

The Dilemma of Social Media:

Perceptions and Ethics of AI.

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Abstract

Social media networks are extensively using artificial intelligence tools (AI) fed with huge data about users' preferences, mental state, mood, health, and other. The potential risk of manipulating this "Big Data" to predict users' behavior, customize users' profiles and create a "Virtual social world" for each one is of major importance. Using algorithms to make sense of streams of data, known as the discipline of data analytics, and how it's applied in social media platforms and decision-making rises ethical concerns about data privacy and data protection. The debate about the negative effects of social media on users' psychology, how it affects a person's image of himself and the world will be tackled from the perspective of users' perception of the risks of using social media. This research is conducted to answer questions related to users' perceptions of privacy, risk of sharing personal data on social media and to what extent are people aware of the use of AI and the risks they face while using SNSs, as well as the ethical issues related to the use of artificial intelligence in social media.

Introduction:

Artificial intelligence technologies have been an issue of recent debate, perceptions about AI were generally connected to computer science field for a long time, but in the past few years, interest has been focused on the implications of AI in people's life and the future of human relations. Netflix streamed a docudrama "The Social Dilemma" on September 2020, it scored 38 million views according to Hindustan times, October 21, 2020. The documentary-drama hybrid investigates the impact of social media on people through the presentation of experts revealing the dark side of the applications they created. The movie tackled the idea of algorithms to predict human behavior, AI and its impacts and the effects of social media. The current research arises the notion of "privacy" and its relation to social media, as an unprecedented amount of data and personal information is being shared and circulated with less control and high vulnerability. The research explores people's perception of privacy in social media, to what extent they perceive the risk of using social media, are they concerned about their privacy and do they have control over it? The research aims to explore people perception of privacy and ethics related to the use of social media.

The social Dilemma concept:

According to (Van Lang, Paul A.M, et al, 2012) "Social dilemma involves a conflict between self-interest and longer-term collective interests". Many of the most common social problems represent social dilemmas, for instance preserving the environment, overpopulation, destruction of the rainforests, overharvesting of goods, in all the above behaviors people may think of their immediate personal interest and ignore the long-term effect on the collective interests, which creates social dilemmas.

In the current case of social media, the social dilemma is created from the conflict between dealing with social media as business models and ignoring the long-term effects of that on collective interests. Many researchers studied the different dark sides of using social media on society members, monitoring social and psychological effects on kids, teenagers, youth, adults, females and other categories. According to (Abi Jaoude, E, et al, 2020) after reviewing cross-sectional, longitudinal and empirical studies, results showed that the intense use of social media among youth leads to depression, self-harm, suicidal attempts, sleeping disorder and academic performance. The heavy use of smartphones among adolescents leads to social comparison affecting users' views of themselves and their personal interaction. In the last decade, increasing in mental distress and seeking treatment for mental health among youth was linked to smartphones and social media. In Ontario, the percentage of mental distress between teenagers raised from 24% in 2013, to 34% in 2015, to 39% in 2017. Similarly, the rate of suicidal attempts between American adolescents doubled between the year 2008 and 2015 with the highest percentage for girls. (Abi Jaoude, E, et al, 2020, P. E136)

On the other hand, two cross-sectional studies conducted respectively on American and German university students found that students who spent more time on social media develop a sense of envy and social comparison, referring to the term "FOMO" which reflects the Fear of Missing Out, pointing to the stress social media burdens the young generation shoulders with, by comparing their lives to others, which leads to depression and anxiety. (Abi Jaoude, E, et al, 2020, P. E137)

The business model of online applications including Google, Facebook, twitter, Instagram, Pinterest and many others are building on selling users' attention to advertisers. A competition between apps to keep users hooked to the screen for a longer time to monetize time and attention. In order to do that, developers relied on research about color effects and use psychological concepts such as triggers and rewards to keep the attention of users. This creates an addictive behavior that alters our perception of the world. (Basen, I, 2018)

The "Social Dilemma" documentary produced by Netflix and aired in September 2020, started a discussion about this conflict. The documentary discussed ideas related to social media as business model, addiction, privacy, ethical issues related to social responsibility and controlling the misuse of social media. In their study (Petrescu, M. & Krishen, A.S, 2020) conducted a sematic analysis of 8812 Twitter messages discussing the documentary from beginning of October 2020. The results emphasized the concern about data manipulation via the main companies Google, Facebook and Twitter as well as the use of algorithms to analyze users' data. According to (Rashckle et al, 2014) discussion and collaboration should take place between stakeholders to shape common ground on ethical platforms, monetarized business models, privacy and consumer awareness.

Artificial intelligence in social media:

Over the past two decades, the growth of artificial intelligence and its advancement and large use dominated the field of technology. According to (Jackson, P.C., 1985) artificial intelligence refers to "the ability of machines to do things that people would say require intelligence". The field of AI today can update and enhance the applications we use in a way that decreases the need for human interference (Hervieux, S & Wheatley, E., 2020). Many questions and discussions are associated with the widespread of AI in our lives, concerns about its impact on social interaction, its negative uses for instance in faking news, how to promote the use of AI in decision making, and privacy concerns.

The emergence of artificial intelligence and its use in social media raises concerns about the impact it could have on human social interaction. As (Cassell, J., 2019) stated in his research that every new invention rises at first hopes and ambitions about positive impacts on society like the emergence of television in the past, then soon the great expectations are followed by fears and concerns about the negative aspects of its use on the society and the human interaction.

On the other hand, (Skkiba, R., 2020), discussed fake news one of the negative aspects of AI. Artificial intelligence techniques are widely used to fake news, and to present content that is like real news. At first, faking news was considered difficult to do due to the process it takes to present news to appear real, now with the AI technology news, photos and videos could easily be manipulated and presented in a level of professionalism to convince the readers and viewers that it's not faked. The photos are photoshopped with great accuracy, videos are processed with the same ease to change sound tone or lip-synching.

Moreover, another concept that was widely known in the late years, the internet of things (IoTs), a term referring to consumer use of their smartphones to check on their home devises, synchronize them and adjust the way it works. As smart homes give a privilege to customers and open new horizons and benefits, it represents a risk on privacy. (Petrescu, M. & Krishen, A.s, 2018)

Check-in services are another feature widely used on social network sites, in which users reveal and share their visited places and location. Users often refuse to share location while using the application due to the risk perception related to the disclosure of private information. If the user chooses to add location via Facebook, the application automatically detects where he is using the GPS (Global Positioning System). (Kumar, T.F, et al 2020) The GPS connects wirelessly to information through this feature. (Raschke, R, L et al, 2014) As the information and communication systems are using personal data, this presents a risk to privacy.

Algorithms and decision-making:

In the era of artificial intelligence and information society, the decisions-making process that was previously held by humans, is now delegated to "Algorithms" that are substituting humans in processing the data and proposing actions. Algorithms are proposing a recommendation system in which they can offer to users the best time to practice, which way to take, what to purchase and whom to contact (Mittelstadt. B.D, 2016). The definition of "Algorithms" as merely mathematical constructs is different than its use in public discourse referring to the process of data-mining is which these constructs are implemented in technology in different domains and used to process big data sets, in order to make decisions previously made by humans, with an excellence in its complexity and capacity. Algorithms can be challenging to human decision-making which is limited to constraints in time and ability, though the capacity computer-based technology use to process thousands of data with accuracy and efficiency opens a new perspective to discuss the ethical issues related to decision making delegation to algorithms. (Krupiy, T., 2020) presented in her research an overview about the introduction of AI technologies to make decisions related to human recruitment and performance. The article discusses the impact of this process from a social justice perspective and argues the impact of a new technology widely promoted by the field of computer science

nowadays in a field that was by nature consecrated to only human decisions.

Perceived privacy:

Since the beginning of the online communication, even before the widespread of the social network sites, people are concerned with the desire to disclose and share personal information online and the fact that they need to maintain their privacy. A fact that is constant since the early written communications till present is that people will benefit more from the medium when they disclose more information about themselves. Therefore, it's a double-edged sword, as the more you disclose personal information the more your privacy could be at risk. (Walther, J.B, 2011)

Margulis S.T, 2011, reviewed the theories of privacy and presented three main theories addressing the notion that stood over time, Westin theory (1967) and Altman privacy theory (1975). Petronio's privacy management theory (2002) built on Altman's work and it suits the study of social networks.

Many attempts to define "privacy" over the last century, Westin, 1967, described it as the decision of a person or group when, how and to what extent they may share information about themselves with others. Westin proposed that people need privacy in their life which helps them adjust to daily interactions. For Westin, privacy is a dynamic process, since people tend to adjust the level of disclosure to the situation. Altman too had an important input in understanding "privacy", he as a social and environmental psychologist put the social interaction in the core of his theory, he focuses on personal and group dynamics. (Margulis S.T, 2011)

While researchers and policymakers try to understand the perceived risk for many decades, research about it dates back in the sixties after the nuclear debate. (Sjöberg, L., 2000)

Communication Privacy Management Theory:

As exposing our private feelings in public is not easy, the term "private disclosure" tackles the idea of sharing in public personal feelings while maintaining self-privacy. The decision of sharing private information and feelings is subject to evaluation of the urgency and the need and with whom these feelings are communicated. Having control over one's privacy is a basic human need, therefore the decision of disclosing private information implies giving others access to our private domain with a potential misuse of it. (Petronio, S., 2012). In his book, Petronio presented the Communication Privacy Management theory to explain the process of person's decision making about revealing private information. In his research (Chang et al, 2015) proposed a "Privacy Boundary Management Model", the researches proposed a model in which they examined relationships between a set of variables that were previously studied and they presented a scale development and a structural model upon which the current study relies.

According to (Deniev et al, 2013) “perceived privacy refers to an individual self-assessed state in which external agents have limited access about information to his or her”. “Privacy concern refers to the individual’s level of anxiety regarding a third-party’s information practice” (Smith et al, 1996). Therefore, when the person has more concern about his privacy, he is anxious about how others may deal with his personal information, he will perceive his privacy as vulnerable.

H1: There is a negative relationship between Privacy concern and perceived privacy.

The previous literature on risk-control proposes a positive relationship between control and optimistic bias, so, the more the person feels having control over his data the more he will underestimate the risk related to sharing personal information on social media, therefore, he will be more open to take risks. The person’s perception of the risk-control relation will influence his overall perceived privacy.

According to (Xu et al. 2011), perceived risk is “the expectation of losses associated with the disclosure of personal information”. The research postulates that people evaluate the risk of sharing personal data on social media, and if they perceive the risk as high, they will raise concerns about what to share and who is entitled to use this personal information. Higher levels of perceived risks will raise users’ privacy concern which affects the overall evaluation of perceived privacy. (Deniev et al. 2013; Petronio et al. 2012)

H2: There is a positive relationship between Privacy risk and privacy concern.

H3: There is a negative relationship between Privacy risk and perceived privacy.

When a person is disclosing personal information, his perception of control is of main concern. According to (Westin, 1967; Xu et al. 2011) perceived control is defined as “individuals’ belief of their ability to manage the release and dissemination of data”. The variance in people’s perception about the control level they have over their private information influence their perceived concerns about their privacy. A negative relationship between perceived control and perceived concern is detected. A negative relationship between the perception of control over private data and the overall perceived privacy. (Chang et al. 2015)

H4: There is a negative relationship between Privacy control and privacy concern.

H5: There is a negative relationship between Privacy control and perceived privacy.

As the tendency to have more concern about the risks of sharing personal data and the evaluation of the life-threatening experiences grow over time, the perception “good” or “bad” effect of the social media effect may differ in relevance to age.

RQ: Age influences the perception of social media effect.

Methodology and data collection:

A cross-sectional study was conducted to measure the interrelation between the variables: perceived privacy, privacy concern, privacy risk and privacy control. The age variable is also studied in relation to the perception of social media effects. A measurement scale was developed upon previous studies reviewed in the literature review with some adjustments to the current research. An online questionnaire was designed to measure the variables of the study, the data was collected from 200 respondents (18- 60) years old, 89.1% females and 18.9% are males; 56.7% of the sample are undergraduate students, 32.5% are university graduates and the rest are masters and PhD holders.

Scales development: based upon the “Privacy Boundary Management Model” proposed by (Chang et al, 2015), the current study adapted the measurements scales to the scope of its research.

Perceived privacy:

- I feel I have enough privacy when I use social media.
- I am comfortable with the amount of privacy I have when using social media
- I think my online privacy is preserved when I use social media.

Privacy concern:

- I am concerned that the information I share on social media could be mis-used
- I am concerned about posting personal information to social media because of what others might do with it
- I am concerned about the use of my profile info by the artificial intelligence tools
- I am concerned that my preferences on social media are being manipulated to predict my behavior

Perceived risk:

- In general, I find it risky to share personal information and feelings on social media
- Sharing my personal information and feelings on social media would involve many unexpected problems
- The use of algorithms to predict our behavior in social media makes me feel unsafe
- The idea of thinking that someone is monitoring my profile scares me.

Perceived control:

- I believe I have control over who can get access to my personal information
- I believe I have control over how personal information is used by social media
- I believe I can put guidance and boundaries to how often I use social media, and what to use it for
- I believe it's hard to stop using social media even if it could have harmful effects

Results:

The results show that 56.2% of the respondents perceive the overall effect of "social media" on our perception of reality as "good" and 43.8% perceive it as "bad". This result depends on the age of the respondents and the correlation between the two variables will be examined.

When asked about their perceptions of "social media" and artificial intelligence (AI) effects, respondents showed 124 high responses (62%), (37%) perceived the effects as medium and only 1% perceived it as low.

Table (1)
Perception of the effect of "social media"

		Frequency	Percent	Valid Percent	Cumulative percent
Valid	high	124	62	62	62
	medium	74	37	37	99
	low	2	1	1	100.0
	Total	200	100.0	100.0	

When asked about their perceptions about social media, 75.4% of the respondents think that our brains are being manipulated by social media, 75.4% consider Facebook, google, Instagram as related applications. 56.8% think that "Algorithms" are designed to get our attention to create a need to buy something and 56.3% reported that artificial Intelligence used in social media creates a distorted vision of the world and us. Then, when asked about their on hoe social media affects the new generation, 53.4% of the respondents agreed that "Gen Z" has more anxiety, depression, self-harm and suicide attempts due to social media pressure, 38.2% were neutral and 8.3% disagree with that statement. Finally, when asked about their trust for the social network sites 71.9% agreed that we should question everything we read online, 21.6% were neutral and only 6.3% disagreed. This reflects how the respondents perceive the social media effects and other aspects related to how they perceive the use of algorithms and artificial intelligence and its influence on the social world.

Furthermore, when respondents were asked about the most important ethical

issues related to the use of artificial intelligence in social media, 55.4% of the respondents pointed to the threats to privacy and data protection rights as the most important issue, 42.6% reported to the manipulation of persons and groups, 41% reported that its impact on the human brain and cognitive capacity, 28.2% were concerned about diminishing variety that creates biased views and distortion of reality, 25.1% were afraid of the algorithmic power over human behavior and development and 20.5% reported “constraints on communication and freedom of expression” as the most important ethical issue related to AI and social media.

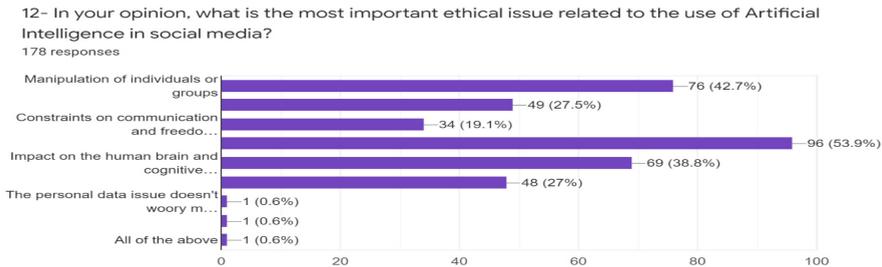


Figure (1)
The most important ethical issues related to the use of artificial intelligence in social media

Results of the respondents' perception of privacy show that overall people perception of privacy on social media is low. 55.49% of the sample disagreed with the idea of having enough privacy when using social media, 21.4% were neutral and 23% agreed with it. 44.5% feel uncomfortable with the amount of privacy on social media, 28.49% are neutral and 25.9% feel comfortable with it. When asked if they think that their privacy is preserved online 40.8% think it's not preserved, 39.5% are neutral and 25.6% agreed with the statement.

Please think about the access the social have to your personal information and answer the following questions:

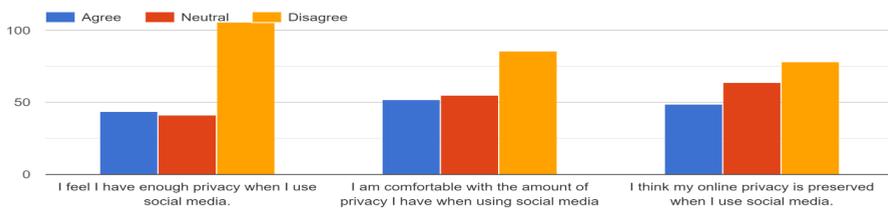


Figure (2)
Respondents' perception of privacy

The results of respondents' concern about their privacy online showed generally a high level of concern reflected through the different statement of the scale with a percentage over 50% for all the scale statements. Then, people are normally concerned about the information they share on social media could be misused, posting personal information to social media because of what others might do with it, the use of their profile info by the artificial intelligence tools and they are also concerned that their preferences on social media are being manipulated to predict their behavior.

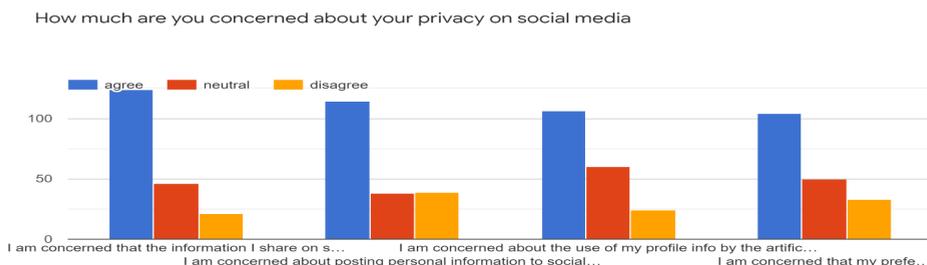


Figure (3)
Respondents' privacy concern perception

As for the perception of risk, respondents perceive their privacy at risk while using social media, (70%) find it risky to share personal information and feelings on social media, and (72.3%) found that this would involve many unexpected problems. (51.29%) of the sample agreed that the use of algorithms to predict our behavior in social media makes them feel unsafe. (65.1%) reported that the idea of thinking that someone is monitoring their profile scares them.

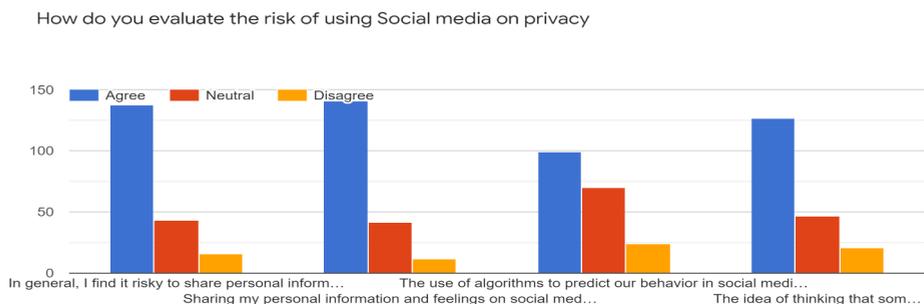


Figure (4)
Respondents' privacy risk perception

Finally, respondents showed generally high levels of perception of control over their privacy on social media. (51.26%) believe they have control over who can get access to their personal information, (48.9%) believe having control over how personal information is used by social media. (48.7%) believe they can put guidance and boundaries to how often they use social media, and what to use it for. Then, when asked about if they can stop using social media, (57.4%) believe it's hard to stop using social media even if it could have harmful effects, while (25.6%) are neutral and only (16.9%) of the sample believe they have the ability to stop using social media.

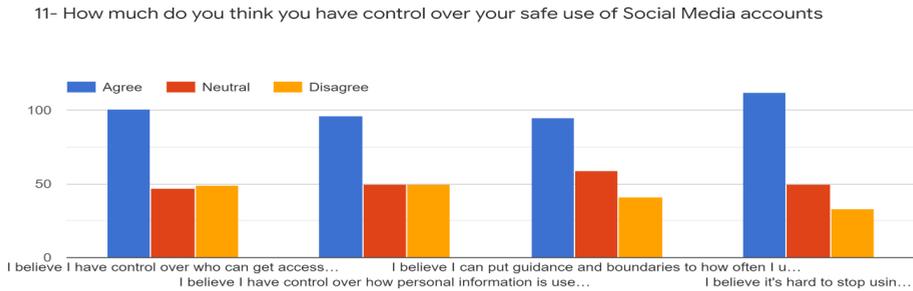


Figure (5)
Respondents' privacy control perception

Hypothesis testing:

H1: There is a negative relationship between Privacy concern and perceived privacy.

There is a significant negative statistical correlation between perceived privacy & privacy concern at a significant level of 0.0002 (weak relation). When the privacy concern level of the sample is high, they have less level of perceived privacy and vice versa.

Table (2)
Pearson correlation between perceived privacy & privacy concern

Variables	Perceived Privacy	
	Pearson Value	Significance level
Privacy Concern	-0.236	0.0002

H2: There is a positive relationship between Privacy risk and privacy

concern.

There is a significant positive statistical correlation between perceived risk & privacy concern at a significant level of 0.0002 (moderate relation), When the privacy risk level of the sample is high, the level of privacy concern is high too and vice versa.

Table (3)
Pearson correlation between privacy risk & privacy concern

Variables	Privacy risk	
	Pearson Value	Significance level
Privacy concern	0.404	0.0007

H3: There is a negative relationship between Privacy risk and perceived privacy

There is a significant negative statistical correlation between Privacy risk & Perceived privacy at a significant level of 0.0002 (weak relation). When the privacy risk level of the sample is high, they have less level of perceived privacy and vice versa.

Table (4)
Pearson correlation between privacy risk & perceived privacy

Variables	Privacy Risk	
	Pearson Value	Significance level
Perceived Privacy	-0.149	0.040

H4: There is a negative relationship between Privacy control and privacy concern.

No significant statistical correlation was proved between Privacy control and Privacy concern.

Table (5)
Pearson correlation between privacy control & privacy concern

Variables	Privacy Control	
	Pearson Value	Significance level
Privacy Concern	-0.094	0.195

H5: There is a negative relationship between Privacy control and perceived

privacy.

There is a significant positive statistical correlation between Perceived privacy & Privacy concern at a significant level of 0.0002 (moderate relation). When the privacy control level of the sample is high, the level of perceived privacy is high too and vice versa.

Table (6)
Pearson correlation between privacy control & perceived privacy

Variables	Privacy Control	
	Pearson Value	Significance level
Perceived Privacy	0.434	0.0001

RQ: Age influences the perception of the effect of social media

Table (7)
Simple linear regression analysis between age & perception of social media effect

Dependent Variable	R ²	F	SIG	Independent Variable	B	SIG
Perception of social media effect	0.067	14.16	0.0001	Constant	1.97	0.000
				age	-0.40	0.0001

A significant statistical effect is proven, the independent variable (age) explains about 6.7% of the perception about the bad effect of social media by the sample. $R^2 = 0.067$, P- value is less than 0.05, significance level (0.0001). F value (16.14) and the simple linear regression equation is: $Y = 1.79 + (0.40)$ *. This means that when the age of the sample is higher, their perception of the social media effect is higher (B= -0.40). Pearson correlation coefficient showed a weak negative relationship between age and perception of the effect of social media. Pearson correlation value (-0.0258) at a significance level 0.0001 proved a negative relationship between age and perception which means that when age increases, the sample tends to perceive the overall effect of mass media as bad rather than good effect and vice versa. This may be explai

ned due to the optimistic bias phenomenon that posits that the greater the perception of control over the situation the more likely persons evaluate the situation as less risky. This could be the case of the elder generation as it underestimates the risk of using social media due to their lack of real-world

experience and optimistic perception of the good effects of social media.

Conclusion:

People's perceptions of privacy could be an indicator of how they will act regarding the sharing of personal information and feelings on social media. The dilemma of dealing with the social media networks as business models that target only profit, disregarding its huge impact on society and potential risks especially to the newer generations needs further revision. As for the users of social media, a first step to limit its dark side on their social lives is to perceive the importance of personal data privacy and risks they may face while sharing their data every day. This study focuses on measuring people's perceptions of privacy through four main variables and their interrelation. The results emphasized that people perceived themselves at risk on social media, they have concerns about their data being manipulated and misused, this affects their overall perception of privacy while using SNSs and they perceive they have control over their data use and privacy measurement, but regardless their perception of the bad effect of social media have on their social life, they felt unable to stop using it. Hypothesis testing proved salience with previous studies, a significant correlation between perceived privacy and privacy concern, so if we can raise people's concerns about their privacy, this may affect their perception of privacy. Likewise, people's perception of privacy risk on social media is correlated to privacy concern, as concern and risk are two faces of the same coin, people who are concerned about their privacy will probably perceive the risk they face on social media as high and may take measurements to reduce it. As a result, perceived risk affects people's perception of privacy, as if the risk perception is high, people perceive themselves vulnerable, and their privacy threatened. On the other hand, there was no significant relationship between people's perception of control over their data privacy on social media and their concern about how it could be misused. Furthermore, people who perceive they have control over their data privacy positively perceive their privacy. Finally, the age affects the perception of social media effects, as respondents who are younger in age tend to oversee the good side of social media in their lives, contrary, the older generations will detect its bad effects more easily. :

The effects of social media in our lives overpassed anyone's expectations, technology developers never stop inventing new techniques that target to capture people's interest to the applications more and more. The addiction side in social media use is now obvious to researchers and arises many concerns about the impact it may have in the future. A dilemma that should be discussed more widely and openly to set the ethical rules to organize this new field of communication and adjust its use to the benefit of human beings not to its destruction.

Recommendations and further research:

This research is an exploratory study tackling the perception of privacy as a key indicator that may lead to decisions related to personal regulations to the use of social media. Further research should focus on the good governance of social media usage, more research about encouraging behavior related to safe use of internet and especially social media could be a scope for many coming research studies. The current research recommends using media to spread awareness about safe social media use and privacy measurements. Digital Media literacy should be implemented in all academic years and adopted largely as a national strategy. Raising awareness about the dark side of social media and the potential risk of disclosing private information is another key factor to limit the bad effects of SNSs. Data protection measures should be applied through legislations to secure people's and country's information. Finally, understanding the effects of Artificial Intelligence, Algorithms and data mining should be discussed in academic research through interdisciplinary studies (media, computer sciences, engineering, business, law, psychology, and sociology).

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