
Modelling the antecedent factors that affect online fake news sharing on COVID-19: the moderating role of fake news knowledge

Oberiri Destiny Apuke ^{1,2} and Bahiyah Omar^{1*}

¹School of Communication, Universiti Sains Malaysia, Pulau Penang, Malaysia and ²Department of Mass Communication, Taraba State University, Jalingo, Nigeria

*Correspondence to: B. Omar. E-mail: bahiyah@usm.my

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Abstract

We proposed a conceptual model combining three theories: uses and gratification theory, social networking sites (SNS) dependency theory and social impact theory to understand the factors that predict fake news sharing related to COVID-19. We also tested the moderating role of fake news knowledge in reducing the tendency to share fake news. Data were drawn from social media users ($n = 650$) in Nigeria, and partial least squares was used to analyse the data. Our results suggest that tie strength was the strongest predictor of fake news sharing related to COVID-19 pandemic. We also found perceived herd, SNS dependency, information-seeking and parasocial interaction to be significant predictors of fake news sharing. The effect of status-seeking on fake news sharing, however, was not significant. Our results also established that fake news knowledge significantly moderated the effect of perceived herd, SNS dependency, information-seeking, parasocial interaction on fake news sharing related to COVID-19. However, tie strength and status-seeking effects were not moderated.

shared or published content [1]. Recent research has shown that in recent months, the most deleterious fake news circulation to the global health system has been on the COVID-19 pandemic [2]. Reports show that as of 14 May 2020, there were over 4.4 million global cases of COVID-19. Over 1.6 million people had recovered from the disease, while there had been around 298 000 deaths [3]. Despite these increasing number of cases, there have been many rumours and incorrect news stories circulating about the COVID-19 [4]. Therefore, it is essential to understand better why people both believe and share false information related to COVID-19 and to develop interventions to reduce the spread of misinformation [5]. To achieve this, we propose a conceptual framework combining three theories: uses and gratification theory (UGT), social networking sites (SNS) dependency theory and social impact theory to understand the factors that predict fake news sharing related to COVID-19.

The reason for using these theories is that the UGT has been shown to be limited in explaining the usage of social media for news sharing [6]. We extended the UGT by incorporating other theories to come up with suitable variables; ‘status-seeking, information-seeking, social tie strength, parasocial interaction, perceived herd and individual SNS dependency’, to be treated as predictors to fake news sharing in this context. Our study also focused on demonstrating the moderating role of fake news knowledge on sharing misinformation related to COVID-19. We believe that the increase of fake news knowledge and awareness among the

Introduction and background

Fake news is any form of falsehood, including rumours, hoaxes, myths, conspiracy theories and other misleading or inaccurate (purposely or not)

populace would help in curbing the spread of false information related to the pandemic. We focused on Nigeria which is less well-studied [7, 8], to provide an alternative view of understanding this global problem of fake news. Moreover, scholars have recommended to look beyond researching fake news from the US and UK contexts [9]. As at 14 May 2020, the Nigeria Centre for Disease Control (NCDC) reported 4971 cases of COVID-19, 1070 recovered and 164 deaths (NCDC 2020). Therefore, we sought to find out the factors that predict fake news sharing related to COVID-19 among social media users. And the role fake news knowledge has in moderating the effect of fake news sharing.

Research model and hypothesis

A research model was proposed based on prior literature and three theories; UGT, SNS dependency theory and social impact theory (See Fig. 1).

UGT

The UGT has been the dominant theoretical approach to studying how and why individuals utilize media for many decades. It identifies the needs and desires that an individual has to use a particular media channel [10]. This provide the basis for the motivations of an individual to communicate, which thus influences the type of media that they will use and how they use and interpret the content that the media facilitates [11]. The prevalence of social media has attracted a growing body of studies adopting UGT. These studies have attempted to explore the gratifications associated with the new media. For instance, Introne *et al.* [12] proposed that the perceived gratifications of online news sharing were entertainment, interpersonal communication, information-seeking and information learning. Park and Blenkinsopp [13] proposed four gratifications derived from social media use, including information-seeking, socializing, entertainment, and self-status-seeking. Therefore, the dominant U&G factors identified by social media literature are entertainment, socializing,

information-seeking, information sharing, self-expression and status-seeking. In this study, we used ‘information- and status-seeking gratifications’. Due to the inherently participatory nature of social media [6], we contend that these gratifications may still be relevant in the current context of fake news sharing.

Information-seeking

Information-seeking refers to the extent to which news shared in social media can supply users with relevant and timely information which is relevant in the context of the COVID-19 outbreak. Lampos *et al.* (2020) [5] stressed that as the cases of the COVID-19 increased around the world, there has been a flurry of misleading or false news stories emerging, as well. This indicates that a lot of people look for information regarding how to cope with the virus, which could turn out to be untrue. We, therefore, contend that due to the million unsupervised messages on COVID-19 found on social media that individuals continuously seek to consume in a bid to combat the disease, they may as well share fake news. We, therefore, propose that:

H1. ‘Information-seeking’ is positively associated with sharing fake news on COVID-19 pandemic.

Status-seeking

Status-seeking refers to how sharing news on social media assists users to attain status within their network. It has been found that individuals share contents on social media to gain recognition (Ma 2014). Lee *et al.* [14] discovered status-seeking to be the strongest predictors of news sharing on social media. We believe that in this period of pandemic, a lot of people would like to disseminate information to either assist or show they are knowledgeable in the preventive tips one should follow in curbing the virus. Therefore, when people are motivated to seek status, they may not care about the accuracy of the news they share. What they care most is the number of views and likes. Taken together, we then propose that:

H2. ‘Status-seeking’ is positively associated with sharing fake news on COVID-19 pandemic.

Social impact theory

Social impact is defined as any influence on individual feelings, thoughts or behaviour that is created from the real, implied or imagined presence or actions of others [15]. The theory helps us understand in which social situations we produce a greater influence. Thus, the social impact will depend on the social forces, the immediacy of the event, and the number of sources that produce the impact. According to Handarkho [16], the choice to use and share an information received is generally influenced by one’s acceptance of others’ views, and this is also based on the quality of social experience that occurred in the platform. Therefore, we examined social tie strength, parasocial interaction and perceived herd’s influence on sharing fake information related to COVID-19.

Social tie strength

Tie strength is the level of intensity of the social relationship, or degree of overlap between two individuals’ scope of friendship [17]. It has been proven that information obtained from a strong tie strength source is perceived as more trustworthy [18]. We thus contend that the ideas or information relating to COVID-19 shared by individuals that are familiar to the users may cause them to trust the information, without necessarily verifying such information. Consequently, we propose the following hypothesis:

H3. ‘Social tie strength’ is positively associated with sharing fake news on COVID-19 pandemic.

Perceived herd

The concept of perceived herd assumes that information or message is perceived to be reliable when shared or accepted by many [19]. Based on

the social impact theory, perceived herd refers to particular behaviour exhibited by a substantial number of people that results to ‘psychological pressure’ towards an individual belief [16]. Drawing from this premise, we assume that when many people on SNS frequently share specific information on COVID-19, social media users may adopt it and consider it as the truth and this may lead to the consumption of fake news. Based on this, we propose that:

H4. ‘Perceived herd’ is positively associated with sharing fake news on COVID-19 pandemic.

Parasocial interaction

Parasocial interaction refers to the degree or propensity of an individual to develop an emotional connection with a figure considered as a guide, or a role model [20]. Handarkho [16] remarked that emotional tie is not only formed among friends and relatives but also formed among individuals that are admired and respected, such as politicians, public figures and idolized personalities. In this view, we assume that people would believe and consider any COVID-19 information disseminated on SNS by public figures they hold in high esteem. Drawing from this, we proposed that:

H5. ‘Parasocial interaction’ is positively associated with sharing fake news on COVID-19 pandemic.

Individual SNS dependency

The SNS dependency theory focuses on the degree an individual depend on SNS to carry out a daily task [21]. The theory assumes that the more an individual rely on SNS platform, the easier it becomes for their conducts and beliefs to be influenced by the ‘opinion’ of others regarding specific issues [22]. People who regard SNS as their primary source of information or update presume that information circulated on the platform is trustworthy and reliable [4] and hence we believe that dependency on social media may lead to fake news sharing. Therefore, the following hypothesis was proposed:

H6. ‘Individual SNS dependency’ is positively associated with sharing fake news on COVID-19 pandemic.

Fake news knowledge as a moderator

In this study, fake news knowledge is a practical understanding of fake news. It is also viewed as the salience on the part of a social network member that fake news exists and may be present in his/her network [23]. It was found that individuals can be at the centre stage in dealing with misinformation because without individuals generating content and sharing it, social media which houses fake news cannot survive [8]. Thus, this current study argues that adequate knowledge and awareness of fake news could help users to reduce the tendency of sharing fake news [23]. Torres *et al.* [23, p. 86] advocated that ‘as individuals become aware that news items from a particular source and media may be misleading, at best they may perceive that source to be incompetent, and may begin to question the integrity of the source or media’. Nevertheless, evidence from past research suggests that some people share fake news frequently although they were aware about the falsity of the news, they shared [10]. In contrast, a recent research concluded that fake news awareness moderate fake news sharing [7]. Taken together, we propose that:

H7a. ‘Fake news knowledge’ will moderate the relationship between ‘status-seeking’ and ‘fake news sharing’ such that the effect of fake news will be stronger for individuals with low fake news knowledge.

H7b. ‘Fake news knowledge’ will moderate the relationship between ‘information-seeking’ and ‘fake news sharing’ such that the effect of fake news will be stronger for individuals with low fake news knowledge.

H7c. ‘Fake news knowledge’ will moderate the relationship between ‘social tie strength’ and ‘fake news sharing’ such that the effect of fake news will be stronger for individuals with low fake news knowledge.

H7d. ‘Fake news knowledge’ will moderate the relationship between ‘perceived herd’ and ‘fake news sharing’ such that the effect of fake news will be stronger for individuals with low fake news knowledge.

H7e. ‘Fake news knowledge’ will moderate the relationship between ‘parasocial interaction’ and ‘fake news sharing’ such that the effect of fake news will be stronger for individuals with low fake news knowledge.

H7f. ‘Fake news knowledge’ will moderate the relationship between ‘individual SNS dependency’ and ‘fake news sharing’ such that the effect of fake news will be stronger for individuals with low fake news knowledge.

Figure 1 demonstrates the model formulated in this study.

Methodology

Sample

A survey research design was adopted in this study. Specifically, a self-administered online survey was conducted to reach social media users in Nigeria aged 18 and above. G*-power with effect size of 0.15, alpha of 0.05 and a power of 0.8, was used to get a minimum sample size of 96. However, since we are dealing with a heterogeneous group, we increased our sample size to 770. We promoted our online questionnaire through a network sampling technique also known as ‘chain referral’ [24]. Participants were invited to complete the survey and share the links with other members. To increase the response rate, the link to the questionnaire was also advertised on various social media platforms. We also contacted some social media influencers in Nigeria to host the link on their page. Overall, 770 responses were obtained for the analysis. Of the 770 responses obtained, 650 was found useable (completion rate 84%). The data were collected between February 2020 and May 2020.

Online survey is a cost-effective method with no limitations of geographical boundaries [25]. However, online survey may reduce the

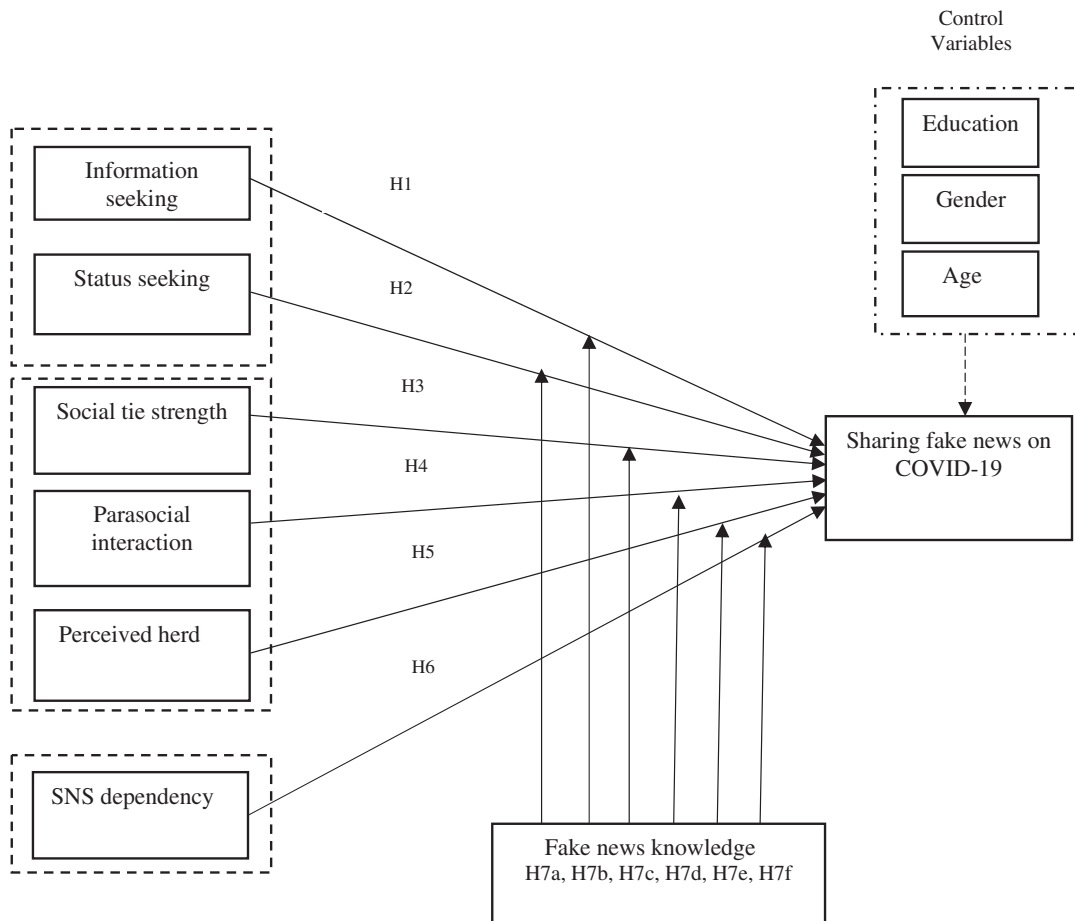


Fig. 1. A research model for fake news sharing on COVID-19.

randomization of sample since members of the population do not have equal chances of receiving the questionnaire [26]. Yet, we believe that online survey seems to be most appropriate because of the movement restrictions. To address the issue of generalizability and bias in online survey, past research suggested a few ways such as having a large sample size, replication of results to increase generalization and comparing sample characteristics with demographic data or/and official statistics [26]. Therefore, we compared our demography with the Nigerian demographic statistics and found that it did not defer much [27]. We also increased our

estimated sample size to 770. Table I shows the respondents characteristics.

Measures

All our constructs were measured using a 5-point Likert-type scale, in which 1 symbolizes strongly disagree and 5 strongly agree. Appendix A list the items used to measure the construct and sources consulted. A pilot study which consisted of ($n = 30$) participants was conducted before actual data collection. Furthermore, experts were consulted to give their input on the items. The feedback from the pilot

Table 1. Profile of respondents (n = 650).

Characteristics	Frequency	Percentage (%)
Gender		
Male	330	50.8
Female	320	49.2
Age		
18–24	250	38.5
25–34	139	21.4
35–44	90	13.8
45–54	81	12.4
55–64	55	8.5
>65	35	5.4
Working status		
Employed full-time	120	18.5
Employed part-time	75	11.5
Student	220	33.8
Retired	30	4.6
Unemployed	145	22.3
Others	60	9.2
Education		
High school	145	22.3
Diploma	150	23.1
Bachelor's degree	210	32.3
Master's degree	82	12.6
PhD	43	6.6
Others	20	3.1
Frequently used SNS		
WhatsApp	290	44.6
Facebook	201	30.9
Twitter	80	12.3
Instagram	60	9.2
Others	19	2.9
Time (h)		
10–12	250	38.5
7–9	230	35.4
4–6	106	16.3
1–3	64	9.8
Ethnicity		
Hausa (Northern Nigeria)	205	31.5
Yoruba (Western Nigeria)	195	30
Igbo (Eastern Nigeria)	190	29.2
Others (other regions)	60	9.2

test and experts was used to revise wordings of the items to avoid misunderstanding.

Data analysis and results

We analysed data using structural equation modelling with *SmartPLS* 3.2.6. The reason for using

Partial Least Squares is related to the exploratory nature of our research and the model complexity with some moderating variables [28]. Common method bias (CMB) was tested before data analysis because responses were collected from the same survey. We performed a Harman's single factor test and a single factor shared over 25.4% of the total variance which is <50% threshold value [28]. This indicates that the CMB was not a problem in this study.

Measurement model

To evaluate the measurement model, the convergent and discriminant validity test was conducted [7]. The outer loading of each indicator item is over 0.708 [29], the composite reliability, average variance extracted and Cronbach's α all exceeded the recommended threshold [29]. Thus, convergent validity was supported (See Table II).

We also assessed the measurement model by conducting a discriminant validity test [30]. Table III shows that all values are <0.90. Thus, discriminant validity was supported.

Structural model

Before assessing the structural model, we assessed collinearity. All the inner VIF values were between 1.14 and 2.42, below the threshold of 5 [29] (See Table I). According to Hair *et al.* [29], the key criteria for evaluating the structural model is to examine the t values, path coefficient (β values), effect size (f^2), predictive relevance (Q^2) and coefficient of determination (R^2). A 5000 resample bootstrapping procedure with 5% significance level (one-tailed) was used to test the significance of the hypotheses. Table IV and Fig. 2 revealed that tie strength ($\beta = 0.622$, $P < 0.001$), perceived herd ($\beta = 0.412$, $P < 0.001$), SNS dependency ($\beta = 0.398$, $P < 0.001$), information-seeking ($\beta = 0.339$, $P < 0.01$) and para social interaction ($\beta = 0.214$, $P < 0.05$) positively predicted fake news sharing related to COVID-19. This supports H1, H3, H4, H5 and H6. However, status-seeking was not significant ($\beta = 0.021$, $P < 0.05$). Therefore, H2 was not supported. Additionally, gender and age had no

Table 2. Construct reliability, composite reliability, and AVE values.

Constructs	Items	<i>M</i>	<i>SD</i>	Outer loading	Cronbach alpha	CR	AVE	VIF
Status-seeking	SS1	4.62	1.79	0.86	0.96	0.94	0.78	1.470
	SS2	4.93	1.69	0.92				
	SS3	4.97	1.73	0.76				
	SS4	5.36	1.53	0.82				
	SS5	4.83	1.77	0.84				
Information-seeking	IS1	3.62	1.70	0.78	0.94	0.94	0.86	1.370
	ISK2	3.67	1.64	0.82				
	ISK3	3.32	1.63	0.90				
Social tie strength	STS1	3.29	1.63	0.92	0.91	0.81	0.81	2.324
	STS2	3.04	1.72	0.89				
	STS3	2.72	1.48	0.78				
Perceived herd	PH1	2.55	1.40	0.88	0.82	0.91	0.89	1.872
	PH2	4.45	1.79	0.87				
	PH3	4.65	1.72	0.82				
	PH4	4.83	1.69	0.90				
Parasocial interaction	PSI	4.93	1.71	0.92	0.91	0.89	0.84	1.980
	PS2	5.46	1.50	0.82				
	PS3	4.81	1.75	0.82				
	PS4	4.11	1.75	0.81				
Individual SNS dependency	ISD1	3.91	1.75	0.84	0.89	0.85	0.86	2.381
	ISD2	3.22	1.60	0.89				
	ISD3	3.66	1.73	0.88				
Fake news sharing on COVID-19	FNS1	3.58	1.86	0.82	0.84	0.89	0.83	—
	FNS2	4.42	1.89	0.86				
	FNS3	3.32	1.84	0.84				
	FNS4	4.65	1.72	0.74				
	FNS5	4.83	1.69	0.75				
Fake news knowledge	FNK1	4.93	1.71	0.79	0.91	0.81	0.88	2.421
	FNK2	5.46	1.50	0.77				
	FNK3	4.81	1.75	0.91				
	FNK4	4.13	1.72	0.89				
	FNK5	3.91	1.75	0.82				

significant effect on fake news sharing, but education was significant ($\beta = 0.321, P < 0.01$).

Further results indicated that the effect sizes (f^2) for the five significant relationships are all achieved from small to large effect size. This is based on the threshold of 0.02 small, 0.15 moderate and 0.35 large [31]. Finally, we looked into the model's predictive relevance (Q^2) [32] and found it to be $0.189 > 0$. This suggest that the research model has excellent predictive relevance, since it is greater than zero. Our model explains 78% of the variance in people's intention to share fake news; suggesting a substantial contribution of all predictors in explaining the dependent variable [28].

Testing the moderation hypothesis

We used the two-stage approach to analyse moderation because it is versatile and should generally be given preference for creating the interaction term [29]. Fake news knowledge significantly moderated the effect on the relationship between perceived herd and fake news sharing ($\beta = -0.372, P < 0.001$), SNS dependency and fake news sharing ($\beta = -0.326, P < 0.001$), information-seeking and fake news sharing ($\beta = -0.239, P < 0.05$) and parasocial interaction and fake news sharing ($\beta = -0.144, P < 0.05$). However, the relationships between tie strength and fake news sharing ($\beta = 0.014, P > 0.05$), as well as status-seeking and fake

Table 3. Discriminant validity: Heterotrait–Monotrait (HTMT).

Construct	1	2	3	4	5	6	7	8
Status-seeking								
Information-seeking	0.384							
Social tie strength	0.311	0.302						
Perceived herd	0.665	0.380	0.364					
Para social interaction	0.720	0.508	0.322	0.687				
Individual SNS dependency	0.328	0.739	0.324	0.339	0.387			
Fake news sharing	0.700	0.465	0.379	0.711	0.740	0.350		
Fake news knowledge	0.431	0.320	0.503	0.356	0.422	0.366	0.468	

Table 4. Structural model results.

No	Hypothesized relationship	β	t values	Q^2	f^2	Decision
H1	Information-seeking \rightarrow fake news sharing	0.339	2.854**		0.182	Supported
H2	Status-seeking \rightarrow fake news sharing	0.021	0.892		0.003	Not supported
H3	Tie strength \rightarrow fake news sharing	0.622	8.055***		0.630	Supported
H4	Perceived herd \rightarrow fake news sharing	0.412	4.966***		0.213	Supported
H5	Parasocial interaction \rightarrow fake news sharing	0.214	2.299*		0.057	Supported
H6	SNS dependency \rightarrow fake news sharing	0.398	3.484***	0.189	0.159	Supported

*Significant at $P < 0.05$,

**at $P < 0.01$, and

***at $P < 0.001$.

news sharing ($\beta = 0.011$, $P > 0.05$) were not significant (See Fig. 2).

Discussion

Main effects

Our results indicated that tie strength is the strongest predictor of fake news sharing related to COVID-19 pandemic. This is consistent with a recent research [16]. Furthermore, we found a positive relationship between perceived herd and fake news sharing related to COVID-19 pandemic. A possible reason for this outcome could be because there are now many rumours and false news stories circulating about the COVID-19 [4]. Therefore, as people come across stories shared and liked by many, they might feel that such information is accurate. We also found a positive association between SNS dependency and fake news sharing related to COVID-19 pandemic. This supports the outcome of a recent research [4].

Therefore, we maintain that individual's high dependency in SNS for information on COVID-19 has caused the consumption and circulation of fake information to increase. Additionally, information-seeking was found to predict fake news sharing related to COVID-19 pandemic. This outcome corroborates recent research [5], related to COVID-19 and false information sharing.

Our results also showed that parasocial interaction predicted fake news sharing. This suggests that a lot of people have the tendency to believe COVID-19 information disseminated on SNS by public figures they hold in high esteem. This is consistent with a recent research [33]. Contrary to what we expected, status-seeking was not associated with fake news sharing relating to COVID-19. What this indicates is that people may not want to share misinformation that would endanger their reputation. Additionally, we found that gender and age have no significant effect on fake news sharing, which is contrary to prior research [8]. We believe

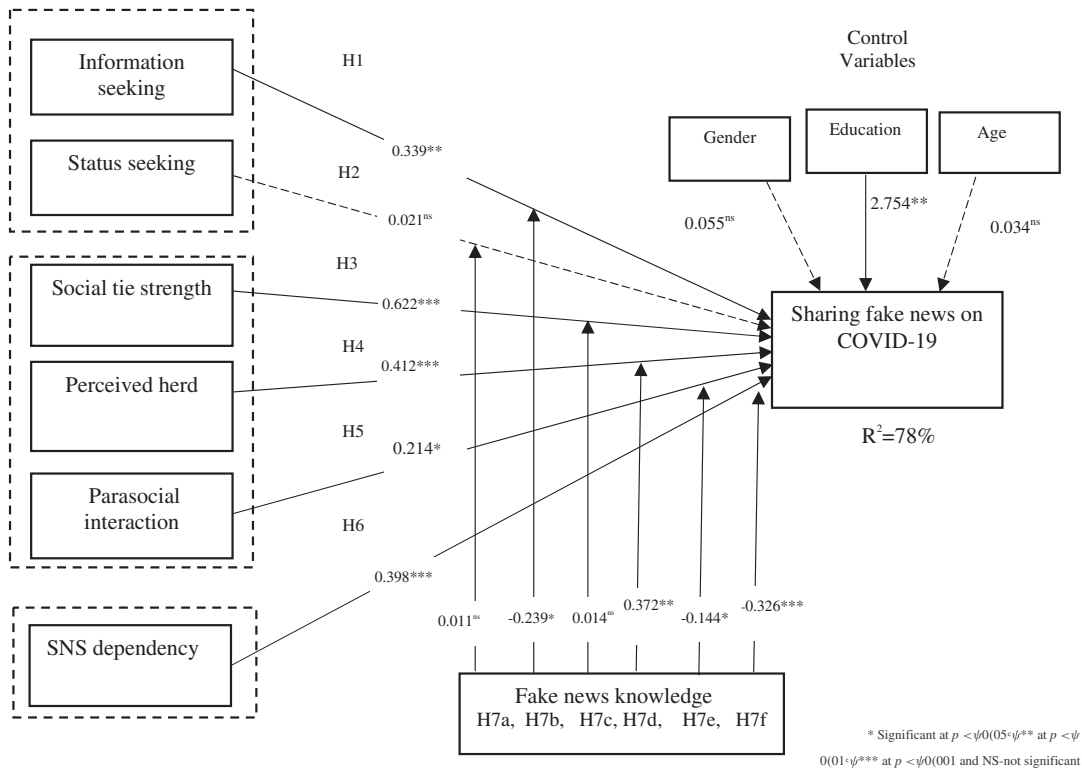


Fig. 2. Structural model for fake news sharing.

Significant at * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

NS, not significant.

that contextual factors might have some influence on this outcome. However, we found that educational level predicted fake news sharing. Those with lower educational qualification shared fake news more than individuals who have higher education.

Moderation effects

As shown in Fig. 3, the relationship between fake news knowledge and perceived herd is weakened among individuals that exerts a high level of fake news knowledge.

These findings suggest that those with a high level of fake news knowledge tend to be more sceptical and critical when sharing information.

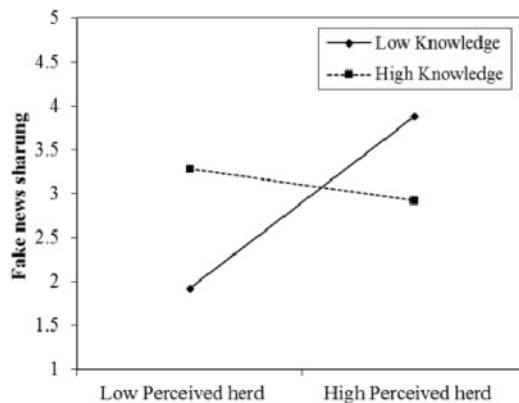


Fig. 3. Graphical impact of the moderation effect of FNK on PH and FNS.

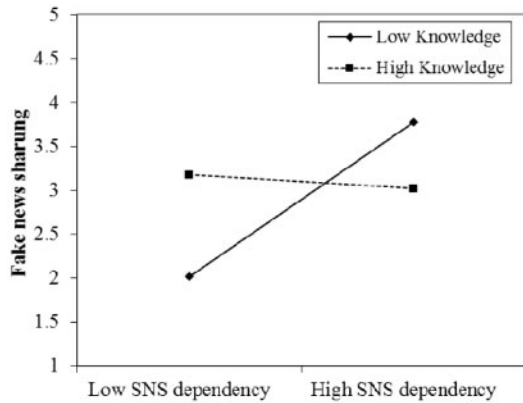


Fig. 4. Graphical impact of the moderation effect of FNK on ISD and FNS.

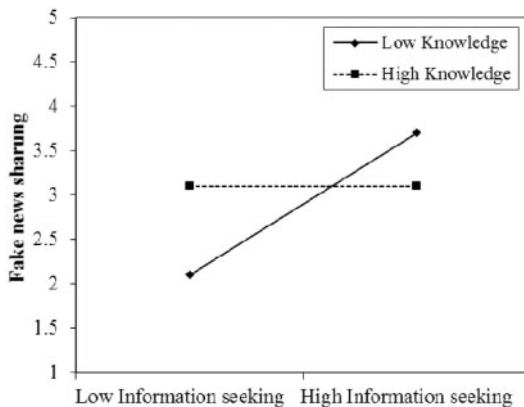


Fig. 5. Graphical impact of the moderation effect of FNK on IS and FNS.

Furthermore, we found that fake news knowledge moderated the relationship between SNS dependency and fake news sharing. This is graphically represented in Fig. 4.

Figure 4 demonstrates that the effect of fake news sharing is more significant for individuals with lower fake news knowledge. Additional findings demonstrate the ability of fake news knowledge in weakening the relationship between information-seeking and fake news sharing (Fig. 5). In this view, we found that the effect of fake news sharing is stronger with individuals that have low fake news knowledge.

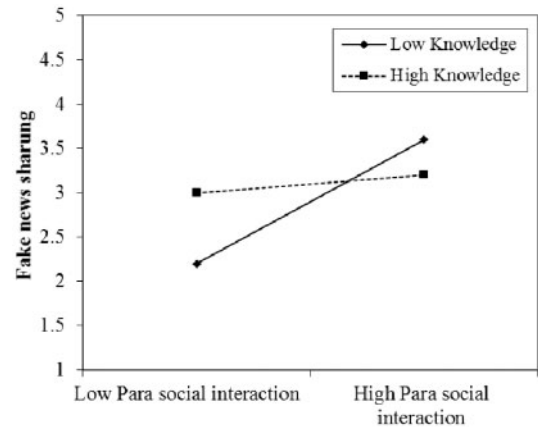


Fig. 6. Graphical impact of the moderation effect of FNK on PSI and FNS.

As shown in Fig. 6, those with low fake news knowledge as represented by the steeper slope share more fake news. What this means is that if an individual has a high level of fake news knowledge, he/she may be more cautious when using any information that a public figure posted online. This outcome is contrary to findings of past research [22].

Contrary to our expectation, fake news knowledge did not moderate the relationship between tie strength and fake news sharing. This could be because Nigerians perceive the quality of idea or information shared on SNS more valued when it comes from relatives and friends. We also found no moderating effect of fake news knowledge on the relationship between status-seeking and fake news sharing.

Theoretical implications

Most prior studies widely employed the U&G as a lens to predict news sharing determinants [6, 34]. We extended the UGT and incorporated other theories such as SNS dependency and social impact theory to establish factors that better explain why people share fake news on social media. This study established that information-seeking, parasocial interaction, tie strength, perceived herd and SNS dependency are associated with fake news sharing. Evidence has shown that empirical studies on fake

news sharing are lacking as most prior literature lacks a theoretical framework or model that empirically broadens our understanding of fake news sharing behaviour on social media [7, 36]. Therefore, this study has significant importance as it modelled the factors that lead to the spread of misinformation during this period of COVID-19. Another contribution of this study is that limited prior literature on fake news mainly focuses on social media users from the Western world. In contrast, the current study is based on samples drawn from Nigerian social media users. Our study has also empirically demonstrated the role of fake news knowledge in curtailing fake news spread.

Practical implications

Based on the findings of this study, we suggest intervention strategies which can nudge people to consume manageable amount of COVID-19 content through social media. People should be mindful with the messages shared by friends and families and prominent figures. They also need to reduce the over reliance on social media for information. Social media users should try to authenticate and scrutinize information properly before sharing. Social media companies should also restrict the number of COVID-19 specific information people are exposed to; this may reduce the circulation of fake news. All relevant authorities, health care workers and other stakeholders should increase the knowledge of people to realize the dangers of spreading fake news during this pandemic. Moreover, government officials and health workers should provide relevant information on this current pandemic. That is, correct information should be shared widely to the public domain through various conventional and online media. This may decrease the spread of fake news on the concocted cure and prevention tips found online.

Limitations and suggestions for further studies

This study suffers from some limitations. This study was undertaken in the context of the COVID-19 pandemic and drew its sample from only one country (Nigeria). More studies are required to extend

this study to other countries that are facing similar issues. Despite the limitations of this study, it has answered a recent call to look beyond researching fake news from the US and UK contexts [7, 9]. Another limitation of this study is that we can only conclude base on the factors we have identified and analysed. There are other factors such as peer influence, social comparison and so on. Therefore, future researchers could expand the number of predictors to better understand fake news sharing related to COVID-19. We also acknowledge the fact that fake news knowledge is not the only moderating variable that could reduce fake news sharing. Future researchers could investigate the role of source credibility, news verification behaviour and other related moderators to fake news sharing.

Conflict of interest statement

We declare no conflict of interest.

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Appendix A. Measurement

Constructs	Code	Items	Source
Status-seeking Please rate the following statements on why you share or receive news content related to COVID-19	SS1	It helps me feel important when sharing	[34]
	SS2	It helps me to gain status when sharing	
	SS3	It helps me to look good when sharing	
	SS4	I feel peer pressure to participate	
	SS5	It helps me gain support and respect	
Information-seeking Please rate the following statements on why you share or receive news content related to COVID-19	IS1	To helps me to store useful Information	[34]
	ISK2	Is easy to retrieve information when I need it	
	ISK3	To keep up-to-date on the latest news and events	
Social tie strength Please rate the following statements on why you share or receive news content related to COVID-19	STS1	I feel my friends would share true information related to COVID-19 in SNS	[37]
	STS2	I feel my family would share true information related to COVID-19 in SNS	
	STS3	The more people share and like the certain COVID-19 information in SNS, the more likely I will use and circulate it	
Perceived herd Please rate the following statements on why you share or receive news content related to COVID-19	PH1	My choice to use or share content on COVID-19 is influenced by the number of people who like and share it	[38]
	PH2	If I realized that many of my friends share certain COVID-19 information in SNS, then I would be more willing to use and trust it	
	PH3	The more people circulate and like certain COVID-19 Information in SNS, the more likely it is for me to use and reshare it	
Para social interaction Please rate the following statements on why you receive news content related to COVID-19	PSI1	I have no problem using COVID-19 information shared in SNS by someone that I admired and respect	[20]
	PSI2	I look up to the figure I admire and respect, to obtain information related to COVID-19	
	PSI3	I seek direction from the figure I admired and respect related to COVID-19 information	
	PSI4	I normally relate my ideas with the information shared by the figure I admired and respect on his or her SNS pages	
Individual SNS dependency Please rate the following statements on why you receive news content related to COVID-19	ISD1	I frequently obtain COVID-19 information through SNS	[21]
	ISD2	I make use of the information related to COVID-19 found on SNS	
	ISD3	I immediately update COVID-19 information received from SNS	

(continued)

(continued)

Constructs	Code	Items	Source
Fake news sharing on COVID-19 Please rate the following statements on your sharing behaviour related to COVID-19	FNS1	I have shared information related to COVID-19 virus that I later found out as a hoax	[39]
	FNS2	I have shared content on social media related to COVID- 19 that seem accurate at a time and I later found was made up	
	FNS3	I have shared content on social media related to COVID-19 that was exaggerated, but was not aware it was exaggerated at the time of sharing	
	FNS4	I have shared content on social media related to COVID- 19 without checking facts through trusted sources	
	FNS5	I have shared content on social media related to COVID-19 without reading the whole article	
Fake news knowledge Please rate the degree to which you believe the following statements	FNK1	I think news content related to COVID-19 without a source is probably untrue	[40]
	FNK2	When a news story on COVID-19 does not match the headline, it is likely to be inaccurate	
	FNK3	Sometimes people publish unverified information related to COVID-19 to increase readability	
	FNK4	I think some news on COVID-19 are fabricated to harm and cause chaos in the society	
	FNK5	Sometimes news stories on social media related to COVID-19 are presented in a misleading way	