 1. Structure of each of the expert interviews. The five factors in part 4 were extracted from discussions of the group "Social Media" of the DiDaT project (Scholz et al., 2021; Sindermann, Ebner, et al., 2021) as well as further discussions of several authors of the present work.

using the recordings for all six interviews. Accordingly, there were two transcriptions by two independent raters for each interview. Afterward, the two transcriptions of each interview were merged into a final response per question and expert by the two raters. During this step, the responses were shortened. As such, filler words and sentences unrelated to the question were deleted. In case of discrepancies between the raters' transcriptions, the recordings were viewed a second time to reach a consensus.

2.5.1. Analysis related to performance criteria (part 5)

Although experts were asked in the interviews for ideas on modifications and transformations before they were interviewed about performance criteria, in the present work, we want to present analyses and results on the performance criteria first.

In part 5, interviewees were asked to state and explain performance criteria considered essential for evaluating social media platforms (see Figure 1). The transcribed, merged, and condensed responses of all experts related to part 5 (performance criteria) were analyzed by the inductive method of exploratory thematic content analysis by the first author (CS). According to Merten's (2013) classification, a topic analysis of a situation was conducted. Specifically, the analysis aimed to identify shared themes and overlaps (similar performance criteria) across the experts' responses. For that, the following procedure was used: A statement (= one or more sentences related to a single criterion) by an interviewee was rated as potentially related to the common/grouping theme when it contained similar or synonymous words (keywords) as did statements of other interviewees. A list of keywords used to screen statements for their fit to a theme is presented in Appendix Table 1 (terms used in the German language analyses + English language translations). The list of keywords and the themes were built by applying an iterative approach. This procedure included a stepwise feedback loop to control previous themes when themes changed: Starting with the analysis of the first interview, initial sets of themes and keywords were extracted. During the analysis of subsequent interviews, the author searched for the keywords and, if found, the respective statement was tested for fit to an existing theme. If a statement did not fit any existing theme, a new category was created with new

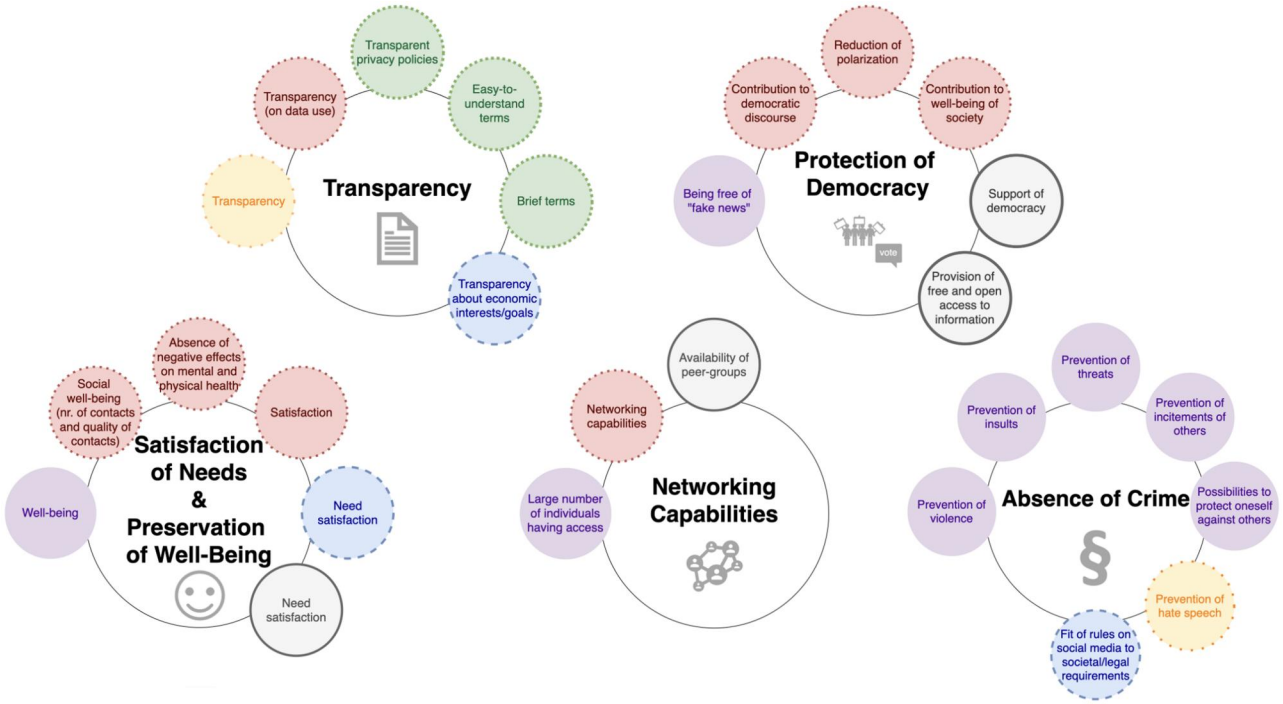

Figure 2. The five suggested performance criteria of social media platforms (large circles) extracted from the six expert interviews. Each smaller circle shows one argument of one expert. For that, each color and each line type indicate one expert (nr. 1 = purple and no line, nr. 2 = yellow and dotted line with view dots, nr. 3 = red and dotted line with more dots, nr. 4 = green and dotted line with many dots, nr. 5 = blue and dashed line, nr. 6 = grey and solid line).

keywords. After analyzing all the interviews, these common themes of similar performance criteria were labeled by the researcher. They are described in detail in the "Results" section of the present work. Notably, themes were labeled only if mentioned by at least three experts. Themes mentioned by fewer than three experts are not mentioned here. Overall, we followed the approach described by Mayring (2000) and added structure to the procedure based on the work by Merten (2013); see Appendix Table 2.

2.5.2. Analysis related to modifications and transformations (part 4)

In part 4 of the interviews, experts were asked to outline ideas for modifications and transformations to social media platforms based on their opinions (see Figure 1). For the summary of these ideas, the descriptions of responses are ordered alongside the following factors/categories: changes in i) financing structures, ii) possibilities for each user to protect his/her interests and data, iii) regulations, iv) possibilities for users to adjust platform design, and v) transparency. This organization is due to interviewees having been asked about potential modifications specifically in relation to these five factors/categories. Thus, for this part of the interviews, a more deductive content analysis approach was implemented. Nevertheless, the content of the interviewees' answers was still investigated using an exploratory approach. The five factors were extracted from discussions of the group "Social Media" of the DiDaT project (Scholz et al., 2021; Sindermann, Ebner, et al., 2021) as well as further discussions of several authors of the present work. Thus, the factor "changes in transparency" was also included in the interview in part 4 by the researchers before the responses of interviewees to part 5 (performance criteria) were known. The "Results" section provides a summary of each of the experts' statements on each of the factors/categories based on the merged and condensed transcriptions of both raters (see Appendix Table 3). As for the analysis of part 5, we followed the approach described by Mayring (2000) and the structured procedure as described by Merten (2013).

3. Results

3.1. Performance criteria of social media

Five themes related to the suggestions on performance criteria for evaluating social media were extracted across the six interviews. These are illustrated in Figure 2 and described in detail below.

3.1.1. Transparency

Transparency emerged as a pivotal performance criterion of social media platforms mentioned by four experts (nos. 2, 3, 4, 5), with a higher degree of transparency being rated more positively (see Figure 2, upper-left side). One expert (no. 4) elaborated on this stance by emphasizing the importance of transparently reported privacy policies on social media platforms. This expert added that the terms should be presented in an easy-to-understand and brief form. Another expert (no. 5) emphasized the need for social media companies to be transparent about their economic interests and goals as well as their financial structures.

3.1.2. Protection of democracy

Democracy protection measures implemented on social media platforms were deemed important by three experts (nos. 1, 3, 6) (see Figure 2, upper-right side). Greater protection of democracy was deemed positive. One expert (no. 1) emphasized the importance of social media platforms being free of fake news. Although the expert did not define the term fake news, a definition can be found in Egelhofer and Lecheler (2019). Another expert (no. 3) specified that according to his opinion, it is crucial to rate a social media platform based on its impact on society, including effects on the democratic discourse, polarization, and societal well-being. The third (no. 6) stated that social media platforms should support democracy and provide free and open access to information.

3.1.3. Satisfaction of needs and preservation of well-being

Need satisfaction and well-being were collapsed into one theme. This is because none of the experts was a psychologist and, thus, none of them was likely to be familiar with the exact differentiation of need satisfaction and well-being.

Three experts (nos. 3, 5, 6) represented the opinion that satisfaction of users' needs through the use of a social media platform is another significant performance criterion. However, none of these three experts further elucidated which needs are of specific importance. In general, higher need satisfaction was deemed more positive.

Relatedly, two experts (nos. 1, 3) mentioned that, for them, user well-being achieved through the use of a social media platform is an important performance criterion. One (no. 3) specified this point, noting the significance of social well-being (i.e., well-being achieved through networking), happiness via contacts, and the absence of negative consequences of social media use on mental and physical health, among others (see Figure 2, lower-left side).

3.1.4. Networking capabilities

Three experts (nos. 1, 3, 6) deemed the possibility to connect with others an important performance criterion of social media platforms (see Figure 2, lower center): The more networking capabilities that are available and the better they are, the more positive a social media platform was viewed. In this regard, one expert (no. 3) referred specifically to networking capabilities. Another (no. 6) stated the opinion that the availability of peer groups on a social media platform is a crucial performance criterion for rating a platform's quality. The final expert (no. 1) pointed toward the importance of a large number of individuals having access to a social media platform. While this point might also be understood as a matter of social equity, it was grouped under network capabilities because only if people have access networking with those individuals is possible.

3.1.5. Absence of crime

The absence of crime between users on a social media platform was deemed an important performance criterion by three experts (nos. 1, 2, 5) (see Figure 2 lower right side): The less crime that happens on a social media platform, the higher its quality was rated. While one expert (no. 5) generally noted the importance of the alignment of social media use rules with societal norms and legal regulations, others specifically mentioned the significance of preventing hate speech (no. 2), offenses, and threats such as violent, insulting, or threatening language and inciting others to violence as well as the possibility of protecting oneself against other users (e.g., unwanted conversations or contacts) (no. 1).

3.2. Potential modifications to and transformations of social media

The experts put forth the following suggestions for modifications to social media platforms and companies, which are summarized in Figure 3.

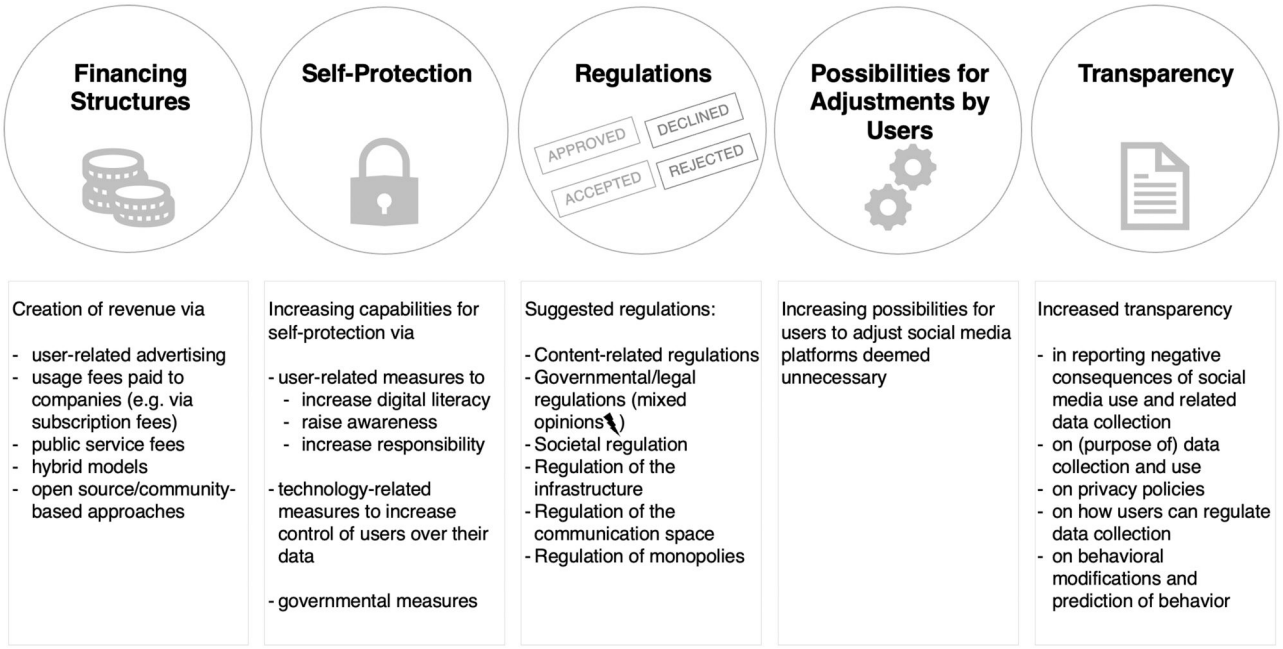

Figure 3. Possible modifications to social media put forward by the experts interviewed for the present work.

3.2.1. Financing structures

Proposed transformations concerning financing structures ranged from support for the currently prevailing revenue model *via* hybrid models to fee-based or monetary payment models. Community-based models were also mentioned.

More specifically, two experts (nos. 1, 5) considered the current financing structure a favorable approach. One of the reasons for this claim by one expert (no. 1) was that users would have to pay a comparatively large amount of money for already-existing platforms. This point was also echoed briefly by another expert (no. 6). Expert no. 1 further argued that newly emerging platforms applying a (monetary) fee-payment model might encounter limitations in growth potential (e.g., in terms of their user base). The second expert (no. 5) supporting the current revenue model justified this opinion by explaining that some kind of revenue model is necessary and that a social media platform would not work without data mining anyway. In line with this, another expert (no. 3) pointed out that paying (money) to use a social media platform and providing data to social media platforms and companies are not mutually exclusive. Hence, the expert concluded that alternative financing structures alone, including monetary fees, might not substantially alter the essence of social media platforms.

In addition to the statements in favor of creating revenue based on user data, i.e., user-related advertising, various experts mentioned possibilities of money-based revenue models: two (nos. 2, 3) raised the idea of public service social media platforms similar to public service broadcasting. In such a scenario, each household pays a fixed (monetary) fee to assess all kinds of public media services. Another money-based payment model mentioned by another expert (no. 6) was a subscription-based model whereby individuals pay a (monetary) user fee to the social media company.

Besides models based on the provision of data or monetary fees, one expert (no. 6) mentioned a hybrid model but did not further specify this. Additionally, two experts (nos. 2, 3) talked about possibilities for open source and community-based approaches whereby social media platforms would be publicly organized like Wikipedia. However, no in-depth explanation of such models was provided.

Overall, two experts (nos. 4, 6) mentioned the importance of users' (un-)willingness to pay (monetary) user fees when considering alternatives to the currently prevailing revenue model.

3.2.2. Self-protection: Possibilities to protect one's interests and/or data

Related to suggestions on potential changes to users' self-protection measures on social media, several experts discussed the significance of user-related measures. Those included user education to increase digital literacy (nos. 1, 6); raising user awareness, for instance, about the ramifications of using social media and sharing data, including side effects (nos. 5, 6); and increasing capabilities of users to act responsibly (German: "Mündigkeit") (no. 4, 5). Moreover, two experts (nos. 2, 5) mentioned that they saw a need for more technical possibilities for increased control over one's data. In addition, expert no. 1 declared that he deemed governmental measures necessary to support users' abilities to protect themselves and to increase their digital literacy. However, he did not offer details. Overall, experts no. 1 and 2 supported the view that personal protection should not be the sole responsibility of users but should be supported by the government. Expert no. 3 did not provide a response to this question.

3.2.3. Regulations

Three experts (nos. 1, 3, 6) noted that they deem content-related regulations on social media platforms, encompassing regulations in regard to fake news and hate speech, important. In relation to this, one of them (no. 3) also raised the question of whether social media platforms should even deliver political content. This expert also criticized the substantial influence those platforms have on individuals' lives and politics.

Regarding governmental and legal regulations, one expert (no. 4) stated the opinion that while ample regulations exist, enhanced enforcement is essential. Another viewpoint (expert no. 6) highlighted the potential risk to users' anonymity if social media platforms were required to verify users' ages. This expert (no. 6) also worried about excessive regulations, particularly if not universally adopted across countries. Social media companies could avoid countries with more regulations to the disadvantage of users living there, while they provide services and flourish in other countries without or with fewer regulations. With a specific consideration of the US context, one expert (no. 2) said that in his opinion connections between private social media companies and government authorities should be reduced. In contrast, another expert (no. 1) emphasized the necessity to improve data protection regulations (especially in the context of political advertising), and another (no. 6) mentioned the importance of improving security regulations when storing data. Related to data-privacy authorities and how they are structured, one expert (no. 2) stated that one should consider whether an institution regulating data privacy should be built like a classical institution at all. Instead, the expert mentioned that such "institutions" might function and be better understood as transparency-supporting intermediaries between private social media companies and users.

Expert no. 5 advocated for treating social media platforms like offline spaces in terms of governmental and legal regulations. Yet, in order to enforce similar regulations on social media platforms, better capabilities for control and better equipment for institutions are mandatory, according to this expert. Additionally, this expert (no. 5) drew attention to the importance of equal enforcement: What is expected from small companies and platforms should also be expected from the big players in the social media economy.

Another expert (no. 2) summarized and supported the idea that society should first think about values and criteria that need to be met by social media platforms, and think

about the technological changes and regulations required to fulfill these values and criteria afterward.

One expert (no. 6) mentioned regulation through an infrastructure toll and another (no. 2) suggested regulations of the communication space as well as the control of monopoly positions. Expert no. 3 mentioned that social media platforms and companies could be societally regulated. None of those suggestions was described in greater detail.

3.2.4. Possibilities for adjustments by users

Regarding transformations related to possibilities for users to adjust social media platforms, five experts (nos. 1, 2, 4, 5, 6) agreed, stating that no modifications related to possibilities for users to adjust platforms are necessary. Their reasons, however, were diverse.

Three experts (nos. 1, 5, 6) expressed that, in their view, there are already sufficient possibilities available to users to implement adjustments to the platforms. All three mentioned that adjustments, e.g., what content is presented, are implemented based on individual users' behaviors and requests. One (no. 1) additionally mentioned the ability of users to decide whether or not to use a platform as a powerful tool to force adjustments on social media. Another expert (no. 4) justified the opinion that no modifications related to possibilities for users to adjust social media are necessary, stating that users might also have negative impacts depending on their intentions (e.g., to spread fake news). Expert no. 2 supported the view that most users are unable to (re-)program digital platforms like social media platforms and, thus, should not be asked to do so.

One expert (no. 3) did not comment on this aspect.

3.2.5. Transparency

Asked about transparency-related modifications to social media, all six experts agreed that transparency on social media platforms could and should be increased.

Two experts (nos. 3, 6) referred to transparency related to reporting negative consequences of social media use and data collection related to social media use. Two other experts (nos. 1, 2) suggested increasing transparency about data collection and what is done with users' data. One of these (no. 2) further stressed the importance of transparency in regard to selling users' data. Closely related to this, two experts (nos. 2, 4) recommended greater transparency regarding social media platforms' privacy policies. In line with this, expert no. 4 suggested the creation of easy-to-understand terms and conditions. Similarly, two experts (nos. 2, 6) asserted the importance of being able to transparently report users' possibilities to responsibly regulate data collection and protection to users to enable them to implement necessary or desired measures on their own. Expert no. 2 suggested increasing transparency about behavioral modifications and predictions about behavior, including algorithmic impacts on conversations between users.

Contrary to the abovementioned responses, one expert (no. 5) declared that absolute transparency related to every minor detail regarding data collection and use can be overwhelming for social media users. He further mentioned that not only the availability of information (from the side of social media) but also the willingness to consume the information (from the user side) is crucial. This expert, nevertheless, also mentioned the possibility of creating one data set of each individual user's data that would be managed and controlled by that user in order to increase transparency. In this scenario, the user could decide what parts of the data set to share with which online service. However, the expert added that this approach could reduce social media platforms' functionality if few users agreed to share necessary data.

4. Discussion

The present work focused on the user-related, advertisement-based revenue model, which underlies many digital services and the companies behind them. More specifically, the present work was conducted to advance the literature and the discussion on this revenue model in the context of (mainstream) social media platforms. To do so, based on six interviews with experts from both academia/science and industry/practice, five performance criteria for rating social media platforms are introduced. Moreover, innovative ideas about modifications to transform social media platforms are provided based on the same six interviews.

4.1. Proposed performance criteria of social media

Five performance criteria were extracted from the interviews to evaluate the quality of social media platforms from a German perspective of society, culture, and human rights. The identified criteria encompassed transparency, protection of democracy, satisfaction of needs and preservation of well-being, high networking capabilities, and absence of crime. These criteria are partially aligned with the criteria put forth in the Ethical Design Manifesto by Ind.ie (2017). They state that ethical technology must respect human rights, which is closely related to the present criterion of the protection of democracy. Moreover, this aspect of the Manifesto can be linked to the present criteria of transparency and the absence of crime. Next, the Ethical Design Manifesto (Ind.ie, 2017) includes technology's respect for human efforts and human experiences. The latter aligns with the criterion of satisfaction of needs and preservation of well-being put forward in the present work. The present criterion of high networking capabilities can also be linked to this aspect of the Ethical Design Manifesto (Ind.ie, 2017).

Surprisingly, none of the experts interviewed for the present work mentioned privacy and privacy protection measures specifically as performance criteria. However, the transparency criterion, mentioned by several experts, potentially relates to privacy concerns. Transparent privacy policies can contribute to enhancing users' knowledge about measures to protect their privacy. This knowledge can, in turn, contribute to increased and more effective privacy-protective behaviors. This is also underlined by the knowledge-gap hypothesis described by Trepte et al. (2015).

Such behaviors encompass not only cautious considerations of which data are actively shared by users but also measures to decrease passive data provision and collection. Similarly, it seems notable that only one expert mentioned compliance of social media companies with the law as a performance criterion.

Nevertheless, the performance criteria delineated by the experts can support a deeper understanding of what might be deemed a beneficial social media platform in the European or, more specifically, German context. Moreover, they facilitate further development of standardized criteria and measurements to assess the quality of social media platforms in this context. While several of the five performance criteria put forth by the experts interviewed for this work are rather easy to test objectively, others are more difficult to evaluate. Nevertheless, the present results have important implications for future research in that they underscore the necessity to evaluate platforms based on these criteria. For instance, the absence of crime – or more broadly how many or how few crimes are committed in relation to a specific social media platform and its use – can be examined by means of crime statistics. Statistics on crimes in relation to social media use were already available in 2012 (Press Association, 2012) and could be separated by social media platforms in order to rate single platforms. Furthermore, the networking capabilities of a social media platform could be rated by means of (active) user numbers as well as by whether algorithms make friend suggestions. Going into greater detail, the algorithms themselves could also be rated. Satisfaction of needs and effects on well-being related to social media platform use could be investigated by asking users about these aspects and associating their scores with their (objectively assessed) social media platform use. For example, users might provide information on their need satisfaction based on self-reports like the Need Satisfaction Inventory (Lester, 1990) or on facets of well-being (Linton et al., 2016). Much research in this area has already been published and a review by Kross et al. (2021) summarizes and discusses different aspects of this field of research. In addition, experimental studies that manipulate which social media platforms participants use and investigate need satisfaction and well-being afterward are possible. Unlike the evaluation of the aforementioned three criteria, standardized measures of transparency are more challenging to develop. For instance, it seems difficult to determine what exactly makes a privacy policy transparent. Yet progress has been made in this direction, for instance, related to cookie banners. This example, however, also illustrates the necessity of a compromise between absolute transparency and short, easy-to-understand explanations, e.g., on data collection and protection, to avoid overwhelming laypersons. Similarly, standardized measures of democracy protection are assuredly difficult to create. This is because trade-offs need to be considered, for example, between freedom of speech and content like hate speech, or between free access to information and regulations related to fake news and conspiracy theories.

4.2. Proposed modifications to social media

Related to financing, alternative revenue models based on monetary payments were most often mentioned in the interviews. Some experts proposed subscription-based models where users pay the respective company. Other experts raised the idea of public service social media platforms transferring the idea of public service broadcasting to social media. In Germany, from which all six expert interviewees came, public service broadcasting is financed mainly by fees paid per household to the public service media, which are institutions or corporations under public law. As such, these fees contribute to the independence of public services from any political influence or interests of private businesses (Berg, 2020; Bundeszentrale für Politische Bildung, 2020). Of note, in Germany, public broadcasters cover more than 40% of the television market share (AGF Videoforschung GmbH, 2022). In addition, the possibility of applying hybrid financing models was mentioned in one interview. One such hybrid model, the "PUR Modell," is familiar in Germany and especially from news websites, as well. This model empowers readers to choose their content access route: Either they pay money to the company behind the website in order to be allowed to read its news articles, which generally results in reduced data collection and minimized targeted advertising; or readers do not pay money and accept data collection and targeted advertising. An overview and narrative review of this model in the context of German news websites is provided by Eberl (2020).

Furthermore, in discussions of alternatives to the user-related, advertisement-based revenue model, it is imperative to acknowledge that the existence of social media platforms in the absence of data collection is impossible. Several experts mentioned this aspect. This connection stems from the foundational reliance of many social media functionalities on user-generated data. For example, friend and group suggestions would not be possible without collecting user data. Next, it is important to acknowledge that the collection of data and paying a fee to use social media are not mutually exclusive. An introduction of user fees payable to private companies behind social media platforms might reduce the necessity for companies to collect extensive amounts of user data. However, companies can continue to collect data and use them to enhance profits, improve services, and ensure the existence of social media as we know it. Hence, on their own, alternative financing structures to the user-related, advertisement-based revenue model can ensure neither reduced data collection nor its absence. Accordingly, such alternatives alone cannot prevent potential negative consequences attributed to the currently prevailing revenue model (Montag et al., 2021; Montag & Hegelich, 2020). Nevertheless, alternative financing structures hold the potential to minimize the necessity for social media companies to collect massive amounts of data to be used for microtargeted advertising. Moreover, without a transformation in the financing structures, positive changes to social media platforms may not be possible at all. In summary, while transforming the financing structure might not constitute a sufficient prerequisite to modifying social media platforms

and their impacts on individuals and society, it seems to be a necessary one. The specific types and amounts of fees to be paid and the potential threats to social equity, however, require a thorough investigation and discussion before being implemented.

In line with this, the experts interviewed for the present work mentioned additional potential disadvantages of alternative financing structures, especially those based on (monetary) user fees. For instance, it was explained that newly created social media platforms starting with a revenue model based on user fees (in monetary terms) face restricted growth opportunities. Although our interviewees did not elucidate, these growth limitations might be explained by several circumstances. One of them is that users will keep using free social media platforms as long as such platforms are available and the user-related, advertisement-based revenue model does not exceed a certain user-inconvenience threshold. Indeed, empirical investigations have consistently revealed a general lack of willingness to pay for social media platforms (Sindermann et al., 2020; Sindermann, Yang, et al., 2022; Sunstein, 2018b). Additionally, for new platforms, the low-growth problem might be due to reduced data collection (as the reason for requiring monetary user fees), which generates fewer possibilities to improve platforms based on user-generated data, information, and preferences. Finally, although the hybrid "PUR-Modell" sounds promising since it gives users control, it faces sharp criticism related to social inequity: Low-income individuals might be forced to share their data, while those with higher incomes can buy their privacy.

Related to modifications to self-protection, most of the expert interviewees highlighted users' digital literacy and/or technical measures. Collaborative efforts of psychologists, educators, and experts from the fields of digitization and law are necessary to develop impactful educational programs to increase digital literacy. These initiatives need to be designed to increase individuals' knowledge about the digital world and, specifically, the user-related, advertisement-based revenue model. Based on an in-depth knowledge transfer to users and an increased understanding of this model, users can be enabled to protect their data, at least to some extent. This, in turn, might prevent negative consequences attributed to the user-related, advertisement-based revenue model, including invasion of privacy and the feeling of being manipulated by targeted advertising.

Regarding the necessity of regulating social media platforms and companies, the experts' opinions were mixed. Consequently, more nuanced and in-depth interviews focusing on this topic appear to be necessary. Such interviews can facilitate a deeper understanding of which regulations may benefit social media users, who decides on and develops them, and how they might be enforced. In the end, however, the experts' opinions reflect the real world, where there is disagreement about regulations such as the EU's Digital Services Act (EU Times, 2022; European Commission, n.d.; Kreye, 2022; Meyers, 2022).

A consensus among most experts was that additional options for users to adjust social media platforms are not necessary. Finally, most experts agreed that transparency must be increased, for example by transparent, easy-to-understand privacy policies and terms and conditions.

Next to those points mentioned by the experts interviewed for the present work, we want to mention that data portability between platforms (Engels, 2016) and platform interoperability, i.e., possibilities of communicating and sharing content across platforms (Brown, 2020), are important factors to be discussed related to transforming the social media landscape in the future.

4.3. Implications for future research

Besides providing comprehensive information on performance criteria and potential modifications to social media platforms and companies to address their impacts on individuals and society, the present work raises new questions. Foremost among these is: "How will specific modifications to social media impact the fulfillment of performance criteria of social media?" Aside from modifications related to measures to increase transparency (e.g., transparent privacy policies), isolated modifications are likely to yield only marginal changes in performance related to any of the criteria discussed in this work. Instead, a complex interaction of a number of modifications ultimately affecting the improvement of the performance of social media is likely. Modifications can be implemented based on the framework presented in the present work but might also include modifications to the designs of the platforms themselves (Montag et al., 2019). Regrettably, freely available empirical findings addressing relations between modifications and performance criteria of social media are rare. Consequently, a forthcoming research focus should encompass the development of an empirical framework that brings together the modifications discussed and the performance criteria presented herein. Such a framework can support the identification of helpful modifications to increase the performance of existing social media platforms.

4.3.1. Practical and policy Implications

We hope the present work encourages scientists and activists to collaborate in developing standardized metrics for evaluating the performance criteria of social media platforms. Only through the use of unambiguous definitions, operationalizations, and measures of performance criteria can a meaningful quality assessment shared among different stakeholder groups become possible in the future. Such an assessment will be necessary to rate the quality of existing and newly developed social media platforms as well as the efficacy and quality of modifications and transformations implemented in these platforms in the future. We hope for more funding possibilities for independent research in this field by funding bodies and regulators. Properly operationalized, these criteria may also be used to negotiate rules of performance ("What should social media do? What should it not do?") among private and commercial users, (mainstream) social media companies, and governments. Thus,

such criteria are also crucial for policymakers in order to generate policies to regulate and/or transform social media platforms in line with expert opinions and provide opportunities for users to benefit from such platforms. In this regard, considering how to make social media companies change their platforms, i.e., which benefits might drive transformation, will be a crucial topic in upcoming debates on modifications to social media. The transformation of social media is especially important since it is obvious that social media does provide advantages like building social capital (Deng et al., 2021; Gil de Zúñiga et al., 2012; Liu et al., 2016; Trepte & Scharkow, 2016) alongside positive use cases especially – but not only – during the COVID-19 pandemic (Abbas et al., 2021; Zhou et al., 2021). Furthermore, and as mentioned by one of the experts, the question of what purpose social media platforms should have and what purpose or aim they do not need to follow remains to be answered.

5. Conclusions

In summary, based on six interviews conducted with German experts from science and practice, the present work provides five performance criteria for social media platforms: transparency, protection of democracy, satisfaction of needs and preservation of well-being, networking capabilities, and absence of crime. As a sixth criterion, high privacy standards might be added, and other researchers and experts are invited to augment this list. Moreover, the present work presents first ideas on modifications that should be discussed in forthcoming debates on how social media could be transformed in the future. Therefore, this work builds a foundation for future research and further standardized discussions about transforming social media. Thereby, this work offers first insights into what might be deemed a beneficial social media platform and how social media platforms could be modified to transform their impacts on individuals and society. We hope that this paper, the proposed criteria, and the ideas for modifications to social media will encourage more research and negotiations between different stakeholder groups or, more specifically, users, social media companies, and governmental agencies.

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Appendix

Appendix Table 1: Keywords used to add a statement of an expert to one of the broader categories on performance criteria of social media platforms.

Criteria category	Keywords	Keyword translation
Transparency	Transparenz; transparent*; Offenheit […] über; Verständlichkeit	transparency; transparen*; openness […] about; comprehensibility
Protection of Democracy	Gesellschaft; Polarisierung; demokratischer Diskurs; Demokratie; Zugang zu Informationen; Falschinformationen über Politik	society; polarization; democratic discourse; democracy; access to information; misinformation about politics
Satisfaction of Needs and Preservation of Well-being	Wohlbefinden; Befriedigung; Glück*; Gesundheit; *Bedürfnis*; Bedürfnisbefriedigung	well-being; satisfaction; happy*/happi*; health; *need*; need satisfaction
Networking Capabilities	Vernetzungsmöglichkeiten; Peer-Group; Barrierefreiheit	networking opportunities/capabilities; peer group; accessibility
Absence of Crime	Straftaten; rechtliche Vorgaben; *Recht*; rechtlich; Schutz; hate speech	crimes; legal requirements; *right*; legal; protection; hate speech

Note: Keywords are presented in German language because the interviews were conducted in German; the English translations are as close as possible to the German versions of the keywords and are provided for transparency; the English terms have not been used in the analyses because the interviews were conducted in the German language. An asterisk (*) indicates that a word has been used in different versions (e.g., happy and happiness).

Appendix Table 2: Description of the procedure applied in the present work related to part 5 of the interviews (performance criteria) based on Merten (2013).

Nr.	Step Denomination Based on Merten (2013)	Comment on Specificities of the Present Work
0	Starting point:	Social problem
1	Aim of the investigation:	Inductive
2	Building hypothesis	/
3	Operationalization of variables (indicators, indices)	Level of words: keywords; Level of arguments: performance criteria; Aggregated arguments: common themes
4	Choosing type of content analysis:	Analysis of situation (Topic analysis)
5	Creation of measurement instrument	Excel file including a questions-by-interviewees matrix to transcribe the interviews
6	Definition of sample	Six experts to be interviewed (see section "2.2. Participants: Expert interviewees")
7	Setting measures of association	Not a statistical value but overlap in words (same words/synonyms/similar words) across interviewees' responses
8	Setting testing parameter(s)	Theme built when ≥3 interviewees mentioned the same theme
9	Pretest	Interviewers and raters practiced together, and questions were independently checked by all authors before the interviews [not a pretest in the strict sese]
10	Data collection	Conducting six semi-structured interviews, and transcribing the interviews (2 independent raters)
11	Data cleaning and preparation	Checking raters' transcriptions against each other, merging the two transcriptions, and reducing them
12	Data analysis	Finding common themes (inductive) across interviewees to extract performance criteria
13	Interpretation of results	See section "4. Discussion" of the present work
14	Publication	
…	…	

Appendix Table 3: Description of the procedure applied in the present work related to part 4 of the interviews (modifications and transformations) based on Merten (2013).

Nr.	Step Denomination Based on Merten (2013)	Comment on Specificities of the Present Work
0	Starting point:	Social problem
1	Aim of the investigation:	Inductive (In parts deductive because categories for transformations were provided by interviewers; however, responses to those categories were investigated inductively without hypotheses (i.e., exploratory))
2	Building hypothesis	/
3	Operationalization of variables (indicators, indices)	Level of arguments: summary of content across interviewees' responses
4	Choosing type of content analysis:	Analysis of situation (Topic analysis)
5	Creation of measurement instrument	Excel file including a questions-by-interviewees matrix to transcribe the interviews
6	Definition of sample	Six experts to be interviewed (see section "2.2. Participants: Expert interviewees")
7	Setting measures of association	Categories to be considered were provided; results are a descriptive summary of responses of all interviewees
8	Setting testing parameter(s)	Results reported are a summary of each expert's response in relation to each category
9	Pretest	Interviewers and raters practiced together, and questions were independently checked by all authors before the interviews [not a pretest in the strict sese]
10	Data collection	Conducting six semi-structured interviews, and transcribing the interviews (2 independent raters)
11	Data cleaning and preparation	Checking raters' transcriptions against each other, merging the two transcriptions, and reducing them
12	Data analysis	Writing down all responses of each interviewee in short form
13	Interpretation of results	See section "4. Discussion" of the present work
14	Publication	
…	…	