Research article

Examining the growth in willingness to pay for digital wellbeing services on social media: A comparative analysis

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ABSTRACT

In recent years, there has been a growing need for social media platforms to offer services that preserve and promote users' digital wellbeing, including better protection of personal data and balanced technology usage. However, the current business model of social media is often seen as in conflict with users' digital wellbeing. In 2020, a study investigated users' willingness to pay monetary fees for social media digital wellbeing services. In the present work, we replicated this study in Q4 of 2022, aiming to explore any changes in interest and willingness to pay for these services. In addition, we extended the replication by conducting qualitative analysis on participants' comments to gain deeper insight and identify reasons for payment and reasons for rejecting to pay. Data were collected from 262 participants through an online questionnaire. The survey focused on four services: better data protection, less use of data for marketing, aiding users in controlling their prolonged usage, and reducing fake news and radicalisation on social media. The results showed that the willingness to pay for these services was significantly higher in 2022 compared to the results published in 2020. Participants expressed concerns about the feasibility and fairness of the alternative business model, which requires users to pay for safety and support. Our findings suggest a growing interest in digital wellbeing services, emphasizing the need for social media platforms to assess the feasibility of alternative business models, identify user segments, and take measures to enhance consumers' trust, accordingly.

1. Introduction

Carr and Hayes [1] defined social media as "Internet-based, disentrained, and persistent channels of masspersonal communication facilitating perceptions of interactions among users, deriving value primarily from user-generated content" (P. 49). This definition suggests that social media refers to online tools, which can include non-web-based platforms. To be considered social, there must be an interactive element, even if it is not with other users [2], and the value of social media comes from user-generated contributions or interactions [1]. Social media platforms like Facebook, YouTube, and Twitter are examples of masspersonal communication, where masspersonal communication is a concept at the intersections of mass and interpersonal communication [3] (For a review of social

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media definition, see Ref. [4]).

Social media includes, but is not limited to, social networking sites like Facebook and Instagram, virtual game worlds, weblogs and messenger services. Worldwide, the number of social media users is estimated to be close to five billion [5]. The widespread use of social networking sites and messaging platforms has led to a significant shift in how people communicate, interact and share information [6]. These platforms serve a multitude of purposes ranging from connecting with loved ones to accessing news and entertainment [7]. However, concerns about users' digital wellbeing when using these platforms have been raised, particularly in relation to disclosure of personal information to third parties, data loss and data breaches [8–10], and control over social media usage [11,12]. In this context, Abeele [13] has defined digital wellbeing as "a subjective individual experience of optimal balance between the benefits and drawbacks obtained from mobile connectivity. This experiential state is comprised of affective and cognitive appraisals of the integration of digital connectivity into ordinary life" (p. 938). Beyond limiting individual effects of technology abuses, digital wellbeing is increasingly recognized as vital when considering the pervasive impact of technology on both individuals and their peers across diverse everyday-life situations [14,15]. It is about encouraging healthier use of the internet and safe online participation by promoting etiquette, literacy, and security through education and support [16,17].

Recent research suggests that the current design of social networking sites and messenger services is limited in promoting the overall digital wellbeing of users. Social media usage has been linked to negative effects on overall wellbeing [18], including decreased levels of happiness and efficiency [19], as well as lower appearance self-esteem [20]. Additionally, it has been associated with increased rates of depression [21] and loneliness [22]. On multiple occasions, personal data has been unlawfully and unethically released without individuals' consent. The infamous Cambridge Analytica scandal, which started during the 2016 US presidential election, is a prime example [23]. As a result, people have become anxious about the possibility of their data being collected and analysed in ways that can manipulate and influence their decision [24,25]. For the feasibility of such an approach, see Zarouali et al. [26]. In a review study by Fang et al. [27], it was found that excessive screen time could potentially increase the risk of childhood overweight and obesity. Additionally, a review conducted by Lua et al. [28] showed that screen time immediately prior to bedtime can have a negative effect on the sleep quality of adolescents. This all said, overall associations between time spent on social media and wellbeing are small and negative [29], and understanding the wellbeing of users in light of their social media use must consider many variables [30], including who uses social media, how social media is used, and why social media is used [31].

In addition to addressing concerns about data misuse and negative impacts on mental health associated with increased social media use, reducing harmful content such as radicalisation and fake news on social media platforms has become an essential component in creating a healthier online environment [32,33]. Social media platforms have been identified as the primary source of fake news, accounting for 88 % of instances, while TV, the press, and websites are less involved [34]. Various types of fake news have gained prominence in recent times, including misleading political stories, misinformation, and disinformation about COVID-19 [35]. The harmful effects of fake news sharing on the public opinion, institutional trust, and democracy have become more prevalent during and after COVID-19 [36–38]. The urgency to act against an "infodemic" is escalating. In the words of the UN Secretary-general, "as COVID-19 spreads, a tsunami of misinformation, hate, scapegoating and scare-mongering has been unleashed" [39]. The persistent negative impact of the infodemic poses a significant threat to global efforts to manage the pandemic, undermining these efforts and jeopardizing measures to control its spread.

The fourth critical concern revolves around online privacy, a growing worry for social media users [40]. The collection and utilization of users' data by social media companies has become a significant concern in recent years, with the lack of privacy being a key criticism of the tech industry's business model, often termed as surveillance capitalism [41]. Collecting more user data leads to more effective targeted advertising and increased revenue for social media platforms. To collect more data, social media platforms are intentionally designed to prolong engagement time [42,43]. This extended engagement aims to collect as much personal information as possible to predict users' preferences, potentially amplifying uncontrolled, and perhaps addictive usage [44]. Furthermore, the engagement-driven model of social media promotes sensational and controversial content, resulting in the spread of fake news for higher advertising revenue. The profitability of fake news producers is increased on social media due to the ease of entry, short-term strategies, and difficulty in verifying information [45]. These issues along with the spread of misinformation can be linked to the current data business model [46] which fails to protect users' data, leading to concerns among users and experts in the field. Lately, the concerns about privacy have seen an increase, which in turn negatively affected the intention to use social media apps such as Facebook [47]. Similarly, there are concerns about the amount of social media usage [28,48] and the spread of fake news and its negative impact on society on social media [36,49].

Considering the negative side effects of the current business model of social media, an alternative model that involves charging monetary fees for social networking sites and messaging services has emerged. However, research indicates a generally low willingness to pay for social media use, with disparities between the amount users are willing to pay to use social media and the amount required to incentivize them to discontinue usage [50,51]. The payment for social media digital wellbeing services may serve as an indication of users' interest in these services and can serve as a proxy measure to estimate the likelihood of people using these services.

A prior study by Sindermann et al. [52] showed that among 210 participants, only 21.43 % were generally willing to pay for social media in exchange for enhanced digital wellbeing services, including enhanced data protection, reducing problems of fake news and radicalisation, and prolonged usage. Given the significant changes in social media platforms between 2020 and 2022 and the increased number of users [53], we recognized the importance of replicating the study conducted by Sindermann et al. in Q1 2020 with our study conducted in Q4 2022, accumulating to almost three years. Given the recent events such as COVID-19 and the heightened awareness about digital wellbeing and the use of technology for mental health [54,55], we aim to re-analyse the data from the Sindermann et al. study and investigate whether the willingness to pay for social media to offer better digital wellbeing services and address issues such as data protection and fake news reduction has changed, accordingly. Additionally, we extend the replication by conducting a

qualitative analysis on participants' comments to gain deeper insights and identify reasons for payment and reasons for rejecting to pay. Moreover, while previous relevant studies included participants from China [51] and Germany [52], our study included individuals from additional European countries such as Finland, Norway, and Switzerland. This expansion enhances the diversity of perspectives and facilitates a more comprehensive understanding of users' willingness to pay for these services. The survey involved 262 participants and focused on the aforementioned four key services related to digital wellbeing. Our study draws on broader concepts related to social media user behaviour, digital wellbeing and consumer preferences. This research will aid in understanding social media users' attitudes and concerns from their perspective, offering a more extensive view of the factors influencing their decisions. The results of this study may facilitate shedding light on the services that users need, thereby prioritizing the inclusion of these features or services in the technical design. By recognizing the heightened awareness and willingness to pay for digital wellbeing services, social media platforms could explore new revenue streams while addressing user concerns and promoting a healthier online environment.

2. Methodology

2.1. Dataset

In this study, a comparison was made to examine if there are differences in the willingness to pay for digital wellbeing services offered by social media using two datasets collected via online questionnaires from independent samples in 2020 and 2022, respectively. The first dataset was procured from Ref. [52] and consisted of 210 German participants ($n = 117$ males; $n = 91$ females; $n = 2$ non-binary) with a mean age of approximately 36 years (min $= 18$ years; max $= 73$ years). The data for the first dataset was acquired from the Open Science Framework at the following link: https://osf.io/wehmj/ and re-analysed for the present work. Nearly half of the participants ($n = 108$) had a university degree. The remaining participants stated a university of applied sciences degree ($n = 22$), or some kind of school degree ($n = 80$) as their highest educational degree. The two participants stating "non-binary" as their gender identity were not included in the analysis in the present work due to the low number of individuals in this group. Therefore, the analysis was conducted with n = 208 participants.

The second dataset was collected by the authors of this paper from European participants using the Prolific platform (https://www.prolific.co/), a recruiting platform for research. The study received exempt review status from the Institutional Review Board (IRB) of Qatar Biomedical Research Institute (QBRI) at Hamad Bin Khalifa University (ID: QBRI-IRB-2023-2). The participants received an informative invitation to take part in the anonymous survey and provided consent. They were free to withdraw from the survey at any time, and attention checks were included to ensure data quality. Participants received payment of 2 Euro for their participation. The European cohort ($n = 262$, aged 18–66 years, 57.6 % male) included individuals predominately from Germany ($n = 122$ participants) and then from Denmark, Finland, the Netherlands, Norway, Sweden, and Switzerland. These neighbouring European countries were selected to participate in the study based on their similarity with Germans as determined by the World Values Survey (WVS), a large-scale cross-national study that explores cultural, social, and political attitudes and values worldwide [56]. WVS created a cultural map that groups similar countries based on two dimensions: secular-rational values and self-expression values that were selected out of ten indicators using factor analysis. It is noteworthy that our study focuses on willingness to pay for four specific items on social media: data protection, less use of data for marketing, aiding users in controlling their prolonged usage and reducing fake news and radicalisation. These services are more relevant to economic status, regulation of online interaction and content, and digital literacy, and are less culturally sensitive. The majority of the countries selected for this study adhere to General Data Protection and Regulation (GDPR), which is a European regulation on data protection and privacy in the European Union, the European Economic Area, and the United Kingdom, indicating a shared approach to data protection among these countries. Moreover, the absence of specific laws or

Table 1
Questionnaire assessing the willingness to pay for social networking sites and the amount of payment for social networking sites and messenger services.

Questions	Acronym	Rating
I am willing to pay a monthly usage fee (money) for social network services, such as Facebook, if thereby:		
they ensure that my data accrued there are not used for marketing purposes.	Data not used for marketing	Five-point Likert-Scale: "very unlikely" = 1, "unlikely" = 2, "not sure" = 3, "likely" = 4, "very likely" = 5
they ensure that my data accrued there are better protected.	Data protection	
they are designed in a way that does not aim to prolong the time I spend on them.	Usage not prolonged	
they confirm to me they will work more to decrease the issues of fake news.	Fake news and radicalism reduction	
they confirm to me they will work more to decrease the issues of radicalism.		
How much money, in your local currency would you be willing to pay per month for a single social media service		
such as Facebook to provide the above-mentioned features?	Amount of monthly social media fee	Number
such as WhatsApp to provide the above-mentioned features?	Amount of monthly messenger fee	

policies regarding social media's impact on prolonging online time or reducing mental health issues suggests a universal approach to these aspects. Income-wise, the countries have relatively comparable income levels according to data from the World Bank [57].

Approximately half of the participants ($n = 127$) had a university degree, some participants were pursuing a B.Sc. degree ($n = 68$), and the remaining participants ($n = 67$) had a school degree. In sum, in terms of education, the majority of participants in both datasets have completed a university degree.

2.2. Measures

2.2.1. Demographic measures
In both datasets, information on age, gender, and educational level was collected. Additionally, in the second study, participants were also asked to provide their nationality and country of residence.

2.2.2. Willingness to pay for social media services
The willingness to pay a monetary fee to social media companies for digital wellbeing services was assessed with four items in the first dataset and five items in the second dataset. All items were rated on a five-point Likert scale ranging from 1 ("very unlikely") to 5 ("very likely") and are presented in Table 1. The items ask whether participants are willing to pay for social media if thereby they: 1. ensure that the data accrued there are not used for marketing purposes (we label it as 'Data not used for marketing'), 2. ensure that the data accrued there are better protected ('Data protection'), 3. are designed in a way that does not aim to prolong the time spent on them ('Usage not prolonged'), 4. confirm to reduce problems of fake news ('Fake news reduction'), and 5. confirm to reduce the issues of radicalism ('Radicalism reduction'). The first dataset, which was collected in 2020, included both fake news and radicalism in item 4, whereas the second dataset, collected in Q4 2022, separated them into two items (item 4 and item 5). Item 4 and item 5 had a strong positive correlation ($r_s = 0.859$, $p < 0.001$). To make the comparison between the two datasets, the scores of items 4 and item 5 from the second dataset were combined by taking their average, and the resulting value was rounded. The Cronbach's alpha for the four willingness to pay for social media items was $\alpha = 0.89$ for the first dataset and $\alpha = 0.79$ for the second dataset, indicating very good internal reliability [58]. The participants were also asked two additional questions about how much they are willing to pay monthly in their country's currency for social networking sites and messenger services to increase digital wellbeing services.

2.3. Procedure

The study by Sindermann et al. [52] was conducted in Q1 2020 while this study was conducted in Q4 2022. This time gap witnessed significant changes in social media platforms. Several platforms and initiatives have introduced features aimed at promoting user wellbeing and many studies have been conducted on digital wellbeing [11,59]. Additionally, global events such as the Covid-19 pandemic have heightened awareness of mental health and digital wellbeing [54,55]. These factors suggest potential changes in user behaviour and attitudes towards social network sites and messenger services [60]. Based on these observations, we postulate that the monetary fee that users are willing to pay for social media wellbeing services could serve as an indicator of their interest in features that promote wellbeing in social media platforms, and we aim to answer the following research question (RQ):

RQ: Has users' willingness to pay for social media digital wellbeing services changed since the original study conducted in 2020?"

2.4. Data analysis

To address the research question and investigate differences in the willingness to pay for digital wellbeing services, we compared the responses to the four survey items measuring willingness to pay and the two questions about the amount of monthly social networking and messenger fee that one is willing to pay between the first and second datasets. In preparing the data for analysis, around 139 participants were removed from the second dataset due to participants failing multiple attention checks, providing contradictory responses, or leaving the survey incomplete. The original sample size was 401 participants, which was reduced to 262 participants after this screening process. The analysis was performed using IBM SPSS Statistics 29 software, and both datasets underwent a similar analysis process. In the second dataset, the questions about the amount that one is willing to pay used different European currencies based on the individual's country of residence. To make the currencies uniform, they were converted to Euro. In the first dataset, all participants were from Germany and used Euro, so no currency conversion was necessary. It is to be noted that although the two samples are different, consisting of individuals who took the survey in 2020 and those who took it in 2022, the sample size is sufficient to draw meaningful and credible conclusions, according to Schönbrodt & Perugini [61].

For both datasets, the four survey items measuring willingness to pay and the aggregate score of these items exhibited skewness and kurtosis values within the range of $+2$ to -2, suggesting approximately normal distribution and permitting the use of parametric tests [62]. However, the two questions about the amount of monthly social networking and messenger fees that one is willing to pay showed skewness and kurtosis values outside the range of ± 2, indicating a violation of normality assumptions. Therefore, non-parametric tests were used to analyse these two items. A point-biserial correlation was applied to analyse the association between gender and the total score of the willingness to pay. Furthermore, Spearman's correlations were employed to analyse the association between the total willingness to pay, the four survey items measuring willingness to pay, and the two questions about the amount of monthly social media fee one is willing to pay. Notably, the differences between Pearson's and Spearman's correlations were not significant. To examine gender-related variations in individual item scores in both datasets, an independent *t*-test was utilized (Mann-Whitney *U* test was used when the normality assumption was violated). To investigate differences in willingness to pay between the two datasets, we

employed MANCOVA with 5000 bootstrapping resamples and a significance level of $p < 0.05$. Three separate MANCOVA models were conducted. The first model compared the willingness to pay for social media between the two groups of the second dataset: German 22 and European 22. The second model compared Germans 20 (the first dataset) with Germans 22 from the second dataset, and the third model compared the overall differences between the two datasets. In each model, education level and age were included as covariates to account for potential differences between the datasets. Additionally, for mean comparisons, we calculated the estimated marginal means, adjusting for all covariates in the model, and conducted pairwise comparisons between means with the Bonferroni correction applied.

Finally, the questions about the monetary fee that one is willing to pay were categorized according to participants' responses of either paying or not paying. A response of paying any sum greater than zero was coded as "1," indicating a willingness to pay, whereas a response of paying zero was coded as "0," indicating an unwillingness to pay. Then, Chi^2 tests were employed to analyse the differences between the two datasets regarding participants' willingness to pay and unwillingness to pay. To gain further insights into the reasons for payment and the reasons for rejecting to pay, the participants in the second dataset were asked to write their comments on the suggested digital wellbeing features. The instruction was: "Please write your comments on the above-mentioned features, the need for them, and the possibility of paying for them. You can write as much details as you can". The responses were categorized based on two criteria: 1) the amount of monthly payment and 2) the total score of the willingness to pay. Responses from participants who were paying any amount greater than zero and had a total score between 3.51 and 5.00 were categorized as "reasons to pay," while responses from participants who were paying zero and had a total score between 1.00 and 2.50 were categorized as "reasons for rejecting to pay." The reasons provided by participants in each category were summarized using keywords to identify frequently occurring responses and classify them accordingly. The analysis was conducted using QDA Miner Lite software (QDA Miner Lite, 2023), and 10 themes were identified for each group - reasons to pay and reasons for rejecting to pay - based on relevant keywords.

3. Results

3.1. Descriptive statistics and analysis

The descriptive statistics of demographic characteristics for both datasets are presented in Table 2. Participants of both datasets were classified into three groups based on their total score of willingness to pay: those who were unwilling to pay (scores 1.00–2.50), were neutral (scores 2.51–3.50), and were willing to pay (scores 3.51–5.00) as shown in Fig. 1. Another approach is to interpret scores of 2.5 points or below as indicative of a minimal willingness to pay, while scores of 3.5 points or above indicate a higher willingness to pay. Scores falling between these thresholds reflect a neutral stance. A comparison of both approaches is available in the supplementary material. Point-biserial correlations between gender and the total score of willingness to pay for social media were found to be insignificant with $r_{pb} = 0.066$, $n = 208$, $p = 0.344$ and $r_{pb} = 0.034$, $n = 262$, $p = 0.582$ for the first and second dataset, respectively. Furthermore, Table 3 presents the results of Spearman's correlation analysis, indicating significant positive correlations between all the variables in both datasets, except for age.

Table 4 and Table 5 present descriptive statistics and independent *t*-test results on gender differences in scores of willingness to pay for social media for digital wellbeing services. In the first dataset, the first two variables, data not used for marketing and data protection, showed similar means for males and females. The third variable, usage not prolonged, had the same mean for both genders. The fourth variable, fake news and radicalism reduction and the fifth variable, total of willingness to pay for digital wellbeing services, were not significantly different between males and females. The sixth and seventh variables, amount of monthly fees for social networking site and amount of monthly fees for messenger that participants were willing to pay, also showed similar means for males and females, with no significant gender differences reported based on the Mann-Whitney *U* test results. In summary, insignificant gender differences indicate no differences in the first dataset. The results in the second dataset also indicate no significant gender differences in any of the variables.

Table 2
Descriptive statistics for the first and the second datasets.

| Variable	First dataset 2020			Second dataset 2022					
				Germans 2022			Europeans 2022		
Gender	Male	Female	Total	Male	Female	Total	Male	Female	Total
N	117	91	208	62	60	122	89	51	140
%	56.25 %	43.75 %	100.0 %	50.82 %	49.18 %	100.00 %	63.57 %	36.43 %	100.00 %
Age	range 18–73, M (SD)			range 18–66, M (SD)			range 18–55, M (SD)		
	35.72 (12.24)			28.34 (8.78)			29.89 (8.06)		
Education	School degree	University of applied sciences	University degree	School degree	Pursuing BSc	University degree	School degree	Pursuing BSc	University degree
N	80	21	107	44	33	45	23	35	82
%	38.46 %	10.09 %	51.44 %	36.06 %	27.05 %	36.89 %	16.43 %	25.00 %	58.57 %
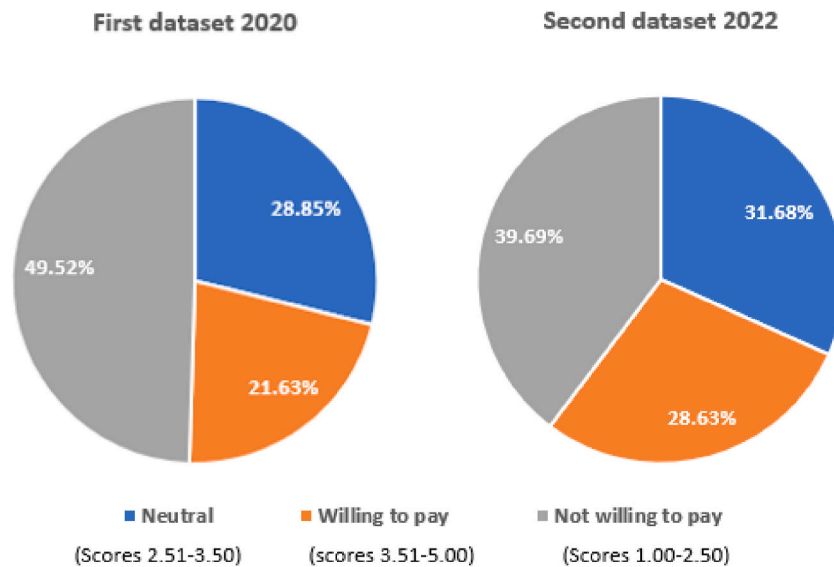
Fig. 1. Proportions of participants indicating willingness to pay for social media digital wellbeing services based on total scores, divided into three categories: Neutral, Willing to pay and Not willing to pay, for the first and second datasets.

Table 3
Spearman's correlation between the variables of interest in both dataset.

Variable	Age	Data not used for marketing	Data protection	Usage not prolonged	Fake news & radicalism reduction	Amount of monthly social networking site fee	Amount of monthly messenger fee	Total of willingness to pay
Age	–	0.037	−0.027	0.076	−0.070	−0.068	−0.060	0.009
Data not used for marketing	0.014	–	0.768***	0.559***	0.315***	0.491***	0.345***	0.844***
Data protection	−0.037	0.784***	–	0.609***	0.397***	0.521***	0.382***	0.882***
Usage not prolonged	−0.033	0.792***	0.704***	–	0.377***	0.424***	0.255***	0.816***
Fake news and radicalism reduction	0.016	0.551***	0.665***	0.597***	–	0.393***	0.279***	0.611***
Amount of monthly social networking site fee	−0.027	0.592***	0.662***	0.575***	0.679***	–	0.709***	0.571***
Amount of monthly messenger fee	−0.145*	0.445***	0.435***	0.436***	0.412***	0.593***	–	0.387***
Total of willingness to pay	−0.006	0.888***	0.903***	0.877***	0.807***	0.726***	0.491***	–

First dataset is presented below the diagonal, second dataset is presented above the diagonal.
* p < 0.05, **p < 0.01, *** p < 0.001.

3.2. Comparative analysis

Three comparisons were performed: Comparison 1: Germans 2022 vs. Europeans 2022, Comparison 2: Germans 2020 vs. Germans 2022, and Comparison 3 between the two datasets: Germans 2020 vs. Germans and Europeans 2022. The results of bootstrap MANCOVA for Comparison 1, which examined the differences between Germans 22 and Europeans 22 in the second dataset, revealed a statistically insignificant effect on the dependent variables after controlling for education and age differences, as expected, $F_{(6, 252)}$ = 1.659, p = 00.131, Wilks' Λ = 0.962, partial η^2 = 0.038. These results suggest that possible cultural differences between Germans 2022 and Europeans 2022 were not significant enough to affect the results. However, Comparison 2 and Comparison 3 showed significant effects on the dependent variable with $F_{(6, 320)}$ = 4.688, p < 0.001, Wilks' Λ = 0.919, partial η^2 = 0.081 and $F_{(6, 460)}$ = 3.954, p < 0.001, Wilks' Λ = 0.951, partial η^2 = 0.049, respectively. The statistically significant MANCOVA for Comparisons 2 and 3

Table 4
Willingness to pay for social media and comparison by gender: descriptive statistics and independent *t*-test results for 208 participants of the first dataset.

	Total (208) M (SD)	Male (117) M (SD)	Female (91) M (SD)	Gender differences
Data not used for marketing	2.53 (1.22)	2.47 (1.21)	2.62 (1.24)	t (206) = −0.85, p = 0.40, d = −0.12
Data protection	2.67 (1.30)	2.60 (1.29)	2.76 (1.31)	t (206) = −0.88, p = 0.38, d = −0.12
Usage not prolonged	2.41 (1.26)	2.40 (1.27)	2.43 (1.25)	t (206) = −0.15, p = 0.88, d = −0.02
Fake news and radicalism reduction	2.97 (1.41)	2.86 (1.42)	3.12 (1.38)	t (206) = −1.36, p = 0.18, d = −0.19
Total of willingness to pay	2.65 (1.13)	2.58 (1.12)	2.73 (1.15)	t (206) = −0.95, p = 0.34, d = −0.13
Amount of monthly social networking site fee	2.24 (2.97)	2.15 (2.95)	2.36 (3.01)	W = 5059.5, p = 0.520, r = −0.050
Amount of monthly messenger fee	2.74 (2.64)	2.59 (2.84)	2.20 (2.59)	W = 5742.5, p = 0.322, r = 0.079

Table 5
Willingness to pay for social media and comparison by gender: descriptive statistics and independent *t*-test results for 262 participants of the second dataset.

	Total (262) M (SD)	Male (151) M (SD)	Female (111) M (SD)	Gender differences
Data not used for marketing	2.62 (1.27)	2.59 (1.30)	2.65 (1.23)	t (260) = −0.37, p = 0.710, d = −0.047
Data protection	2.90 (1.32)	2.87 (1.35)	2.95 (1.29)	t (260) = −0.47, p = 0.636, d = −0.059
Usage not prolonged	2.71 (1.36)	2.65 (1.37)	2.80 (1.35)	t (260) = −0.90, p = 0.369, d = −0.112
Fake news and radicalism reduction	3.28 (1.06)	3.29 (1.09)	3.27 (1.01)	t (260) = −0.11, p = 0.913, d = 0.014
Total of willingness to pay	2.88 (1.00)	2.85 (1.01)	2.92 (0.99)	t (260) = −0.551, p = 0.582, d = −0.069
Amount of monthly social networking site fee	2.74 (2.64)	2.92 (2.73)	2.50 (2.51)	W = 9163.5, p = 0.190, r = 0.093
Amount of monthly messaging fee	2.10 (2.17)	2.26 (2.23)	1.87 (2.07)	W = 9286, p = 0.126, r = 0.108

was followed up with pairwise comparisons with a Bonferroni adjustment, as shown in Table 6. The results revealed that, among others, the total score of willingness to pay was significantly higher in 2022 compared to 2020 in both Comparison 2 and Comparison 3.

The results of Comparison 2, i.e., between Germans in 2020 and Germans 2022, suggested that there are differences in users' interest in willingness to pay for social media for digital wellbeing. Specifically, the total score of user willingness to pay for social media platforms was higher in 2022 compared to 2020. Furthermore, there was a significant difference in participants' interest towards data protection, usage not prolonged, and fake news and radicalism reduction. However, the monthly amount participants were willing to pay for messenger services was higher in 2020. The results for Comparison 3 replicated the outcome of Comparison 2 except for data protection and the amount of monthly messenger fee, where the difference between Germans 2020 vs. Germans and Europeans 2022 was insignificant.

To further explore the differences between participants who are willing to pay and those who are not willing to pay in both datasets, Chi^2 tests were used. A response of paying any sum greater than zero in the monthly payment variables was coded as "1," indicating a willingness to pay, whereas a response of paying zero was coded as "0," indicating an unwillingness to pay. The results showed significant differences $Chi^2 (1, N = 470) = 9.911, p = 0.002$ between the two groups (willing to pay vs. not willing to pay) in both samples. Table 7 shows the higher number of participants who are willing to pay in the 2022 dataset.

3.3. Analysis of participants' comments on the suggested digital wellbeing features

In the second dataset, participants were asked to provide comments on the suggested digital wellbeing features, focusing on the need for them and the possibility of paying for them. The responses were analysed based on 1) the amount of monthly payment and 2) the total score of willingness to pay as described in the data analysis section. Among the participants in the group rejecting to pay,

Table 6
Pairwise contrasts for adjusted means results: Germans 2020 vs. Germans 2022 and Germans 2020 vs. Germans and Europeans 2022.

	Germans 2020 VS Germans 2022	Germans 2020 VS Germans and Europeans 2022
	Difference in adjusted means (95 % CI)	
Data not used for marketing	−0.156 (−0.450, 0.139)	−0.068 (−0.312, 0.176)
Data protection	−0.333 (−0.643, −0.024)*	−0.199 (−0.456, 0.058)
Usage not prolonged	−0.336 (−0.643, −0.030)*	−0.289 (−0.544, −0.034)*
Fake news and radicalism reduction	−0.396 (−0.708, −0.085)*	−0.295 (−0.534, −0.055)*
Total of willingness to pay	−1.222 (−2.253, −0.191)*	−0.851 (−1.677, −0.025)*
Amount of monthly social networking site fee	−0.570 (−1.251, 0.110)	−0.446 (−0.992, 0.100)
Amount of monthly messenger fee	0.636 (0.040, 1.231)*	0.404 (−0.072, 0.880)

* p < 0.05.

Table 7

Percentage and counts of participants willing to pay in first and second dataset.

	First dataset 2020 N (%)	Germans 2022 N (%)	Europeans 2022 N (%)	Second dataset 2022 N (%)
Willing to pay (1)	105 (50.48 %)	85 (69.67 %)	85 (60.71 %)	170 (64.89 %)
Not willing to pay (0)	103 (49.52 %)	37 (30.33 %)	55 (39.29 %)	92 (35.11 %)
Total	208	122	140	262

forty-five out of fifty provided reasons for their decision, whereas among those willing to pay, fifty-eight out of sixty-four participants provided reasons for their payment. In the reasons for rejecting to pay group, approximately 31 % of the participants did not provide a specific reason for their refusal to pay, expressing statements such as "I will never pay for social media" or "I do not think I'll pay to use any social media," while about 18 % believed that these services should be provided for free, "I would not pay […] because I believe that these social networking services should already offer these services for free […]". About 13 % of the participants felt that the suggested features were not important or useful to them, expressing comments like "I don't really see the point of these features […]" or "I don't feel the need to have these features let alone pay money for them […]" while about 9 % claimed to have limited social media usage or to have control over their usage, "[…] my use of it is already limited", or "I can control my social media usage myself, so no need for paid support for me." The remaining participants mentioned their lack of trust in social networking sites, such as Facebook, stating concerns about data usage, e.g., "I have no problem to pay for social media, but Facebook and others just have so bad behaviour that they will use your data anyway" or suggested involving a third party or ensuring authentic data protection certification, e.g., "[…] with using a third party, I'm a bit more willing to think about maybe paying for it, but just Facebook (or something) alone I don't trust enough to actually do what they say with the money I give them".

In the reasons to pay group, majority of participants, about 40 %, were willing to pay for some services but not for others, or for specific websites and not others, and provided comments such as "[…] those things I find important I would be willing to pay a small fee for […]", "[…] paying for a protection of data doesn't feel rewarding to pay for. However, I would be willing to pay for […] things I feel make a positive difference" and "The most critical needs for me are the reduction of fake news, extremisms, and the caring for people's mental health". The second largest group (about 14 %) think that the suggested services are useful, "Improved safety and privacy is very much worth paying a small monthly fee for […]" and "I think it is a good idea about things like mental health, data security and learning new skills." About 14 % were willing to pay if these services enhanced healthy usage and commented "It would be great if it were free, but I wouldn't mind paying for it if it could help me with using social media and being less addicted to it" and "Features which can lead to a better usage of social media would be great, so I can control my time on social media better". Some participants focused on the amount of payment, expressing concerns about high costs, e.g., "The cost needs to be small […], if I had to pay a lot […] I might just move to another one, even though it is an unhealthier option for me". A few participants also requested assurance of third party: "Having a third party to monitor the data would be nice […]" or suggested to compensate social media companies "I think that to ensure security of people's data, there is a need for fees, as free services earn their money through using your data for advertising." Table 8 summarizes the reasons for willing to pay vs. not willing to pay for digital wellbeing services in social media.

4. Discussion

The objective of this study is to investigate whether there are differences in social media users' willingness to pay for enhanced digital wellbeing services, particularly in relation to data protection, addressing fake news, and mitigating prolonged usage. Our analysis of both datasets did not reveal any significant gender differences in the total willingness to pay, data not used for marketing,

Table 8

Reasons for participants willingness and rejection to pay for social media for digital wellbeing services.

Reasons for payment and representative quote	Reasons for rejecting to pay and representative quote
Perceived usefulness: "Improved safety and privacy is very much worth paying a small monthly fee for. Especially considering the somewhat shady business practices of say Facebook and how they handle their user's private data", "It is a luxury to have"	**Self-regulation issue:** "It is one's responsibility to protect themselves from the potential harm or negative side of social media"
Fair alternative to free use: "I think that to ensure security of people's data, there is a need for fees, as free services earn their money through using your data for advertising".	**User's right:** "Features of wellbeing should be free
Enhancing healthy usage: "There is a need for better protection on social media and avoid prolonging usage time. It instils confidence of healthy social media usage."	**Perception of Usefulness:** "The proposed features are not worth paying for"
Moderate fees: "The features are important, but the payment should be inexpensive"	**Distrust:** "Social media cannot be trusted. They may use payment information unethically"
Selective payment: "If it is optional or payment is made on a per-feature basis"	**Distancing from Social Media:** "I have limited my use of social media or I do not use it at all"
3rd party assurance: "Payment should be through third party such as Apple or Google"	**Economic:** "I do not have enough money to pay"
Payment for additional features: "I would pay only for stuff that is additional to the stuff that are free now or paid for with personal data"	**Basic and Legal Right:** "It is legal requirement to protect my data and privacy and my data are protected as European citizen"
Against social media "Essentially, social media should not exist, anything that makes it disappear faster is better"	**Lack of interest:** "Not interested in extra. It is fine"

data protection, usage not prolonged, fake news and radicalism reduction, as well as the amount of monthly social media fee that individuals were willing to pay. This finding contrasts with previous literature that suggested, for instance, that females exhibit higher privacy concerns and are more likely to activate privacy settings in social media compared to males [63,64]. Another study found that female Facebook users were more concerned about third-party data usage beyond the original purpose and behavioural advertising techniques than males [65].

Correlation analysis revealed a positive association between all social media payment variables, while age did not show any significant relationship. This could imply that users who value one type of payment variable are likely to value other types as well. Specifically, in the first dataset, a strong positive correlation was found between data not used for marketing and data protection, indicating that participants who value data protection are more likely to also value data not being used for marketing purposes. This is in line with previous research that recommended advertisers and social network providers to conduct detailed data protection impact assessments, particularly with consideration for the age and maturity of adolescents [66]. This study underscores the link between data protection and users' awareness of commercial data collection practices, stressing the need for a holistic approach to address user concerns regarding data protection and advertisements on social media. Similarly, in the second dataset, a strong positive correlation was found between the amount of monthly social networking site fee and the amount of monthly messaging fee, suggesting that participants who are willing to pay for a monthly social networking sites fee are also more willing to pay for a monthly messaging fee. In general, the total willingness to pay for social media digital wellbeing services in both datasets was strongly associated with data protection, data not used for marketing, and usage not prolonged. The results also showed no significant difference between the four items of the willingness to pay for social media digital wellbeing features, their total score, and the amount of monthly fee between Germans 2022 and Europeans 2022.

The results of the second comparison between German participants of 2020 and German participants of 2022 and the third comparison between German participants 2020 and German and European participants of 2022 suggest that participants' interest in paying for social media digital wellbeing features is higher now compared to earlier. Specifically, there is a significant difference in participants' total score of willingness to pay for social media platforms in 2022 compared to 2020, even when controlling for the potential effects of education level and age, both of which served as covariates in the MANCOVA models. This result suggests that, within the current samples, interest in healthier social media services could be similar among individuals regardless of age and educational level. Furthermore, there is a significant change in participants' interest towards services that offer better data protection (comparison 2), reduction of fake news and radicalism, and designing the platform in a way that does not prolong usage time in comparison 2 and 3, which may indicate a growing demand for such features.

The higher interest in willingness to pay for social media digital wellbeing services suggests that users are becoming more aware of the potential negative impacts of social media on their physical and mental wellbeing and are accepting and more willing to pay to mitigate those effects [67]. This awareness has been further heightened by the proliferation of data breaches and the spread of fake news among social media users during and after the COVID-19 pandemic [9,36,37]. Health and wellbeing concerns, including social media fatigue, have led many users to decrease or discontinue their social media usage. Privacy concerns among social media users have also been found to have a positive influence on social media fatigue [68], which can cause physical and psychological strain [69], and has been linked to elevated levels of anxiety and depression among social media users [70]. Moreover, higher privacy concerns regarding the misuse of personal information by social media platforms have been associated with increased levels of social media fatigue [71,72]. While users desire to share information to enhance their socializing experience, they are apprehensive about privacy issues and the potential for their information to be misused. Privacy concerns can lead to a decline in the intention to use social media, as demonstrated by van der Schyff et al. [47], which found a significant negative relationship between information privacy concerns and the intention to use Facebook app. Similarly, privacy concerns have been identified as a critical factor affecting the use of fitness apps during the COVID-19 pandemic [73]. Considering these growing concerns, social media companies may be at risk of losing user engagement and profitability if they fail to incorporate digital wellbeing features into their business models. Participants' comments mentioned earlier revealed that one reason for their willingness to pay for social media wellbeing services was to decrease advertisements, which are a result of the profits generated by social media platforms through targeted advertising. These profits rely on the exploitation of users' leisure time and digital labour, including the creation of online content [74], which can increase irritation in using mobile social media due to perceived intrusiveness and privacy concerns, ultimately leading to advertising avoidance [75].

The comparison between the 2020 and 2022 survey results showed a greater preference among individuals in 2022 for paying for wellbeing services, particularly for not prolonging usage time and reducing fake news and radicalism. Some individuals may find it difficult to regulate their use of social media and other online platforms, leading to negative impacts on their mental health and wellbeing [76–80]. Self-regulation of online use and improvement of mental wellbeing can potentially be achieved through features such as tools for screen time monitoring, notification limits, and mindfulness promotion [28]. Recent evidence has highlighted the growing importance of online support and social media in promoting healthy behaviours [81], and the software development sector has recognized the significance of digital wellbeing in building user loyalty and trust [82]. Initiatives like the Royal Society for Public Health's Scroll Free September campaign [83] and Vodafone's Digital Parenting Program [84] have contributed to raising awareness about mental health.

Using wellbeing features on social media and messenger services can help individuals regulate their online behaviour, similar to the challenges of maintaining a consistent exercise routine, which can be aided by tracking tools like fitness apps and wearable technology [73]. Individuals who have invested time and effort into their social media presence may view it as a personal asset and are therefore more likely to pay for features that facilitate better regulation of their online activity. This sense of ownership may lead to greater attachment to their social media identity and, consequently, more investment in their digital wellbeing. Additionally, social media companies can benefit from providing these digital wellbeing services. A study by Tsai et al. [85] suggests that consumers may be

willing to pay a premium to purchase from privacy-protective websites when privacy information is made more salient and accessible, indicating that businesses can leverage privacy protection. The same is likely to apply for protection from fake news and radicalism as well as overuse. However, the amount that individuals are willing to pay for these features may vary, and social media companies may price their services accordingly.

Social media has been shown to play a significant role in our lives, particularly during difficult times, by serving as an emotional outlet and providing social support [86]. Simultaneously, it is equally crucial to address the downsides that arise when social media use exceeds healthy boundaries. Therefore, it is important to take steps to curtail or lessen the negative effects of social media on mental health and wellbeing [87]. Our results found a higher score for willingness to pay and interest towards data protection, reduction of fake news and radicalism, and ensuring that social media design does not prolong usage time, which could be an indicator for interest in digital wellbeing services. A subscription-based model that offers these digital wellbeing services could be a potential solution. Social media can prioritize users' digital wellbeing, similar to industries that have adopted sustainable and ethical production methods [88], to increase willingness to pay for these services among users. This willingness is influenced by the perceived levels of trust and usefulness associated with the platform [89].

We argue that although our study participants had a higher willingness to pay for social media features than participants in 2020, this does not necessarily indicate increased trust in social media, as feedback and comments do not support this notion. As a potential solution, third-party services, trusted by users, could provide these features and ensure users' needs are met through payment for social media services that promote digital wellbeing. These services can assist in reducing fake news and radicalism by providing reliable information from trusted sources and fact-checking tools. They can collaborate with social media companies to implement measures that detect and remove fake news and misinformation. For data protection, third-party services can offer ad blockers and anti-tracking software to protect users' online activities, as well as encryption and security tools to prevent data breaches and identity theft. To promote positive online interactions and control usage time, they can offer services such as mindfulness and relaxation apps, screen-time monitoring, and notification management tools.

Lastly, the first dataset was collected in 2020, before the COVID-19 pandemic, while the second dataset was collected in 2022 (after the pandemic). This could indicate that the observed difference in users' willingness to pay for digital wellbeing services on social media is likely a result of recent events. For example, research suggests that individuals have increasingly turned to social media to fulfil their business communication needs during the COVID-19 crisis [90]. The variance in willingness to pay for digital wellbeing services could also be attributed to heightened users' awareness.

4.1. Practical implications

Our study has several implications. Firstly, it reveals potential awareness among social media users about digital wellbeing reflected in their willingness to pay for related services. However, it might also be due to increasing issues about trusting the social media business model and the demand for change. Secondly, users expressed a significant preference for features that prioritize data protection, reduce fake news and radicalism, and do not prolong usage time. Therefore, social media companies may benefit from incorporating these features to align with user preferences and enhance user satisfaction, whether on a paid or free basis. In this paper, the willingness to pay was used as an indicator of strong interest. Thirdly, promoting services such as safer and more civilized content on digital platforms supports Sustainable Development Goal (SDG) targets related to education, social inclusion, and peacebuilding by fostering informed and inclusive societies [91]. Fourthly, and despite this use, our study may still suggest that adopting an alternative subscription-based model for digital wellbeing services could be a successful business strategy for social media companies. The implementation of this model could vary and include collaborating with trusted, reliable third-party services in providing these features. Such involvement of more independent parties may contribute to fostering user trust by playing the role of client advocate or ombudsman regarding wellbeing.

4.2. Limitation

The study has some limitations. The analysis was conducted on two independent datasets comprising different sets of participants. While participants in the first study were from Germany, participants in the second study were primarily from Germany but also included other neighbouring countries. Nonetheless, the survey items and questions posed to participants were similar across both datasets and the statistical analysis revealed no significant differences between participants from the German group and the other countries group, in the second study. This further assures the homogeneity of the sample in the second study. The sample sizes for the two datasets, with 208 and 262 participants respectively, deemed adequate for meaningful and credible analysis [61]. However, the data was collected via self-report measures, which could lead to response bias and potentially less accurate reporting by participants. This risk was mitigated through the use of anonymous data collection procedures and the freedom given to participants to withdraw at any time. We also minimized concerns related to social desirability through the wording of the questions, avoiding implications that the alternative business model is necessarily a better replacement. Additionally, we refrained from suggesting any negativity or positivity regarding the current business model. Attention checks were used to check participants' engagement and increase the quality of the data. It is worth noting that this study might not have included all conceivable variables that could be linked to the willingness to pay for social media and messaging platforms, such as a person's earnings or the extent of their reliance on social media. Also, while the willingness to pay question was utilized, it may not be the optimal measurement for assessing an individual's willingness to pay for social media services, and we recommend using other measures that could account for possible biases, considering that people are not currently paying for social media.

5. Conclusion

Social media can be designed in a way that fosters digital wellbeing, e.g., by adding functionalities that help users to manage problematic apprehension [92]. The leak of data and personal information is suggested to lead to physical, mental or emotional danger [93], and research shows that there is considerable demand for privacy among users and that different apps can utilize reasonable monetary fee to protect users' data [94]. This study explores the change in willingness to pay for healthier social media and messenger services in recent years, which potentially offers an alternative to the current data-driven business model. The study employed two datasets collected in 2020 and 2022 and found significantly higher scores in participants' willingness to pay for social media and messenger services in 2022. The study advances our understanding for the need for an initiative model as part of corporate social responsibility for healthier usage of social media that puts users' digital wellbeing first while paying a monthly monetary fee. Participants comments show differences in perceiving the importance of these services; hence, future research is needed to study factors influencing these services, identify key services promoting digital wellbeing, and determine appropriate payment amounts. Additionally, future research may consider objectively testing users' willingness to invest in digital wellbeing services and examining the impact of digital competency and past challenging experiences such as being victim to fraud.

Data availability statement

The dataset associated with this work are (WTP_Datafile_2022) can be found at: https://osf.io/qzjm3/.

CRediT authorship contribution statement

Areej Babiker: Writing – original draft, Methodology, Formal analysis, Conceptualization. **Sameha Alshakhsi:** Writing – review & editing, Methodology, Formal analysis, Data curation. **Cornelia Sindermann:** Writing – review & editing, Conceptualization. **Christian Montag:** Writing – review & editing, Conceptualization. **Raian Ali:** Writing – review & editing, Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.heliyon.2024.e32467.

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