Consumer response to fake news about brands on social media: the effects of self-efficacy, media trust, and persuasion knowledge on brand trust

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Abstract

Purpose – Drawing on theoretical insights from the persuasion knowledge model (PKM), this study aims to propose and test a model that maps out the antecedents, process and consequences to explain how consumers process and respond to fake news about brands on Facebook.

Design/methodology/approach – Contextualizing the fake news about Coca-Cola's recall of Dasani water, an online survey was conducted via Qualtrics with consumers in the USA ($N = 468$). Data were analyzed using covariance-based structural equation modeling.

Findings – Results showed that self-efficacy and media trust significantly predicted consumers' persuasion knowledge of the fake news. Persuasion knowledge of the fake news significantly influenced consumers' perceived diagnosticity of the fake news and subsequent brand trust. Furthermore, persuasion knowledge of the fake news mediated the effects from self-efficacy on perceived diagnosticity of the fake news and brand trust, respectively.

Originality/value – This study contributes to the literature of brand management by examining how consumers process and respond to fake news about a brand. It also extends the persuasion knowledge model by applying it to the context of fake news about brands on social media, and incorporating antecedents (self-efficacy and media trust) and consequences (perceived diagnosticity and brand trust) of persuasion knowledge in this particular context. Practically, this study provides insights to key stakeholders of brands to better understand consumers' information processing of fake news about brands on social media.

Keywords Brand trust, Social media, Self-efficacy, Persuasion knowledge, Fake news

Paper type Research paper

In April 2016, the website "News 4 KTLA" reported that Coca-Cola was recalling its product Dasani water because of some clear parasites found in bottles distributed across the USA. Later, the news was revealed to be untrue and Coca-Cola issued its response regarding this hoax (Evon, 2016). Nevertheless, this misinformation was rapidly transmitted on social media, even after the news was identified as fake. Coca-Cola is not the only company that has been exposed to the threat of fake news. In a recent North American Communication Monitor report, more than 20 per cent of the 1,200 surveyed communication professionals indicated that fake news had impacted their organizational reputation (Reber *et al.*, 2018). Among them, 80 per cent also noted that fake news was published and transmitted on social media such as Facebook, Twitter and blogs (Reber *et al.*, 2018).

The wide spreading of fake news about brands and companies on social media as shown in the abovementioned case and research results is concerning in today's society. While the interactivity and ease of information transmission on social media have provided brand managers powerful tools to better engage with consumer, these features have also allowed fake news to get transmitted more easily without prudent editorial judgment. Fake news such as the one involving Coca-Cola's case may reduce consumers' trust in companies and brands. Such threats raise the urgency for brand managers to better understand how consumers process and respond to fake news about brands on social media.

Undoubtedly, the impact of fake news on society reaches beyond the realm of brand management and has compelled scholars to analyze its transmission process and outcomes (Burkhardt, 2017; Vargo *et al.*, 2017). While fake news itself is not a new phenomenon, the scale of its impact has been drastically magnified owing to the increased speed of its transmission (Burkhardt, 2017). Traditionally, fake news is primarily spread via word of mouth, written words and printed media, but the prevalent use of internet and social media nowadays has provided fertile ground for fake news to be transmitted more easily and to a larger extent (Burkhardt, 2017).

The algorithm on social media allows accounts to target like-minded individuals based on their browsing and interaction (e.g. clicks, shares) history and to spread fake news that corresponds to one's social circle and prior beliefs. A computational analysis of online mediascape from 2014 to 2016 showed that fake news was especially entwined with partisan media (Vargo *et al.*, 2017). Such transmission processes of fake news online, and especially on social media, has brought detrimental outcomes including reinforced echo chambers and escalated distrust in public institutions (Field, 2018).

Although the unprecedented scale of fake news has brought more scholarly attention in recent years, most studies focused on the public policy and political communication perspectives (Jang and Kim, 2018; Vargo *et al.*, 2017). Relatively little research has investigated fake news in the context of brand management and communication. In reviews of the relationship between fake news and brands, Berthon and Pitt (2018) pointed out that brands can both be the enhancers and victims of fake news. On one hand, brands may directly or indirectly fund fake news via the targeted popular sites, many of which may be carrying fake news. On the other hand, brands themselves may be the target of fake news, such as in the case of Coca-Cola and Dasani water; they may also be contaminated by associations if they appear next to fake news (Berthon and Pitt, 2018; Berthon *et al.*, 2018). The latter was empirically examined; results showed there was indeed a chain of effect from fake news on consumers' trust toward brands that appeared next to fake news, and such effects were mediated by the credibility of the news and sources (Visentin *et al.*, 2019). Berthon and colleagues (Berthon and Pitt, 2018; Berthon *et al.*, 2018) laid important groundwork for the investigation of brand management in the face of fake news proliferation and proposed viable solutions, yet more research is called for to provide a better understanding on the impact of fake news and build a systematic approach to combat fake news (Reber *et al.*, 2018).

To answer the above-mentioned call and contribute to the body of knowledge regarding brand management and fake news (Berthon and Pitt, 2018; Berthon *et al.*, 2018), this study draws theoretical insights from the the persuasion knowledge model (Friestad and Wright, 1994). As a theoretical model that is widely applied in marketing and advertising (Ham *et al.*, 2015), the persuasion knowledge model explains consumers' coping mechanism when exposed to messages. It posits that a message's persuasive outcomes would be influenced by message receivers' knowledge of the marketing and advertising related issues (i.e. persuasion knowledge), knowledge of the message senders' traits and goals (i.e. agent knowledge) and knowledge of the message topic (i.e. topic knowledge) (Friestad and Wright, 1994). Because the goal of fake news oftentimes is to persuade rather than to inform the public (Tandoc *et al.*, 2018, p. 147), the persuasion knowledge model would also be able to lend important insights in understanding how consumers process the message contained in fake news about brands. Extending the insights from the persuasion knowledge model, we propose a model that maps out the antecedents, process and consequences when consumers are exposed to fake news about a brand on Facebook. Specifically, the model focuses on the role that persuasion knowledge plays in fake news' impact on consumers' brand trust. It further delineates how consumers' self-efficacy (i.e. self-evaluation of what one can do with obtained skills [Bandura, 1997]) on identifying fake

news and media trust predicts their persuasion knowledge of the fake news they are exposed to and how persuasion knowledge impacts their perceived diagnosticity (i.e. relevance and usefulness of information [Ahluwalia *et al.*, 2001]) of the fake news and subsequent brand trust. Previous studies have pinpointed the importance of cultivating efficacy and persuasion knowledge in media literacy education to combat fake news (Burkhardt, 2017; Lee, 2018), yet no empirical research has been conducted to apply persuasion knowledge model to the fake news context. By proposing and testing a model that applies the persuasion knowledge model in the context of fake news about brands, this study contributes both to the growing body of knowledge of persuasion knowledge model and our understanding on how consumers would process and respond to fake news about brands on social media.

In the following sections, we will first review fake news, the persuasion knowledge model and provide the linkage among different constructs in the model from which six hypotheses are derived. We will then present the method and results of the study, followed by a discussion on the implications for brand management scholars, professionals and key stakeholders.

Literature review

Defining fake news

The concept of "fake news" is not new. The wide spreading of fake news in recent years, however, has resulted in a distinct definition in current literature from earlier definitions (Tandoc *et al.*, 2018). A review of literature containing the term "fake news" from 2003 to 2017 has yielded the typology of fake news that includes news satire, news parody, fabrication, manipulation, advertising and propaganda (Tandoc *et al.*, 2018). These different forms of fake news may be placed in two dimensions: facticity (i.e. the degree to which the information in the news relies on facts) and intention to mislead (Tandoc *et al.*, 2018). This study focuses on fake news about brands in the form of fabrication, which has low facticity and high intention to mislead. This typology follows the more widely used current definition of fake news regarding it as "fabricated information that mimics news media content in form but not in organizational process or intent" (Lazer *et al.*, 2018, p. 1094). Specifically, in this study, the fabricated information was the news about Coca-Cola's recall of Dasani water mentioned at the beginning of this article.

Social media has played a significant role in the impact that fake news has on society today, as it not only provides the platform for fake news to be transmitted more easily and to a larger extent but also challenges the traditional definition of news itself (Tandoc *et al.*, 2018). On social media, the information source gets blurred and a piece of information may be shared by multiple sources (Kang *et al.*, 2011). The algorithm of this process allows posts with higher popularity (e.g. in the form of more likes and shares) to further fuel unverified information to be distributed and mistaken as legitimate information (Lokot and Diakopoulos, 2016). To reflect the role of social media, this study contextualized the fake news about Coca-Cola's recall of Dasani water in the form of a Facebook post.

To combat fake news, solutions and interventions are proposed from both the perspectives of individuals (e.g. media literacy education) and technology (e.g. improving algorithm of platforms) (Berthon and Pitt, 2018; Burkhardt, 2017; Lazer

et al., 2018). Specifically, from the perspective of individuals, research has emphasized the importance of empowering individuals and cultivating persuasion knowledge and skepticism (Burkhardt, 2017; Lee, 2018), as individuals' information processing of fake news is often clouded by their confirmation bias (i.e. the tendency to believe in what is consistent with their prior attitude) and desirability bias (i.e. the tendency to believe in what pleases them) (Lazer *et al.*, 2018). As such, the persuasion knowledge model, a theoretical framework that explains consumers' processing mechanism when exposed to persuasion messages (Friestad and Wright, 1994), would be an appropriate theoretical framework to inform our understanding of how consumers process fake news about brands.

The persuasion knowledge model

The persuasion knowledge model is a consumer behavior theory that explains consumers' coping and processing mechanism when exposed to persuasion episodes such as marketing and advertising strategies (Friestad and Wright, 1994). Specifically, consumers would draw from three knowledge structures that determine the persuasion outcomes (Friestad and Wright, 1994; Ham *et al.*, 2015): persuasion knowledge, agent knowledge and topic knowledge. Persuasion knowledge refers to the knowledge consumers have about various advertising and marketing-related issues such as their beliefs about message senders' goals and tactics and their appropriateness, as well as their own coping goals and mechanisms (Hibbert *et al.*, 2007). Agent knowledge refers to consumers' beliefs about the persuasion agent's (e.g. advertiser and salesperson) traits, competencies and goals, whereas topic knowledge refers to consumers' beliefs about the message topic such as product, service and social causes (Friestad and Wright, 1994). Persuasion knowledge model can be applied to explain the persuasion process for both the target (i.e. message receivers such as consumers) and the agent (i.e. message senders such as the advertiser) as the target attempts to best cope with a persuasion episode, and the agent tries to choose an appropriate persuasion tactic (Friestad and Wright, 1994; Ham *et al.*, 2015). In this study, we focus on the application of persuasion knowledge model for the target's (i.e. consumers) processing mechanism.

Over the years, the persuasion knowledge model has been widely applied and empirically tested in the context of advertising and marketing from various perspectives (Campbell and Kirmani, 2000; Ham *et al.*, 2015; Skard and Thorbjørnsen, 2014). As persuasion knowledge embodies people's belief and evaluation of the goals, tactics and appropriateness of messages, the persuasion knowledge model can throw light on our understanding of how consumers process and respond to fake news about brands. By applying persuasion knowledge model in the context of fake news about brands on social media, this study adds to the heuristic value of persuasion knowledge model by extending it to a new realm. Drawing on theoretical insights from studies on fake news and brand management, this study also expands the framework of persuasion knowledge model via the linkage between persuasion knowledge and its antecedents and consequences in the context of social media fake news.

In the following sections, we first operationalize persuasion knowledge in the context of fake news about brands. We then conceptualize and build the linkage between each key construct and persuasion knowledge. These key constructs include self-efficacy and media trust as antecedents of persuasion knowledge

and message diagnosticity and brand trust as consequences of persuasion knowledge. Finally, we examine fake news' impact on consumers' brand trust through a proposed model (Figure 1).

Persuasion knowledge

Although persuasion knowledge model has been widely applied in previous studies, no single, unified measure has been used to assess persuasion knowledge because of its multidimensional nature and varied application in different contexts (Campbell and Kirmani, 2008; Ham *et al.*, 2015). In a systematic review of persuasion knowledge measures, Ham *et al.* (2015) categorized previous persuasion knowledge measures into two types: dispositional persuasion knowledge that is formed through individuals' various interactions with persuasion attempts in his/her lifetime and situational persuasion knowledge that alters when consumers cope with different persuasion tactics. This study operationalizes persuasion knowledge from the situational perspective because this type of persuasion knowledge is more often used for them to assess information from biased (vs independent) sources (Kirmani and Zhu, 2007).

Specifically, we assess persuasion knowledge of the fake news about Coca-Cola on Facebook based on inference of manipulative intent (Campbell, 1995) and consumers' skepticism toward the Facebook post (adopted from skepticism toward advertising tactics; Rossiter, 1977). This approach was previously used to measure persuasion knowledge in the context of nonprofit communication (Hibbert *et al.*, 2007) and corporate social responsibility communication (Skard and Thorbjørnsen, 2014). The measure is appropriate for this study because it measures consumers' situational persuasion knowledge of the specific fake news.

Self-efficacy and persuasion knowledge

The concept of self-efficacy refers to a form of self-evaluation, which reflects what people believe they can do with obtained skills (Bandura, 1997). For instance, computer self-efficacy means individuals believe that they can accomplish required skills such as using software and analyzing data (Compeau and Higgins, 1999). Communication scholars also proposed that self-efficacy was context-driven: self-efficacy in the context of privacy focused on what individuals believe they can do to protect personal privacy (Chen and Chen, 2015); internet self-efficacy means the perception of a person's ability to accomplish tasks online (Eastin and LaRose, 2000). In this study, self-efficacy was defined as consumers' perception on their ability to identify/verify fake news and to prevent receiving and sharing misinformation.

Figure 1 Conceptual model and hypotheses
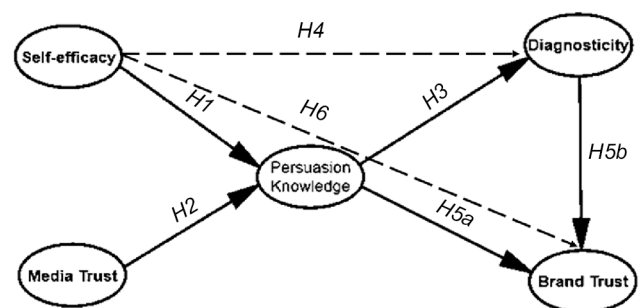
Previous research found that self-efficacy was a predictor of consumer behaviors such as providing self-information for personalized services, technology acceptance and controllability (Sundar and Marathe, 2010; Wasko and Faraj, 2005). It is also important to note that self-efficacy was a key individual character, which could have an impact on the ability to activate consumers' persuasive knowledge by self-recognizing the persuasive nature of advertising messages (Golovacheva, 2016; Kahle and Gurel-Atay, 2015). Therefore, in this study, we hypothesized that a higher level of self-efficacy could help activate a higher level of persuasive knowledge of the Facebook post that contains fake news about the brand. *H1* was proposed:

H1. Consumers' self-efficacy positively influences their persuasion knowledge of the fake news post on Facebook.

Media trust and persuasion knowledge

With the booming development of social media, media abundance and audience fragmentation have threatened the power of the mass media and news credibility. This phenomenon emerged as an important topic, especially after the 2016 US presidential election (Engel, 2017; Turcotte *et al.*, 2015). According to a recent survey research from the Pew Research Center, individuals are becoming more skeptical of mainstream media because of their different political ideologies (Engel, 2017). With the wide and rapid spread of fake news, social media platforms such as Facebook also fell into crises, as they have played a major role in transmitting misinformation (Silverman, 2016). Therefore, it is important to study media trust in a society where distrust toward media outlets is escalating (Speed and Mannion, 2017).

In this study, we focus on Facebook, one of the most popular social media sites in the USA. Recent research further suggests that media trust significantly influences outcomes such as information-seeking behaviors (Turcotte *et al.*, 2015), attention to news (Williams, 2012) and political voting behavior (Ladd, 2010). In the business context, scholars also found that media trust was significantly related to persuasion knowledge. When consumers retain a low level of trust toward a certain media outlet, their persuasion knowledge such as inference of manipulative intent and skepticism toward media messages tend to increase (Nelson *et al.*, 2009). Therefore, *H2* was proposed:

H2. Consumers' trust in Facebook negatively influences their persuasion knowledge of the fake news post on Facebook.

Persuasion knowledge and information diagnosticity

Diagnosticity refers to how individuals perceive the relevance and usefulness of information when they form judgment and decisions (Ahluwalia *et al.*, 2001; Miniard *et al.*, 1992). Past research in psychology and consumer behavior has examined diagnosticity as an outcome after message exposure and a process between such exposure and consumers' subsequent attitude and behavior (Ahluwalia *et al.*, 2001; Klar, 1990; Pullig *et al.*, 2006). Previous research suggested that consumers' persuasion knowledge of rhetorical questions (Ahluwalia and Burnkrant, 2004) and word-of-mouth (Herr *et al.*, 1991) will influence their evaluation of the information diagnosticity. Thus, *H3* was proposed as follows:

H3. Consumers' persuasion knowledge of a fake news post negatively influences their perceived diagnosticity of the post.

Furthermore, as the previous sections suggested, consumers' self-efficacy would positively influence their persuasion knowledge of the information (i.e. Facebook post). Therefore, we would also expect an indirect effect from self-efficacy on the perceived diagnosticity of the fake news Facebook post:

H4. Consumers' self-efficacy negatively and indirectly influences perceived diagnosticity of the fake news post on Facebook.

Self-efficacy, persuasion knowledge and brand trust

In the past literature of brand management, trust was defined as "consumers' affect-based experience of a particular brand" (Karjaluoto *et al.*, 2016, p. 529). As a necessary precondition of consumer-brand relationship, scholars found that trust could help reduce uncertainty, facilitate positive attitudes and build long-term commitment, strong loyalty and brand love (Drennan *et al.*, 2015; Matzler *et al.*, 2008). In this study, we regard brand trust as consumers' level of mutual confidence in the brand (Shen, 2017).

Previous studies suggested consumers' trust toward a particular brand is gradually built on previous encounters and interactions with the brand (Albert and Merunka, 2013). If consumers make negative inferences of manipulative intent (IMI) from retailers, their perceived persuasion knowledge is high and the trust of the brands' integrity decreases (Lunardo and Mbengue, 2013). Wei *et al.* (2008) found that persuasion knowledge could also positively influence consumers' evaluation of the embedded brand if the perceived media messages on the brand were appropriate. In this study, we hypothesized that if consumers have high persuasion knowledge of the Facebook post and thus suspect this news as fake, their trust toward the brand itself would increase. Therefore, a positive relationship between consumers' persuasive knowledge of the fake news Facebook post and brand trust is hypothesized in *H5a*. In addition, as previous studies on diagnosticity suggested it to be the process through which consumers adjust their judgment and decision about a brand after exposure to brand information (Pham and Muthukrishnan, 2002; Pullig *et al.*, 2006), *H5b* was proposed to delineate the negative effect from perceived diagnosticity of the fake news Facebook post on brand trust:

H5. Consumers' brand trust is (a) positively impacted by persuasion knowledge and (b) negatively impacted by perceived diagnosticity of the fake news post on Facebook.

Furthermore, an indirect effect from self-efficacy on brand trust will occur through the process of persuasion knowledge (as shown in Figure 1). When consumers possess a high level of self-efficacy, they have a sufficient amount of knowledge to identify persuasion intent of messages. Consequently, consumers' brand trust is not likely to be impacted by the fake news and will stay positive. Therefore, *H6* is proposed:

H6. Consumers' self-efficacy positively and indirectly influences brand trust.

Method

Research design and method

To test the proposed hypotheses, a survey study was conducted online. The survey method served as an appropriate method for research purposes of this study, as it samples individual units from US consumers regarding their perceptions and attitudes (Wrench *et al.*, 2013) toward fake news about brands on social media. At the outset of this survey, all participants were presented the context of this study, and an example screenshot of such fake news was shown regarding Coca-Cola's recall of Dasani water because of contamination by parasites, a news spread in 2016 that was identified as fake later on (see Appendix for the text body included in the example screenshot). This example facilitated participants' understanding of the research background and improved accuracy of their responses (Babbie, 2016). Such an approach has been adopted by previous survey studies in marketing and communication (Chen *et al.*, 2019; Cheng *et al.*, 2015).

Several multiple-choice questions were also used for the online survey quality control. Participants then proceeded to answer measures regarding media trust, persuasion knowledge, perceived diagnosticity and brand trust. Demographic information was collected at the end of the survey and participants were all debriefed about the untrue nature of the news.

Target population and sampling

To examine how consumers in the USA process fake news about brands on social media, and how consumers' brand trust is impacted by fake news, we programed the questionnaire online and purchased a consumer panel from Qualtrics, a technology platform and market research company that arranges sampling from the US consumer population based on the Census data. The consumer panel of Qualtrics has been widely used in brand management and communication survey studies (Chen *et al.*, 2019; Westhuizen, 2018). The panel yielded 468 qualifying responses (2,665 choices). Among the 468 participants, 246 (52.6 per cent) identified themselves as male, and 222 (47.4 per cent) identified themselves as female. The average age was 47 years old (SD = 18.57, ranging from 18 to 84). Regarding education, the majority of participants (68.6 per cent) did not have a bachelor's degree, and 31.4 per cent held a bachelor's or more advanced degrees. The majority of the participants identified themselves as Caucasian/White (non-Hispanic) (61.8 per cent), followed by Latino/Hispanic (19.0 per cent), Black/African American (non-Hispanic) (10.7 per cent) and Asian/Pacific Islander (6.0 per cent). The majority of participants (70.5 per cent) had an annual income of below US$60,000.

Measurement instrument

All measures were adopted from previous studies and tested for internal consistency. Among them, self-efficacy, media trust, persuasion knowledge and brand trust were measured on five-point Likert-type scales anchored by one being "strongly disagree" and five being "strongly agree," and diagnosticity was measured on a five-point semantic differential scale. *Self-efficacy* was measured by four items adopted from Wei *et al.* (2010) (α = 0.80). *Media trust* in this study specifically measured consumers' trust toward the particular medium (i.e. Facebook) that carried the message about the brand, and it was measured by four items adopted from Chen *et al.* (2019) (α = 0.88). The measure of *persuasion knowledge* comprised four items (α = 0.80) adopted from Hibbert *et al.* (2007) and Skard and Thorbjørnsen (2014), where combined measures of IMI (Campbell, 1965) and skepticism toward advertising tactics (Rossiter, 1977) were used. Consumers' evaluation of the Facebook post's *diagnosticity* was measured by three items adopted from Ahluwalia *et al.* (2001) and Klar (1990) (α = 0.93). *Brand trust* was measured by four items modified from Shen (2017) (α = 0.90). See Table I for a summary of the measurement instrument used in this study.

Data collection and analysis

A pilot study was first carried out with 100 participants in November 2018. Then an additional 2,665 participants were recruited on Qualtrics' online survey panel, and 468 qualifying responses were finally analyzed for hypotheses testing using maximum-likelihood, covariance-based structural equation modeling (SEM). The covariance-based SEM approach was used because this study provides a set of hypotheses informed by previous theoretical frameworks and contains a sufficient sample size, both of which are conditions that fit the use of covariance-based SEM (Reinartz *et al.*, 2009).

Results

Prior to hypotheses testing, descriptive statistics (means and standard deviations) were tested for each of the constructs and associated indicators (see Table I for complete results of descriptive statistics). To test the proposed model and hypotheses, the SEM approach was adopted using Mplus version 8.1. Following a two-stage process, a confirmatory factor analysis (CFA) was first conducted to assess the robustness of the measurement, followed by a structural model to test the proposed hypotheses.

Confirmatory factor analysis

Five constructs were measured and specified as latent variables in the model: Self-efficacy, media trust, persuasion knowledge, diagnosticity and brand trust. A CFA was therefore modeled by allowing all five latent variables to freely covary. Results indicated satisfactory model-data fit and suggested desired validity: $\chi^2(N = 468, 142) = 322.03$, $p < 0.001$, $\chi^2/\text{df} = 2.33$, RMSEA = 0.05 (90 per cent CI: 0.05-0.06), SRMR = 0.04, CFI = 0.96 and TLI = 0.96. Table I shows the results from CFA and internal consistency of each latent variable's measurement items, with all factor loadings greater than 0.60 and all Cronbach's alpha greater than 0.70. The measurement model was therefore retained for structural modeling and hypotheses testing in the following step.

Structural model analysis and hypotheses testing

Following CFA, the proposed hypotheses were tested in a structural model. The proposed structural model showed satisfactory model-data fit: $\chi^2(N = 468, 340) = 366.25$, $p < 0.001$, $\chi^2/\text{df} = 1.08$, RMSEA = 0.06 (90 per cent CI: 0.05-0.07), SRMR = 0.07, CFI = 0.96 and TLI = 0.95. Each path was then analyzed for hypotheses testing.

Table I Measurement instrument

Construct	Item	Factor loading[a]	Mean	SD
Self-efficacy ($\alpha = 0.80$) Adopted from Wei *et al.* (2010) (M = 3.51 and SD = 0.78)	I believe that I can identify misinformation by myself	0.80	3.40	0.93
	I know how to verify misinformation by using media tools such as Snopes.com for checking	0.69	3.45	1.09
	I believe that I can post/share facts instead of misinformation	0.74	3.69	0.94
	I believe that I can reduce the likelihood of receiving/sharing misinformation	0.64	3.49	0.98
Media trust ($\alpha = 0.88$) Adopted from Cheng *et al.* (2018) (M = 2.91 and SD = 0.87)	I believe that Facebook treats stakeholders like me fairly and justly	0.74	2.88	0.94
	Facebook can be relied on to keep its promises to stakeholders like me	0.78	2.77	0.97
	I feel very confident about Facebook's capabilities	0.89	2.84	1.06
	Facebook has the ability to accomplish what it says it will do	0.75	3.14	1.04
Persuasion knowledge ($\alpha = 0.80$) Adopted from Hibbert *et al.* (2007) and Skard and Thorbjørnsen (2014) (M = 3.47 and SD = 0.79)	The way this Facebook post tries to persuade people seems acceptable to me[b]	0.64	3.05	1.06
	The Facebook post tells the truth[b]	0.77	3.21	0.94
	I like the Facebook post[b]	0.80	3.49	1.04
	I always believe what the poster says or does on Facebook[b]	0.62	4.11	0.98
Diagnosticity ($\alpha = 0.93$) Adopted from Ahluwalia *et al.* (2001) and Klar (1990) (M = 2.77 and SD = 1.20)	Extremely irrelevant – extremely relevant	0.83	2.78	1.31
	Not at all helpful – extremely helpful	0.94	2.76	1.27
	Not at all useful – of very great use	0.93	2.79	1.26
Brand trust ($\alpha = 0.90$) Adopted from Shen (2017) (M = 3.66, SD = 0.73)	I believe Coca-Cola treats stakeholders like me fairly and justly	0.70	3.47	0.79
	Coca-Cola can be relied on to keep its promises to stakeholders like me	0.77	3.55	0.83
	I feel very confident about Coca-Cola capabilities	0.92	3.76	0.87
	Coca-Cola has the ability to accomplish what it says it will do	0.86	3.88	0.83

Notes: [a] All factor loadings are significant at the level of $p < 0.001$; [b] reverse coded

Direct effects: *H1* proposed a direct effect from consumers' self-efficacy on persuasion knowledge. The path results showed that self-efficacy (M = 3.51 and SD = 0.78) had a positive influence on persuasion knowledge (M = 3.47 and SD = 0.79). As self-efficacy increases, consumers' persuasion knowledge of the Facebook post also increases, B = 0.36, SE = 0.05 and $p < 0.001$. *H1* was supported.

H2 predicted a direct effect from consumers' media trust on persuasion knowledge. Results demonstrated a significant positive effect. In this study, as consumers' trust in Facebook (M = 2.91 and SD = 0.87) increases, their persuasion knowledge of the Facebook post also increases, B = −0.20, SE = 0.05 and $p < 0.001$. *H2* was supported.

H3 posited a negative direct effect from persuasion knowledge on consumers' evaluation of the Facebook post's diagnosticity. Path results showed that as persuasion knowledge increases, evaluation of the post's diagnosticity (M = 2.77 and SD = 1.20) decreases, B = −0.66, SE = 0.03 and $p < 0.001$. Therefore, *H3* was supported.

H5a and *H5b* predicted the effects from persuasion knowledge and diagnosticity of Facebook post on brand trust, respectively. Results showed that persuasion knowledge positively influences brand trust (M = 3.66 and

SD = 0.73), B = 0.19, SE = 0.07 and $p < 0.01$. *H5a* was supported. However, the influence from diagnosticity on brand trust was not significant, B = −0.09, SE = 0.07 and $p = 0.19$. *H5b* was not supported.

Indirect effects: *H4* and *H6* predicted indirect effects from self-efficacy on diagnosticity and brand trust, respectively and were tested through a bootstrapping procedure (N = 2,000). *H4* predicted a negative indirect effect from self-efficacy on diagnosticity. Bootstrapping results showed that the indirect effect from self-efficacy on diagnosticity was significant, B = −0.34, $p < 0.001$ and 95 per cent CI = −0.45-−0.25, and such indirect effect was fully mediated by persuasion knowledge. *H4* was supported.

H6 predicted a positive indirect effect from self-efficacy on brand trust. Results showed small but significant, positive indirect effect from self-efficacy on brand trust, B = 0.07, $p < 0.01$ and 95 per cent CI = 0.04-0.11. Therefore, *H6* was supported. Figure 2 presents complete results of hypotheses testing.

Discussion

This study examined the mechanism of how consumers process and respond to fake news about brands on social

Figure 2 Structural model with path estimate results
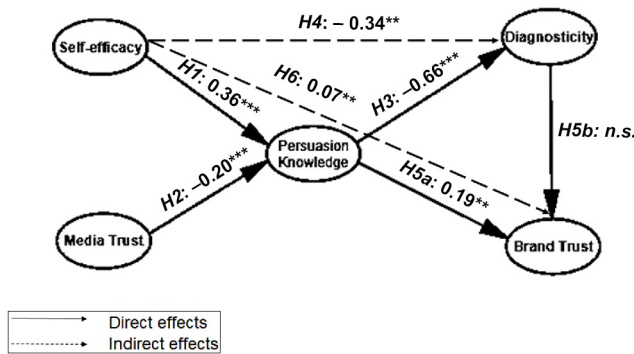
Notes: *** $p < 0.001$; ** $p < 0.01$; n.s. = not significant

media and extended the applicability of the persuasion knowledge model to the realm of social media fake news. Specifically, we proposed and examined the antecedents and outcomes of persuasion knowledge toward a fake news post on Facebook about Coca-Cola's recall of Dasani water. Survey results showed support of the application of persuasion knowledge model in the context of fake news about brands on social media. Findings showed that self-efficacy and trust in Facebook were significant predictors of consumers' persuasion knowledge of the fake news Facebook post. Persuasion knowledge significantly influences consumers' perceived diagnosticity of the fake news and their subsequent brand trust. Furthermore, persuasion knowledge serves as the mediator of the effects from self-efficacy on perceived diagnosticity of the fake news and consumers' subsequent trust in Coca-Cola.

There are several important theoretical contributions from this study. First, this study extended the application of persuasion knowledge model to the context of fake news about brands on social media. Previous studies mostly examined persuasion knowledge model in the context of advertising and marketing communications (Campbell and Kirmani, 2000; Skard and Thorbjørnsen, 2014). By extending the application of persuasion knowledge model to explain how consumers process and respond to fake news about brands on social media, this study adds to the heuristic value of this framework.

Second, this study also expanded the framework of persuasion knowledge model by examining the antecedents (self-efficacy and media trust) and consequences (perceived information diagnosticity and brand trust) of persuasion knowledge. Results suggested consumers' self-efficacy on their abilities to identify and verify fake news, and their trust in the medium where the fake news is disseminated would jointly influence their situational persuasion knowledge of the fake news. Furthermore, persuasion knowledge also serves as the mechanism of the influence from self-efficacy and media trust on consumers' perceived diagnosticity of the fake news and brand trust. Findings not only suggested the important role persuasion knowledge plays in consumers' information processing mechanism of fake news but also linked it with the antecedents and

consequences in the context of fake news about brands on social media.

Furthermore, this study also enriched our understanding of how consumers' brand trust is impacted by fake news on social media. Findings suggest that although the effect was relatively small, consumers' self-efficacy in identifying fake news did significantly influence their brand trust after the fake news exposure, and such effect was made possible through the impact of self-efficacy on consumers' persuasion knowledge of the fake news. Interestingly, the path from perceived diagnosticity of the fake news on brand trust was insignificant. Although persuasion knowledge of the Facebook post significantly impacts perceived diagnosticity of the news, it influences consumers' brand trust directly rather than through perceived diagnosticity. One explanation is that the role of diagnosticity is usually examined as a predictor for attitude change and judgment revision (Pham and Muthukrishnan, 2002; Pullig *et al.*, 2006). However, in this study, when consumers have high persuasion knowledge of the fake news about Coca-Cola, they would not adjust or change their attitudes toward the brand. Rather, consumers' brand trust remains unchanged after exposure to fake news because the high persuasion knowledge prevented them from further processing of the fake news information in attitude formation. This postulation should be empirically tested in future studies.

Managerial implications

Through the application and extension of persuasion knowledge model in the context of fake news about brands on social media, this study provides several important managerial implications for key stakeholders of a brand (e.g. consumers, brand managers and regulators) in today's turbulent environment facing widespread fake news. First, findings suggest that consumers' persuasion knowledge plays an important role in combating the influence from fake news about brands. As consumers' persuasion knowledge about fake news increases, the impact from fake news on brand trust significantly decreases. That is, consumers' increased skepticism and inference of manipulative intent toward the fake news would effectively prevent the fake news from impacting subsequent brand trust. Previous studies on persuasion knowledge in the context of marketing and advertising suggest that the increase of such persuasion knowledge about brand information as presented in marketing communications or advertising messages would prevent consumers from forming favorable attitude about brands (Campbell and Kirmani, 2008; Hibbert *et al.*, 2007). Taken together, this study suggests that consumers' persuasion knowledge is key to determine whether the brand information, regardless of whether it is presented in marketing communication messages or fake news about the brand, could influence their attitudes toward the brand. In addition to the insights from previous studies suggesting brand managers to be authentic in their communication to reduce such skepticism, results from this study also suggest brand managers to pinpoint certain cues in the fake news when releasing real information to combat the potential reputational damage caused by fake news. For consumers,

maintaining skepticism toward information they receive about brands would help them identify fake news from real, authentic information. The manipulation inference they identify for those who are sharing the information would also help them differentiate real news that intends to inform from fake news that intends to mislead. To reduce the wide spread of fake news and its influence on social media, it is important for consumers to develop such persuasion knowledge and remain vigilant toward brand information shared by various sources on social media.

Second, by examining consumers' self-efficacy in identifying fake news as an antecedent of their persuasion knowledge of the fake news, this study provides implications on how such persuasion knowledge could be enhanced. It is important to cultivate consumers' self-efficacy to reduce their susceptibility toward fake news, thereby reducing the impact from fake news on brand trust. However, self-efficacy could take years to be cultivated (Bandura, 1997). To combat the influence of fake news on brand trust, it would take more than just brand communications. Consumers' self-efficacy of identifying fake news may be cultivated via media literacy education. Media literacy refers to an individual's competency and knowledge to use, interpret and evaluate media (Aufderheide, 1993; Masterman, 1985). The education of media literacy would include cultivating one's critical thinking skills that analyze the source, purposes and persuasive techniques of a message (Hobbs, 2005, 2006). Therefore, brand managers should also take into consideration the importance of media literacy in combating the influence from fake news, as it may help increase consumers' self-efficacy. For example, they may invest in corporate social responsibility initiatives that aim at educating the public's media literacy, which benefit both the brand and the society as a whole in the end. The insight of cultivating self-efficacy via media literacy education also provides implications for policymakers and regulators. It is important to inform the public about the availability of viable fact-checking tools and to encourage people to fully read, process and evaluate information on social media before sharing it with their networks (Burkhardt, 2017). Such improved media literacy will empower consumers to have higher self-efficacy at identifying fake news, thereby improving their persuasion knowledge when exposed to fake news about brands on social media.

Finally, the predicting role of media trust on consumers' persuasion knowledge about fake news also throws light on brand management when combating the influence of fake news. As consumers' trust in Facebook decreases, their persuasion knowledge of the fake news Facebook post increases and they become more skeptical. To avoid being misinformed and susceptible to fake news about brands, consumers need to note the credibility and trustworthiness of the media channel where a piece of information is transmitted. It is important to keep in mind that information shared on social media has not gone through editorial judgment for fact-checking, and some information may even be generated by bots disguised as common consumers (Berthon and Pitt, 2018; Burkhardt, 2017; Lazer *et al.*, 2018). As such, brand managers may provide additional information or put emphasis on the trustworthiness of specific media channels, so that consumers may make their own judgment about what to believe and what to look for when they are exposed to brand information on social media. Moreover, when communicating the truth after fake news takes place (such as Coca-Cola not having Dasani water recalled), brand managers would need to weigh in the trustworthiness of each media channel and choose the appropriate media channels to communicate with consumers.

Limitations and future research

This study contributes to the literature of brand management by exploring how consumers process and respond to fake news about a brand. It also extends the persuasion knowledge model by applying it in the context of fake news about brands on social media and examining the antecedents (self-efficacy and media trust) and consequences (perceived diagnosticity and brand trust) of persuasion knowledge in this context. However, this study bears some limitations that need to be addressed in future studies.

First, although the current study addresses persuasion knowledge model in the context of fake news about brands on social media, it primarily touched on one of the three structures – persuasion knowledge – in persuasion knowledge model. To further apply persuasion knowledge model in this context and to examine the model more comprehensively, future research should also incorporate the other two structures – agent knowledge and topic knowledge into the model and further compare and explore how each structure in persuasion knowledge model is influenced by consumers' self-efficacy and in turn influence perceived diagnosticity of fake news and subsequent brand trust.

Second, previous studies on the information processing of fake news pointed out the influence from confirmation bias and desirability bias, as people tend to be more susceptible to information that confirms their previous belief and is pleasant to hear (Lazer *et al.*, 2018). These biases may result in reduced persuasion knowledge. Therefore, future studies should consider incorporating different brands with varying initial trust level and examine how prior trust levels may impact consumers' persuasion knowledge of fake news about certain brands. In that way, the information processing of fake news explained by persuasion knowledge model may be connected with the biases pointed out by previous research.

Last but not least, results from this study revealed the connection between self-efficacy, media trust and persuasion knowledge, thereby casting a light on the importance of media literacy education. However, the construct of media literacy was not directly examined in this study. Therefore, future studies should also test the connections among media literacy, self-efficacy and persuasion knowledge to further delineate what may influence consumers' persuasion knowledge when exposed to fake news about brands on social media.

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Appendix. Text from the Facebook post regarding Coca-Cola's recall of Dasani water

Below please find the text in the Facebook post regarding Coca-Cola's recall of Dasani water. Please note that the text was kept at its original format, including the typos and punctuation.

Text in the Facebook post: This brand is on recall and also dasani water from coke cola company thousands of bottles of water all over the (🇺🇸) has clear parasites from contaminated water. There's a website for emergency recalls that you can have emailed any bad foods or products.

Text in the Facebook post being shared: Bought this water at Walmart yesterday while in Washington…opened it to give water to dogs and it turned into a gelatin substance…WTH is this?????

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