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How is the use of AI in social media accepted by users and impacting human – computer interfacing in that area?

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Abstract The study examines current international growth in the use of social media which uses AI extensively and asks whether the unconscious acceptance of AI by social media users is having any impact on human – computer interfacing (HCI) research for the purpose of AI use in social media. It also asks whether the public acceptance of AI-based social media is based on trust in the technology or simply due to there being no real alternative.

The study combines a systematic review of the current literature related to the subject under investigation with an analysis of secondary data from statistics, government surveys, and trade sources.

The major finding related to whether the public trust the use of AI and technology is that the more of it that is available in a society, the less it appears to be trusted – Western advanced societies have a markedly lower level of trust in technology and AI than developing nations. However, it is observed that the lack of trust does not equate to a lack of use, since the countries where the trust is lowest are also the countries experiencing the fastest growth in the use of bot AI and social media.

It is clear that further research is needed because this study cannot be wide enough in its scope to understand the apparent contradictions in the data.

This is original research based on secondary data in an area where growth and change are rapid but is based on the most up to date material available.

Keywords Artificial intelligence (AI), social media, trust, data security, fear of missing out (FoMO), Human Computer Interaction (HCI)

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Introduction

Artificial Intelligence (AI) is a rapidly growing field, but it application can be controversial.[1] In this respect, some AI experts have themselves raised fears about its use, particularly the ethical aspects of such use.[2], [3] Despite this, AI is widely used in marketing and social media,[4] and this research examines the attitude and knowledge of ordinary people towards the use and impact of AI in social media to determine whether its use can have a positive impact on Human – Computer Interfacing (HCI) in this context. The analysis compares data regarding the level of use of AI in social media with data regarding how trustworthy people believe that it is.

The initial section will provide a theoretical understanding of AI in social media: what it is (beyond the simple dictionary definition of *"the study of how to produce machines that have some of the qualities that the human mind has, such as the ability to understand language, recognize pictures, solve problems, and learn"*[5, p. np]), how it is used, and why. It will also briefly consider AI in relation to accountability, law, and copyright, although only as far as these issues may impact on its use within social media. It will also provide an overview of why social media is so ubiquitous in the era of 'Fear of Missing Out' (FoMO).[6]

Theoretical Understanding

What is AI, and how is it used in Social Media

The simple definition of AI given in the introduction does not really explain what is meant by the term in every-day usage.

A slightly more usable definition says that it is the *"study and development of computer systems that can copy intelligent human behaviour"*,[7, p. np] but even this does not explain how broad the study if AI is; from auto-pilot systems in aircraft to the advertisements on social media that are focused on the search history of the user, 'thinking' machines and AI are found virtually everywhere in the modern world.[8]The latter example, targeted or focused advertising is perhaps the one that most people have experienced and are aware of,[9] although apparently not all users of social media are aware that this is based on AI.[10]

The power and speed of modern computers has made the use of AI possible in this context, it is no longer the preserve of governments and military users, and the algorithms are written with the intention of understanding and replicating human behaviour.[11]In marketing, personal information about potential customers has always been valuable,[12]but with the advent of AI and the use of "big data" that value has increased. Marketing via social media was initially a niche idea,[13] but as AI was increasingly used and improved it now allows companies to market their products directly to those people who are most likely to purchase, improving efficiency and reducing cost.[14]

Ethical application of AI in social media

Among the issues that arise from the use if AI, particularly in social media, is whether it is ethical.[15]There are fears that customer data could be misused,[3] leaked, or that vulnerable users could be taken advantage of because they are unaware of the way the AI has targeted them.[16]

Although ethics is not objective, changing as society changes,[17]it is necessary for social media companies to take an ethical approach to the use of AI.[18] It is essential that 'business ethics' does not develop in a way which is not open to examination,[19] and which does not in any way violate human rights.[20] The ubiquity of AI and social media are behind the call for a 'code of ethics' for AI,[16] and although it has been suggested that business ethics are becoming more pragmatic,[21]it is essential that a universal approach to this is taken by all social media and computer companies.[22] The issue of ethics is also raised regarding AI and accountability,[23] and AI and copyright,[24] both of which are also important within social media marketing.[14]

The growth of social media and Fear of Missing Out (FoMO)

The rapid growth of social media use in the twenty-first century has been linked to the phenomenon known as 'Fear of Missing Out' (FoMO).[25] This has been observed in social media users of all ages, not just younger users,[26]and has been linked to sleep disorders, depression,[27] and distraction.[28] Consequently, studies have concentrated on combatting FoMO,[29]and how social media use is linked to FoMO among students.[30] Understanding the existence of FoMO may be a key aspect of the behaviour and attitudes of ordinary people when expressing their views on the impact and trustworthiness of AI.[31]

Methodology

The methodology used in this study is a combination of a systematic review of the literature,[32] and an analysis of public domain data relating to public use of social media,[33] and their level of trust in AI.[34] This also includes data about their recorded attitudes towards AI and data technology.[31]Because secondary data is used there are no ethical issues arising, since there are no direct human participants, and all data is already anonymised. The literature review examined the latest available academic literature related to the topics under investigation and is divided into sub-headings for each of these areas. The data is tabulated and presented in a simplified format, although the original data can also be viewed at the websites listed in the references and, in part, in the appendix.

Literature Review

The growth of Social Media use

Social media use continues to rise rapidly across the world, although there are some cultural differences in the acceptance and usage of social media.[35]The recent coronavirus pandemic also led to even more people using social media to remain in contact with family and friends,[36] and it has also been used as an educational tool for distance learning.[37]Business use of social media has also grown, with social media marketing becoming an essential aspect for most companies.[13], [14] Indeed, social media has become part of a modern business toolkit; *"Social media is a rapid and dynamic medium of communication that forms a crucial component of the modern business toolkit".*[38, p. 623] Social media platforms are now considered to be one of the best communication tools for companies wishing to attract greater visibility in the marketplace.[38]

Its use gives a clear statement that the business is engaging with its customers via the social media platform used and gains them more attention in the market field. Xiong et el. [38, p. 631], stated that:

"Social media creates volume. Comparing the information environment between traditional media and social media reveals that misleading information is more repetitive in traditional media than social media, as was the case with EMPO's alleged campaign periods".

The business use of social media, particularly for marketing, has accelerated more since the advent of AI,[10] and this growth, too, seems set to continue.

Social Media and AI

There are many ways in which AI is utilised by social media,[10]including analysis algorithms which are used to maximise traffic. Despite its ubiquity, however, there are also some problems associated with social media use, including recently discovered links between its use and depression – these links still need deeper investigation,[39] as do apparent links between social media and sleep loss,[40] FoMO,[41] and internet addiction.[42], [43]. Nevertheless, it has been proposed that these areas could be helped by AI, although the objection to this is that the AI should be able to advise a human user that there is a risk to continuing but should not be able to prevent them from continuing.[44]

An apparent contradiction arises here, since social media may actually make users less social, since although social media may now be considered to be part of modern life, it has changed users' behaviour and influences users' mental states. The time spent on social media use cannot easily be measured but must be more fully understood in a way which shows its relationship with social anxiety.[45]A connection between social media and sleeping patterns has been observed in which it has been shown to perhaps cause disturbed and problematic sleep,[40] although Tandon et al, [40, p. 106487] stated that *"social media may act as a platform for users to self-regulate their desires for maintaining social connections*".

Although the public and business use of social media and AI is still growing, this use does raise an ethical question, because' *'the advanced AI has no intentions, [so] responsibility cannot be ascribed to it".*[46, p. 643]Thus, although AI is a cutting-edge technological development that boosts a businesses' social networking and helps marketers focus more closely on their audiences,[10] more work must still be done to prevent fraudulent and unethical use – although the application of AI has led to a solution using machine learning (ML) and deep learning (DL) to identify fraudulent 'clicks' and protect advertisers from losing money.[47] This is positive, but one of the main drawbacks of AI anywhere, not just in social media, is accountability,[23] and in some uses, legal subjectivity.[48]

This is because, in the new age of technology, artificial intelligence has opened access for social media to be used to actively participate in marketing. Companies are increasingly relying on social media as a means of raising their sales and profits by up to 10% while also adopting a variety of marketing strategies that are based on AI.[49] In turn, AI has had a huge impact on social media and online marketing, and it is essential to ensure that it is used ethically, particularly since the rapid acceptance and development of AI and the extensive use of social media has changed the way we live, work, and even bank.[50], [51]

Thus, AI has completely revolutionised the marketing sector, as well as the ways in which social media is linked to marketing. This has even been given its own name, "social artificial intelligence," which allows marketing specialists to organise sponsored advertising based on AI intelligence.[10] This has led to the entire marketing industry becoming dependent on AI, and over reliance could be problematic without ethical guidelines and limits to the power or autonomy of the AI.[3], [16], [18]The difficulty is that since AI is now a key part of most social media platforms (According to Sadiku et al.,[10] well-known social networking sites including Facebook, Instagram, Snapchat, LinkedIn, and Pinterest all use the capabilities of AI), and may impact how they are used in the future. Essentially, as Dong et al.,[52]predict, *"In the coming years, machines will get smarter. If we cannot distinguish a machine from a human, then we have reason to think that this machine is intelligent"*[52, p. 3], implying the possibility of takeover.

Social Media, AI, and illegal activity

As AI created content has become virtually indistinguishable from that created by humans, social media fraud has also increased. In fact, AI and social media use have led to massive increases in fraud of all kinds,[53] including 'fake news', 'deepfakes', and romance fraud (the last being particularly common on social media dating sites).[54]Thus, although AI is expected to be central to banking in the future,[55] and has already been used to facilitate major fraud including on social media,[56] it has also been shown to be useful in the detection of fraud.[57]'Fake news' and the creation of 'deepfakes' [54] – impossible without AI – have been one of the main areas of concern in recent years, and as a consequence this has become a major area of AI research.[58]

Among the illegal activity led by AI on social media, fraud is perhaps the largest issue in terms of financial cost.

It needs to be eliminated in online marketing or advertising because it can and does damage the reputation of companies.[47]Partly to counter fraudulent advertising, Al Jaberi and Qawasmeh state that *"Most social media platforms, such as Facebook, YouTube, and Instagram, have introduced their own advertising services''* [47, p. 5]. This area is essential, because, while many companies rely on social media marketing to increase their revenue and boost their profit:

"The issue of fraudulent ad clicks is serious, especially when we consider that the cost of some keywords in Google Ads can be as much as $50 or over $100 per click. In fact, the volume of click fraud can soon cause issues for the average advertiser, even with clicks costing around $1 each. In 2017, one in five clicks on a PPC ad campaign was thought to be false in some way''.[47, p. 5]

New algorithms to reduce 'deepfake' attacks are also being created and tested,[59] but this area is also a growth area for fraud. The real difficulty is that 'deepfakes' on social media can be completely convincing, and almost impossible to disprove, which is one of the factors which has led to romance fraud being a particularly strong growth area in social media. Some vulnerable users have spent thousands of pounds sent to 'partners' with the belief that they can set up home together or move to (or from) another country for the relationship that they believe that they have developed online. This and other fraud have become so widespread that prevention measures are essential.[58], [59]

Social media AI crime is a relatively new area, since although cyber-crime has been growing for many years,[60] including money laundering with cryptocurrencies,[61] the use of AI and social media is a big development. Despite this, AI is being used by both sides since it has also been adopted for crime investigation and prevention.[62]Although AI policing is beginning to be seen,[63] some areas of illegal activity linked to AI and social media are still problematic despite the application of the same technology for prevention as the criminals themselves have used.[64] Nevertheless, in recent decades, a major criticism of the encryption of social media content and the use of AI is that it may encourage or hide images of sexual abuse and other exploitation.[65]

Here, AI presents a dichotomy for both the users and the social media companies because it could be used to detect such material,[66] or to promote it.[67]This is the "double edged sword" of AI use in social media, because companies also have a double duty – to protect user privacy and to prevent the distribution of images of this nature or of any form of exploitation.[68], [69] One of the issues related to this is that both the protector and the potential

abuser could use AI to identify who, exactly, is vulnerable to this. This adds to the need for limits and codes of ethical practices whilst also tending to reduce public trust in the technology.[31]This is an area of concern across the world, and the UN has recommended action to protect children and other vulnerable people.[70]–[73]

One possible use of AI in combatting this is training investigators to recognise signs when interviewing, speaking to, or interacting with suspected victims (for example on social media),[74] although this is already too late to prevent the exploitation or abuse. Prevention is the long-term aim, but using AI to improve the outcomes for victims demonstrates the potential of AI in other areas – it is clear that although human investigators may be very skilled at spotting the signs of abuse, using an AI interface between the investigator and the victim could encourage more victim disclosure.[74]

Social Media, AI, and FoMO

Fear of Missing out is viewed by many a phenomenon which largely affects the younger generation, although Barry and Wong believe that rather than being generationally based, it is individual and that it is related to other addictive behaviours,[26] which affect some people but not others. If this is correct, then the use of AI in social media could determine early signs of these potentially harmful behaviours in users and guide them towards different use or appropriate help. Unfortunately, this is still a disputed area among academics, so a deeper investigation is required.

Another accepted impact of FoMO, however, is productivity in the workplace, which was examined by Rozgonjuk et al.[41] in Germany. They reached the following conclusion:

Bivariate analyses showed that severity of all social networks use disorders were positively correlated with FoMO and social media's negative impact on daily-life and productivity at work. Furthermore, controlling for age and gender, mediation analyses showed that out of all platforms, only Snapchat Use Disorder did not mediate the association between FoMO and social media's negative impact on daily-life and productivity at work. [41, p. 106487].

After demonstrating that the issue is critical, they discussed the idea that the AI used in social media could perhaps be used to minimise the impact of FoMO.

There is also an observed link between the three issues of social media, FoMO[29], and internet addiction,[41] and gaining some form of control may be essential in the future. FoMO does appear to have become more common in the digital era,[6] although as stated by Barry and Wong,[26]it does not seem to be a generational issue. It has simply become more noticeable with the use of social media and computers in modern life. However, combatting or reducing FoMO is an area where AI could help, perhaps by providing data summaries that would allow users to believe that they were not missing anything important.[29]

It has been suggested above that as AI develops it could perhaps be used to reduce levels of FoMO, or at least detect when it is likely to occur, so that it can be assessed.[25]This could be a development from the use of AI in digital forensics,[75] since one of the strengths of AI is noticing and analysing patterns of behaviour.[76]This use, however, could also go far beyond social media, but does have ethical implications.

The ethical dilemma which arises when attempting to combat FoMO on social media is that, as AI develops, neural networks will be enhanced with neural chips,[77] so AI machines will naturally know an increasing amount about the user, which is excellent for sectors such as healthcare,[78] banking,[79] and finance,[80] but within social media's less secure operations users may view this as an invasion of privacy.[81]Because of this, perhaps AI should be studied from a sociological viewpoint,[82] the argument being that FoMO is a social phenomenon,[26], [30] not a technological issue, so that any effort to combat FoMOshould include a sociological approach.[29] This view is further supported, since social media use is known to have an impact on the users' mental state and it has been demonstrated that it can create social anxiety,[45]which could have serious consequences. A study by Erliksson et al.,[45] used the Social Anxiety Scale for Social Media Users (SAS-SMU), however, unlike earlier studies, their data showed a link between passive, active, and prolonged use of social media and the development of social anxiety. Some suggest that AI may be able to reduce this, at the same time as the related issue of sleep disturbance,[40] which is an element of FoMO. However, this would require an AI algorithm which could differentiate between human sleep requirements and the fact that computers can operate continuously and would probably be even more invasive from a privacy standpoint.

The human impact of AI in social media

AI use beyond social media has already impacted areas such as art, [83] and employment.[84] However, because the field of AI is changes so rapidly, there is said to be *"substantial uncertainty"*[85] about its future impact. Already, ideas of human-AI collaboration for work or for art has become commonplace,[86] leading to new concepts and ideas, and in addition, human-AI collaboration in healthcare is a growing area.[78]This not only happens in social media for remote consultations and e-medicine, but is also being applied beyond this, with AI diagnostics and planning being growth areas.[78]

Unlike social media, medicine is likely to be well monitored and controlled when AI is used, but issues of autonomous AI robotics could still be problematic.[87] According to Livingston and Risse [20], this could impact on issues of Human rights, although they say that at present the scope of this impact is unknown. The problem that they consider to be particularly pressing in this regard, however, is that of 'superintelligence' which they believe mean that researchers should:

"Consider the moral and ethical implications of such a potential development. What do machines owe humans and what do humans owe superintelligent machines?" [20, p. 141]

This is why human rights questions could arise which include the idea that if a machine has human attributes and cannot be distinguished from a human, should it also have some form of "human rights".[88] This dilemma has already been raised when Saudi Arabia gave an AI robot citizenship as part of the publicity, but clearly a citizen has rights, therefore a robot citizen must also have rights. This area is unresolved, but Livingston and Risse point out that this is an area which must be settled,[20] and this is also connected to the legal issues of accountability,[23] and subjectivity,[48] since it could be argued that switching off an AI is "killing" it. This then links to the final area of literature studied, Human – Computer Interfacing (HCI) in social media and beyond.

HCI, AI, and social media

Human-Computer Interaction or Interface (HCI) is one of the major focus areas for AI development, and faces many challenges because the differences in size, shape, and movement between different human computer operators must be incorporated into AI HCI algorithms.[89] Within social media this problem is even more acute, because the algorithm is not designed for a few hundred employees, but literally for the world. Another aspect of HCI applicable to social media are the ways in which using the computer impacts the mental state of the user, and several ways of measuring this have been proposed.

[90]Since this includes the use of AI to determine complex mental states of the user,[91]it is clear that the importance of this cannot be overestimated – even to a lay observer it is clear that the user's mental state is affected by using Open Storage Networks (OSNs) and social media, and the FoMO discussion above also highlights this.

Stephanidis et al.[89] highlighted how the digital era and the latest HCI literature can have a significant impact on the way that humans experience new Information and Communication Technology (ICT). Until very recently, HCI was a study related to the interaction link between human and computer and relied on human intelligence. However, Vishwarupe et al. pointed out that starting *"a few years ago, AI is literally changing the way we act and interpret the world around us"*[92, p. 915]. Thus, AI is a reality that is transforming the environment around us and altering our behaviour, and both human and artificial intelligence must now be considered in HCI. However, Vishwarupe et al. [92] state that even though AI and HCI could work together they still need experts for both fields:

"AI and HCI, it is still not extensive enough to be able to use HCI and AI in scenarios where in it becomes difficult to have experts from both the fields working together such as cyber physical systems" [92, p. 915].

In other words, AI can be the motivation for HCI development systems and *vice versa*. Nevertheless, Stephanidis et al. [89, p. 1244] stated that *"HCI research should also support regulation activities about privacy, safety, and security in the new intelligence era",* which is perhaps the biggest challenge.

A connected HCI issue is the way that information is visualised,[93] and a 'universal' system which would be needed for social media use, could be combined with AI dashboards to provide an information overview. The primary advantages foreseen for this is that such an overview could perhaps reduce the levels of FoMO,[29] as discussed above, and also perhaps reduce screen time for users, an area that is difficult to regulate outside the workplace, since home users of social media are likely to be unaware of regulations and guidance.[94], [95].

Nevertheless, as AI is further developed, it is essential that computer systems remain "human-centric".[92]The challenge of usability or user-friendly computer systems is one that needs careful planning in AI systems, because AI may tend to believe that the computer intelligence is greater than human intelligence (and may even be so), and this would minimise the need for human input. The fear expressed by users and developers of AI is the need to control AI to ensure that a human interface is always required and that this must be a primary concern of both HCI research,[96] and of AI developers,[85] because of the potential impact on business and society. Part of this consideration is the fear that, unless the systems remain human centred, corporations could end up becoming more powerful than governments [97], and that the machines themselves would take over, "playing God" with human lives.[44]

Public perceptions of and trust in technology and AI

In recent years there have been several government and trustworthy industry surveys related to the use, perceptions, and trust that the public have regarding social media, technology, and AI and those chosen for analysis mainly relate to the UK and are: gov.uk,[31] cybercrew.co.uk,[36] and Statista.[33], [34] These provide the basis for the results and analysis below, but overall bear out the academic view discussed above that the use of social media is steadily increasing, but that the public have a mixed perception of whether AI and technology are a positive or negative aspect of modern life, and a varied level of trust in AI and technology according to where they live, suggesting that this has a cultural aspect. For Great Britain, the level of responses to the question *"To what extent do you agree or disagree with the following (1-strongly disagree to7 - strongly agree)? I trust artificial intelligence"* were: 23% agree, 29% neutral, and 48% disagree.[34]

The cultural aspect of trust in technology and AI is borne out by the general trend in the statistics, which is that Western, developed nations have a greater distrust in AI and technology than developing nations – the country with the lowest levels of trust is also generally perceived as having the highest level of use of technology and AI, as this is Japan where 50% disagree with the view in the question above whilst only 13% agree.[34] At the opposite end of the spectrum, China (70% agree, 17% neutral and 12% disagree) and Saudi Arabia (64% agree, 21% neutral, and 15% disagree) show the breadth of the division of opinion.[34]

In addition to the survey completed by Statista,[34],data collected in an independent survey for the UK government about the public perceptions of AI and technology showed an interesting corollary to statistic cited above that 48% did not trust AI and technology. Participants were asked about their perceptions and attitudes towards AI, and were asked for *"one word that best represents how you feel about 'Artificial Intelligence'"*[31, p. np]. The data is presented online in the form of a 'word cloud', and the most prominent are the words "Unsure" and "Scary" with several other negative sentiments also appearing conspicuously.

Results and Analysis

Data regarding the public use of social media (UK)

Although the figures used came from a range of sources, and the article citing them is from a trade source (Cybercrew.co.uk), Jovana Zivkovic provides the insights in Table 1 and Table 2.[36] One of the important areas to note is that 18% of children aged 8 to 11 years have a presence on social media, despite publicity and fears about their vulnerability to online predators and advertising. This grows to 87% of those aged 12 to 15, who are still not adults and may be vulnerable in the same way. Zivkovic states that one of the fastest growing platforms is TikTok – *"According to Statista, TikTok is expected to reach 12.5 million users in the UK by 2024".*[36, p. np]

Table 1: Statistics related to UK social media reach and behaviour. Data extracted from Zivkovic.[36]

Item	UK	World (where known}
Social media users	53 million (67%)	- (45%)
Internet users	75 million (95%)	- (-)
Average use time per day (social media)	102 minutes	-
Social media users (age 8-11)	- (18%)	-
Social media users (age 12-15)	- (87%)	-

Table 2: Statistics related to UK social media platforms. Data extracted from Zivkovic.[36]

Platform	UK users (million)
Facebook	51
LinkedIn	30
Instagram	27
Twitter	20
YouTube	18
TikTok	6

The growth in the use of social media in the UK, and current user demographics presented above are also confirmed by an examination of the article by Stacy Dixon published by Statista.[33] Although Dixon presents a more comprehensive range of statistics, only those presented above are public domain. Nevertheless, Dixon's article does fully support and bear out the data included in the tables above and discussed by Zivkovic.[36]

Data relating to public perceptions of and trust in technology and AI

The data relating to public perceptions of and trust in technology and AI from Statista is in Table 3.[34]

Table 3: Statistics related to worldwide trust in AI. In countries marked with an asterisk the samples represent a more affluent, connected population. Data adapted from Statista.[34]

Country	Agree (%)	Neutral (%)	Disagree (%)	Total (%)
China*	70	17	12	99
Saudi Arabia*	64	21	15	100
Mexico*	56	23	21	100
India*	50	26	26	100
Turkey*	43	27	30	100
Argentina	42	26	32	100
Brazil*	41	27	31	99
Italy	40	32	28	100
Poland	40	31	29	100
Russia*	40	33	27	100
South Africa*	34	25	41	100
Spain	34	33	33	100
Hungary	33	30	37	100
New Zealand	29	32	39	100
United States	25	28	47	100
Australia	24	30	46	100
Belgium	24	35	41	100
France	23	31	46	100
Great Britain	23	29	48	100
Sweden	22	31	46	99
Canada	21	25	55	101
Germany	21	29	50	100

South Korea	17	35	48	100
Japan	13	37	50	100

The survey for gov.uk was carried out in two parts, and although the concentration here is on "Wave 2",[31] the published document shows comparisons to the earlier data where attitudes have changed. An example of this is that, when asked what is *"The greatest risk posed by data use in society* "most categories showed very little change between November 2021 (Wave 1) and June 2022 (Wave 2), the top two categories did show change (see Table 4). Changes were also perceived in the way in which news stories depicted items related to data and AI. In this area, people are more concerned now than they were, which could impact attitudes and behaviour.

Table 4: Statistics related to "The greatest risk posed by data use in society" and "positive presentation of data in news stories", UK. Data extracted from gov.uk.[31]

Item	2021	2022
Data will not be secure and could be hacked or stolen	25%	28%
Data will be sold to other organizations for profit	18%	24%
News stories present the use of data negatively	37%	53%
News stories present the use of data neutrally	35%	29%
News stories present the use of data positively	25%	15%

Although the perceived risks to personal data were of concern to the participants, they trusted some organisations or categories more than others, whether or not AI was used. Their views on this are presented in Table, with the clear indication that social media companies and the government are the least trusted organisations regarding data use and safely.

Table 5: Trust in UK organisations related to personal data. Data adapted from gov.uk.[31]

Organization	Use the data effectively to improve product or service (%)	Keep personal data safe (%)	Use data to benefit society (%)	Be open and transparent about what they do with data (%)	Let you make decisions about your data (%)	Average (%)
The NHS	79	74	75	70	65	**73**
Academic researchers at universities	64	60	66	60	56	**61**
Researchers at pharmaceutical companies	64	58	62	53	49	**57**
Regulators	52	51	51	47	45	**49**
Utilities providers	49	50	41	42	42	**45**
Big technology companies	50	45	39	40	40	**43**
The government	43	45	42	35	37	**40**
Social media companies	34	30	26	28	31	**30**
Category average	**54**	**52**	**50**	**47**	**46**	

Although the data from the gov.uk survey did suggest that younger participants had a more positive and trusting view of AI and technology overall, their response to the questions about the biggest threats (Table 4) and who could be most trusted with their data (Table 5) were not significantly different to other demographics. This is potentially important for developers of AI HCI and for social media companies since they are considered to be the least trusted. It is very positive that the NHS and university researchers are highly trusted, because as noted earlier medicine is one of the major areas of development for AI and HCI, and although there has been some use of social media in healthcare,[39] secure and dedicated channels are the more usual approach.

When the data on social media usage and public trust in AI are analysed comparatively, there seems to be a situation where, although the users do not trust either the social media companies or the AI that they are using, they are still prepared to use both. Although in the modern Western world it is difficult to avoid the use of social media or contact with AI and technology, meaning that there is some element of lack of choice, the rate of growth of social media usage does not easily compute with the apparently low levels of trust in AI, technology, and social media companies displayed in the data. This also relates to the changes in perception that are shown in Table 4; people in the UK appear to believe that the risks have increased during the previous year and that the press and news reports are increasingly negative in their portrayal of stories about data and technology.

This, of course, is their perception, and without objective research cannot be assumed to be fact. However, if these stories are portrayed increasingly negatively, then this could also be one of the factors in the perception that the risks have increased during the same period. Correlation is not causation, though, and it would be essential to examine the major news stories of the intervening period to discover whether there was an increased negative bias, or whether the opposite is true: because they participants have, for some reason, lost trust in technology, they consequently are more likely to notice negative stories in the news.

Nevertheless, the lack of trust in social media companies may also be a reaction to the fact that currently, in social media, AI is used (among other things) to recognise the users' face in photographs, target advertisements to user preferences, make job offers, and *"to track your features and overlay filters that move with your face in real-time".*[9, p. np]In other words, AI has become so integral to social media and to such a degree that users no longer even notice. From a marketing viewpoint this is the perfect opportunity to sell specific product without the user even realising that it is being advertised or marketed.

Conclusions and Implications

Although the use of AI in social media and social media marketing is well known and accepted, the research has examined data that was collected related to the ways in which users perceive and trust in technology and AI. What the data from the UK and around the world appears to show is that the greater the level of technology in society, the less AI is trusted. Hence, in Japan, Great Britain, and the USA the levels of mistrust are higher than in China and Saudi Arabia (see Table 3). The difficulty with this conclusion, however, is that these countries where trust is lower – particularly noticeable being the lack of trust in social media companies – are also, nevertheless, experiencing rapid and strong growth in the use of AI and social media.

The data, generally, does seem to contain contradictions that need to be further researched. One of these areas is particularly prominent in the UK data about the perceptions of, and trust in, AI and technology. It is noted in Table 5 that the respondents had a strong level of trust in the way that the NHS would use and protect their data. This is very good and very positive, except that it must be remembered that the NHS is a government funded institution, which uses government supplied and financed computer systems, and yet trust in the government use and protection on data is almost as low as trust in social media companies.

Another difficulty with drawing conclusions from the comparative analysis of the data is that, although in the UK it does appear that if the participants are in the younger age groups, they have a more positive view of the use of technology and AI, this greater overall trust is not reflected in their attitude towards what the risks are or which companies or institutions can be trusted with their data. In fact, although the difference is not statistically significant, the idea that news stories about data and technology have become increasingly negative was less marked among the older participants. The reason that it is relevant that younger participants are more positive, and trusting is because this is also the demographic where most of the social media growth is occurring.

The implication of this is that these younger social media users appear to trust the technology itself more that they trust the companies which are using the technology. There also appears to be a resulting cognitive dissonance, where

they believe that the social media companies cannot be trusted but are prepared to use them anyway because "I would not trust them with your data, but they will be ok with mine". This contradiction makes it difficult to predict the future trends, unless a deeper study is completed which includes a much deeper sociological investigation into these apparently incompatible views. Have the younger users got a more positive view regarding AI and its potential benefits to society because they have greater knowledge or is this simply due to the enthusiasm and lack of experience of the younger participants.

The final implication of the research is that if AI HCI is to be developed that is compatible with social media use, perhaps aimed at reducing FoMO or internet addiction it will need to be more flexible and open to a wider variety of users than most commercial HCI, because in the UK alone, social media has more than 50 million users. This would require a much wider accommodation than an HCI system in a company with a few hundred employees but must also minimise the degree to which it collects and personalises data because of the concerns of privacy and of the vulnerability of younger users.

Research limitations

The principal limitation of the research is that it has been conducted on a small-scale using secondary data. Consequently, it is unable to investigate any of the sociological or societal aspects of the data, particularly those areas of the data appear to be contradictory, such as why the respondents to the government survey state that they do not trust AI or social media companies but at the same time are increasing their use of social media, which incorporates AI into every aspect of their products and services. In addition, the research was unable to determine whether the perceptions of the participants in the UK survey regarding news reports related to technology were accurate.

They appear to believe that these news reports have become increasingly negative in their approach during the last year, but without research directly into these news reports it is impossible to state whether this is a perception based on fact or on some other factor.

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Appendix A: Supplementary Data

1. From Statista,[34]the data regarding *'Trust in artificial intelligence by country 2018'* has the following notes:

note	Detail
Release date	November 2018
Region	Worldwide
Survey time period	September 20 to 28, 2018
number of respondents	18,000 respondents
Age group	16-64 years
Method of interview	Online panel
Supplementary notes	Original question: To what extent do you agree or disagree with the following (1-strongly disagree to7 - strongly agree)? I trust artificial intelligence* Samples represent a more affluent, connected population.

For Great Britain the trust statistic displayed was 23% agree, 29% neutral, and 48% disagree.

2. From gov.uk,[31] the survey methodology states that: *"For Wave 2, Savanta completed a total of 4320 online Interviews (CAWI) across a demographically representative sample of UK adults (18+). This survey ran from 27th June 2022 to 18th July 2022. A further 200 UK adults were interviewed via telephone (CATI) between 1st and 20th July 2022."*
3. cybercrew.co.uk,[36] a trade body, use collated and extracted data from a range of sources including those used for this article. Although this is not an academic source, the statistical data has been confirmed wherever possible by examining the original source, and although these sources have not licensed the data for reproduction here it has been cross-referenced to check the validity of the cybercrew.co.uk report.[36]
4. Dixon's article on Statista,[33] was used to support and confirm the cybercrew.co.uk report,[36] and although it cannot be reproduced in this article, it has not been misrepresented by cybercrew.co.uk.[36]