

Endorse the Source – The Impact of Information Assessment on News Sharing Behavior

Completed Research

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Abstract

Social media provides enormous loads of information for its users paired with easy sharing mechanisms such as liking or retweeting. In such an environment it is not easy to accurately judge every tweet or post piece by piece, in which case individuals rely on easy strategies to evaluate information. In this research, the role of the source credibility and verification strategies of users were investigated to understand how individuals assess the information quality on Twitter and under which circumstances they share information. A quantitative study was conducted using Amazon Mechanical Turk. The results show that peripheral cues, namely the source credibility has a strong influence on how people perceive the quality of information.

Keywords

Twitter, source credibility, information verification, information quality.

Introduction

Social media made it possible for individuals to exchange information in an effortless manner. The act of sharing is boiled down to a simple click on a "thumbs up," a retweet or simply on a sharing symbol. We all more or less participate in this information exchange and probably do not realize this easy way of sharing can have severe consequences on a larger scale. Especially in the context of "Fake News" it is of importance to understand under which circumstances people tend to share information. "Fake News" is fabricated misinformation to mislead its readers (Janze and Risius 2017). This phenomenon gained much exposure especially in the presidential election of 2016 (Allcott and Gentzkow 2017). Many fabricated stories about Donald Trump and especially Hillary Clinton were shared on social media, which showed to have no factual basis (Mozur and Scott 2016). The United States already encountered publicly spread fake news in 2010, when Twitter bots were used to spread false information about Senator Ted Kennedy, and in 2014 when stories about a quarantine of Texas spread because of an Ebola outbreak (Akpan 2016). In Germany, a picture of a refugee was used in the context of terrorist attacks, even though the individual had no connection to said context (Shubert and Schmidt 2017). In the case of the annexation of the Crimea in February 2014 so-called "troll armies" spread false information on Twitter about the situation in Ukraine. Also, misinformation about Russian submarines' intrusion in Sweden was retweeted (Kragh and Åsberg 2017).

The presented examples are only a few instances of fake stories which were shared on social media. This shall illustrate that the fake news phenomenon is a current and also urgent topic to discuss. The internet, once held as a powerful tool for democracy, nowadays threatens democracy by misinforming big chunks of our society into believing in stories which follow the specific agenda of the once who fabricate them. We can see that fake news currently are more often shared among social media than actual news articles (Silverman 2016; Vosoughi et al. 2018). False information always existed in human society; however, with the emergence of social media various incorrect information became more and more visible.

This evolution of modern news sharing is concerning for our whole society. To understand why the phenomenon “Fake News” flourishes we firstly need to understand the relationship of social media users towards their preferred platform and their sharing behavior. Therefore, I want to shed light on the topic of how do Twitter users perceive information or news quality. In the sphere of Twitter, the news source shows to be a key aspect, since people choose who they want to follow. In line with past research (Osatuyi and Hughes 2018), the elaboration likelihood model delivers key influences on a change in behavior. The peripheral route which takes cues into account (in this case the news source) and the central route which takes the information quality into account. Building on these influences, I want to elaborate on how strong they influence the news sharing attitude of individuals on Twitter, but also on which basis the information quality is perceived by the users. A quantitative study using Amazon mTurk with 148 participants was conducted to answer the research question:

RQ: How do Twitter users form their beliefs on information quality and how strong is that impact on the news sharing attitude?

Structural equation modeling using the PLS routine was performed to investigate the impact on the news sharing attitude.

The remainder of the paper is structured as follows: first research in the sphere of fake news is presented. Afterwards, the elaboration likelihood model is introduced with research in this context. Afterwards, the research model with its hypothesis is presented, followed by the research method. Then, the results with quality criteria and the structural model are shown. The paper closes with the discussion, limitations, and conclusion.

Background

The current stream of fake news research in the IS field often draws on the Elaboration Likelihood Model as a basis (Ebrahimi 2014; Janze and Risius 2017; Zha et al. 2018). Therefore, the theory behind ELM will be explained in the first step and then the relevant research in this regard is presented.

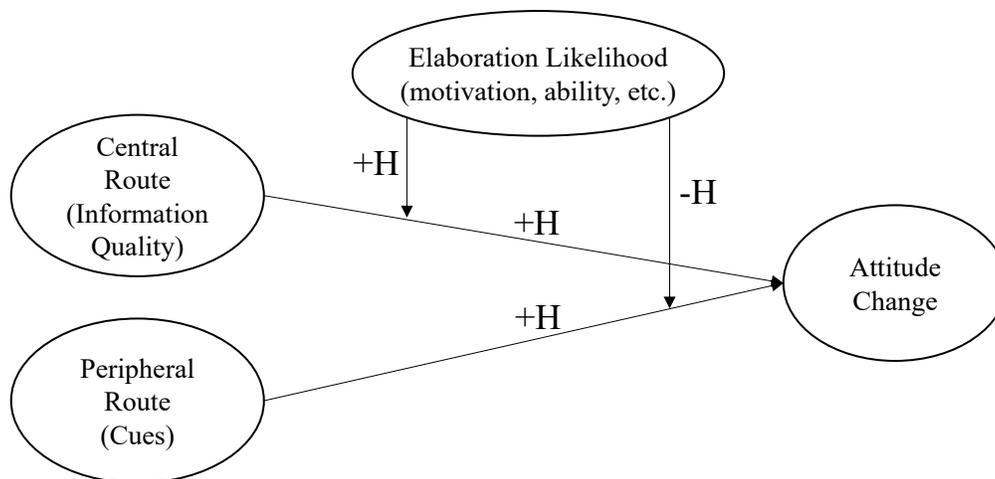


Figure 1 Elaboration Likelihood Model

The ELM is part of the dual-process theory and assumes that changes in behavior or attitudes are driven by external information. Petty and Cacioppo (1986) describe two possible cognitive routes individuals take which lead in a behavior or attitude change: the central route, which reflects effortful, analytical and rational cognitive processes, and the peripheral route which relies on heuristics and a rather effortless automatic cognitive style. Bhattacharjee and Sanford (2006) present three characteristics in which the routes show differences. Concerning the central route individuals rely solely on the given information. In the case of a news article, people would check whether the information and the argumentation are coherent. The peripheral route relies on cues which are not directly linked to the content of the information, such as big titles, aggressive language, intense colors, or the source of information. These are characteristics which are

very easy to process, whereas checking for internal consistency of the information is more effortful. This is the second characteristic: the central route requires more cognitive effort than the peripheral route. And lastly, behavior or attitude changes induced by the central route show to be more robust over time.

Literature shows that in IS research the two routes are operationalized by information quality for the central route and source credibility for the peripheral route (Bhattacharjee and Sanford 2006). To evaluate the information quality, a particular expertise is needed, such as knowledge of the matter, or the willingness to verify information with different sources. Either way, this verification process takes time and effort and stands in no relation to the source credibility, which is usually evaluated very quickly. The ELM suggests that based on the individual's elaboration likelihood, people engage more on the central or on the peripheral route.

Janze and Risius (2017) drew on the ELM in the context of fake news detection. The study explored cognitive, visual, affective and behavioral cues in news posts as indicated by the peripheral route of the ELM. Ebrahimi (2014) suggested the ELM in the context of information adoption in online communities. Involvement in the community and the personal expertise were used as a term of the elaboration likelihood. Information quality as the central route and the source credibility/trustworthiness of the source as the peripheral route was chosen. This is in line with Bhattacharjee and Sanford (2006) and also fits the context in this study. Torres et al. (2018) investigated fake news on social networking sites. The ground their research on epistemology of testimony and clarify how the source of information, as well as individuals' characteristics, influence the willingness to verify information. Social ties, perceived cognitive homogeneity, trust in network, and perceived media credibility were investigated to influence information verification behavior. They found that fake news awareness is a significant predictor of perceptions of media credibility.

Research Model

The study is based on the constructs associated with the elaboration likelihood model. Fake news builds on peripheral cues (Janze and Risius 2017), such as the "loudness" of the message or the source. On Twitter, the source of information has a unique stand, since every user defines their information environment. Everybody can choose who they want to follow. Therefore, here the source credibility is investigated as the main driver for peripheral cues and its influence on other constructs. On the other hand, the central route of the ELM suggests that users elaborate on information quality. Peripheral cues as well as the central route, both influence the Twitter news sharing attitude as depicted.

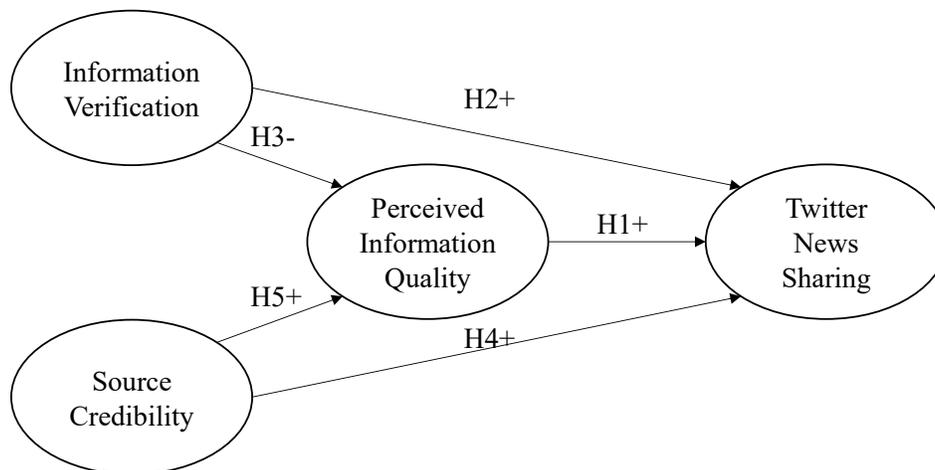


Figure 2 Research Model

The dependent variable is derived from Bhattacharjee and Sanford (2006). The construct was slightly altered to fit the context. It is defined as the attitude of Twitter users to share what they deem to be

newsworthy in general. Since fake news are shared more frequently on social media than regular news (Janze and Risius 2017; Silverman 2016), this construct can act as a fake news predictor.

Perceived Information Quality refers to the degree to which a user perceives a piece of information on Twitter as believable or authentic. Whether or not users identify information as accurate, refers to the epistemology of testimony (Fallis 2003). Shieber (2015) argues that if an individual makes a judgment about a report, whether it is true, the person made an epistemic evaluation of the testimony. If such information is shared on a social networking website, the person engaged in the act of testimony (Torres et al. 2018). The recipient of information makes subjective judgments of whether the information is correct. Therefore, the users strive for an appropriate trust in the testimony to others (Shieber 2015). This process can be observed with every member of an information distribution system such as Twitter. Therefore, individuals who perceived information as truthful are more likely to share this information with others. Thus:

H1: The higher the perceived information quality, the higher the intention to share news on Twitter.

Information verification refers to the individual's information verification strategies which were taken from Metzger et al. (2003). Literature suggests that if individuals want to engage in the act of information verification, the dimensions of accuracy, completeness, currency, format, and believability should be considered (Klobas 1995; Marchand 1990; Nelson et al. 2005). Four items which incorporate the verification of the presented information were used from Metzger et al. (2003). These include whether the information is current, complete, comprehensive if the information is about opinions or facts and the seeking for other sources to verify the information. If the individual engages in information verification on Twitter, it is assumed that they are more likely to engage in sharing this kind of information, due to a reciprocal process. A Twitter user's interest is also in receiving trustworthy information. Therefore the user also expects others to engage in information verification. The higher the expertise of the user basis, the more likely the information they present is trustworthy and worth to share. Therefore, the following hypotheses are:

H2: The better the information verification strategy, the higher the Twitter news sharing attitude.

Furthermore, users who engage in information verification strategies are likely to perceived news on Twitter different than the ones who do not. Since we learned that fake news is more frequently shared on Twitter, people who engage in information verification should perceive the gross of information on Twitter as false. Therefore:

H3: The better information verification strategies, the lower the perceived information quality.

Trust of information is heavily tied to the origin of the information (Mayer et al. 1995). In online communities, it has been shown that the trustworthiness of the information source is essential for information exchange and part of the peripheral route in terms of the elaboration likelihood model (Ebrahimi 2014). The source credibility is used as a proxy to evaluate the quality of the information due to its easy evaluation (no analytical cognition needed), and the sheer amount of information users are confronted with on social media. The source credibility is perceived differently from person to person. Therefore, different users follow different Twitter entities. The real credibility of a person who shares information on Twitter can consequently be not evaluated by the users who are limited to their expertise and biases. Fadel et al. (2009), and Sussman and Siegal (2003) use the source credibility as the peripheral route in the elaboration likelihood model as one form of information processing. Peripheral cues are pieces of information which are not directly tied to the actual information presented and act as a proxy to evaluate given information. In the context of Twitter users may determine the trustworthiness of a source by their followers, retweets or if the person is well-known in society (e.g. celebrities, politicians, activists, etc.). The reliability of the source is heavily tied to the information spread by this entity, and the vast amount of information available on social media (which is practically not possible to verify by single users). We argue that the perceived information quality is likely to be biased by the perceived credibility of the source, even though both entities should be viewed separately by the user. Furthermore, in line with Zha et al. (2018), we argue that the source credibility has a direct effect of the news sharing attitude. Thus:

H4: Higher source credibility is positively influencing the Twitter news sharing attitude.

H5: Higher source credibility is positively influencing the information quality.

Research Method

For this study, Twitter users were asked about their news sharing attitude. To gather data, Amazon Mechanical Turk was used to target US Twitter account holders. With mTurk it is possible to directly focus participants with predefined characteristics such as US citizenship and a Twitter account. The participants were asked in which way they use Twitter (e.g., communication with friends, retrieving the latest news, and also the numbers of followers and followees of the account). The sample consisted of 148 participants who showed to engage frequently with information on Twitter.

Demographics	Characteristic	Number of Participants	Percentage of n
Age	<20	1	0.68%
	20-29	31	20.95%
	30-39	61	41.22%
	40-49	29	19.59%
	50-59	16	10.81%
	>60	10	6.76%
Gender	Male	79	53.38%
	Female	69	46.62%

Table 1 Sample Demographics

The Table below shows the items used in the questionnaire.

Construct	Items	References
Twitter News Sharing Attitude	Using Twitter to inform other people by retweeting news is a good idea.	Adapted from Bhattacharjee and Sanford (2006)
	Using Twitter to share news is a foolish idea.	
	I dislike the idea of using Twitter to share news.	
Information Quality	The news on Twitter is accurate.	Adapted from Bhattacharjee and Sanford (2006)
	The news on Twitter is consistent.	
	The news on Twitter is incomplete.	
Source Credibility	I believe that news on Twitter is provided by people who are trustworthy.	Adapted from Bhattacharjee and Sanford (2006)
	I believe that news on Twitter is provided by people who are knowledgeable on the topic.	
	I believe that news on Twitter is provided by people who appear to be credible.	
Information Verification	I check to see if the information is current.	Adapted from (Metzger et al. 2003)
	I check to see if the information is complete/comprehensive.	
	Consider whether the views represented are facts or opinion.	
	Seek out to other sources to validate the information online.	

Table 2 Items

MTurk has demonstrated to deliver reliable results in research and showed to mirror the US citizenship very well (Chandler et al. 2014; Holden et al. 2013; Paolacci and Chandler 2014; Sheehan and Pittman 2016; Steelman et al. 2014). Items were taken from literature and altered to fit the context for the study. To analyze the data structural equation modeling (PLS-SEM) was performed, using the software SmartPLS 3.2.7. (Ringle et al. 2015). PLS-SEM performs well in a prediction-oriented research approach (Ringle et al. 2012).

Results

Hair Jr et al. (2016) suggest a method based on the estimated R^2 which the research model will be able to explain. The literature shows that ELM provides R^2 in the ranges of 30% in the context of social media (Zha et al. 2018), and R^2 above 30% in the organizational context (Bhattacharjee and Sanford 2006; Sussman and Siegal 2003). Based on this I used 25% as the lower bound, which seemed to be very conservative (the lower the estimated R^2 , the bigger the needed sample size). Hair Jr et al. (2016) suggest 41 participants based on this minimum R^2 value, which is exceeded by this sample.

Internal consistency was assessed by Cronbach's Alpha and the composite reliability (CR). I used Cronbach's Alpha as a lower bound and CR as an upper bound for the quality assessment as suggested by Hair Jr et al. (2016). Values between 0.7 and 0.95 are desirable and indicate internal consistency.

Convergent validity was evaluated by the average variance extracted (AVE) (>0.5) and the factor loadings (>0.707) (Hair Jr et al. 2016). All criteria indicate convergent validity in this case.

	Cronbach's Alpha	Composite Reliability	(AVE)	(1)	(2)	(3)	(4)
(1) Twitter News Sharing Attitude	0.859	0.913	0.777	0.881			
(2) Information Verification	0.871	0.911	0.721	0.312	0.849		
(3) Information Quality	0.817	0.891	0.734	0.524	0.303	0.857	
(4) Source Credibility	0.884	0.928	0.812	0.489	0.191	0.740	0.901

Table 3 Quality Criteria (Cronbach's Alpha, CR, AVE, Fornell-Larcker-Criterion)

	(1)	(2)	(3)	(4)
(1) Twitter News Sharing Attitude				
(2) Information Verification		0.34		
(3) Information Quality		0.616	0.315	
(4) Source Credibility		0.541	0.203	0.847

Table 4 Heterotrait-Monotrait Ratio

	(1) Twitter News Sharing Attitude	(2) Information Verification	(3) Information Quality	(4) Source Credibility
InfoQ1	0.492	0.365	0.920	0.706
InfoQ2	0.456	0.287	0.922	0.731
InfoQ3	0.400	0.064	0.710	0.410
InformationVery1	0.269	0.903	0.307	0.223
InformationVery2	0.336	0.920	0.321	0.189
InformationVery3	0.160	0.772	0.176	0.077
InformationVery4	0.253	0.791	0.175	0.117
SourceCred1	0.422	0.133	0.665	0.911
SourceCred2	0.462	0.217	0.663	0.893
SourceCred3	0.437	0.164	0.673	0.899
TweetAttitude1	0.866	0.308	0.521	0.524
TweetAttitude2	0.885	0.238	0.389	0.297
TweetAttitude3	0.893	0.266	0.450	0.428

Table 5 Cross-Loadings

Discriminant validity was assessed by observing the cross-loadings (every item has the highest loading for its specific construct), the Fornell-Larcker-Criterion and the heterotrait-monotrait ratio (HTMT). Values

above 0.9 are considered to not show discriminant validity for the HTMT, which is not the case in this study. Also, here drawing on Hair Jr et al. (2016), all criteria exceed the needed thresholds.

Since all quality criteria have been assessed as supporting the quality of the data, the next step is to assess the path coefficients, their significance, and the R². The figure below depicts the results of the structural equation modeling. The model was controlled for the demographic variables (gender, age) as well as for the characteristics of the Twitter accounts (followers and followees), which did not show to have a significant influence.

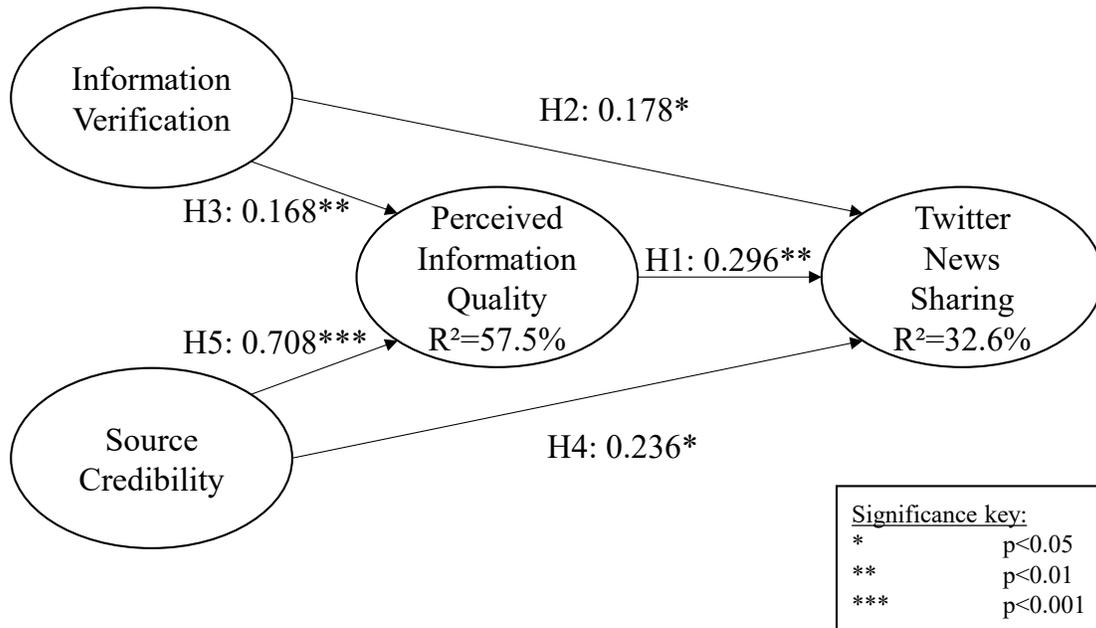


Figure 3 Research Results

Perceived Information quality (IQ) shows a significant influence on the Twitter news sharing attitude ($\beta=0.296$, $p<0.01$), which supports H1. Information verification has a significant influence on the news sharing attitude ($\beta=0.178$, $p<0.05$). Therefore, H2 is supported. However, information verification has a positive influence on the perceived information quality ($\beta=0.168$, $p<0.01$) and therefore does not support H3. Source credibility significantly influences the twitter news sharing attitude ($\beta=0.236$, $p<0.05$), which supports H4. Furthermore, source credibility has a strong influence on the perceived information quality ($\beta=0.708$, $p<0.001$) which supports H5. Overall, the presented model can explain 32.6% of the variance of the Twitter news sharing attitude. Also, 57.5% of the variance in the construct of the perceived information quality can be explained. Information quality was also tested as a mediator for the information verification and the source credibility. The table below shows that the indirect effects through the perceived information quality are significant and therefore indicate that there is a partial mediation.

	Original Sample (O)	P Values
(2) Information Verification -> (3) Information Quality -> (1) Twitter News Sharing Attitude	0.050	0.039
(4) Source Credibility -> (3) Information Quality -> (1) Twitter News Sharing Attitude	0.209	0.004

Table 6 Mediation Analysis

Discussion

First, the implications for theory are presented. The results are interpreted, then implications for practice follow.

Implications for Theory

News sharing attitude is linked to personal evaluation. Based on previous research, we know that a behavior or attitude can be induced by rational and affective components (Petty and Cacioppo 1986). The degree on which – rational or affective – route has a stronger influence is determined by the person's elaboration likelihood. In the past, the ELM in the sphere of IS research was often applied to an organizational context (Bhattacharjee and Sanford 2006; Sussman and Siegal 2003), whereas the theory found its way into the area of online communities (Ebrahimi 2014). We found, in line with Zha et al. (2018) that the ELM also can find application in the sphere of social media and the associated behavior of news sharing. We also found similar results in terms of the explained variance. With two key constructs, we can explain 32.6% of the variance of the news sharing attitude. We also showed that the attitude is determined by the personal evaluation of given information based on the information quality or on the credibility of the source. However, this research does not aim towards an objective assessment of information, nor does it point towards objectively credible personalities who share information online. This research aims towards the individual's perception of whether they judge information as true or not. Towards news sharing attitude, this is an incremental characteristic of social media, since people may perceive individual personalities as credible, even though there could be valid criticism that the information by mentioned personality cannot be trusted entirely. Users of social media base their behavior on what they think is right, given the sharing environment they participate in. This includes their following history, i.e. they decide what sources of information they want to receive beforehand. The strong influence of the source credibility mirrors the importance of the defined Twitter environment users participate in. Given by the user-defined credible sources, the information verification of provided information by the sources is not as relevant. Therefore, it is arguable if the two routes do really mirror the central and peripheral route, or if the dual process of thinking happens one step ahead, in the definition of one's information environment.

In ELM the **Information Quality** is seen as the central route. The results indicate that in the context of social media the central route is heavily influenced by peripheral cues. In this study, we found that the source credibility has a strong influence on the perceived information quality. We, therefore, cannot be sure that the information quality is the central route, but more of a mediator. The data suggests that people do not really check for the internal consistency of the presented information, but heavily rely on the source credibility. This can explain the thrive of fake news and maybe also a problem for social media websites in general. Users are overloaded with information on these websites. Besides, people may not even visit these websites to gain information they would also acquire in newspapers. Therefore, all information which is currently not that relevant is only roughly scanned. It is simply not possible to evaluate every piece of information which is presented on social media. Therefore, people rely on the cues, and consequently fake news has it much easier to be shared.

Information Verification showed to influence whether people share on Twitter. This is in line with the hypothesis H2. However, H3 could not be supported. Even though people show strong information verification strategies, they still see the information quality on social media as good. This may be due to the specifics of Twitter. People define their information environment themselves. Therefore, people with verification strategies also check for their information carefully and only follow personalities who they deem as worthy to follow.

Implications for Practice

The results show that peripheral cues have a powerful impact on how people share information on social media. Therefore, social media websites should also make use of these cues to show users credible personalities and verified news stories. This way people can engage with the information themselves without suffering from information overload, and still do not fall for fabricated stories.

Limitations and Further Research

We only investigated Twitter as a platform on which Fake News emerge. The Internet shows much more ways in which Fake News can spread, such as Instagram, Facebook or YouTube. Furthermore, for the current research, solely on the US demographic was drawn. The sharing behavior may differ in other developed countries with a lesser polarized user basis when it comes to political views. The Left-Right scheme in the US naturally induces much clearer enemy stereotypes, in which Fake News can flourish.

For further research, an investigation of different theories is planned to evaluate which framework would be the best to investigate the fake news phenomenon even more. The idea is to identify which environment thrives verification behavior, so that the false news distributor No. 1, the average social media user, shows awareness of this problem.

Conclusion

We showed that information quality and the source credibility are integral components on the individual's evaluation towards the attitude whether to share a piece of information or not. Furthermore, the source credibility showed a substantial influence on information quality. It is concluded that due to extreme information overload, social media users do not have the chance to evaluate every piece of information and therefore heavily rely on cues, which can explain the thrive of fake news.

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