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Abstract

The spread of fake news on Facebook is a reality. This behavior is aimed at affecting reputation and generating distrust towards a certain person or on a specific topic. A bibliometric study of the scientific production in Scopus on Fake News on Facebook in the period 2013-2023 was carried out. The results showed that fake news is promoted in political issues to generate instability and in health issues to generate confusion and panic in the population. It was concluded that citizens must develop critical thinking to question the validity of news sources. Similarly, anonymity and misinformation are a natural part of society.

Keywords: Anonymity, Credibility, Facebook, Information, Politics.

1 Introduction

Information is the essence of all human activities. Peer-to-peer communication also contains it. In the virtual world, one of the ways of interacting is through social networks. Social networks are embedded in everyday life and, as such, reflect behaviors that can be understood or questioned (Chauhan, et al., 2021).

Facebook is a social network. It is not the only one, and it is one of the best-known in the world. The cyber-citizen becomes a content provider with a single click and in the absence of apparent sanctions is considered free to disseminate information, the problem being when this information is not true. It is not easy to distinguish false information, as this requires experience and verification by the reader. However,

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this does not always happen in reality because the intention to disseminate the information is more important than verifying or analyzing the origin of the information. This is the negative effect that societies suffer from. Likewise, fake news has been developing on this network for a long time. That is, information is spread with fake news, which generates an illusory effect among readers or the general public that affects democratic societies, therefore, it is important to study fake news (Pennycook, et al., 2018), (Qayyum, et al., 2019), (Zhang, & Ghorbani, 2020) and (Waisbord, 2018).

In this regard, there is research focused on determining ethical behavior on social networks, for example, in Cameroon in a study of 1000 publications it was found that it is necessary to control the publications to prevent the proliferation of conduct contrary to morality. Similarly, in the United States, a web survey was carried out with the participation of 2603 university students, and the result of the research was that the negative effects of Facebook materialize in the young adult population. It should also be noted that research was carried out in the context of the US presidential elections, where it was found that fake news on Facebook generates advertising revenue. In that order of ideas, it is necessary to take into account that there is an opportunity to generate awareness in the population about their interaction with fake news, if ignored, it is likely that behaviors oriented to the dissemination of news will be sanctioned (Njamen Kengdo, & Nchofoung, 2020), (Valenzuela, et al., 2009) and (Carlson, 2020).

It is undeniable that when the term news is mentioned, it is associated with journalism, which for some makes Facebook a digital medium for the dissemination of various topics. However, there is no defined control over the content of the information disseminated, which causes damage to society and democratic institutions (Bakir, & McStay, 2018), (Allcott, et al., 2019), (Richardson, 2017) and (Sukhodolov, & Bychkova, 2017).

In this regard, there is research linking information dissemination to online trust. This reflects the intention to filter content or counteract the effects of false stories. However, it is forgotten that Facebook is a medium or tool and that fake news is posted by people from different parts of the world (Talwar, et al., 2019), (Clayton, et al., 2020), (Pangrazio, 2018) and (Karlsen, & Aalberg, 2021).

This study does not focus on real stories circulating on Facebook, as its analysis is different. This time, it focuses on the interest in fake news. It is also noted that, in general, it does not take into account who created and disseminated the news, and it is necessary to analyze credibility for the benefit of users (Kim, & Dennis, 2019).

The behavior of Facebook users cannot be measured by ethics. Some people access the Internet and do not have good intentions. Even more so if user identification has gained prominence in recent years before anonymity was a reality. This aspect is no longer a decision but a need to know who are the authors promoting the dissemination of concrete and truthful information (Sahoo, & Gupta, 2021).

In that sense, anonymity on Facebook is considered to be linked to disinformation or the spread of misinformation. This is a global danger that affects public health and scientific dissemination. Reader and public trust are distorted when interacting in the virtual world (Del Vicario, et al., 2019), (Islam, et al., 2019), (McClain, 2017), (Torres, et al., 2018), (Xu, et al., 2020), (Van Dijck, 2020), (Maweu, 2019) and (De Zuniga, & Cheng, 2021).

It is necessary to verify identity in the virtual world. In this way, the dissemination of false information could be attributed and sanctioned. With this action, it would be possible to eliminate behaviors that cause alarm and affect the emotional health of the population. Facebook can no longer be considered a news agency; that was not its original purpose. Although it did invest heavily in preventing harmful content. This situation is not controlled as it should be (Moravec, et al., 2020), (Andersen, &

Soe, 2020), (Johnson, & Kelling, 2018), (Cano, et al., 2021), (Tandoc, et al., 2021) and (Gongane, et al., 2022).

In this sense, it is important to conduct a bibliometric analysis to identify the scientific production of fake news on Facebook.

2 Literature Review

From the literature review, it can be seen that Fake News on Facebook is segmented into the following sub-themes.

Fake News in Politics

In the 2016 US presidential campaign and election, fake news spread on social media. The fundamental characteristic is to generate doubt in the voting public. The influence and impact of the information are similar to that of the media, which must be balanced with the behavior of the audience (Allcott, & Gentzkow, 2017), (Guess, et al., 2017), (Guess, et al., 2020) and (Nelson, & Taneja, 2018).

One point to bear in mind is the public's perception of fake news. Political misinformation by candidates has irreparable consequences. In this context, it is feasible to develop good citizenship. Good citizenship is understood as the duty of every citizen to seek political information and make good decisions (Chadwick, et al., 2018) and (Masullo, & Kim, 2021).

In the case of US newspapers, the issue of fake news was dealt with differently. The editors' work represented the filter to avoid critical incidents of social problems. This reduced the presence of false or fabricated sources. On Facebook, this did not happen (Tandoc, et al., 2019) and (Andorfer, 2018).

Fake News and Health

During the COVID-19 pandemic, the dissemination of false information was notorious. The motivation for this was found to be linked to prediction or entertainment. The lack of information to counteract the effects and the fact that it was not disseminated promptly by the authorities caused the population to take refuge in social networks. This behavior led to the affectation of the health system and the mental health of users accessing the internet. In this sense, it is clear that during the pandemic, Facebook was one of the channels for the greatest dissemination and exchange of information (Apuke, & Omar, 2021), (Atehortua, & Patino, 2021), (Radwan, et al., 2021), (De Barcelos, et al, 2021) and (Faraon, et al., 2020).

Misinformation hinders disease prevention and treatment. While it is true that there is an understandable need to communicate a message, it is also true that this message must be supported by scientific evidence. Otherwise, it becomes just more speculation spread in cyberspace (Sommariva, et al., 2018).

In that sense, citizens must take responsibility for the information they disseminate on social media. Shared information can have a social impact when the person who has access to it does not know more details. Distrust of the internet should be the first natural filter to recognize false information (Pulido, et al., 2020).

3 Methodology

The information was collected from the Scopus database on April 25, 2023.

The research objective is to identify the scientific production of fake news on Facebook in the period 2013-2023.

Search Formula

In Scopus: (TITLE-ABS-KEY (Facebook and "fake news")).

Inclusion and Exclusion Criteria

Table 1 details the selection criteria for the scientific production and specifies the inclusion and exclusion criteria.

Table 1: Criteria

Criteria	Inclusion	Exclusion		
Database Scopus		Other databases		
Document Type	Article	Conference Paper, Book Chapter, Review, Conference Review, Book, Editorial, Note, Short Survey,		
Publication Stage Final		Article in Press		
Source type Journal Conference Proceeding, Book Series, Book, Trade Journal		Conference Proceeding, Book Series, Book, Trade Journal		
Period 2013- April 2023 Another period		Another period		

The search was considered based on the title, abstract, and keywords. The inclusion criteria are: limited to articles, limited to journals, and limited to final articles.

The exclusion criterion is everything that is not related to the previous paragraph.

At the beginning of the search, 246 articles were obtained as a result. When reviewing the documents, 146 articles were considered because they are related to the research objective.

Data analysis was performed using Excel and R-studio 4.1.0 software, the bibliometrix package, and the Biblioshiny interface.

The Research Questions are:

- RQ1. What are the most influential journals and authors on Fake News on Facebook?
- RO2. What are the most cited articles and authors?
- RQ3. What are the most frequent words used in research on Fake News on Facebook?
- RQ4. What is the trend in the scientific production of fake news on Facebook?

4 Results

Most Influential Journals and Authors

Figure 1 shows that the first place is occupied by the journal Computers in Human Behavior (ISSN 0747-5632), published by Elsevier, in force since 1985, with an h-index of 203 and ranked in Scopus quartile 1.

Similarly, the journal Proceedings of the ACM on Human-Computer interaction (ISSN 2573-0142), published by ACM (Association for Computing Machinery), in force since 2017, with an h-index of 38 and ranked in Scopus quartile 1. The two journals have 4 articles published in the period 2013-2023.

The second place is shared by 5 journals, each registering 3 articles published in the period 2013-2023. The journal African Journalism Studies (ISSN: 2374-3670E-ISSN:2374-3689), published by Taylor & Francis, current since 2015, with an h-index of 17 and ranked in Scopus quartile 2. The journal International Communication Gazette (ISSN: 1748-0485E-ISSN:1748-0493), published by SAGE, in

force since 2006, with an h-index of 39 and ranked in Scopus quartile 1. The journal International Journal of Communication (ISSN: 1932-8036), published by USAC Annenberg School for Communication & Journalism, in force since 2011, with an h-index of 45 and ranked in Scopus quartile 1. The journal PLOS ONE (ISSN 1932-6203), published by the Public Library of Science, in force since 2006, with an h-index of 367 and ranked in Scopus quartile 1. RISTI – Revista Iberica de Sistemas e tecnologías e Informacao (ISSN 1646-9895), published by Asociación Ibérica de Sistemas y Tecnologías de Informática (AISTI), in force since 2011, with an h-index of 16 and ranked in Scopus quartile 4.

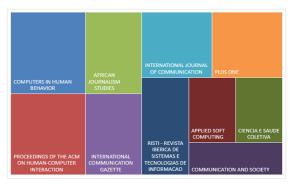


Figure 1: Most Relevant Sources

Most Relevant Authors

Table 2 contains the authors' production over time.

The first article is entitled "Consumer response to fake news about brands on social media: the effects of self-efficacy, media trust, and persuasion knowledge on brand trust" and was written by authors Fay, & Cheng (2020). It was published in the Journal of Product and Brand Management which is ranked in quartile 1 in Scopus. It records a total of 60 citations. The central theme of the article is to identify public reactions to fake news (Fay, & Cheng, 2020).

The second article is entitled "Fact or Fake? An analysis of disinformation regarding the Covid-19 pandemic in Brazil" and was written by authors Pereira, et al. (2020). It was published in Ciencia e Saude Coletiva which is ranked in quartile 2 of Scopus. It records a total of 59 citations. The central theme of the article is that fake news affects public health, as was the case with Sars-CoV-2 (Pereira, et al., 2020).

The third article entitled "The Influence of Presumed Fake News Influence: Examining Public Support for Corporate Corrective Response, Media Literacy Interventions, and Governmental Regulation" was written by authors Cheng, & Fay (2020). It was published in Mass Communication and Society which is ranked in quartile 1 of Scopus. It records a total of 41 citations. The central theme of the article is that user trust was affected by the spread of fake news (Cheng, & Fay, 2020)

The fourth article is entitled "Why Do People Share Ideologically Extreme, False, and Misleading Content on social media? A Self-Report and Trace Data—Based Analysis of Counter media Content Dissemination on Facebook and Twitter" was written by authors Hopp, Ferrucci, & Vargo (2020). It was published in Human Communication Research which is ranked in quartile 1 of Scopus. It records a total of 38 citations. The central theme of the article is the social distrust produced by fake news, a situation that does not occur in the mass media (Hopp, et al., 2020).

The fifth article is entitled "The battle to end fake news: A qualitative content analysis of Facebook announcements on How it combats disinformation" and was written by authors Losifidis, & Nicoli

(2019). It was published in International Communication Gazette which is ranked in quartile 1 of Scopus. It records a total of 30 citations. The central theme of the article is that the dissemination of false information violated digital freedom and affected populist sentiments (Losifidis, & Nicoli, 2019).

The sixth article entitled "Populist Disinformation: Exploring Intersections between Online Populism and Disinformation in the US and the Netherlands" was written by Hameleer (2020). It was published in Politics and Governance which is ranked in quartile 1 of Scopus. It records a total of 22 citations. The central theme of the article is that fake news is used to discredit politicians at an election juncture (Hameleers, 2020).

The seventh article is entitled "Regulating the internet intermediaries in a post-truth world: Beyond media policy?" written by authors Losifidis & Andrews, (2020). It was published in International Communication Gazette which is ranked in quartile 1 of Scopus. It records a total of 15 citations. The central theme of the article is that fake news acquires a significant say when combined with digital advertising (Losifidis, & Andrews, 2020).

The eighth article entitled "Fake news self-efficacy, fake news identification, and content sharing on Facebook" was written by Hopp (2021). It was published in the Journal of Information Technology & Politics which is ranked in quartile 1 of Scopus. It records a total of 9 citations. The central theme of the article is that the ability to identify fake news on Facebook should be developed (Hopp, 2021).

The ninth article entitled "Techlash', responsible innovation, and the self-regulatory organisation" was written by Hemplhill (2019). It was published in the Journal of Responsible Innovation which is ranked in quartile 1 of Scopus. It records a total of 9 citations. The central theme of the article is that it is necessary to implement self-regulation to identify fake news on Facebook (Hemplhill, 2019).

The tenth article entitled "The effects of emotions, individual attitudes towards vaccination, and social endorsements on perceived fake news credibility and sharing motivations" was written by authors Ali, et al. (2022). It was published in Computers in Human Behavior which is ranked in Scopus quartile1. It records a total of 6 citations. The central theme of the article is that fake news was also spread by antivaccine movements (Ali, et al., 2022).

Table 2: Most Relevant Authors

N	Author	Title	DOI	Total
				Citations
1	Fay, & Cheng	Consumer response to fake news about brands on 10.1108/JPBM-12-2018-2145		60
	(2020).	social media: the effects of self-efficacy, media trust,		
		and persuasion knowledge on brand trust		
2	Pereira, et al.	Fact or Fake? An analysis of disinformation	10.1590/1413-812320202510.2.28922020	59
	(2020).	(2020). regarding the Covid-19 pandemic in Brazil.		
3		The Influence of Presumed Fake News Influence:	https://doi.org/10.1080/15205436.2020.1750656	41
	Cheng, & Fay	Fay Examining Public Support for Corporate Corrective		
	(2020).	Response, Media Literacy Interventions, and		
		Governmental Regulation		
4	Норр,	Why Do People Share Ideologically Extreme, False,	https://doi.org/10.1093/hcr/hqz022	38
	Ferrucci, &	and Misleading Content on Social Media? A Self-		
	Vargo (2020).	Report and Trace Data-Based Analysis of		
		Countermedia Content Dissemination on Facebook		
		and Twitter		
5	Losifidis, &	The battle to end fake news: A qualitative content	https://doi.org/10.1177/1748048519880729	30
	Nicoli (2019).	analysis of Facebook announcements on how it		
		combats disinformation		
6	Hameleer	Populist Disinformation: Exploring Intersections	https://doi.org/10.17645/pag.v8i1.2478	22
	(2020).	between Online Populism and Disinformation in the		
		US and the Netherlands		

7	Losifidis &	Regulating the internet intermediaries in a post-truth	https://doi.org/10.1177/1748048519828595	15
	Andrews,	world: Beyond media policy?		
	(2020)			
8	Hopp (2021).	Fake news self-efficacy, fake news identification,	10.1080/19331681.2021.1962778	9
		and content sharing on Facebook		
9	Hemplhill	'Techlash', responsible innovation, and the self-	https://doi.org/10.1080/23299460.2019.1602817	9
	(2019).	regulatory organization		
10	Ali, et al.	The effects of emotions, individual attitudes towards	https://doi.org/10.1016/j.chb.2022.107307	6
	(2022)	vaccination, and social endorsements on perceived		
		fake news credibility and sharing motivations		

Figure 2 shows that the country of the corresponding author that stands out the most is India. In 2018 the first article was registered. From 2019 onwards the number increased. The years 2022 and 2023 reached their highest production of articles. There are 33 and 40 articles produced in the last two years.

In the case of the USA, the first article was registered in 2017. From 2019 onwards, the number of articles has increased. In the last two years, 62 and 63 articles have been registered. In the case of Spain, the first article is recorded in 2018. From 2021 the production of articles increased. In the last two years, 22 and 24 articles are recorded. In the case of Brazil, the first article is recorded in 2019. From 2021 onwards, production has increased. In the last year, it reached a production of 25 articles.

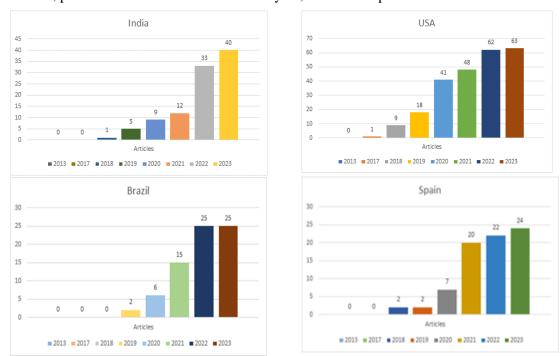


Figure 2: Corresponding Author's Country

Most Global Cited Documents

Table 3 lists the most representative articles on the topic of Fake News on Facebook. A common result is that the topic is linked to political competition and electoral processes. It is also used to affect the reputation or create rumors about candidates or politicians.

On the other hand, it should be borne in mind that there is a need to educate citizens to avoid falling victim to fake news (Megías, D., 2022). Trust in information rests on the origin of the source. In the same vein, it is essential to recognize that fake news is bound to undermine democracy in society

Table 3: Most Global Cited Documents

N	Title	Author /Year	DOI	Total	Main Information
				Citations	
1	Prior exposure increases	Pennycook,	10.1037/xge0000465	465	An informed electorate
	perceived accuracy of fake	Cannon, & Rand			contributes to the
	news	(2018).			support of democracy.
2	Trends in the diffusion of	Allcott,	https://doi.org/10.1177/2053168019848554	232	False information
	misinformation on social	Gentzkow, &			causes damage to
	media	Yu (2019).			institutions and
					democracy.
3	Less than you think:	Guess, Nagler,	https://doi.org/10.1126/sciadv.aau4586	193	Fake news is used in
	Prevalence and predictors of	& Tucker			political contests.
	fake news dissemination on	(2019).			
	Facebook	CI.	1		and the second
4	Real Solutions for Fake	Clayton, et al.	https://doi.org/10.1007/s11109-019-09533-	157	Citizen education
	News? Measuring the	(2020)	0		reduces the effects of
	Effectiveness of General				false headlines in the
	Warnings and Fact-Check				electoral context.
	Tags in Reducing Belief in False Stories on social media				
5	Multiple features-based	Sahoo, & Gupta	https://doi.org/10.1016/j.asoc.2020.106983	137	Reputation on
3	approach for automatic fake	(2021)	https://doi.org/10.1016/j.asoc.2020.106985	157	Facebook is damaged
	news detection on social	(2021)			by fake news
	networks using deep learning				by take news
6	Exposure to untrustworthy	Guess, Nyhan,	https://doi.org/10.1038/s41562-020-0833-x	132	Fake news is related to
	websites in the 2016 US	& Reifler (2020)	114ps.//doi.org/10.1030/341302-020-0033-X	132	politics and gives rise
	election	& Remer (2020)			to speculation.
7	Polarization and Fake News:	Del Vicario, et	https://doi.org/10.1145/3316809	124	It is essential to
′	Early Warning of Potential	al. (2019)	110,000 10.11 10,000 1000)	121	recognize false
	Misinformation Targets	un (2015)			information being
					spread on the web.
8	A New Application of Social	Pulido, et al.	https://doi.org/10.3390/ijerph17072430	98	False information
	Impact in social media for	(2020)	1 8 3.1		linked to the health
	Overcoming Fake News in	(/			sector generates social
	Health				impact.
9	A survey of Twitter research:	Antonakaki,	https://doi.org/10.1016/j.eswa.2020.114006	82	Fake news is confused
	Data model, graph structure,	Fragopoulou, &			with rumors and
	sentiment analysis and attacks	Loannidis			attempts to create a
	-	(2021).			perception of
					trustworthiness.

Most Frequent Words

Figure 3 identifies that the most used words about the topic of Fake News on Facebook are: social media (68 times), social networking (online) (40 times), adult (22 times), Facebook (18 times), fake detection (18 times), fake news (15 times), deep learning (13 times), social network (13 times), public health (7 times), and social media platforms (7 times).

Figure 4 shows 3 clusters: blue, green, and red. The blue cluster focuses on the keywords: social media, social network, and information dissemination. The red cluster includes the words: social networking (online), Facebook, fake detection, fake news, deep learning, social media platforms, classification (of information), learning algorithms, behavioral research, feature extraction, and natural language processing systems. In the green cluster, the words: misinformation, deception, trust, pandemic, communication, internet, public health, perception, prevention and control, social networking, vaccination, consumer health information, and policy are recognized.



Figure 3: Word Cloud

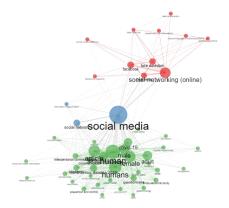


Figure 4: Co-occurrence Network

The Trend in the Scientific Production of Fake News on Facebook

As can be seen from Figure 5, it can be seen that in the last 5 years, the scientific output on fake news on Facebook has increased. In 2020 and 2022 it reached its peak with more than 50 papers.

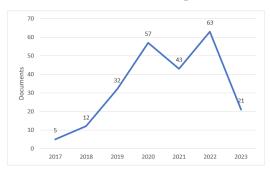


Figure 5: Annual Scientific Production

5 Discussion

Regarding the Most Influential Journals and Authors

The issue of Fake News on Facebook focuses on the political context, i.e., it is used to affect the image and reputation of candidates or politicians during an election process. The false information that is spread does not measure the consequences and can affect honor or simply generate rumors. This behavior should be sanctioned because it is not the politician who is harmed. If analyzed carefully, the only one harmed is the voter, whose perception was not distorted to make an informed choice (Carlson, 2020), (Allcott, et al., 2019) and (Antonakaki, et al., 2021).

For this reason, the most outstanding journals are located in quartiles 1 and 2 of Scopus. The scientific production of the authors leaves a message that priority should be given to the preparation of the citizen to avoid being a victim. The citizen must develop critical thinking and question the validity of all information on Facebook. The source or origin of the information is the first step in the exercise of democratic freedom (De Magistris, et al., 2022), (Di Domenico, et al., 2021) and (Kaur, et al., 2020).

Regarding the Most Cited Documents

The most cited articles focus their attention on the political level, i.e., the purpose of fake news on Facebook is to generate discredit and lose votes for future candidates or to discredit politicians. This is a constant in the articles reviewed and is focused on the loss of trust.

In this regard, it should be borne in mind that information should always be checked as to its source of origin. Deterrence and deception are the characteristics that affect reputation and credibility on social media. There is no initiative to develop the ability to self-inform, i.e., for the population to seek the veracity of the news disseminated on Facebook (Kim, et al., 2019), (Mena, 2020), (Luo, et al., 2022), (Corbu, et al., 2020), (Awan, et al., 2021) and (Boididou, et al., 2018).

About the most frequent words, it is recognized that social media, fake detection, deep learning, and information dissemination focus their attention on the citizen's response. It is for this reason that the population will have to develop new tools to detect the quality or authenticity of information. Likewise, it is not appropriate to continue to consider Facebook as an agency that disseminates news because that is not the purpose for which it was conceived (Melchior, & Oliveira, 2021), (Idrees, et al., 2019) and (Lunga, & Mthembu, 2020).

How Does the Promotion of Fake News on Facebook Affect the Public?

This research found that fake news on Facebook is produced by the apparent freedom and absence of sanctions held by cybercitizens. This becomes a world without rules. Although there are efforts to self-regulate behavior on the internet, however, the sanctions are not exemplary or drastic. It was also determined that fake news directly affects political stability at election time, which is reflected in acts that violate the dignity and privacy of candidates. Similarly, it affects public health because it distorts information and maximizes the practice of disseminating information without verifying its credibility, a situation that exposes the health of citizens. No information was found on countries that prioritize legal education on the Internet, which is an opportunity to sanction conduct that violates or infringes on human rights.

In this regard, it is necessary to mention that the dissemination of fake news is a reflection that questions the ethical credibility of the issuer of the content that is disseminated on platforms such as Facebook. It is important to recognize that there is a tendency towards anonymity, which is considered ideal to avoid the identification and possible sanctioning of the author who violated rights. There is no major academic activity aimed at establishing the civil or criminal liability of the author who infringes on public tranquillity or public health.

6 Conclusion

Fake news spread on Facebook affects the reputation and credibility of candidates or politicians. Anonymity and misinformation of the population are naturally combined. This behavior must be sanctioned because it affects the dignity of human beings and the democratic freedom exercised in society.

The discrediting of politicians is a constant in the most cited articles about fake news on Facebook. The population needs to develop critical thinking to question the validity of information sources. Not everything on the internet is of quality and misinformation leads to distrust of institutions.

Citizens should not rely on all the information on Facebook. There is fake news aimed at disturbing people's peace of mind or questioning a person's reputation. It is necessary to detect the quality or authenticity of the information, based on its origin and who is disseminating it. Anonymity should not be allowed.

Government authorities must prioritize legal education on the Internet as a public policy, which will allow citizens to know the legal consequences of rights violations committed online. Likewise, universities must contribute to digital literacy in the adult population to avoid the increase of the digital divide.

It is proposed as future lines of research to analyze Internet legislation in South American countries, since it would be convenient to develop regional guidelines and international cooperation focused on equal opportunities offered by the Internet.

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