



Impact of Human and Economic Development on Fake News Propensity During the COVID-19 Crisis: A Cross-Country Analysis

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ABSTRACT

The advent of the COVID-19 pandemic augmented the propensity for fake news globally. Today, over 90% of the global population depends on the internet for information. However, there is an enormous difference in fake news propensity in different countries. Thus, one must understand what factors influence the propensity for fake news during the COVID-19 crisis. Leveraging prior literature on fake news, the authors theorize the relationship between human and economic development and fake news propensity within nations. They analyzed the proposed model on a dataset generated from 104 countries. The research finds that a level of human development did not affect a nation's fake news propensity, while a higher level of economic development curbed its fake news propensity. This research extends prior IS research on fake news at the macro level and aims to better inform governments and policymakers in designing future crisis-proof policies to curb fake news.

KEYWORDS

Crisis, Cross-Country Study, Digital Communication Policy, Digital Intelligence, Disinformation, Economic Development, Fake News, Human Development, Reactive Coping, Resilience, Social Media Use

INTRODUCTION

The emergence of the novel coronavirus (SARSCoV2) in December 2019 coincided with the spread of fake news. As social and traditional media became inundated with content about COVID-19, the World Health Organization (WHO) announced that the pandemic was accompanied by an information epidemic, an “infodemic” (Al-Zaman, 2021). Although previous research has addressed how and why

DOI: 10.4018/JGIM.322401

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information is consumed and broadcast on social networking sites (Kapoor et al., 2018), this is the first time academics have been confronted with an infodemic (Schuetz et al., 2021; Shirish et al., 2021).

Fake news creates an uncertain atmosphere and generates tension, misconception, and mistrust among citizens of every nation. In the era of digital communication, online fake news is gaining new momentum. The primary reason for this trend is that approximately 90% of the world's population depends on the Internet for health-related information (Colominq et al., 2021).

Internet connectivity and social media is a unique and effective channel to spread misinformation among users rapidly and for malicious actors to target populations across borders. This production and consumption of false information has intensified the pandemic-led crisis (Griffin, 2020). For example, a single instance of medicine-related fake news claimed at least 800 lives and led to the hospitalization of 5000 more (Al-Zaman, 2021). Studies related to fake news associated with COVID-19 are important for researchers to deliberate. And more studies are required in this domain to capture nuances pertaining to differences between nations to understand what drives or inhibits citizens to explore and share fake information.

COVID-19 is a unique global phenomenon, but the impact of fake news and the propensity for it differ from country to country. As highlighted by the Poynter Institute, more than half of COVID-related fake news originates in four countries: Brazil, Spain, India, and the United States (Poynter, 2020). A recent survey posits that the incidence of fake news is low in less polarized nations such as Denmark and Norway, where media literacy is high, and people prefer objective news. On the contrary, it also predicted that instances of misinformation are higher in nations like Brazil, Kenya, and South Africa, where national institutions are weaker (Shirish et al., 2021).

The difference in the volume of fake news related to COVID-19 between countries, and the potential damage that this information may cause, provides centrality to research that identifies the factors that lead to country-level fake news propensity. Such research will help governments better understand the phenomenon of the infodemic and enable the development and design of appropriate policies to curtail it.

Moreover, the spread of fake news on social media poses a direct threat to public health. Governments aim to reduce locally fabricated false medical claims to minimize potential harm to their citizens. For instance, since late January 2021, researchers at the Taiwan FactCheck Center have spent time analyzing reports on fake remedies, counterfeit drugs, and false tests. Claims such as smelling sesame and other oils can kill SARS-CoV2 before it reaches the lungs have become popular in various regions of the world. Claims, for example, that COVID-19 is caused by the 5G network, the entire pandemic is a hoax, and the hospitals in France are empty have dire consequences (Bruns et al., 2020). Such news has resulted in decreased compliance with quarantine, sanitary measures, and willingness to vaccinate, accelerating the spread of coronavirus (Andersson et al., 2021). A recent study found that one in six people in the UK would reject the coronavirus vaccine, and fake news has led to other anti-vaccine campaigns in France and the United States (Jolley & Cookson, 2020). The popularity of this news owes to the fact that there is a huge knowledge gap around COVID-19. Therefore, focusing scientific efforts to understand the underlying factors that affect fake news propensity is timely and relevant.

The global effects of the pandemic may be lasting. Fake news has undermined social cohesion and trust in democratic governments (Herrero-Diz et al., 2020). Fake news can generate social unrest, motivated by those with manipulative intentions to produce the inflammatory information (Montesi, 2020). Perpetrators of fake news are motivated by potential economic benefits such as generating advertising revenue by increasing visitor traffic to certain websites to gain more followers and clicks. They have also taken advantage of the pandemic knowledge void to propagate certain ideologies and situations over others (Colominq et al., 2021). Thus, this study posits that higher levels of economic and human development can inhibit the motives for propagating or indulging in the fake news economy, and therefore, that institutional factors can reduce a country's propensity for COVID-19 fake news.

Human development is defined as the process of expanding people's choices to allow them to lead long and healthy lives, to be educated, and to enjoy a decent standard of living, political freedom, and guaranteed human rights (UNDP, 2015). These are all factors that support people's ability to make informed decisions. Yet, recent technological advances have made it difficult to verify authentic content online, and the manipulations of fake news negatively impact individuals' rights to health and education. This is a problem for advanced economies, but fragile institutions and potentially unlimited access to unverified data mean that the situation is even more problematic for emerging and developing economies. Moreover, human development assumes that increased access to Internet sources will be accompanied by increased ability to evaluate these sources. This assumption has never been tested.

Another factor that may affect COVID-19 fake news is a country's economic development. Economic development is defined as the wealth creation from which community benefits are achieved. It is an investment to enhance the prosperity and quality of life of all residents. Economic uncertainty creates a scenario of being in constant need of information, creating inroads for fake news consumption and production (Shirish et al., 2021). Fake news is usually generated to leverage citizens' fear and uncertainty, with the ulterior motive of capitalizing on local events. During the pandemic, economically unstable countries like Brazil, Argentina, and Spain were subjected to an abundance of fake news. Therefore, it is important to explore the dimension of economic development further in the context of fake news propensity.

In this study the following research questions (RQ) are raised:

RQ1: In the context of the COVID-19 pandemic, to what extent do human development levels impact fake news propensity within nations?

RQ2: In the context of the COVID-19 pandemic, to what extent do economic development levels impact fake news propensity within nations?

This study used negative binomial regression and considered the fake news propensity of each nation to include social media-generated incidences of fake news listed by fact-checking agencies available from a centralized database. This research capitalized on the use of country-level secondary data on a country's human development index and gross domestic product per capita to operationalize human and economic development indicators, respectively. The study extends prior literature on fake news proliferation in the IS domain and offers several practical insights. It is suggested that national policymakers develop authentic and trustworthy government institutions in complement to technological solutions to manage infodemics within their territory.

BACKGROUND LITERATURE

Literature on fake news during the COVID-19 crisis is emerging at both the micro and macro levels of analysis. Studies have focused on technical inhibitors to fake news. At the micro level, fact-checking behavior within the context of social media use may keep citizens from falling prey to fake news (Schuetz et al., 2021). Age cannot be explained as a factor when it comes to fake news consumption and transmission (Abraham and Mandalparthy, 2021), and studies have devoted their attention to understanding the cognitive reasoning behind the act of browsing or sharing fake news via social media through simulations and experiments. One study used a mathematical model to simulate the effort level of citizens in resisting fake news. It showed that making citizens aware of the negative consequence of fake news makes them more diligent in quickly filtering content, reducing victimization risks (Hartley & Vu, 2020). However, Pennycook and Rand (2019) note that people do not normally exert effort on analytical reasoning, which is why fake news spreads during times of crisis.

There are fewer studies at the macro level. But In a recent one, it has been shown that that greater institutional perceptions of economic and media freedoms encourage a resilient cognitive mindset among citizens, but the perceptions of greater political freedom contribute to a vulnerable cognitive

mindset that discredits reasoning, encourages reactive use of mobile devices, and increases fake news propensity within a nation (Shirish et al., 2021). A another cross-country study shows that fear of fake news consumption is linked to both news avoidance and news authentication behavior (Chan et al., 2021). These findings highlight the need to consider individual and institutional-level variables that can cognitively constrain citizens during a crisis to mediate their increased attraction to mobile content and services, which increase a country's fake news propensity. Thus, a cognitive mindset devoid of predictability and security is filled with uncertainty and fear, and any affective evaluation steaming from such mindset can propagate fake news. Extending this line of inquiry, it is proposed that human and economic development levels are inhibiting factors that offer predictability to citizens at times of crisis and allow them to make informed decisions. The conceptual model is presented in Figure 1.

Human Development and Fake News

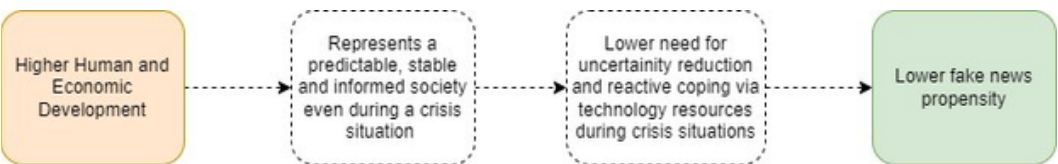
The COVID-19 pandemic has increased the need of relevant information. Confirmed coronavirus cases rose exponentially in China, followed by Italy, Spain, Central Europe, and the United States, culminating in a worldwide public health emergency. The health threat caused people to search out information to gain a sense of certainty about this disease. Thus, the sudden outbreak of COVID-19 led to misinformation about COVID-19 circulating widely across social media, radio, talk shows, and national news media (Barua et al., 2020).

In African countries, news from social networks are trusted more than traditional media due to citizens' mistrust of government. Social media has used this inclination to its advantage, providing abundant news at a quick pace that is accessible to everyone (Kabha et al., 2020). However, it is becoming difficult to differentiate a piece of true news from a fabricated one. This is even more important as access to big data allows social media players to increasingly filter content based on users' preferences and consumption habits; when all news is the same, it becomes harder to disbelieve. Therefore, Attention must be paid to the authenticity of the news. As social media becomes increasingly popular, its creators are churning out false information and phony news to build their audiences (Groza, 2020).

With the rising profile of online media in non-industrial nations, the issue of disinformation has broadened. Scientists have shown that individuals are not adept at identifying lies and falsehoods in messages. A meta-investigation of more than 200 tests by Bond and DePaulo in 2006 found that there is just a 4% probability of recognizing lies in messages. In many agricultural nations, online media, for example, Facebook, is so predominant that many rely on it as their primary source of information, without any form of fact checking (Wang, 2020). There is a convincing need to improve the ability of the overall population to fact check and call attention to disinformation (Khuong, 2020).

The rapid spread of the Internet has activated domestic public opinion, making the situation of fake news more complex. Agencies including the WHO and the United Nations (UN) connect the rising popularity of social media as a platform for information and the increased difficulty of controlling the spread of misinformation. Though some networking sites are trying to reduce misinformation on their portals by implementing fact checking, these efforts have yet to achieve real success (Wang, 2020).

Figure 1.
Conceptual model



Conceptual Model: Development Levels and Fake News Propensity within a Nation

Research on fake news continues to provide evidence of the reality of its impact on society. People believe that their opinions are personal but rarely realize that they are often influenced by what they see in social media. Fake news influences people's beliefs and attitudes and thus their actual behavior (Wright, 2020). This change in behavior is being used to mobilize voters, especially in developed societies. The confluence of Internet and social media is a major factor in the electoral success of populist movements in Europe and the United States (Zhuravskaya et al., 2020).

As global Internet connectivity increases, social media has become the biggest source of health information in developing countries. Internet technologies are becoming less expensive and easier to access (Barua et al., 2020). The restricted nature of solid, logical data during the COVID-19 pandemic has encouraged individuals to look for clarification as to the cause of the outbreak outside of verified channels, paving the way for the amplification of phony news and bogus data (Salvi et al., 2021). When sensations of vulnerability and dread make it hard to expect or design activities, individuals will look for opportunities to lessen those sensations, actively seeking out information that will help them regain a feeling of stability.

Recent research explains that citizens' reasoning and thinking abilities affect their affinity for consuming and propagating fake news. A higher level of human development would mean a more educated population who may be more impervious to phony news. The most popular measure of human development is that adopted by UNDP (2022). They measure human development in a composite manner considering achievements in key dimensions: a long and healthy life, being knowledgeable, and having a decent standard of living. This measures the non-economic growth of a country and its citizens. However, recent reports, especially post pandemic, predict a sharp decline in human development levels in several nations, and it is particularly attributed to mental health issues compounded by uncertain and complex problems that tests the level of cognitive resilience of citizens of each nation despite the provision of basic education and health facilities (UNDP, 2022). Evidence of these problems is noticed in studies conducted during the COVID-19 pandemic. Negative news has been more effective in attracting viewers than positive news (Salvi et al., 2021). Contemptuous and counter-disdain bots have seemed to cooperate and connect widely with each other, advancing a culture of bigotry against Asians (Pennycook et al., 2020). A study of individual behavior in response to the COVID-19 crisis in the United States found that "individuals less willing to engage effortful, deliberative, and reflective cognitive processes were more likely to believe the pandemic was a hoax, and less likely to have recently engaged in social-distancing and hand-washing" (Khuong, 2020). A population's cognitive makeup and educational level that can be captured through human development levels are crucial factors to consider when looking at inhibitors to fake news propensity.

Economic Development and Fake News

The COVID-19 pandemic has revealed government structural and coordination failures around the globe. The dwindling market and sudden lockdowns resulted in job and business losses, increasing the dependency of citizens on government. Many people do not trust government policies and find it hard to believe that economic conditions will be restored. This lack of trust results in citizens extracting information from social media rather than reliable government sources (Shirish et al., 2021). And media outlets have used this opportunity to accumulate more revenue by spreading sensational yet false information about deteriorating economic conditions during the lockdowns. Younger people are particularly critical of current financial policies. A survey conducted by the World Economic Forum (2020) found that people between 18 and 29 are concerned about market uncertainty, whereas older citizens are less worried as they may have fixed pensions and more life experience.

Phony news and indifference to government are becoming acute problems in developing nations. Crowded slums and failing healthcare and sanitation systems have created a breeding ground for fake news propensity during COVID-19. Economic freedom at a national level can be an effective measure to curb the propensity for fake news during a pandemic (Shirish et al., 2021).

Economic instability creates uncertainty and leads to a feeling of desperation for information. For instance, in Italy, two contrasting scenarios were observed during the lockdown. Municipalities with deprivation and low fiscal capacity had a higher volume of fake news propensity in comparison to fiscally stable municipalities (Bonaccorsi et al., 2020).

The fake news economy is focused on circulating as much information as possible rather than providing valuable information to citizens. This has lowered the importance of news in general. Indeed, media business models have come to rely more on fake news, which drives more viewers and in turn more revenue to an outlet. Few organizations focus on verifying facts before broadcasting because such measures can add to company costs. In some instances, fake news may even be preferred, as it is easily shared, allowing media companies and freelance entities to earn more revenue in less time (Frau-Meigs, 2018). Since 2016, AdSense has paid YouTube creators \$0.80, on average, for CPM (1000 views), with creators able to access their revenue after passing AdSense's minimum payment threshold of \$100 (70 euros) depending on the region. YouTubers who are influencers can generate higher revenues if they are sponsored, in which case they go through Multi Channel Networks (MCN) that can take from 10% to 40% of the ad revenues creators bring in. Such procedures may explain why Google and Facebook are often mentioned in the misinformation ecosystem (Frau-Meigs, 2018).

The publication of fake news is seen as beneficial to the owner of the media outlets that produce it. Even if they have no political agenda, they must attract large audiences to generate revenue (Christov, 2019). The principal prerequisite for most online media outlets is that traffic come from individuals, not bots (Silverman et al., 2017). Most fake news items on social media are not innovative violations of technical or legal codes requiring "super-programmer" abilities. Intentional creators of fake news use social design and misdirection strategies to attract audiences. Misdirection includes a mental cycle as opposed to an innovative one. The thought is that data senders (counterfeit newsmakers) can give data beneficiaries (consumers of fake news) the impression that what they are reading is genuine. Thus, the creators, consumers, and arbiters of disinformation can have a reinforcing effect on each other, leading to a strong fake news ecosystem (Khestri & Jeffrey, 2017). Hence, we presume that countries with higher economic development levels will be less of a breeding ground for the production and consumption of fake news and its citizen's may perceive greater stability and predictability.

RESEARCH MODEL

The propensity for fake news during COVID-19 can be attributed to the sudden lockdown and restrictions, which led to economic instability and fear. During the pandemic, people have become impatient for information that would help them understand the situation. Malicious actors have exploited this opportunity by spreading fake news through different social networking sites.

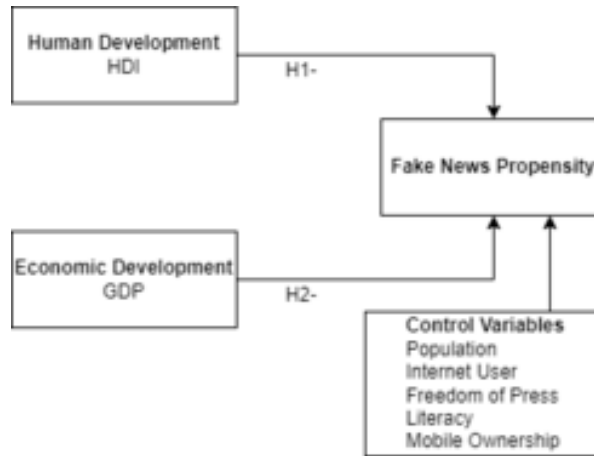
Citizens of developing countries have access to the Internet but may lack resources to effectively verify the information found there, rendering them unable to discern true from false news. Fake news is negative in nature and designed to elicit strong emotions in users. It may generate more fear and uncertainty, which those who consume it will try to dispel through constant consumption, becoming dependent on newer, online, potentially false sources of information. A vicious cycle is created, which in turn creates a high propensity for fake news with the influx of information during COVID-19. Based on this assumption and the possibility of a positive influence of economic and human development factors in curbing the need for reactive coping, a research model is presented in Figure 2.

HYPOTHESIS DEVELOPMENT

Linking Human Development to Fake News Propensity

Government institutions influence information flow in a country. By sharing information, people create their perception of reality, which in turn results in the collective prosperity of a nation. By making

Figure 2.
Research model



mutual interactions in a society predictable, national institutions define how citizens select, organize, and interpret information. Resources and institutional quality are linked to a nation's development level (Bulte et al., 2005). Prior studies have shown that collective sense making is undertaken through heuristics via an internalized cognitive constraint mechanism that guides citizens to take proper actions in times of uncertainty (Shirish et al., 2021).

The advancement of technology makes it difficult for people to differentiate between fake news and true news, which must be countered by investing in higher media literacy and awareness to enable them to verify the information they receive (Groza, 2020). Citizens are not good fake news spotters; they cannot identify lies within online texts (Compton et al., 2020). Social networking sites and local agents and perpetrators use this shortcoming to their advantage, generating more engagement on their fake news stories and thereby satisfying their material goals of financial gain or propaganda. This can explain why fake news is increasing in both developed and developing countries, though its volume is greater in the latter (Wang, 2020). In general, people do not verify facts in news and accept all the information they receive regardless of the source. This allows cybercriminals to flood platforms with fake news, especially in countries where people lack trust in government institutions (Khuong, 2020).

The increasing volume of fake news can be countered by users if they are analytical and critical when they encounter news items, especially on the Internet. Yet, in many developing countries the general literacy level is low, and people may be more trusting of information made available through technology.

Moreover, lack of resources and trust in government means citizens in poorer countries rely more on news received through social media than through government agencies (Kabha et al., 2020). While insightful people may consciously assess the accuracy of news, most will quickly succumb to misinformation that is sensational, locally relevant, and made to catch their attention (Salvi et al., 2021). Therefore, it is proposed here that in countries where human development is high, citizens will act more consciously in consuming cyber information, meticulously verifying information due to their overall greater education levels. In addition, they may not need to use technological resources to reactively cope with uncertainty because they may have superior health facilities along with other resources and institutional supports that sustain human development levels, leading to greater predictability in times of crisis. Nations with lower human development levels generally lack these supports and stable institutions, indirectly encouraging citizens to rely on any news available through social media channels. Thus, the following hypothesis is presented:

Hypothesis 1: The higher the human development level of a country, the lesser the propensity for fake news in the context of COVID-19 within that country.

Linking Economic Development to Fake News Propensity

The propensity for COVID-19 fake news on social media can be explained by the phenomenon that during periods of uncertainty people will use any means available to seek information. This information helps them to plan better to face the crisis and provides them with reassurance, including economic reassurance. The strength of a country is dependent on its economic stability. Financial stability is fundamental for most people, and it becomes even more significant during uncertain times. Regions with economic instability have higher volumes of fake news circulation (Bonaccorsi et al., 2020).

Social media organizations rarely focus on fact checking because the speed with which fake news is broadcast and shared brings them more revenue. Thus, when economic conditions within a nation are unstable, fake news becomes a popular alternative revenue source (Frau-Meigs, 2018). Social media organizations prefer to broadcast fake news as it generates more revenue for the national broadcasting agent/agency. Local content creators, in turn, turn the feelings of unease generated by a crisis into an opportunity to earn more revenue for themselves (Christov, 2019).

Since fake news circulation is a vicious circle that involves consumers, content creators, and arbiters, perceptions of local economic stability can influence all these actors in the network. Due to information asymmetry, media outlets circulate fake news to earn higher revenues. People read it, share it, and help circulate it.. This cycle is known to become robust if a country is going through a fiscal crisis (Khestri & Jeffrey, 2017).

Moreover, as prior research has shown, perceptions of economic freedom tend to restore citizens' economic agency and control in the face of uncertainty brought on by crises like COVID-19. The presence of free and fair economic institutions will enable citizens to be confident about their economic welfare during and after the crisis (Shirish et al., 2021). Previous research shows that economic stability leads to peace and happiness (Mure an et al., 2022). Citizens of economically stable countries trust government agencies, which provide them with reassurance, and therefore do not need to search for extra information on various platforms. They also have economic security, and therefore have less incentive to involve themselves in the fake news economy. On the basis of this logic, the following hypothesis is presented:

Hypothesis 2: The higher the economic development level of a country, the lesser the propensity for fake news in the context of COVID-19 within that country.

METHODS

Data Description

An empirical analysis was conducted to test the hypotheses. The data was collected from key sources: the Coronavirus Infodemic database run by the International Fact-Checking Network (IFCN); Poynter Institute, 2021; Gross Domestic Product for 2019 as calculated by the International Monetary Fund (IMF); Human Development Index for 2020 as calculated by the United Nations Development Program (UNDP), Foundation Intelligence Report 2020; Reporters without Borders Report 2020; and Global System for Mobile Communication Associations (GSMA Intelligence). Included were all countries for which complete data for all variables was available. Analyzed were the 104 countries listed in Table 3 in the Appendix. The latest data set available during the analysis phase was used for this study.

Variable Descriptions

Information on variables and their sources can be retrieved from Table 4 in the Appendix.

Dependent Variable

The dependent variable is the country-level data on the number of incidences of fake news that have proliferated on social media during the COVID-19 crisis. This data was extracted from the IFCN coronavirus information epidemic database, an authentic, world-renowned fact-checking platform run by the Poynter Institute. It works with more than 100 organizations around the world to identify, inquire about, and curb the propensity for fake news. In conducting this research, the Poynter website has conducted fact checks in more than 120 countries. It has regularly updated its data during COVID-19 to provide a real-time fact-checking infographic display. Each piece of news is classified by country and source of origin, thus in-depth verification can be made.

Independent Variables

The independent variables in this study are 1) a country's human development index as a measure of its human development level and 2) gross domestic product as a measure of its economic development level. The variable of human development was extracted from the 2020 Human Development Index released by UNDP, 2020. Economic development was calculated on GDP per capita for 2019, released by the IMF (the latest available data set at the time of analysis). Both these agencies are renowned worldwide and have been releasing these reports on an annual basis for decades. Along with these variables, data was collected for control variables to ensure the robustness of our results. The information used for the exploration factors depended either on information or on overall general assessment studies led by the previously mentioned authorities. Thus, it is anticipated that the data from these agencies are reasonable for directing thorough research.

Control Variables

Variables other than those included in the research model may affect the propensity for fake news during COVID-19. To ensure the validity of our findings, the following control variables were selected:

1. Mobile Connectivity:
 - a. Mobile ownership.
 - b. Internet users, as these are related to access to social media platforms.
2. Social Factors:
 - a. The population of the country in millions.
 - b. Literacy rate, as this might influence the availability of and ability to discern fake news.
3. Freedom of Press, as it affects the accessibility of social media to citizens.

RESULTS AND ANALYSIS

The statistical descriptions and correlations for the variables are included in Tables 5 and 6, respectively, in the Appendix. A negative binomial regression was conducted to test the hypotheses because the dependent variable was a count variable. Although Poisson regression is often used to model count data, negative binomial regression is a generalization of Poisson regression, which reduces the restrictive assumption that the variance of the Poisson model is equal to the mean (Shirish et al., 2021). From Table 5 in the Appendix, it can be determined that our dependent variable "Fake News" has a standard deviation greater than its mean. Therefore, it is an over dispersed variable, and the model can be best analyzed using the negative binominal regression method.

The results of the analysis are listed in Table 1, which provides insight into how the human development index and gross domestic product per capita influence fake news propensity. First, only control variables were entered in Model 1 (population, internet users, literacy, freedom of press, mobile ownership, and social media penetration through mobile phone). The human development index and the economic development indicator (i.e., GDP per capita) was added in Model 2.

Table 1.
Results

Variable Name	Model 1 (Only Control Variables)			Model 2 (With HDI and GDP)		
	β	Standard Error	Wald Chi-Square	β	Standard Error	Wald Chi-Square
Intercept	-0.738	0.7847	0.885	-2.802	1.0463	7.172
Control Variables						
Population	4.776E-9	1.5145E-9	9.946	6.513E-9*	1.7395E-9	14.018
Internet Users	0.007	0.0079	0.756	0.001**	0.0099	0.022
Freedom of Press	0.10	0.1142	0.008	0.141**	0.1245	1.287
Literacy	0.052	0.0112	21.291	0.025*	0.0144	3.110
Mobile Ownership	-0.002	0.0120	0.028	-0.016**	0.0143	1.194
Independent Variables						
Human Dev.				7.544**	3.1762	5.642
Economic Dev.				-3.085E-5**	9.361E-6	10.857
Log-Likelihood	-567.292			-562.150		
Likelihood Ratio Chi-square	90.549			100.832		
Degrees of Freedom	5			7		
Model Significance	0.00			0.00		
Akaike's Information Criterion	1146.583			1140.300^		
Bayesian Information Criterion	1162.449			1161.455^		
Consistent Akaike's Information Criterion	1168.449			1169.455^		
N	104			104		

Note: N= No of countries, *p < 0.05; **p < 0.01. ^Model 2 is a better fitting model compared to Model 1

The results from the above table reveal that “Human Development” ($\beta = 7.544$, se = 3.17, $p < 0.018$) has a direct positive relationship with the propensity for fake news; therefore, it does not support the inverse relationship as hypothesized in H1. On the other hand, the economic development indicator, “Gross Domestic Product per capita” ($\beta = -3.085E-5$, se = 9.361E-6, $p < 0.01$), has an inverse relationship with the propensity for fake news through social media, supporting the H2 hypothesis. From values of Akaike’s information criterion, Bayesian information criterion, and consistent Akaike’s information criterion (CAIC), model fit estimation was obtained. Noted is that all these values are lesser for Model 2 when compared with Model 1, therefore confirming Model 2 to be a better fitting model. Table 2 presents a summary of the results.

DISCUSSION AND IMPLICATIONS

Discussions, Limits, and Future Research Directions

The results obtained are both significant and surprising. Primarily, the model showed good support for an inverse relationship between the economic development of a country and fake news propensity. Thus, it is established that economic security and structures such as strong institutions can protect citizens from fake news. However, a negative direct relationship between human development and fake news propensity was not discovered as hypothesized. On the contrary, the relationship was positive

Table 2.
Summary of result

Hypothesis	Description	Analysis
H1	The higher the human development level of a country the lesser the propensity for fake news in the context of COVID-19 within that country.	Hypothesis not supported (Proof of inverse relationship)
H2	The higher the economic development level of a country the lesser the propensity for fake news in the context of COVID-19 within that country.	Hypothesis supported

and significant, which suggests human development levels actually perpetuate fake news propensity within nations. There could be several explanations for this finding. Firstly, this result is in consonance with other studies showing that with technological advancement, it is becoming difficult for citizens to differentiate between true and false information, and they may be biased in their beliefs irrespective of their human development levels (Moravec et al., 2020). Moreover, prior research has also shown that in developed countries with higher human development levels, political parties and politicians can influence and shape public opinion by spreading fake news (Carr et al., 2019). Prior research has also shown that political freedom increases fake news (Shirish et al., 2021) and perceptions of such freedom are known to positively influence human development levels (Perkins et al., 2021; Ul Haq, 1995). Therefore, presence of politically active citizens implies a higher level of human development. But this level of freedom is often based on idiosyncratic values as opposed to a rational approach to the consumption and production of news. This can indirectly increase fake news proliferation. Further, the ready acceptance and consumption of fake news, even in countries where there is higher human development, can also be explained by the phenomenon of “illusory truth effect” (Dreyfuss, 2017). When a certain phrase or piece of information is repeated, it becomes recognizable and people begin to accept it as truth. When multiple sources are involved in spreading the same false information, the lie gains credibility (Alba, 2019). Moreover, latest reports from the UN have claimed that there could be a marked decline of human developmental levels in the last two years (2021-2022) further indicating the push pull effect often experienced by citizens of various nations as they navigate the “uncertain complex” including widespread and intensifying polarization that fuels fake news especially during a crisis. Undertaking a new study post pandemic soon, should further validate these results in the long term. With a larger sample size, it is possible to test the stratified influence of human and economic developmental levels (low/medium/high) on fake news propensity, our sample did not allow us to do so. Future research in this direction is prudent. And further avenues of investigation to discuss and the implications of the study are addressed in the next sub-section.

Although this study used reliable data sets and appropriate analysis, it does have limitations. First, only gross domestic product was considered as an economic development indicator. Other market forces may affect the economic situation of a country. It may be argued that net national product or purchasing power parity could be used to measure economic development. However, GDP is accepted universally, and countries are ranked according to GDP annually by recognized organizations; therefore, it is a suitable option for the purposes of parsimony and research impact potential. Second, emphasis was made that it would be robust to see a link between human development and technological advancement in a country. It is possible that advancements in artificial intelligence and other emerging technology could influence fake news production. Deep fake news technology usage within nations would mean that even concerned and conscious citizens would be unable to differentiate between real and fake, nullifying the potential impact of human development on fake news propensity in the hypothesized direction. It is recommended here that further studies investigate these aspects at the macro level. Third, this data is collected from fact-checking websites. These institutes lack funding and resources to gather a vast array of data. This means that the actual propensity for fake news in a country may be different from the propensity perceived in the data.

Theoretical Implications

This study describes a better understanding of how countries can prepare themselves for fake news in times of crisis. A nation's human and economic development affects its ability to provide its citizens with the resources they need to make informed decisions. Recent technological advances, including developments in big data and artificial intelligence, have paved the way for the manipulation of information characteristic of the fake news phenomenon. Nevertheless, technology development, because of high human development, is often considered a panacea for lower economic growth and development, and governments are making concerted efforts to increase Internet penetration and mobile phone usage (Shirish et al., 2021). Contrary to this narrative of development, this study, for the first time, highlights that higher human development levels could increase fake news consumption and propagation through social media exposing the dark side of ICT use. This finding contributes to IS and fake news study and opens interesting avenues for further research. Academics need to investigate this counter-intuitive finding in depth. The results can have implications for the findings of prior studies on weak signal management and the difficulties even educated populations encounter due to information overload (Lesca & Lesca, 2013).

This research points out that a nation's economic stability can help to reduce the propensity for fake news, especially in the COVID-19 crisis. This expands on prior research in IS that was restricted to the perceptions of economic freedom alone (Shirish et al., 2021). To foster long-haul public resilience in the face of unanticipated emergency circumstances, governments should focus on creating organizations that guarantee economic stability to all actors within their control. Future studies can examine the optimal level of economic development required to ward off the problems of an infodemic. Governments should establish social incentives that can offer a sense of economic stability to their citizens. Such efforts are sure to have an indirect impact on the fake news consumption and production economy.

Finally, this study has shown that there is a need to look at the nexus of technology (social media) use and human development levels to better understand factors that affect the propensity for fake news. Attentive use of technology can help find balance in society by enhancing transparency and citizen accountability. Consequently, it would be fascinating to pursue more research that blends the two factors to inform technology management policies during future crises. Moreover, it is not straightforward for citizens to materialize complex, dynamic cognitive regulatory processes when they are mediated by IT, especially when assessing rumors circulating on social media (De Vaujany & Bussy-Socrate, 2018; Soulier & Beaudon, 2022; Whitehead, 1929). Thus, more research on cognitive and human development-related aspects needs to be considered in a nuanced manner when it comes to sociotechnical phenomena such as fake news.

Policy Implications

Governments around the world consider fake news to be a sociotechnical phenomenon requiring contextualized policy and advice tools to combat its spread (Capano et al., 2020; Shirish et al., 2021). This examination offers ways for government policymakers to check the expansion of fake news during and after the COVID-19 pandemic. First, people respond to an unstable economic situation by seeking out all kinds of information from a variety of sources to restore a sense of predictability and their ability to plan for the future. The COVID-19 crisis gave rise to many uncertainties, especially after borders were sealed (Shirish, 2021). Most government efforts to mitigate financial vulnerability among residents were reactive in nature (Capano et al., 2020). In this scenario, social media becomes the preferred option as it provides a large volume of information in a brief period of time. Prior monetary incentives and security act as a structural block that enhances the security of the public, increasing citizen trust in government actions even during crises.

Offering financial growth opportunities is an institutional asset. It can constrain the public from looking for added information on social media, significantly reducing fake news consumption and spread within a nation. Thus, as an emergency readiness measure, governments should adopt a

proactive stance in offering monetary opportunities to their citizens to counter fake news (Capano et al., 2020). All measures to stabilize the national economy will lead to lower levels of infodemic. Pre-existing perceptions of economic freedom are the building blocks for stability in a society, which countries can mobilize to maintain citizen trust when a crisis strikes. Results from this study indicate that higher economic development levels are an essential institutional resource because they act as a protective national-level capability that can offer collective resilience in the face of fake news proliferation. Hence, from a policy perspective, governments should undertake proactive efforts to build perceptions of economic security and freedom among their citizens as a crisis preparedness measure (Woo et al., 2015).

It was not demonstrated in this study that human development levels reduce fake news propensity, on the contrary it increases fake news propensity. Therefore, technological access and prior political freedom perceptions could be influencing the impact that human development levels can exert on fake news propensity. Thus, citizens' access to modern technologies and the appetite to use them could make it impossible for netizens to distinguish true from false when it comes to news consumption. Moreover, higher political freedom without governmental social media presence may undo any potential positive impact of human development levels on fake news propensity. Therefore, governments must direct effort to providing trustworthy information to citizens during uncertain times via social media to counter the centrality of content creators who are financially incentivized to propagate fake news. Governments could also collaborate with fact-checking agencies, providing them with the funds to do research. These agencies can prove to be a credible source of information validation and thus can save citizens from the influx of fake news from social media usage. It is crucial for government to instill the perceptions of future stability and predictability as this study indicates that prior education and health provisions did not cognitively constrain citizens from indulging in reactive coping. It is therefore important to keep a check on the so called moral panic situation that often arises during crises situations, as it is possible that these can give rise to cyber deviant behaviors including the propagation and production of fake news. Policy makers and researchers can look into the impact of quality legal systems and their influence on fake news propensity in deterring such behaviors.

Policymakers should raise digital safety awareness measures to provide citizens with the skills to become more responsible news viewers and consumers. Governments could put in place cybersecurity measures to ensure that malicious persons do not use the Internet to manipulate citizens' opinions through false information (Shirish et al., 2021). Solid media education policies exist in the Nordic nations. For example, Finland has insulated its residents from using and consuming fake news (Henley, 2020). Since 2016, Finland has included media proficiency and basic reasoning in its educational plan, which may have helped defend the country from the threat of fake news during the COVID-19 pandemic (Rowe, 2018; Shirish et al., 2021). Policy interventions may be needed to provide targeted training to enhance citizens' critical thinking skills and build expertise in fake news detection. This type of dual training model can complement current educational methods and enable citizens to better respond to fake news encounters (Klein, 2009, 2015). This training can build desirable macro cognition among vulnerable groups of citizens such as school children, the elderly, non-digital natives, rural, and economically weaker segments of a nation. Since human development can increase fake news, educating citizens on the effective use of social media may reduce this impact and make it non-significant. It is also important to impart moral values along with critical thinking skills among citizens who are often allured to deviate from social norms due to the attractive economic opportunity offered by the social media powered fake news economy.

CONCLUSION

This study helps policymakers and academics better comprehend the factors that affect the propensity for fake news and how to control it. There is an immediate need to bring this situation under control, and there is a future need to learn from the current handling of the infodemic crisis. To ensure a

fake news-free society, governments must work to create an atmosphere where citizens are entitled to true and proper information along with economic stability and opportunities to make a living. They need to ensure citizens' general well-being and digital safety by devising interventions for cognitive, affective, and behavioural empowerment that allow them to be resilient and fearless during uncertain times that are increasingly mediated by digital technology. Improving national economic strength is vital. When citizens have job security and know that the government can support them in overcoming fiscal crises they will not scavenge for news from various sources. It may also be useful for governments to deploy more resources toward improving the credibility of news and enhancing their online accountability during this COVID-19 pandemic. Governments should plan for more proactive awareness sessions for citizens to provide them with the skills to understand the nuances of social media in addition to focusing on providing general educational opportunities since we find that human development levels increased fake news propensity. Thus, a comprehensive and targeted government action to develop a digitally intelligent society that has improved digital media literacy and moral values along with stable economic conditions can help to curb the propensity for fake news on social media. Since the phenomenon of fake news is local yet global, there is a need to further understand both the subjective and local dynamics of this phenomenon at the macro level. This research should fuel further interest among both researchers and policymakers as they endeavour to better understand this complex phenomenon that has negative implications for our society.

ACKNOWLEDGMENT

We gratefully acknowledge the constructive feedback and support received from the senior editors and the reviewers, which significantly improved the paper.

Kanika Kotwal acknowledges the support received from her institution, which enabled her to dedicate time toward this research.

CONFLICT OF INTEREST STATEMENT

The authors of this publication declare that there is no conflict of interest.

FUNDING INFORMATION

Anuragini Shirish acknowledges funding was received from the Télécom & Société Numérique Carnot Institute, France, which enabled the publication of this article.

REFERENCES

- Abraham, B., & Mandalaparth, M. (2021). Fake news during Covid-19 outbreak: Differentiating audience's age regarding prior exposure, emotion, susceptibility, practice, and forwarding behaviour. *Media Watch*, 12(2), 251–264. doi:10.15655/mw/2021/v12i2/160150
- Al-Zaman, M. S. (2021). COVID-19-Related social media fake news in India. *Journalism and Media*, 2(1), 100–114. doi:10.3390/journalmedia2010007
- Alba, J. (2019, September 10). The evolution of fake news: what, why, and how misinformation spreads, journalism. *Below the Fold*. <https://www.belowthefold.news/blog/evolution-fake-news-infographic>
- Andersson, O., Campos-Mercade, P., Meier, A. N., & Wengstrom, E. (2021). Anticipation of COVID-19 vaccines reduces willingness to socially distance. *Journal of Health Economics*, 80, 102530. Advance online publication. doi:10.1016/j.jhealeco.2021.102530 PMID:34563830
- Baura, Z., Baura, S., Akta, S., Kabir, N., & Li, M. (2020). Effects of misinformation on COVID-19 individual responses and recommendations for resilience of disastrous consequences of misinformation. *Progress in Disaster Science*, 8, 100119. Advance online publication. doi:10.1016/j.pdisas.2020.100119 PMID:34173443
- Bonaccorsi, G., Pierri, F., Cinelli, M., Flori, A., Galeazzi, A., Porcelli, F., & Pammolli, F. (2020, July). Economic and social consequences of human mobility restrictions under COVID-19. *Proceedings of the National Academy of Sciences of the United States of America*, 117(27), 15530–15535. doi:10.1073/pnas.2007658117 PMID:32554604
- Bond, C. F., & DePaulo, B. M. (2006). Accuracy of deception judgments characterizations of deception. *Personality and Social Psychology Review*, 10(3), 214–234. doi:10.1207/s15327957pspr1003_2
- Bruns, A., Harrington, S., & Hurcombe, E. (2020). Corona? 5G? or both?: The dynamics of COVID-19/5G conspiracy theories on Facebook. *Sage Journals*, 177(1), 12–29. doi:10.1177/1329878X20946113
- Bulte, E. H., Damania, R., & Deacon, R. T. (2005). Resource intensity, institutions, and development. *World Development*, 33(7), 1029–1044. doi:10.1016/j.worlddev.2005.04.004
- Capano, G., Howlett, M., Jarvis, D. S., Ramesh, M., & Goyal, N. (2020). Mobilizing policy (in) capacity to fight COVID-19: Understanding variations in state responses. *Policy and Society*, 39(3), 285–308. doi:10.1080/14494035.2020.1787628 PMID:35039722
- Carr, P. R., Cuervo-Sanchez, S. L., & Daros, M. A. (2019). Citizen engagement in the contemporary era of fake news: Hegemonic distraction or control of the social media context? *Postdigital Science and Education*, 2(1), 39–60. doi:10.1007/s42438-019-00052-z
- Chan, M., Lee, F., & Chen, H-T. (2022). Avoid or Authenticate? A Multilevel Cross-Country Analysis of the Roles of Fake News Concern and News Fatigue on News Avoidance and Authentication. *Digital Journalism*, 1-20. doi:10.1080/21670811.2021.2016060
- Christov, A. (2019). Economy of the fake news: Business side and effects. *University of National and World Economy*, 4, 1–7.
- Colominq, C., Margalef, H. S., & Youngs, R. (2021). *The impact of disinformation on democratic processes and human rights in the world*. European Parliament. [https://www.europarl.europa.eu/RegData/etudes/STUD/2021/653635/EXPO_STU\(2021\)653635_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2021/653635/EXPO_STU(2021)653635_EN.pdf)
- Compton, J., Roozenbeek, J., & Linden, S. Y. (2020). Inoculating against fake news about COVID-19. *Frontiers in Psychology*, 11, 566790. Advance online publication. doi:10.3389/fpsyg.2020.566790 PMID:33192844
- de Vaujany, F. X., & Bussy-Socrate, H. (2018). Des modes de diffusion de la rumeur: une approche par la matérialité 1. *Systèmes d'information et Management*, 23(4), 9-30.
- Dreyfuss, E. (2017). Want to make a lie seem true? Say it again. and again. and again. *Wired*. <https://www.wired.com/2017/02/dont-believe-lies-just-people-repeat/>
- Frau-Meigs, D. (2018). *Societal costs of “Fake News” in the digital single market*. European Parliament. [https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU\(2018\)626087](https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU(2018)626087)

Giovanni Bonaccorsi, P. F. (2020). Economic and social consequences of human mobility restrictions under COVID-19. *Europe PMC*, 117(27).

Griffin, R. (2020). *Social media and content moderation in times of COVID-19*. SciencesPo. /<https://www.sciencespo.fr/public/chaire-numerique/en/2020/07/09/social-media-and-content-moderation-in-times-of-COVID-19/>

Groza, A. (2020). Detecting fake news for the new coronavirus by reasoning on the COVID-19 ontology. *Cornell University*, 9. Advance online publication. doi:10.48550/arXiv.2004.12330

Hartley, K., & Vu, M. K. (2020). Fighting fake news in the COVID-19 era: Policy insights from an equilibrium model. *Policy Sciences*, 53(4), 735–758. doi:10.1007/s11077-020-09405-z PMID:32921821

Henley, J. (2020). How Finland starts its fight against fake news in primary schools. *The Guardian*. <https://www.theguardian.com/world/2020/jan/28/fact-from-fiction-finlands-new-lessons-in-combating-fake-news>

Herrero-Diz, P., Jiménez, J. C., & Cózar, S. R. (2020). Teens' motivations to spread fake news on WhatsApp. *Sage Journals*, 1-14.

Jolley, D., & Cookson, D. (2020, July 8). Coronavirus anti-vaxxers: One in six British people would refuse a vaccine—Here's how to change their minds. *The Conversation*. <https://theconversation.com/coronavirus-anti-vaxxers-one-in-six-british-people-would-refuse-a-vaccine-heres-how-to-change-their-minds-142207>

Kabha, R., Kamel, A. M., Elbahi, M., Dawood Hafiz, A. M., & Dafri, W. (2020). Impact of fake news and myths related to COVID 19. *Journal of Content. Community & Communication*, 12, 270–279.

Kapoor, K. K., Tamilmani, K., Rana, N. P., Patil, P., Dwivedi, Y. K., & Nerur, S. (2018). Advances in social media research: Past, present and future. *Information Systems Frontiers*, 20(3), 531–558. doi:10.1007/s10796-017-9810-y

Khestri, N., & Jeffrey, V. (2017). The Economics of “Fake News”. *IT Professional*, 19(6), 8–12. doi:10.1109/MITP.2017.4241459

Khuong, K. H. (2020). Fighting fake news in the COVID-19 era: Policy insights from an equilibrium model. *PoliScience*, 53(4), 735–758. doi:10.1007/s11077-020-09405-z PMID:32921821

Klein, G. (2009). *Streetlights and shadows: Searching for the keys to adaptive decision making*. MIT Press. doi:10.7551/mitpress/8369.001.0001

Klein, G. (2015). A naturalistic decision making perspective on studying intuitive decision making. *Journal of Applied Research in Memory and Cognition*, 4(3), 164–168. doi:10.1016/j.jarmac.2015.07.001

Lesca, H., & Lesca, N. (2013). *Weak signals for strategic intelligence: anticipation tool for managers*. John Wiley & Sons.

Montesi, M. (2020). Understanding fake news during the COVID-19 health crisis from the perspective of information behaviour: The case of Spain. *Sage Journals*, 53(3), 454–465.

Moravec, P., Minas, R., & Dennis, A. R. (2018). *Fake news on social media: people believe what they want to believe when it makes no sense at all*. Kelley School of Business Research Paper.

Mure an, G. M., Văidean, V. L., Mare, C., & Achim, M. V. (2022). Were we happy and we didn't know it? A subjective dynamic and financial assessment pre-, during and post-COVID-19. *The European Journal of Health Economics*. Advance online publication. doi:10.1007/s10198-022-01506-1 PMID:35984544

Pennycook, G., McPeteres, J., Zhang, Y., Lu, J. G., & Rand, D. G. (2020). Fighting COVID-19 misinformation on social media: Experimental evidence for a scalable accuracy-nudge intervention. *Psychological Science*, 31(7), 770–780. doi:10.1177/0956797620939054 PMID:32603243

Pennycook, G., & Rand, D. G. (2019). Lazy, not biased: Susceptibility to partisan fake news is better explained by lack of reasoning than by motivated reasoning. *Cognition*, 188, 39–50. doi:10.1016/j.cognition.2018.06.011 PMID:29935897

Perkins, R. C., Howell, C. J., Dodge, C. E., Burruss, G. W., & Maimon, D. (2020). Malicious spam distribution: A routine activities approach. *Deviant Behavior*, 1–17.

Poynter. (2020). <https://www.poynter.org/ifcn-covid-19-misinformation/>

- Rowe, F. (2018). Being critical is good, but better with philosophy! From digital transformation and values to the future of IS research. *European Journal of Information Systems*, 27(3), 380–393. doi:10.1080/0960085X.2018.1471789
- Salvi, C., Iannello, P., Cancer, A., McClay, M., Rago, S., Dunsmoor, J. E., & Antonietti, A. (2021). Going viral: How fear, socio-cognitive polarization and problem-solving influence fake news detection and proliferation during covid-19 pandemic. *Frontiers in Communication*, 5, 562588. doi:10.3389/fcomm.2020.562588
- Schuetz, S. W., Sykes, T. A., & Venkatesh, V. (2021). Combating COVID-19 fake news on social media through fact checking: Antecedents and consequences. *European Journal of Information Systems*, 30(4), 376–388. doi:10.1080/0960085X.2021.1895682
- Shirish, A. (2021). Positive technology: A growing market with a potential to rebuild a resilient society during and after the COVID-19 crisis. In *Management and marketing for improved competitiveness and performance in the healthcare sector* (pp. 266–294). IGI Global. doi:10.4018/978-1-7998-7263-4.ch012
- Shirish, A., Srivastava, S. C., & Chandra, S. (2021). Impact of mobile connectivity and freedom on fake news propensity during the COVID-19 pandemic: A cross-country empirical examination. *European Journal of Information Systems*, 30(3), 322–341.
- Silverman, C., Singer-Vine, J., & Vo, L. T. (2017, April 4). In spite of the crackdown, fake news publishers are still earning money from major ad networks. *Buzzfeed News*. <https://www.buzzfeednews.com/article/craigsilverman/fake-news-real-ads#.yxX5P2075A>
- Soulier, E., & Beaudon, G. (2022). XXXV. Alfred North Whitehead. L'organisation en procès. In Y.-F. Livian (Ed.), *Les Grands Auteurs aux Frontières du Management* (pp. 435–449). EMS Editions. doi:10.3917/ems.livia.2022.01.0435
- Srivastava, S. C., Teo, T. S. H., & Devaraj, S. (2016). You can't bribe a computer: Dealing with the societal challenge of corruption through ICT. *Management Information Systems Quarterly*, 40(2), 511–526. doi:10.25300/MISQ/2016/40.2.14
- Ul Haq, M. (1995). *Reflections on human development*. Oxford University Press.
- UNDP. (2022). *Human development report 2021-2022*. <https://hdr.undp.org/content/human-development-report-2021-22>
- United Nations Development Programme. (2015). *Human development index*. <https://hdr.undp.org/en/content/human-development-index-hdi>
- Voas, N. K. (2017). The economics of “fake news.” *IT Professional*, 19(6), 8–12. doi:10.1109/MITP.2017.4241459
- Wang, W. W. (2020). *Fake news and development*. Berkley MDP. <https://mdp.berkeley.edu/fake-news-and-development/>
- Whitehead, A. N. (1929). An essay in cosmology. In D. R. Griffin & D. W. Sherbourne (Eds.), *Process and reality*. Macmillan.
- Woo, J. J., Ramesh, M., & Howlett, M. (2015). Legitimation capacity: System-Level resources and political skills in public policy. *Policy and Society*, 34(3-4), 271–283. doi:10.1016/j.polsoc.2015.09.008
- World Economic Forum. (2013). *Outlook on the global agenda 2014*. <https://reports.weforum.org/outlook-14/top-ten-trends-category-page/6-diminishing-confidence-in-economic-policies/>
- World Economic Forum. (2020). *Coronavirus is creating retirement insecurity. These 10 steps can defuse the timebomb of an ageing population*. <https://www.weforum.org/agenda/2020/08/here-are-10-steps-to-diffuse-the-timebomb-of-an-ageing-population-post-covid19/>
- Wright, C. (2020). *How fake news affects U.S. elections*. UFC Today. <https://www.ucf.edu/news/how-fake-news-affects-u-s-elections/>
- Zhuravskaya, E., Petrova, M., & Enikolopov, R. (2020). Political effects of the internet and social media. *Annual Review of Economics*, 10(1), 1146. doi:10.1146/annurev-economics-081919-050239

APPENDIX

Supplementary Tables

Table 3.
List of countries

Afghanistan, Albania, Algeria, Argentina, Australia, Azerbaijan, Bahrain, Belarus, Belgium, Bolivia, Bosnia, Brazil, Bulgaria, Burundi, Cambodia, Cameroon, Canada, Chile, China, Colombia, Costa Rica, Croatia, Czechia, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Fiji, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, Guatemala, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Latvia, Lebanon, Libya, Lithuania, Madagascar, Malaysia, Mali, Mexico, Morocco, Myanmar, Nepal, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Oman, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Saudi Arabia, Senegal, Serbia, Singapore, Slovakia, South Africa, South Korea, Spain, Sri Lanka, Sweden, Tanzania, Thailand, Tunisia, Turkey, Uganda, Ukraine, UAE, UK, USA, Uruguay, Venezuela, Zimbabwe.

Note: Total no. of countries analyzed =104

Table 4.
Description of variables

Dependent Variable
<p>Fake News Propensity: The total number of incidences of fake news originating in each country, posted across a variety of social media platforms including WhatsApp, Facebook, Twitter, YouTube etc. This data was gathered from IFCN, Poynter Institute from January 2020 until June 2021.</p> <p>Link last accessed in 2022: https://www.poynter.org/ifcn-covid-19-misinformation/</p>
Independent Variables
<p>HDI: Human development index is released by the UNDP annually. It consists of three broad dimensions: 1) long and healthy life, 2) knowledge, and 3) a decent standard of living. The index used was released in 2019.</p> <p>Link last accessed in 2022: https://hdr.undp.org/data-center/human-development-index#/indicies/HDI</p> <p>GDP per Capita: The IMF releases gross domestic product annually in its World Economic Outlook. It is a measure of average income earned per person in a particular country. It is used to calculate the economic wealth of a nation. The data were extracted from the ranking released in 2019.</p> <p>Link last accessed in 2022: https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOORLD</p>
Control Variables
<p>Population: The total number of people residing in a country (in millions). It is compiled by the IMF, World Bank, and various other indicators. The data we chose were taken from the IMF along with GDP for the year 2019.</p> <p>Link last accessed in 2022: https://www.worldometers.info/world-population/population-by-country/</p> <p>Internet Users: An estimate of how many residents have access to the Internet in the country. The appropriate measures are provided by the International Telecommunication Union. The data have been extracted for the year 2020.</p> <p>Link last accessed in 2022: https://en.wikipedia.org/wiki/List_of_countries_by_number_of_Internet_users</p> <p>Freedom of Press: This index is provided by Reporters Without Borders 2020. It provides a measure of media freedom in a country, their independence, and safety.</p> <p>Link accessed in 2022: Freedom of Press Human development Reports (undp.org)</p> <p>Literacy Rate: A measure of the number of residents over 15 years of age who have received education and can read, write, and speak at least one language. This data was provided by UNDP, 2020.</p> <p>Link last accessed in 2022: Human development Data Center Human development Reports (undp.org)</p> <p>Mobile Ownership: A measure of the number of residents in a country who have access to a mobile phone. This data was provided by the GSMA in their foundation Intelligence Report 2020.</p> <p>Link last accessed in 2022: GSMA Mobile Connectivity Index</p>

Table 5.
Descriptive statistics

Variables	Mean	Standard Deviation	Minimum	Maximum
Fake News	132.46	289.320	1	1896
Population	63681920.54	198565712.8	343353	1444216107
Internet Users	64.66%	26.17%	5.59%	98.26%
Freedom of Press	2.91	1.158	1	5
Literacy	89.96	13.91	35.50	99.9
Mobile Ownership	80.20	16.30	32.97	100
HDI	0.77	0.134347	0.433	0.957
GDP Per Capita	18840.23	21448.709	303	81315

Note: N = 104

Table 6.
Correlation matrix

Variables	Fake News Through Social Media	GDP per Capita	HDI	Internet Users	Population	Literacy	Freedom of Press	Mobile Ownership
Fake News	1							
GDP per capita	0.26	1						
HDI	0.93	0.75	1					
Internet Users	0.141	0.68	0.87	1				
Population	0.51	-0.83	-0.92	0.15	1			
Literacy	0.097	0.406	0.784	0.664	-0.67	1		
Freedom of Press	-0.24	0.467	0.402	0.314	-0.209	0.180	1	
Mobile Ownership	0.57	0.459	0.56	0.512	-0.54	0.24	0.457	1

Note: N = 104

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