



Article

Social Media, Quo Vadis? Prospective Development and Implications

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Abstract: Over the past two decades, social media have become a crucial and omnipresent cultural and economic phenomenon, which has seen platforms come and go and advance technologically. In this study, we explore the further development of social media regarding interactive technologies, platform development, relationships to news media, the activities of institutional and organizational users, and effects of social media on the individual and the society over the next five to ten years by conducting an international, two-stage Delphi study. Our results show that enhanced interaction on platforms, including virtual and augmented reality, somatosensory sense, and touch- and movement-based navigation are expected. AIs will interact with other social media users. Inactive user profiles will outnumber active ones. Platform providers will diversify into the WWW, e-commerce, edu-tech, fintechs, the automobile industry, and HR. They will change to a freemium business model and put more effort into combating cybercrime. Social media will become the predominant news distributor, but fake news will still be problematic. Firms will spend greater amounts of their budgets on social media advertising, and schools, politicians, and the medical sector will increase their social media engagement. Social media use will increasingly lead to individuals' psychic issues. Society will benefit from economic growth and new jobs, increased political interest, democratic progress, and education due to social media. However, censorship and the energy consumption of platform operators might rise.

Keywords: Delphi study; individual effects; interactive technologies; news media; social media; societal effects

1. Introduction

Since the launch of the first social media network SixDegrees in 1997 [1], social media have become an immensely popular and ubiquitous medium. Almost three billion people are currently using social media at least once per month [2].

Over the last two decades, social media as applications that allow the creation and exchange of user generated content [3] has significantly changed, based on technological advances, and new platforms have emerged while others have vanished [4]. Given these dynamics and the relevance of social media for individuals, organizations, and society [5], we engage in foresight [6–9] and ask the following research question: How will social media change over the next five to ten years? The timeframe of five to ten years has been chosen due to social media's fast-paced dynamics [5]. More specifically, we aim to identify the most probable future scenario for social media in regard to interactive technologies, platform development, relationships to news media, institutional and organizational users, and effects of social media on the individual and the society. To achieve this goal, we conduct an international, two-stage Delphi study. Our study contributes to the existing knowledge base of social media research by adding a foresight perspective, which is relevant for both researchers and practitioners.

The results indicate changes in all addressed aspects of social media. The expert panel expects that we will interact on platforms using virtual and augmented reality, our somatosensory sense, and touch- and movement-based navigation. We will not be able to distinguish between other human users and AI-based entities. Social media platforms will massively extend their scope of activities, merge with the World Wide Web and advance to e-commerce, edu-tech, fintech, the automobile industry, and HR recruitment. However, there might be more inactive than active user profiles. Several platforms will introduce freemium business models. Cybercrime will become a major threat. News media will be dominated by social media at the expense of TV, radio, and print media. Fake news is expected to remain unsolvable. Firms will spend higher budgets on social media advertising. Institutions and organizations such as schools, politicians, and the medical sector, will more strongly engage in social media. Social media will have several negative effects on individuals' well-being. On a societal level, social media is expected to be responsible for economic growth and new job creation, raise interest in politics and be beneficial for democracy and public education. However, we will see more censorship and energy consumption of platform operators is expected to increase.

The paper is structured as follows: After setting the background of the study and formulating projections (Section 2), which builds the foundation for the empirical study, we describe the procedure of the conducted Delphi study (Section 3). Next, we present the results statistically and in the form of a holistic scenario (Section 4). We discuss striking findings, address the limitations of the study, and make recommendations for future research (Section 5). The conclusion summarizes the findings of the study (Section 6)

2. Theoretical Background and Development of Projections

This section builds the foundation of the empirical study (Section 3). It distinguishes six thematic sections of the possible future development of social media and formulates specific projections, which are used for the expert questioning. The sections are: interactive technologies, platform development, relationships to news media, institutional and organizational users, and effects of social media on the individual and the society. In these clusters, we formulated 50 projections, which refer to the most relevant social platforms such as Facebook, Instagram, WeChat, WhatsApp, TikTok, and YouTube [10].

We decided to follow a broad rather than deep scenario approach [11–13], i.e., we aimed at a holistic image of future social media covering as many relevant topics as possible. However, as the number of projections had to be limited in order not to overstrain the respondents' patience and risk low response and repetition rates, not every conceivable aspect in every topic could be addressed. Future research could pick single topics and immerse deeper.

2.1. Interactive Technologies

Perpetual innovation of digital technologies is transforming social media [14]. This is especially the case for the user experience when interacting with the platform [15]. From being mainly a text-based medium (e.g., early Twitter and Facebook) to incorporating image and videos (e.g., later Facebook, Instagram, and Pinterest), social media keeps on adapting new technologies [5].

One of these technologies that is already integrated into several digital services is Augmented Reality (AR), which adds virtual objects to the real physical world [5,16–18], and Virtual Reality, which creates an artificial environment for the user to immerse in [16,18–24]. In social media, AR is most commonly used in the shape of face filters, for instance on Snapchat. Furthermore, Facebook created a platform called Spark AR that allows users to create their own AR filters and effects for Instagram [25]. In addition to that, Facebook is working on a social VR experience that can be described as an interactive virtual world, where users can play, create, and explore together [26]. Therefore, we state the following projections: P1. Apart from text-, image-, and video-based social media platforms, also platforms mainly based on virtual reality will emerge. P2. Some social media

platforms will use augmented reality (e.g., to display information or commercials while looking at things).

Besides sound and sight, other sensory stimuli such as touch, taste, and smell are mostly unused so far but could emerge in the future. Whereas touch- and movement-based human–technology interaction is on its way, gustatory and olfactory senses are dependent on chemical transduction, which cannot be easily digitized yet [27]. In that sense, we formulate the following projections. P3. Apart from the visual and auditory sense, some social media platforms will also address the somatosensory sense. P4. Apart from the visual and auditory sense, some social media platforms will also address the olfactory sense. P5. Apart from the visual and auditory sense, some social media platforms will also address the gustatory sense. P6. Apart from entering text or uploading media, some platforms will also allow for a touch- and movement-based interaction. P7. Apart from entering text or uploading media, some platforms will also allow for a thought-based interaction.

Social bots are another notable technology. These are computer algorithms able to interact in human-like behavior and create content [28–32]. Not only can bots influence and manipulate the opinion of users [33], they are also difficult to detect. Bots have become increasingly sophisticated and advanced in their behavior. Hence, recognizing the difference between a human and a bot is increasingly challenging [34]. Considering this, we posit as follows. P8. Users will not recognize a difference when interacting with a real person or an AI-based bot.

2.2. Platform Development

Social media platforms emerged as a sub-segment of the internet. In this section, we address possibilities of merging social media with other internet segments and other social realities. Whereas social media platforms are rather separated from the World Wide Web, as much content is only visible for logged in users, a closer approximation of both segments is conceivable. We therefore conclude as follows. P9. Social media and the World Wide Web will merge.

Similarly, social media could merge with e-commerce. Sales in e-commerce are projected to further increase in the future [35]. Social commerce relates to e-commerce activities on social media platforms that also include interactions by users [36]. First attempts to integrate e-commerce into social media are visible [37]. For example, on Facebook, users can offer secondhand goods. Similarly, Instagram offers businesses to integrate shopping features into their account, so that users can directly purchase goods from pictures and videos posted in the app [38]. In 2018, about 32% of the respondents of a survey in the United States used the option to directly shop on social media [39]. This leads to the following proposition: P10. Social media and e-commerce will merge.

So called “edtech” (educational technology) startups try to disrupt or at least bring technological innovation to the current education sector [40–43]. While these platforms often offer elements of social media, also the large social media platforms could further develop into the education sector. They already partly serve for educational purposes by supporting social interaction and collaborative learning [44]. However, currently academia is rather retrained regarding the use in higher education [45]. Nevertheless, Facebook groups are used as online co-learning groups for students, in order to communicate and interact [46]. In regard to these considerations, we posit: P11. Social media and educational platforms will merge.

Another potential platform development relates to the automotive industry. It is predicted that social media will be connected to users’ vehicles via its infotainment system [47]. Moreover, in autonomous vehicles, social media could be integrated so that it enables users to connect with people or share and consume content on the go, like a smartphone [48]. We therefore conclude: P12. Social media will move into the automobile industry.

Similarly, fintech (financial technology) startups attempt to disrupt or innovate the financial industry [49–57]. Social media platforms could also engage in this sector. An already visible advance in this direction is the Libra payment system [58]. Further developments like this are conceivable. As a consequence, we posit: P13. Social media will expand in the Fintech sphere.

Currently, users have to have several accounts when they want to use different platforms. In the future, one access point or even the merging of separate social media platforms to a unified platform is conceivable. This leads to the following notion: P14. There will be one unified social media platform.

However, also the opposite is possible, i.e., national governments regulate social media operators more strictly to break their predominant market power. For example, Facebook, which operates the Facebook platform, Instagram, and Whatsapp, could be forced to split up into three separate companies. A possible development could be: P15. State governments will break social media platform providers to de-monopolize the market.

Recruiters already use social media platforms to screen and select human resources despite ethical, legal, and practical concerns [59,60]. However, job seekers may also research an organization on social media, so that their perception of the potential employer might be influenced [61]. LinkedIn is the most suitable social media platform, when it comes to employment recruitment, as it is a professional networking platform for business professionals to connect [62]. In that sense, we state: P16. Social media will become the main channel for hiring staff.

In contrast to the expected increasing relevance of social media platforms, it could also be hypothesized that user numbers decrease, for example due to privacy concerns or excessive advertising. Additionally, Öhman and Watson state that the number of profiles on Facebook belonging to the deceased will probably outnumber the profiles belonging to the living before the end of the century [63]. These ideas can be summarized as follows: P17. On most of today's leading social media platforms, the number of inactive, deleted, or profiles by dead people will exceed active users.

It is also possible that the business model which is mainly based on revenues from advertising could be turned into a freemium model, where paying users can avoid ads or get additional functionalities [64–66]. This is already the case on the business platform LinkedIn. Therefore, we hypothesize: P18. Several social media platforms will offer fee-based premium accounts with additional possibilities and services.

In view of the increase of general cybercrime over the last decades [67], it comes to no surprise that social media is also at risk for cyber threats [68]. Social media is not only extremely vulnerable to cybercrime, but that threat is also difficult to detect [68]. Besides identity theft and impersonation [68], automated bots also pose a problem, as they scrape data illegally [69]. The corresponding projection can be stated as follows: P19. Cybercrime will increase on social media platforms.

Various challenges that have already arisen such as fake news or privacy problems [70] might lead to an increased regulation by national governments, which might inhibit platforms' further development. This would lead to the following thought: P20. Governments' strict regulations will massively inhibit platform development.

2.3. News Media

The emergence of new media channels might not completely replace older ones [71], but clearly changes media consumption habits over time [72]. While news were mainly consumed through traditional media, social media now plays a vital part in news circulation [73]. It can be hypothesized that social media's relevance for news distribution and consumption might even grow and have diminishing effects on more traditional news media channels. As a consequence, we can posit: P21. Social media will be the leading news distributor.

Whereas the time spent on the internet is increasing, it is predicted that the usage of television and radio will be constant [72]. However, it is also conceivable that social media platforms might offer TV and radio programs, making established broadcasters obsolete. This case can be formulated as follows: P22. Television will significantly diminish due to social media. P23. Radio will significantly diminish due to social media.

The situation seems to be clearer for print media such as newspapers and magazines, as their global consumption has been in decline for more than two decades [74,75]. It can be expected that this trend will continue, so we posit: P24. Print media will significantly diminish due to social media.

Social media is an essential news distributor especially for young adults, who consume news rather incidentally on social media and rely on their network to share relevant news. However, this development bears risks concerning the reliability of news spreading [73,76,77]. Although social media platforms have been attempting to fight fake news, the problem remains [78–80]. Therefore, we state: P25. Fake news on social media will still be an unsolvable problem.

As a consequence of the shift in media consumption, budget allocation concerning advertising expenses could also continue to shift. Social media advertising expenses are projected to increase in the future [81], in other words: P26. Advertising expenses on social media will significantly rise.

2.4. Institutional and Organizational Users

Social media platforms depict two-sided markets with consumers on the one side and organizations on the other side [82,83]. In this section, possible developments for institutional and organizational users are addressed. For example, schools could increasingly use social media in their communication with students [84]. Whereas using social media in general is correlated with students' poorer academic performance, social media can slightly improve students' academic performance when related with school [85,86]. This could lead to the following adjusted behavior of schools: P27. Schools will use social media for educational purposes.

Politics have already made intense use of social media for election campaigns. Such posts can influence real-life voting behavior [87]. Thus, political elections could be increasingly determined by social media or more concisely: P28. Political elections will be mainly determined by social media.

However, fake news related to political campaigns during elections might impact social media users to some extent [88]. Consequently, this could lead to election campaigns being banned on social media and we can state: P29. Election campaigns will be banned from social media.

As already stated in P26, advertising expenses on social media might significantly increase. Whereas this projection was mentioned in the context of the competitive situation between news media channels, we can, more generally, hypothesize that firms, as major organizational actors in societies, might increase the marketing budgets. This projection can also be seen as a control projection for P26. In that sense, we formulate the following projection: P30. Marketing budgets of companies will significantly increase.

Health care could also be increasingly affected by social media in the future. Social support and exchange among patients already plays a crucial role [89,90]. Twitter is used to prove general health advice and psychiatric consultation by health professionals, although privacy concerns exist [91]. This development could intensify. Therefore, we state: P31. Medical doctors will use social media for online consultations.

2.5. Individual Effects

Current effects of social media usage on individuals' cognition and behavior have already been subject to intense research efforts. In this section, we will address possible future developments. The emergence of social media caused both optimism about promising benefits for individuals and concerns about potential negative effects [92,93]. We formulate projections for both cases.

Social media can pose potential advantages for users with mental illnesses, given that they connect with others in online communities on social media. Benefits of the interaction include sharing and providing advice and hope, a feeling of group belonging and connectedness and also potentially seeking mental health care treatment [93]. Lerman et al. support these findings and suggest that Facebook groups provide a positive, beneficial, and safe place for adolescents with depression [94]. However, several studies find a negative impact of social media on wellbeing [95]. Therefore, both assumptions could be used as a projection. We use the positive correlation (which could be rejected by the panel): P32. Social media will increase users' general wellbeing.

Even though time spent on social media has not been directly linked to an increase in depression and anxiety among adolescents [96,97], several studies confirm negative effects for individuals. Therefore, we can assume: P33. Social media will increase depression among users.

Young adults with high social media use tend to feel more socially isolated than those with lower social media usage [98–100]. In contrast, Pittman and Reich emphasize that the perception of loneliness is actually decreasing, if image-based social media networks such as Instagram or Snapchat are visited [101]. Likewise, users' experience with image-based platforms increased happiness and satisfaction with life [101]. Therefore, we posit two contradicting projections: P34. Social media will increase real-life social contacts between users. P35. Social media will increase users' isolation and loneliness.

Salomon and Brown found that adolescents are more exposed to negative body image and body shame [102]. Moreover, the use of social media has been associated with body dissatisfaction and disordered eating behaviors [92]. Consequently, we formulate the following projection: P36. Social media will increase users' negative body images.

Individuals who enjoy feeding their ego in terms of receiving instant feedback and positive recognition on social media platforms are more likely to show addictive behaviors towards social media [103]. Barry and McDougall agree that narcissism is associated with certain social media uses [104]. Narcissism relates to high levels of self-importance, self-esteem, and the imagination of unlimited success and power [105]. However, due to lack of evidence it is uncertain if social media is one of the causes of developing narcissism [104]. However, we can state the following assumption: P37. Social media will increase users' self-centeredness and narcissism.

Different media types evoke different media consumption behaviors [106–108]. Due to the high pace and potential information overload of social media, its use might lead to decreased attention spans [109]: P38. Social media will reduce users' attention span.

2.6. Societal Effects

Social media has effects way beyond the individual and organizations and already changed parts of society. In this section, we address social media's effects in several societal spheres.

How will social media affect the economy? According to a report by Deloitte from 2016, Facebook had an economic impact of \$227 billion and indirectly created 4.5 million jobs worldwide outside its company in 2014 [110]. Most of the economic impact is generated through marketing effects which drive online and offline sales. In addition, Facebook acts as a tool for app development, so that new and innovative features and third-party products and services are created. Being a popular platform, Facebook encouraged the purchase of devices and internet connections, which results in an increase in connectivity [110]. This notion can be summarized in the following projection. P39. Social media will (directly or indirectly) significantly increase economic growth.

Apart from that, the emergence of social networks created numerous new jobs that haven't existed in the past [111]. Jobs like influencers, which are social opinion-leaders, wouldn't exist without social media [5]. As a daring hypothesis, social media could stimulate birth rates. Both ideas can be stated as follows: P40. Social media will (directly or indirectly) significantly increase the creation of jobs. P41. Social media will increase birth rates in various countries.

Bond et al. state that social media influence, through peer pressure, encourages other users to vote [87]. Their experiment points out that social media users, who viewed a photo and message of their friends voting, were more likely to vote themselves than users, who only received an informational message without a photo of their friends. Hence, interests in politics increased through social influence on social media. According to this, we can conclude that this trend will continue: P42. Social media will (directly or indirectly) significantly increase political interest.

However, according to Aral and Eckles manipulation of elections through social media is potentially a threat to democracy and therefore, it should be measured [112]. Despite this argument, Enikolopov et al. claim that social media has the ability to hold governments and corporations

accountable in terms of corruption, due to the possibility to share information independently, compared to traditional mass media [113]. Consequently, it could result in strengthening democracy [113]: P43. Social media will (directly or indirectly) significantly increase democracy.

The free flow of information on social media is not guaranteed though. National governments might try to influence news dissemination on platforms or platform operators could have an interest in specific news not being spread [114,115]. This is not necessarily limited to fake news. In that sense, we posit: P44. Censorship on social media will increase.

The relationship between social media and education is subject to extensive research. On the one hand, established educational institutions such as schools and universities can use social media as an additional educational medium to achieve educational goals in a better or at least different way [3,116,117]. On the other hand, it could be argued that social media could be seen as a new educational institution itself. Just as newspapers are not limited to inform the public about news but also can serve educational purposes, the same can be true for social media. Therefore, we formulate the following projection: P45. Social media will (directly or indirectly) significantly increase the public’s level of education.

As previously stated, social media has an effect on an individual’s mental health and well-being [92–94,102]. In an aggregated view, public health could also be affected. For example, social media could enable the public health community to study behaviors in order to understand diseases such as depression, type-II diabetes, or cardiovascular illnesses [118]. Additionally, it complements communication with the public [118]. For instance, during natural disasters or environmental concerns, social media can be utilized to warn the public, spread information by government, and assist public health workers to act quickly and efficiently [119]. Against this background, we state: P46. Social media will (directly or indirectly) significantly increase public health.

Social media could also have an increasing effect on the environment. For example, social media can show how to make environmentally friendly choices in their everyday life [120]. Social media can also foster environmental movements. For example, Twitter supported the global climate change protests in 2018 and 2019 [121]. This idea can be summarized in the following projection: P47. Social media will (directly or indirectly) significantly reduce environmental pollution.

However, digital technologies are part of the reason for a growing energy demand [11,122]. Facebook is committed to become more sustainable and claims that 86% of their facilities and data centers worldwide use renewable energy and that they reduced their greenhouse gas emissions by 59% in 2019 [123]. If this trend continues, the following projection is likely to come true: P48. Energy demand for operating social media platform servers will have a two-digit percentage of the global energy consumption.

Individualism and collectivism as fundamental societal values or ideologies could also be affected by social media, just as social media are affected by them [124]. Whether the individual or society (or at least groups) are prioritized mainly depends on the national country, which, in turn, can be influenced by mass media such as social media. Therefore, we formulate the two final opposing projections as follows: P49. Social media will (directly or indirectly) significantly increase individualism. P50. Social media will (directly or indirectly) significantly increase collectivism.

All projections are summarized in Table 1.

Table 1. Projections for the Delphi study.

Projections
Section 1. Interactive Technologies
P1. Apart from text-, image-, and video-based social media platforms, also platforms mainly based on virtual reality will emerge.
P2. Some social media platforms will use augmented reality (e.g., to display information or commercials while looking at things).
P3. Apart from the visual and auditory sense, some social media platforms will also address the somatosensory sense.
P4. Apart from the visual and auditory sense, some social media platforms will also address the olfactory sense.
P5. Apart from the visual and auditory sense, some social media platforms will also address the gustatory sense.
P6. Apart from entering text or uploading media, some platforms will also allow for a touch- and movement-based interaction.
P7. Apart from entering text or uploading media, some platforms will also allow for a thought-based interaction.
P8. Users will not recognize a difference when interacting with a real person or an AI-based bot.

Table 1. Cont.

Section 2. Platform Development
P9. Social media and the World Wide Web will merge.
P10. Social media and e-commerce will merge.
P11. Social media and educational platforms will merge.
P12. Social media will move into the automobile industry.
P13. Social media will expand in the Fintech sphere.
P14. There will be one unified social media platform.
P15. State governments will break social media platform providers to de-monopolize the market.
P16. Social media will become the main channel for hiring staff.
P17. On most of today's leading social media platforms, the number of inactive, deleted, or profiles by dead people will exceed active users.
P18. Several social media platforms will offer fee-based premium accounts with additional possibilities and services.
P19. Cybercrime will increase on social media platforms.
P20. Governments' strict regulations will massively inhibit platform development.
Section 3. News Media
P21. Social media will be the leading news distributor.
P22. Television will significantly diminish due to social media.
P23. Radio will significantly diminish due to social media.
P24. Print media will significantly diminish due to social media.
P25. Fake news on social media will still be an unsolvable problem.
P26. Advertising expenses on social media will significantly rise.
Section 4. Institutional and organizational users
P27. Schools will use social media for educational purposes.
P28. Political elections will be mainly determined by social media.
P29. Election campaigns will be banned from social media.
P30. Marketing budgets of companies will significantly increase.
P31. Medical doctors will use social media for online consultations.
Section 5. Individual effects
P32. Social media will increase users' general wellbeing.
P33. Social media will increase users' depression among users.
P34. Social media will increase real-life social contacts between users.
P35. Social media will increase users' isolation and loneliness.
P36. Social media will increase users' negative body images.
P37. Social media will increase users' self-centeredness and narcissism.
P38. Social media will reduce users' attention span.
Section 6. Societal effects
P39. Social media will (directly or indirectly) significantly increase economic growth.
P40. Social media will (directly or indirectly) significantly increase the creation of jobs.
P41. Social media will increase birth rates in various countries.
P42. Social media will (directly or indirectly) significantly increase political interest.
P43. Social media will (directly or indirectly) significantly increase democracy.
P44. Censorship on social media will increase.
P45. Social media will (directly or indirectly) significantly increase the public's level of education.
P46. Social media will (directly or indirectly) significantly increase public health.
P47. Social media will (directly or indirectly) significantly reduce environmental pollution.
P48. Energy demand for operating social media platform servers will have a two-digit percentage of the global energy consumption.
P49. Social media will (directly or indirectly) significantly increase individualism.
P50. Social media will (directly or indirectly) significantly increase collectivism.

3. Methodology

3.1. Research Design

The aim of this study is to forecast the future development of social media and for formulate a corresponding holistic future scenario. To achieve this goal, we conducted a two-stage Delphi study. Delphi studies are used to forecast social phenomena [125] which are, unlike natural phenomena, based on human intentions and actions, social interactions, and coincidences [126]. The method is well-established as it was used in 175 studies published in business and management journals between 1975 and 2017 [127]. Whereas scenario analyses aim at generating multiple future scenarios [128–131], Delphi studies try to identify the scenario with the highest probability of occurrence. The scenario consists of several, in our case 50, projections, which are presented to experts in the field on inquiry to be assessed (at least) twice, informing the panel about the results from the first round in the second round with the goal of enhancing the consensus [12,125,132–135].

3.2. Panel

For our Delphi study, we employed purposive sampling. The main criterium of selecting participants is their status as an expert in the field, because experts are considered to be able to provide a higher forecasting accuracy, i.e., the congruence between the prediction in the present and its actual occurrence in the future [136], than laypersons [135,137–142]. Delphi panels are usually small [139,143,144]. Gordon (1994) found that most Delphi studies comprise 15 to 35 participants, depending on the specificity of the research field [137]. Seven is considered as the minimum [145]. For the first round, with 63 experts, we recruited a larger panel because social media can be considered a broad rather than narrow field, and the six thematic sections comprise diverse topics that require different areas of expertise.

In order to identify appropriate experts for the study [146], we searched for researchers who published on social media, social media managers and employees, social media marketers, influencers/bloggers, and public relations (PR) managers with a focus on social media. We also included social media heavy users. We invited respondents from Australia, Europe, and the USA. The experts were not offered a monetary benefit for taking part in the study. The panel characteristics are depicted in Table 2.

Table 2. Panel characteristics.

	First Round	Second Round
Age range		
18–29	48%	48%
30–39	32%	32%
40–49	14%	16%
50–59	5%	4%
60+	2%	0%
Role		
User	22%	24%
Social Media Researcher	14%	12%
Blogger/Influencer	14%	8%
PR-Manager	6%	8%
Social Media Marketing Manager/Employee	22%	24%
Other Social Media Manager/Employee	12%	16%
Not specified	8%	8%

3.3. Data Collection

The first round of the survey took place from 29 April until 31 May 2020. 548 experts were invited via e-mail to participate in the study. Of them, 63 experts participated in the first round of the study. The second round took place from 6 June until 25 June 2020. In total, 25 participants gave their ratings, which equals a repetition rate of 39.7%. There are a variety of possible reasons for the decrease in participants: sick leaves, vacation, increased workload, or lack of motivation to conduct the survey again.

In both rounds, the participants rated each projection on a four-point Likert scale in a structured questionnaire [146], with “agree,” “somewhat agree,” “somewhat disagree,” and “disagree” as possible ratings. A fifth option (neutral/unsure) was not included to have clear outcome from the respondents [147]. At the end of each section, a commentary field allowed the respondents to comment on the projections. Additionally, the participants were also asked to disclose their age, gender, their relation to social media, and their e-mail address, so that they could be contacted for the second round where the questionnaire showcased the results for every projection from the first round by means of a pie chart. That way, the participants were able to grasp the results quickly. The survey was ended after two rounds, as the high consensus did not require further rounds.

4. Results

4.1. Descriptive Statistics

For our analysis, we ascribed the following values to the respondents’ assessments: 1–agree, 2–somewhat agree, 3–somewhat disagree, and 4–disagree. Table 3 depicts the aggregated first (I) and second (II) round results with regard to the median ($x_{0.5}$), the lower ($x_{0.25}$) and upper quartile ($x_{0.75}$), and the interquartile range ($IQR = x_{0.75} - x_{0.25}$) as the scattering measure. The last main column showcases the differences between both rounds. Table 4 summarizes the final (dis)agreements with the projections ($x_{0.5(II)}$), the changes of (dis)agreement ($x_{0.5(II)} - x_{0.5(I)}$), and the changes of the scatterings ($IQR_{II} - IQR_I$).

As a result, the experts (somewhat) agreed to the majority of projections. They somewhat disagreed with P4, P5, P7, P15, P20, P29, P32, P34, P41, P46, and P47, and disagreed only with P14. For 41 projections, no change of the median occurred. Hence, the experts did not change their opinions regarding the rating of most projections. The median of P7 and P14 increased, leading to a stronger rejection of these two projections. In contrast, the median decreased for P1, P13, P22, P30, P36, P37, and P45, indicating a shift towards acceptance for 14% of the projections. The scattering decreased for 15 projections across all thematic fields. Only the scattering of P47 increased. Therefore, in respect of the overall aim of the Delphi study, an increased or at least steady consensus was reached.

Table 3. Results of both rounds.

Projection	Second Round (N = 63)				Second Round (N = 25)				Differences			
	$x_{0.25}$	$x_{0.5}$	$x_{0.75}$	IQR	$x_{0.25}$	$x_{0.5}$	$x_{0.75}$	IQR	$x_{0.25}$	$x_{0.5}$	$x_{0.75}$	IQR
<i>Section 1:</i>												
<i>Interactive Technologies</i>												
1. Virtual reality	1	2	2	1	1	1	2	1	0	-1	0	0
2. Augmented reality	1	1	2	1	1	1	1	0	0	0	-1	-1
3. Sematosensory sense	2	2	3	1	2	2	3	1	0	0	0	0
4. Olfactory sense	2	3	3	1	3	3	4	1	1	0	1	0
5. Gustatory sense	2	3	3	1	3	3	4	1	1	0	1	0
6. Touch- and movement	1	1	2	1	1	1	2	1	0	0	0	0
7. Thought-based interact.	1	2	3	2	2	3	3	1	1	+1	0	-1
8. AI-based bots	1	2	3	2	1	2	3	2	0	0	0	0
<i>Section 2:</i>												
<i>Platform Development</i>												
9. WWW	1	2	2	1	1	2	2	1	0	0	0	0
10. E-Commerce	1	1	2	1	1	1	2	1	0	0	0	0
11. Educational platforms	1	2	2	1	1	2	2	1	0	0	0	0
12. Automotive industry	1	2	3	2	1	2	2	1	0	0	-1	-1
13. Fintechs	1	2	2	1	1	1	2	1	0	-1	0	0
14. Unified platform	3	3	4	1	3	4	4	1	0	+1	0	0
15. De-monopolization	2	3	3	1	2	3	3	1	0	0	0	0
16. HR Recruitment	1	2	2	1	2	2	2	0	1	0	0	-1
17. Inactive Profiles	2	2	3	1	2	2	3	1	0	0	0	0
18. Freemium	1	2	2	1	1	2	2	1	0	0	0	0
19. Cybercrime	1	1	2	1	1	1	1	0	0	0	-1	-1
20. Regulations	2	3	3	1	3	3	3	0	1	0	0	-1
<i>Section 3:</i>												
<i>News Media</i>												
21. News distribution	1	1	2	1	1	1	2	1	0	0	0	0
22. TV	1	2	3	2	1	1	2	1	0	-1	-1	-1
23. Radio	1	2	3	2	1	2	3	2	0	0	0	0
24. Print media	1	1	2	1	1	1	2	1	0	0	0	0
25. Fake news	1	1	2	1	1	1	2	1	0	0	0	0
26. Advertising expenses	1	1	2	1	1	1	1	0	0	0	-1	-1
<i>Section 4:</i>												
<i>Institutions/organizations</i>												
27. Schools	1	2	2	1	1	2	2	1	0	0	0	0
28. Political elections	1	2	3	2	1	2	3	2	0	0	0	0
29. No election campaigns	2	3	3	1	3	3	4	1	1	0	1	0
30. Marketing budgets	1	2	2	1	1	1	2	1	0	-1	0	0
31. Medical doctors	1	2	3	2	2	2	3	1	1	0	0	-1

Table 3. Cont.

Projection	Second Round (N = 63)				Second Round (N = 25)				Differences			
<i>Section 5:</i>												
<i>Individual effects</i>	$x_{0.25}$	$x_{0.5}$	$x_{0.75}$	IQR	$x_{0.25}$	$x_{0.5}$	$x_{0.75}$	IQR	$x_{0.25}$	$x_{0.5}$	$x_{0.75}$	IQR
32. Well-being	2	3	3	1	3	3	3	0	1	0	0	-1
33. Depression	1	2	2	1	2	2	2	0	1	0	0	-1
34. Real-life contacts	2	3	3	1	3	3	3	0	1	0	0	-1
35. Isolation/loneliness	2	2	3	1	2	2	3	1	0	0	0	0
36. Negative body image	1	2	2	1	1	1	2	1	0	-1	0	0
37. Narcissism	1	2	2	1	1	1	2	1	0	-1	0	0
38. Reduced attention	1	1	2	1	1	1	2	1	0	0	0	0
<i>Section 6:</i>												
<i>Societal effects</i>	$x_{0.25}$	$x_{0.5}$	$x_{0.75}$	IQR	$x_{0.25}$	$x_{0.5}$	$x_{0.75}$	IQR	$x_{0.25}$	$x_{0.5}$	$x_{0.75}$	IQR
39. Economic growth	2	2	2	0	2	2	2	0	0	0	0	0
40. Job creation	1	2	2	1	1	2	2	1	0	0	0	0
41. Birth rates	3	3	4	1	3	3	4	1	0	0	0	0
42. Political interest	2	2	3	1	2	2	2	0	0	0	-1	-1
43. Democracy	2	2	3	1	2	2	3	1	0	0	0	0
44. Censorship	2	2	3	1	2	2	2	0	0	0	-1	-1
45. General education	2	3	3	1	2	2	3	1	0	-1	0	0
46. Public health	2	3	3	1	3	3	3	0	1	0	0	-1
47. Pollution	2	3	3	1	2	3	4	2	0	0	1	+1
48. Energy demand	2	2	3	1	2	2	3	1	0	0	0	0
49. Individualism	2	2	3	1	2	2	3	1	0	0	0	0
50. Collectivism	2	2	3	1	2	2	3	1	0	0	0	0

Table 4. Overview of projection assessments and changes.

Assessment/Change	Projection(s)
Agree	1, 2, 6, 10, 13, 19, 21, 22, 24, 25, 26, 30, 36, 37, 38
Somewhat agree	3, 8, 9, 11, 12, 16, 17, 18, 23, 27, 28, 31, 33, 35, 39, 40, 42, 43, 44, 45, 48, 49, 50
Somewhat disagree	4, 5, 7, 15, 20, 29, 32, 34, 41, 46, 47
disagree	14
Agreement increased	1, 13, 22, 30, 36, 37, 45
Disagreement increased	7, 14
IQR decreased	2, 7, 12, 16, 19, 20, 22, 26, 31, 32, 33, 34, 42, 44, 46
IQR increased	47

4.2. Scenario

Based on the results, we can formulate the following scenario. According to the experts, the ways users interact with social media platforms will rise above current technologies within the next five to ten years, and include virtual and augmented reality, address users’ somatosensory sense and allow touch- and movement-based interaction. Users will not recognize a difference between a real person and an AI-based entity on social media platforms.

Social media platforms will change over the next five to ten years in several ways. The boundaries between social media platforms and the World Wide Web, e-commerce, edutech, and fintechs will diminish. Social media will move into the automobile industry and become the primary channel for HR recruitment. The number of inactive user profiles will exceed active ones. Several social media platforms will change to a freemium business model offer fee-based premium accounts with additional possibilities and services. Cybercrime will become more relevant.

Social media’s impact on news media will increase. It will become the leading news distributor, whereas the relevance of TV, radio, and print media will diminish. However, fake news will continue to be a problematic issue. Advertising expenses on social media will rise strongly.

Institutional and organizational users will increase their engagement in social media. For example, schools will use them for educational purposes. The results of political elections will be mainly dependent on social media communication. Firms will increase their marketing budgets. Medical doctors will offer online consultations via social media channels.

Social media will have significant negative effects on individuals such as depression, feelings of isolation and loneliness, negative body images, self-centeredness, and narcissism. Also, users' attention spans will decrease.

Furthermore, societal effects will be significant. The economy will increasingly grow, and more jobs will be created due to social media. The public's interest in politics will increase, and therefore democracy will progress. However, we will also see rising censorship on social media platforms. Society will also benefit from a higher level of citizen's education. However, energy consumption of social media operators will represent a high share of global energy demand. Social media might increase both individualism and collectivism.

In contrast, the experts do not expect several developments to happen that were addressed in further projections. Regarding the interactive technology, they do not see that social media will address the olfactory or gustatory sense. Also thought-based interaction is not expected, at least not in the given timeframe. The change of social media platforms will not include their unification to one large network. National governments will neither de-monopolize large social media operators nor encumber them with regulations which might inhibit their further development. It is also not expected that political campaigns will be banned from social media. The experts do not see positive effects on individuals caused by social media, such as an increased general wellbeing or more real-life social contacts. Several societal effects induced by social media can also be negated. For example, social media will have no effects on birth rates, will not increase public health, and not reduce pollution.

5. Discussion

5.1. Striking Results and Implications of the Findings

The experts (somewhat) agreed with 38 of the 50 projections, which can be considered as a high acceptance rate. However, a full acceptance was not strived for as several projections were formulated in a rather provocative way or contradicted each other. They help to verify that not all projections get blind acceptance but are carefully considered and evaluated. The scattering of almost all projections is a satisfying IQR of 1 or even 0. The IQR was reduced for 15 projections from the first to the second round. Considering that many projections already had an IQR of 0, the group consensus was already high in the first round and further increased in the second round. Only for a few projections, the IQR still was 2, indicating a lower consensus than for most projections and therefore some uncertainty among the panel members.

For example, in Section 1 (interactive technology), it is no surprise that the statements about the olfactory (Projection 4) and gustatory sense (Projection 5) were rejected. Lots of fantasy is needed to imagine devices that can produce many different smells and tastes, and it is doubtful if many customers are interested in such experiences, also because these senses play a subordinate role in our everyday lives, compared to seeing and hearing. However, these ideas are not completely absurd, as shown by only a partial (median 3) rather than complete disagreement. It can be assumed that five to ten years are just not seen as enough time to digitize these sensory experiences. The same is true for thought-based interaction. The feasibility of myoelectric or mind-controlled prostheses has already been proven, and it is conceivable that such technologies might diversify into other fields. Therefore, it is understandable that as many as 44% of the experts (somewhat) agreed to the projection. However, also here, the question is not only what technology can offer but also what consumers accept. A majority might have strong reservations about the risk that the software could also read thoughts that are not to be disclosed. One respondent commented that the negation of his projection "is likely due to emotional and cultural barriers as it may be perceived as an invasion of privacy". This could explain why the experts changed their opinion towards rejection of this projection from the first to the second round. A comparably high scattering (IQR = 2) appeared for Projection 8, indicating that the experts show less consensus than for the other projections regarding the statement that users will not recognize the difference between bots and human beings when interacting on social media platforms.

The advancement of interactive technologies suggests that users get even more immersed in social media in the future. This increased immersion does not only regard the time commitment but also the physical and mental proximity. At some point, the distance between reality and social media might become so small that the risk of excessive social media use and addiction as well as a loss of reality could arise. Public health experts and policy makers might have to address the dilemma between short-term individual wants and long-term human and societal needs and find adequate solutions [148]. In Section 2, Projection 14 about the unification is the only projection which received full rejection. Considering the different focuses current social media have and the competitive situation between platform operators, it is very unlikely that only one platform will exist to the end of the next decade. From the first to the second round, the rejection of this projection increased. One participant gave a clear reason for the rejection of that thesis in a comment: “in a free market, there will never be a unified platform”. Also, the opposite, the de-monopolization (Projection 15) of market-dominating platform operators or their strict regulation (Projection 20), is not seen as likely. Considering the tax avoidance strategies of platform operators, the problem of fake news, and possible electoral manipulations, these rejections were not obvious. Governments might come up with interventions when platform operators become too powerful. The scattering for all projections is low, indicating a high consensus level.

The further platform development indicates the melting of the boundaries between social media, other Internet sectors, and sectors of the “real” economy. As a consequence, the influence of social media becomes more omnipresent, and several industries might get disrupted by social media providers. Today’s national competition and antitrust laws might not cover these cross-industry cartel and market power problems and might need adjustment.

In Section 3, no projection was rejected. However, for Projection 23, the IQR was 2, showing that the experts are somewhat divided about their assessment whether radio consumption will drop due to social media. Almost a third (28%) of the experts rejects this projection. The two media channels are probably too different to interfere with each other. Especially, radio is rather used passively and could also be listened to while on social media.

Similar to the previous section, the findings regarding news media show the potential risk of oligopolistic or even monopolistic tendencies. The diversity of public opinions, as a pillar of democracies, strongly depends on media ownership and media systems [149]. Concentration of media ownership reduces diversity [150]. Therefore, a development towards stronger concentration in news distribution has to be considered with caution. Whereas the possibility of various social media user segments to express their opinions could increase the diversity of opinions, fake news and censorship might require new media policies and even lead to an increased relevance of the role of public or even state media.

In Section 4, only Projection 29 was rejected. Experts do not expect election campaigns to be banned from social media platforms. Considering that political campaigns are common on all news media channels, this forecast is plausible and not surprising. The only projection with an IQR of 2 and, therefore, a higher scattering than usual, is Projection 28. The experts are disunited when it comes to the determination of political elections by social media. Whereas the majority of experts agree with this projection, almost a third (28%) of them disagrees with that projection. A reason for this could be the specific formulation of the projection, which stated that political elections will *mainly* be determined by social media. Probably the experts agreed on the influence of social media on political elections, however, only some saw social media as the main influencer for them.

The results from the section on institutions and organizations also suggest a shift of the public space towards social media as a major channel for social interaction. This development might occur at the expense of other channels and involves the potential risk of a changing behavior of broad sections of the population.

In Section 5, the experts rather see negative effects of social media on individuals and, consequently, rejected the contradicting Projections 32 and 34, which expect an increased well-being and more real-life

contacts. These assessments are plausible, but not obvious. The experts might have focused on social media impelling individuals to passivity and reducing physical activities. Opposed to this, specialized social media platforms could build fitness communities or increase the awareness for health [118,119]. However, it is not expected that the large platforms will head in that direction or the time horizon of five to ten years is seen as too short to accomplish this. Similarly, specialized social media platforms could foster real-life contacts. For example, mobile dating apps such as Tinder do this. However, again, the large platforms are not expected to evolve that way. No projection shows an IQR higher than 1, which indicates a high consensus among the experts.

The negative consequences of intensified social media use that have already been addressed above in regard to the advancement of interactive technologies are confirmed and specified in this section on the individual effects. As social media becomes even more ubiquitous, individual disorders become societal ones, which might call for public health initiatives. However, clear policies are difficult to identify as individual happiness and public health do not necessarily go hand in hand [151].

In Section 6, the societal effects of social media, experts did not see a positive effect on birth rates. It is no surprise that this daring hypothesis was neglected. Projection 46 resembles Projection 32 on an aggregated level. Therefore, it could be expected that also this projection was negated. Projection 48, which hypothesizes a positive effect of social media on sustainability, was also neglected. A good reason for this is given in the next Projection 49, which deals with the rising energy consumption by social media platform operators [122] and was agreed to by 56% of the experts. Consequently, this will not have a positive effect on pollution reduction. Additionally, consumers are not expected to change their environmental behavior. However, the experts are somewhat divided regarding this projection, as shown by an IQR of 2, which increased after the first round. Several experts might expect that social media platform operators could act as advocates for sustainable development promoting content that fosters environmental-friendly behavior. Facebook is already committed to become more sustainable in the future [123].

Besides the negative public health issues addressed above, this section suggests several positive effects on the societal level which will certainly be welcome by most individuals and groups. However, the risk of censorship requires public attention. Additionally, increasing energy consumption of social media platform operators calls for sustainable technological advancements. To compensate these and the other potential negative effects, social media platform operators might intensify their engagement in corporate social responsibility measures [152–156] and act as good corporate citizens [157,158].

5.2. Limitations and Future Research

As with every research, the results of this study are subject to several limitations. First, it has to be stressed again that man-made futures cannot be predicted with certainty [159]. Based on expert assessments, Delphi studies try to identify the most probable development, but cannot guarantee it. As social media is a fast-paced medium, developments can change rapidly, suggesting that forecasting of foresight studies on social media should be repeated regularly with current matters. Future research might also consider employing other forecasting methods, such as prediction markets [160,161].

Second, several critical issues regarding the methodology of Delphi studies have been addressed in literature. For example, exposing the first round results to the respondents interferes with independent judgments [162,163]. However, this procedure aims at increasing the group consensus and might therefore be acceptable. In general, decision-making in groups is not independent, when experts are present simultaneously. Also, the desirability bias [142,164] has to be kept in mind when interpreting the results of a Delphi study. It addresses the risk that the experts do not rate the projections regarding the likelihood of their occurrence but to the extent they would prefer this outcome. As many experts in the panel earn their income from social media, their further flourishing would be pleasant. Future research might include more experts which are independent from social media-related income. Another critique of Delphi studies is that the iterative study design does only lead to a pseudo-consensus that is not based on a better consideration of the statements but

in fact be induced by group pressure [134,142,165,166]. The media shifts and IQR increases which occurred in this study, however, show that the experts were not too much impressed by the previous group ratings. Another general issue of Delphi studies is that they generate a future scenario as an outcome in the future but do not theorize about the antecedents and path that leads to that scenario. Future research might employ theories of future social change [167] to explain the emergence of the identified scenario.

Third, the broad scope of this study did not allow examining each thematic section thoroughly. However, 50 projections were already a quite high number and could only be further increased at the expense of lower response and repetition rates. However, future research could decrease the scope and focus on only one of the sections we addressed and dig deeper with more detailed projections.

Fourth, the number of participants in the second round was rather small. It is unclear if the median shifts would have occurred with a higher repetition rate. Also, some IQR reductions might not have taken place. Unfortunately, repetition rates can hardly be increased. Future research might consider presenting a smaller number of projections as the high number of 50 projections might have demotivated several respondents to do their second, too time-consuming assessment [146].

Fifth, the majority of participants came from western countries. Thus, opinions from other regions might be underrepresented. Future research might consider focusing on other regions to find out about different expectations. Sixth, this study was conducted during the economic crisis caused by COVID-19, which caused a high level of uncertainty among economic agents [168]. In that sense, the same study conducted earlier or later could have led to other results. However, as seen in the discussion, all rejections of projections are plausible and do not seem to correlate to the pandemic.

6. Conclusions and Implications

The purpose of this study was to identify the most probable future development of social media over the next five to ten years by conducting a two-stage Delphi study. Social media experts expect enhanced ways to interact with platforms including virtual and augmented reality, somatosensory sense, and touch- and movement-based navigation. AI-based entities cannot be distinguished from other social media users. Social media platforms will diversify into other spheres such as the World Wide Web, e-commerce, edu-tech, fintechs, the automobile industry, and HR recruitment. An upcoming problem will be that inactive user profiles will outnumber active ones. Paid memberships will reduce displayed advertisements and offer additional functionalities.

Cybercrime will become a predominant issue. Social media will become the most relevant distributor of news and cause a decline of TV, radio, and print media consumption. Fake news will remain an unsolvable problem. Firms will spend higher budgets on social media advertising. The other market-side of consumers, institutions, and organizations such as schools, politicians, and the medical sector, will become even more active on social media.

Social media is expected to increase individuals' depression, feelings of isolation and loneliness, negative body images, self-centeredness, and narcissism. Social media will also further reduce users' attention spans. However, on a societal level, social media will further lead to economic growth and new jobs, increase political interest and democratic progress as well as education of the population. In contrast, censorship in social media and energy consumption of platform operators might rise.

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