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The Effects of Fake News on Consumers' Brand Trust: An Exploratory Study in the Food Security Context

Abstract

The aim of this study is to explore the effects of fake news on consumers' brand trust in the food security context. The starting point of our research is the finding that issues related to food security cannot be addressed without the contribution of multinational food corporations. The efficiency of their intervention depends on their capacity to build and preserve their brand trust despite the multifarious fake news stories that contaminate the information flow. Is brand trust sensitive to fake news? In some cases, the spread of fake news in mass media and social media negatively affects food companies. In other cases, consumers' trust remains relatively unchanged. These ambivalent reactions give us good reason to assess whether consumers' exposure to negative fake news influences their trust in international food brands. Using a one-group pretest–posttest research design, we found that the effects of fake news on consumers' brand trust are predominantly negative, but in a few cases, these effects can be neutral or positive. These results could be useful for PR and marketing researchers and professionals interested in fake news phenomena and brand trust because they shed light on the real threat fake news represents for multinational food companies.
Keywords: fake news, brand trust, consumer, food security

Introduction

Issues regarding food safety and consumers' trust in the quality of food can be solved, or at least attenuated, when approached globally and with the involvement of major brands in the food industry. National government institutions and international agencies play an essential role in regulating the production and distribution of food products. Still, the companies in the food industry, especially the major multinational corporations, are the first to be called to support the production and distribution of food at a global level. These companies have already proven their ability to get involved in sustainable agriculture and reduce food safety and food security risks.

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Multinational food and beverage companies can intervene effectively in food safety and food security issues only if they enjoy a high level of brand trust. Unfortunately, consumers' trust in these companies has steadily declined in recent decades. People distrust the news and information they receive, the food they consume and even the brands they buy (FoodThink, 2019). About 54% of consumers say they have little or no trust in corporations, and 28% say the same about the food and beverage industry (Hyslop, 2020). New generations of food consumers hold higher ethical standards for brands and are generally more skeptical of corporate pledges than previous generations (Hyslop, 2020; Nielsen, 2020). Defined as "a tendency to rely on the brand's capacity to fulfill its declared function" (Koschate-Fischer & Gartner, 2015), brand trust can be influenced by the phenomenon of fake news – the deliberate proliferation through mass media and social media of verifiably false content that aims to mislead or deceive the target audience – which is often aimed at leading companies in the food industry. Fake news enjoys a high degree of public confidence and is difficult to correct. It tends to enjoy an extra layer of credibility in the food industry sphere because of some stereotypes and facts about the industry. Many people believe that multinational food companies pursue their own economic interests, profiting at the expense of public health and safety. Scandals involving food corporations have only strengthened this perception.

Many food manufacturers have turned these alarming statistics into an opportunity to build consumers' trust in their brands. For example, they (a) emphasize ethical sourcing and chain of custody, (b) ensure truth in advertising, and (c) assume the standards of authenticity and transparency (Nielsen, 2020). In addition, when faced with malicious fake news, they promptly release truthful corporate responses (i.e., messages) in credible media vehicles.

Given all these preventive measures and strategic approaches, food industry brands' capacity to preserve consumers' brand trust and remain resilient in the face of fake news deserves to be examined. This article presents a quantitative, exploratory quasi-experiment that assesses whether consumers' exposure to fake news influences their trust in international food brands, in particular a multinational brand of soft drinks that is the market leader worldwide.

The paper is structured in three sections. In the first section, we review the relevant literature to outline the state of the existing research regarding food safety, brand trust, and the phenomenon of fake news. In the second section, we describe the quasi-experimental design, data collection method, and statistical analyses employed to test the hypothesis. In the third section, we present and discuss the results of our research. At the end of the article, the research's conclusions, the limits of the study, and some suggestions for further research are synthetically outlined.

1. Literature review

1.1. Food security context

According to the Food and Agricultural Organization of the United Nations, "food security exists when all people, at any given moment, have physical, social and economic access to safe and nutritious food, in sufficient quantities to fulfill their diet needs and their preferences for an active and healthy life" (Berryhill, Hale, Chase, Clark, He, & Daley, 2018). Food security can be tracked at the individual, family, regional, national, or global level. Guaranteeing food security is part of every state's obligations (Bogdan, Oprean, & Oprean, 2012)

but should also be included among the commitments of specially created international organisms and agencies.

Despite the large-scale use of fertilizers and pesticides, the cultivation of transgenic plants, and spectacular technological progress in agricultural production, "the most recent 2019 estimates show that before the pandemic, nearly 690 million people, or 8.9 percent of the world population, were hungry. (…) Globally, moderate or severe food insecurity rose between 2015 and 2019, and now affects an estimated 25.9 percent of the world population – about 2 billion people" (FAO, 2020). The agricultural and food industries must change their practices significantly to satisfy people's consumption needs worldwide. However, the measures to achieve this goal seem to correlate with the main environmental issues in agriculture: soil erosion, air and water pollution, an increase in soil salinity, a decrease in soil fertility, and extreme climatic events (among others). These problems also threaten food security, biodiversity, and people's health (Arora, 2018).

The contrary imperatives to increase food output and place agriculture upon sustainable foundations have stimulated national and international organizations to develop alternative solutions to food insecurity. One such alternative solution is Alternative Nutrition Networks, which are based on the following elements: (1) a short distance between producers and consumers; (2) diminished farm size and the use of holistic or organic cultivation methods; (3) the existence of additional means of food acquisition, such as farmers' markets or specially designed markets for local communities; and (4) attachment to the social, economic, and ecological dimensions of food production, distribution, and consumption (Cerrada-Serra, Moragues-Faus, Zwart, Adlerova, Ortiz-Miranda, & Avermaete, 2018). Unfortunately, these solutions are costly and challenging to implement on a global scale. Moreover, there is a risk that these solutions will perpetuate and even augment some financial and social inequality.

In a context where food security is a global one, monitoring and measuring of the food security level – or the lack thereof – need to be implemented using universally relevant indicators because the solutions must function globally. The level of food insecurity can be estimated with sufficient accuracy through the following indicators: (1) calorie deprivation indicators, (2) monetary poverty indicators, (3) dietary diversity indicators, and (4) subjective indicators (Headey & Ecker, 2013). These indicators allow for the classification and comparison of households, regions, and countries according to their degree of food insecurity.

It is very likely that the issues related to sustainable agriculture and food security cannot be solved by individual citizens, small farmers, governmental institutions, or international (political) agencies alone. The contribution of major brands in the food sector seems indispensable. Without global food markets and supply chains, poor local harvests – recurrent episodes in any society – would inevitably cause local food shortages and starvation. Moreover, multinational food companies are willing and able to redirect the global food market toward sustainable agriculture and food security. An illustrative example of their commitment is the Sustainable Agriculture Initiative, created by Danone, Nestlé, and Unilever and which later included Kellogg's, Kraft, McDonald's, and PepsiCo (Lang & Barling, 2012).

However, multinational food companies can intervene effectively in alleviating global nutrition problems only if they are able to build and preserve their brand trust even in challenging contexts. People need to see that international food brands have both capacity and willingness to fulfill their obligations despite the news flow that seems to suggest otherwise.

1.2. Brand trust as a necessity for multinational food companies

The efficiency of major international companies' involvement in solving or reducing food insecurity depends on the conservation or increase of brand trust. Unfortunately, meeting this imperative is made difficult by at least two negative perceptions: (1) the major corporations in the food industry follow their economic interests to the detriment of public health and safety and (2) the major corporations in the food industry instrumentalize science to serve their purposes (Sandøe, 2005). These negative perceptions are partially fueled by widely publicized scandals in the food sector (Chong, 2015). As illustrative examples, we mention here two cases. Until the late 1990s, beef farmers in Europe and the US commonly fed cattle with protein from cattle and other ruminant animals. As a result, some cattle were infected with bovine spongiform encephalopathy (BSE), known colloquially as "mad cow disease." Many people who eat BSE-tainted beef contracted a similar fatal affliction, known as variant Creutzfeldt–Jakob disease. Public authorities adopted regulations meant to prevent the spread of mad cow disease, but many companies (just under 100 in the United States) violated these regulations (NBCNews, 2004). A second example of a major scandal in the food sector occurred in 2017. Two of Brazil's food-processing giants – JBS and BRF – faced the accusation that their employees paid federal inspectors to ignore the adulteration or expiration of processed foods. Inspectors falsified sanitary permits, and bribes were directed to the Brazilian Democratic Movement Party of President Michel Temer (Romero, 2017). Such uneven mixtures of facts and perceptions make consumers' confidence in major corporations in the food industry susceptible to the influence of fake news. In this context, brand trust seems to be an essential marketing variable.

In the existing literature, the first studies about trust refer to relationship marketing (Parasuraman, Zeithaml, & Berry, 1985; Morgan & Hunt, 1994). Brand trust is built upon the relationship between consumer and brand. This relationship is no longer reduced to a mere purchase and produces; it includes consumer satisfaction, loyalty, and (long term) commitment, as well as a purchase intention (Sheinin, Varki, & Ashley, 2011; Koschate-Fischer & Gartner, 2015). Trust is considered an important factor in firm success (Morgan & Hunt, 1994) and a mediating variable in a company's relationship with its customers (Morgan & Hunt, 1994; Ekelund & Sharma, 2001; Tezinde, Jamie, Don Thi, Chau, & Cameron, 2001; Alam & Yasin, 2010). Moreover, Liu, Guo, and Lee (2011) argue that brand trust is a crucial factor in customer behaviors before and after a purchase, creating long-term loyalty, and strengthening the relationship between the brand and customers. Brand trust has been recognized as a key variable in long-term relationships with customers, which positively affect brand loyalty (Matzler, Grabner-Kräuter, & Bidmon, 2009; Sung, Kim, & Jung, 2010; Tan, Ismail, & Rasiah, 2011). Brand trust determines loyalty levels as trust creates exchange relationships that are highly valued (Morgan & Hunt, 1994). Finally, Chaudhuri and Holbrook (2001) state that brand trust strongly influences consumers' attitudes and repurchase loyalty.

Scholars seem to share a common conceptualization of brand trust. For example, Lau and Lee (1999) consider brand trust "willingness to rely on the brand." Chaudhuri and Holbrook (2001) conceptualize brand trust as "the willingness of the average consumer to rely on the ability of the brand to perform its stated function." Xingyuan and Wei (2010) argue that "brand trust is a consumer's disposition toward a brand characterized by positive expectations and willingness to rely on the brand." Also, Kabadayi and Alan (2012) state that "brand trust is created and developed by direct experiences of consumers via brands." Furthermore, brand trust is defined by Chinomona, Mahlangu, and Pooe (2013) as "a consumer's confident be-

liefs that he or she can rely on the brand to deliver promised services or products." Similarly, Chinomona and Dhurup (2016) consider brand trust to be "the extent to which a consumer believes that a certain brand satisfies his or her desire."

Whether unidimensionally or multidimensionally considered, brand trust has a set of antecedents related to the consumer, company, and products. Among these variables are consumer satisfaction, product/brand attachment, brand awareness, brand image, perceived benefits, knowledge about the company and product, perceived value, the risks of choosing a particular brand, and the degree of aversion to these risks. Some of the aspects connected to the company and product include reputation, competence, brand identity and personality, the country of origin, the quality of the services, and corporate social responsibility (Koschate-Fischer & Gartner, 2015).

In our study, we have chosen to approach brand trust as most authors do – viewing it as a *unidimensional* concept. Consequently, brand trust "reflects the usual consumer's willingness to rely on the brand's capacity to fulfill its declared function" (Koschate-Fischer & Gartner, 2015). Brand trust is not a spontaneous affective reaction but the result of a complex process during which consumers carefully weigh the company's actions regarding benevolence, honesty, altruism, and its capacity to fulfill its obligations (Chaudhuri & Holbrook, 2001). The messaging of companies that appeal to brand trust tends to revalidate consumers' beliefs about brand credibility and other antecedents of the purchase intention (Li & Miniard, 2006). Obviously, this involves a high level of brand trust and the absence of information that could potentially undermine it.

For the major companies in the agricultural sector involved in increasing food security, protecting and cultivating brand trust is particularly important, especially in a context marked by an overload of unverified information and the proliferation of malicious fake news. Brand trust can reduce consumers' uncertainty about food security because the consumer knows that brand is worth trusting and thinks that a dependable, safe, and honest consumption scenario is the important link of the brand trust (Soong, Kao, & Juang, 2011). Fake news can diminish consumers' level of trust in food brands and, consequently, lessen the impact of a specific brand's potentially positive actions. Before assessing the possible influence of negative fake news upon brand trust (in the food sector), it is necessary to discuss some of the main characteristics of fake news.

1.3. Is brand trust sensitive to fake news?

The term fake news is an "incomplete, even misleading" umbrella expression prone to being politicized and weaponized (Bârgăoanu & Radu, 2018). Nevertheless, because it has been made explicit in countless examples, descriptions, typologies, and correlations (Bârgăoanu, 2018; Fârte & Obadă, 2018; Dumitrache, 2019; Di Domenico, & Visentin, 2020), the term "fake news" delimits a well-defined sphere of action and proves to be a handy knowledge tool.

Simply put, fake news is verifiably false content that is disseminated through mass media to misguide consumers (Allcott & Gentzkow, 2017). Instances of fake news are numerous and varied, and they can be grouped according to several criteria: (a) the level of facticity, (b) the quality of information, (c) the intent to inform, and (d) the degree of intentional wickedness (Fârte & Obadă, 2018; Fârte, 2020).

According to Wardle (2017), the multitude of existing fake news stories instantiates seven types of mis- and disinformation: (1) *satire* or *parody* (i.e., when authors use irony and exaggeration not to harm people but to be humorous), (2) *misleading content* (i.e., when authors use information to present an issue or person in a distorted perspective), (3) *imposter content* (i.e., when the message's source poses as someone else), (4) *fabricated content* (i.e., when authors disseminate completely false information with the intent to deceive and harm), (5) *false connection* (i.e., when there is no logical relation between the headline, visual ingredients, and/or factual content of a news report), (6) *false context* (i.e., when authors mix accurate with inaccurate contextual information), and (7) *manipulated content* (i.e., when authors alter genuine information or imagery to deceive others). As in many other situations, social reality defies rigid categorizations. There are many cases in which one may classify a given article as fake news only if one takes into account the communication context and the recipients' prior knowledge about the subject (Fârte, 2020).

Mass media and social media provide an abundance of examples that illustrate all these types of fake news. For instance, in the 2014 article "Fast Doom (Satire)," Matt Kolbet wrote that McDonald's sent a memo to its employees cautioning them not to eat the food the company makes because of its high content of salt, sugar, and fat. As is clear from the article's title, the author did not intend to inform the public of facts but aimed to satirize the company's practices. An example of the manipulated content type is the Bharatiya Janata Party (BJP) Punjab's tweeting of a picture depicting a farmer to give the impression that farmers were happy with the new farm laws. Harpreet Singh, the picture's subject, fulminated against this abusive use of his photo and sent a legal notice to the BJP Punjab (Rahman, 2020). Mike Adam's (2016) article "The WHOLE TRUTH about Whole Foods: Shocking New Mini-Documentary Excoriates this Deceptive, Fraudulent Corporation for Becoming the Monsanto of Food Retailing" seems to illustrate the misleading content type. Very probably, the investigative journalists were right when they showed that Whole Foods Market (WFM) partnered with Monsanto to reach a "GMO labeling compromise" in the US Senate. On the other hand, this fact does not demonstrate that WFM betrayed consumers to the point of deserving the nickname "POISON FOODS."

The sophisticated process of producing fake news, the extent to which fake news can be created and replicated, the fantastic variety of fake news formats (e.g., texts, pictures, video clips, infograms, memes, gifs, etc.), the speed and efficiency with which fake news is disseminated in media (especially on social media), and the high level of commitment shown by the individuals exposed to it (expressed by appreciation, voting, redirecting, sharing, comments, etc.) have turned fake news into a pervasive phenomenon that cannot be ignored, especially by the systemically important organizations (Fârte & Obadă, 2018). Given the complexity of the global human ecosystem, fake news has the potential to inflict grievous harm on any public figure, organization, and society. Fake news threatens people's physical, mental, and financial security. It may tarnish the reputation of companies, and in some extraordinary circumstances, fake news can undermine society's stability, putting its survival in jeopardy.

In today's dynamic and competitive environment, companies seem particularly vulnerable to fake news. On the one hand, fake news may harm companies' investment and marketing efforts. Using fake news, malicious competitors may manipulate the options and decisions of investors and customers, respectively. On the other hand, fake news may hurt the company's brand, diminishing competitiveness, trust, and loyalty (Obadă, 2019). It is noteworthy that some negative effects can occur even if the brand is not directly attacked, but instead "con-

taminated by associations if they appear next to fake news" (Chen & Cheng, 2019). If brands do not react effectively and immediately against fake news, they risk losing their reputation and revenue (Salzman, 2020).

Because fake news outperforms real news in terms of popularity and engagement (Price, 2017), a company targeted by malicious agents may have difficulty debunking fake news and overcoming its negative effects. This fact can be explained through (a) the relatively low human capacity to detect a hoax, (b) the tendency to believe false news when repeatedly exposed to it (i.e., the validity effect), (c) the tendency to confirm our preexisting beliefs (i.e., confirmation bias), (d) the tendency to believe in what pleases us (i.e., desirability bias), and (e) the tendency to assimilate the points of view belonging to other members of our group (i.e., the bandwagon effect) (Lazer, Baum, Yochai, Berinsky, Greenhill, Menczer, Zittrain, 2018; Chen & Cheng, 2019).

The relationship between brands and fake news is complicated (Obadă, 2019). In some cases, brands are easy prey for fake news distributors (Berthon, Treen, & Pitt, 2018) and become financially affected by the rapid spread of fake news on (social) media. For example, PepsiCo stock fell around 4% just prior to the 2016 US presidential election when a fake news story about Pepsi's CEO telling Trump supporters to "take their business elsewhere" spread on social media (Obadă, 2019). In other cases, well-established brands appear to be resilient in the face of fake news (Chen & Cheng, 2019). Consumers' trust in and favorable attitudes toward these brands remain unchanged after exposure to them. Very probably, these consumer's persuasion knowledge (that is, their experiences and beliefs about the fake news creators' goals and tactics) and their existing strong attitudes enable them "to recognize, analyze, interpret, evaluate, and remember persuasion attempts" (Friestad & Wright, 1994) and execute effective coping tactics. For example, in April 2016, the website "News 4 KTLA" falsely reported that Coca-Cola had recalled its product Dasani water because clear parasites were found in bottles distributed across the US. Although this misinformation was rapidly transmitted on social media (even after the news was identified as fake), consumers' trust in the Coca-Cola brand remained relatively unchanged (Chen & Cheng, 2019).

The above-mentioned *ambivalent reactions* give us good reason to conduct an exploratory study meant to support the following hypothesis:

H1: Consumers' exposure to negative fake news influences their trust in international food brands.

Given the diversity of food brands, we test a narrower version of this conjecture, namely:

H1.1: Consumers' exposure to negative fake news influences their trust in multinational brands of soft drinks.

In our study, we consider brand trust as a unidimensional concept. We do not operationalize the various types of mis- and disinformation. And we overlook the motivation for spreading fake news. If the exploratory quasi-experiment confirms a positive or negative influence of exposure to negative fake news on consumers' trust in multinational soft drink brands, we will have good reason to continue and refine our research to assess the effects of various types of fake news on brand trust.

2. Research design

The research problem involves examining the effects of fake news on brand trust in consumers of carbonated soft drinks. As previously stated, this research problem is extremely relevant for marketing and PR scholars and practitioners seeking to better understand the effects of fake news on brand trust.

To test our hypothesis, we used a quasi-experimental research design. The study was conducted in Romania, between January and February of 2020. We used a non-probabilistic sample of 64 students at the "Alexandru Ioan Cuza" University of Iași. The participants volunteered to take part in the research and were rewarded with credits for their practice.

In our study, *fake news about a carbonated soft drink brand* was the independent variable (i.e., the influence factor whose action was assessed) and *brand trust* was the dependent variable. The quasi-experimental design selected for our study was one-group prettest–posttest. Our main reasons for selecting this type of research design were its lower costs compared to other types of experimental and quasi-experimental design; the possibility of manipulating factors, which is difficult to do in real life (i.e., such as fake news), and, most importantly, that it would not affect the communication strategies implemented by the selected brand. In the one-group pretest–posttest design, the research diagram is as follows (Iacobucci & Churchill, 2010):

$$O1 \rightarrow X \rightarrow O2$$

The participants were interviewed about their brand trust using a four-item scale adapted from the literature before being exposed to the experimental factor (i.e., fake news) (O1). The participants were then interviewed again using the same scale with the same items. The effect of fake news on brand trust was assessed in the following manner:

$$d = O2 - O1$$

The exploratory study was conducted in two stages:

Stage I: Each participant received a code so that they could be easily identified throughout the development of the study. Then, each participant filled out a questionnaire containing four items designed to assess their trust in a worldwide brand of carbonated soft drinks.

Stage II: The participants received a list of three negative fake news stories (see Appendix 1) about that particular brand of soft drinks and were asked to read the messages carefully. After being exposed to the messages, they were asked to fill out the same questionnaire again.

The study was conducted in an amphitheater to ensure a safe and noise-free environment. The research was scheduled during the first part of the day before most courses or seminars; therefore, the participants were rested. The instructions and rules for the questionnaire were explained, in both oral and written form.

2.1. Measures

In order to measure the *brand trust* variable, defined as *a person's belief that a certain brand is trustworthy*, we adapted Sheinin, Varki, and Ashley's (2011) unidimensional Likert scale with four items and seven levels (varying from 1, indicating *Complete disagreement*, to 7, indicating *Complete agreement*). The scale used by Sheinin, Varki, and Ashley (2011) was based on Chaudhuri and Holbrook's (2001) scale, as well as Li and Miniard's (2006) research.

Sheinin, Varki, and Ashley (2011) tested the scale's internal consistency in two studies (the first with 129 participants, α = .88; and the second with 113 participants, α = .89). Even though there is no universally accepted minimum standard of the Cronbach's alpha (α) co-efficient, in the literature, the reference values are typically interpreted as it follows: values around .90 are considered excellent; around .80, very good; and around .70, sufficient (Kline, 2005). The scale developed by Sheinin, Varki, and Ashley (2011) is unidimensional (Study 1: AVE = .71; Study 2: AVE = .74). The four items of the scale were (1) *I trust brand X*, (2) *I rely on brand X*, (3) *Brand X is an honest brand*, (4) *The products of brand X are safe*.

The adapted scale we used in our study for measuring the *brand trust* variable was tested for internal consistency and exhibited a very good to excellent internal consistency (α = .868) (see Table 1).

Table 1. Cronbach's alpha coefficient for *brand trust*

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.868	.868	4

Note: $p < 0.05$.

Furthermore, we considered the Likert scale used in our study to be a non-parametric, or-dinal scale, as most researchers in social sciences agreed on (McIntire & Miller, 2007).

3. Results

To test the hypothesis that brand trust changes as a result of being exposed to fake news about a specific brand of carbonated drinks, we decided to use the Wilcoxon signed ranks non-parametric test (Wilcoxon, 1945). This decision was based on the following arguments from the literature (Fay & Proschan, 2010): Data was collected from dependent samples using ordinal scales. The measurements were repeated for the same group of participants. The data had a non-normal distribution, and the aim of our exploratory study was to determine the size of the dif-ferences between results (i.e., before and after being exposed to the stimulus) arranged according to rank – positive or negative. Therefore, the null hypothesis was formulated as follows:

H0: There are no significant differences between the participants' brand trust level before their exposure to fake news about a brand and their level of brand trust after this exposure.

H1: There are significant differences between the participants' brand trust level before the exposure to fake news about a brand and their level of brand trust after this exposure.

First, we assessed the normality of the data distribution in Stage 1 of the study (pretest) and Stage 2 of the study (posttest) using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The results indicated that the data obtained was not normally distributed, either in the pretest-ing stage or in the posttesting stage (*Sig.* = .02, .02 < .05).

Second, we used the Wilcoxon signed ranks test to calculate the W+ statistics. Thus, all the values observed were systematized and *wi* observed differences were calculated. These differences were arranged according to size; later, an Ri rank was associated with each of

them, based on their position in this series of differences. Accepting (or rejecting) the null hypothesis was based on the probability that the W+ value appeared (Fay & Proschan, 2010).

Table 2 contains the descriptive statistics for the variable brand trust in pretest ($M = 16.90$, $SD = 4.80$) and posttest ($M = 14.46$, $SD = 5.64$). Table 3 shows how many scores were higher, lower, or equal for the variable brand trust between pretesting and posttesting. Analysis of Table 3 reveals that brand trust remained unchanged for five participants after they were exposed to fake news (N = 5 Ties). Also, there was a positive change in brand trust for 17 participants after their exposure to fake news (N = 17 Positive Ranks) and, more importantly, a negative change in the level of brand trust for 42 participants after their exposure to fake news (N = 42 Negative Ranks).

Table 2. The results of descriptive statistics after applying the Wilcoxon signed ranks test for *brand trust*

N	Mean	Std. Deviation	Minimum	Maximum
64	16.90	4.80	7.00	32.00
64	14.46	5.64	4.00	30.00

Table 3. The results of the Wilcoxon signed ranks test for *brand trust*

		N	Mean Rank	Sum of Ranks
Brand trust after exposure	Negative Ranks	42[a]	31.54	1324.50
	Positive Ranks	17[b]	26.21	445.50
Brand trust before exposure	Ties	5[c]		
	Total	64		

a. Brand trust after exposure < Brand trust before exposure
b. Brand trust after exposure > Brand trust before exposure
c. Brand trust after exposure = Brand trust before exposure

Furthermore, we tested the significant differences between the level of brand trust in consumers of carbonated soft drinks before their exposure to fake news about the brand and their level of brand trust after exposure to fake news about the brand (see Table 4).

Table 4. The results of the Wilcoxon signed ranks statistics test for *brand trust*

	Brand trust after exposure – Brand trust before exposure
Z	-3.323[b]
Asymp. Sig. (2-tailed)	.001

a. Wilcoxon signed ranks test
b. Based on positive ranks.

Based on the p-value ($p = .001$, $p < .05$) reported in Table 4, we concluded that *H0* is not confirmed; therefore, we accept H1: There were significant differences between the participants' brand trust level before their exposure to fake news about the brand and their level of

brand trust after this exposure. Therefore, the results of our exploratory study indicate mixed effects of fake news on brand trust.

Brand trust remained unchanged for five participants after they were exposed to fake news. In this case, it seems that the three fake news stories had no effect on brand trust. This result could be explained by the fact that the created fake news reports were about a well-established brand, and these consumers could be *resilient to negative information (such as fake news)*. Therefore, these consumers' brand trust remained unchanged after exposure to fake news about the brand. However, more studies are needed to test this hypothesis.

Second, brand trust significantly increased for 17 participants after they were exposed to fake news. One possible explanation for this surprising result could be the *backlash effect* against false information. In general, the backlash effect is defined as a strong adverse reaction to an idea, action, or object (Faludi,1991). Considering the fact that the created fake news was based on existing information and altered with negative ones, the backlash effect could have occurred, especially if the participants were brand fans and if they had been previously exposed to the news reports on which the fake news stories were based.

Third, brand trust decreased in a statistically significant manner for 42 participants after they were exposed to the fake news. This result is extremely important because indicates the potential negative effect of fake news on brand trust.

4. Discussion

Currently, multinational food companies play an important role in alleviating global nutrition problems. In this effort, it seems crucial for PR and marketing specialists to communicate effectively with their customers to build a high level of trust. The effects of fake news on brand trust could jeopardize this effort and lead to negative perceptions of multinational food companies. In this context, assessing the effects of fake news on brand trust in the food industry becomes extremely important.

The analyzed data support the idea that the fake news phenomenon represents a serious threat to brand trust. Although our study has limits, we found that the effects of fake news on consumers' brand trust are predominantly negative. Moreover, we found evidence that, in some cases, these effects are neutral (i.e., consistent with Chen & Cheng's (2019) studies) or positive. Our research results are concordant with other empirical studies from the literature regarding the effects of fake news on behavioral intentions in which brand trust plays a pivotal role (see, e.g., Visentin, Pizzi, & Pichierri, 2019).

The results of our exploratory study could be useful for PR and marketing researchers and practitioners interested in fake news phenomena and brand trust. We consider the main conclusion of our research to be the idea that fake news could generate mixed effects (positive, negative, or neutral) regarding brand trust. This contribution could shed light on the real threats represented by fake news for brand trust in multinational corporations in the food industry. In the broader context of food security, a low level of brand trust could affect these corporations' efficiency in satisfying the dietary needs and food preferences required for an active and healthy life. As far as we know, our exploratory study is among the very few that focus on the effects of fake news on consumers' brand trust in the food security context.

Research limitations

This exploratory study had some limitations, which we tried to overcome by finding different methodological solutions. When considering the results, we must take into account the main limitation of quasi-experimental research designs: uncertainty about whether the independent variable manipulation difference may be due to extraneous variables, such as order effects or regression toward the mean. Given that our study is an exploratory one, further studies could use an experimental design with a control group to verify the difference between pretest and posttest scores. Another possible limitation caused by the historical errors was managed by handing out pretest and posttest questionnaires shortly after the subjects were exposed to the fake news (i.e., approximately 50 minutes afterward). In addition, to overcome any instrumental errors generated by the imprecision of the measurement instruments, we used a scale validated in the literature, which we adapted and tested to ensure a high internal consistency. Furthermore, interaction errors – which may have arisen because the subjects read the messages containing the fake news and had to pay more attention to the message, as a result of instructions from the researchers – were limited by using fake news stories based on real news that had been specially created to attract the participants' attention. Finally, stress errors (caused by the potential testing tension to which the participants were subjected and due to which they might naturally modify their behavior) were reduced by motivating the participants and ensuring an informal environment.

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Appendix – List of fake news stories

Please read the following news stories carefully:

George Prios, a 50-year-old man from Los Angeles, drank ten doses of X brand of carbonated soft drinks for a month. At the end of the month, he was 13 kilograms heavier, and his blood pressure had increased from 129/77 mm Hg to 145/96 mm Hg. **Attention! All consumers of this carbonated soft drink are in real danger.**

Indian farmers use the X brand of carbonated soft drinks as a pesticide because it is 10 times cheaper than other chemicals commonly used to control diseases and pests. **Also, the X brand of carbonated soft drinks completely cleans toilet bowls, bloodstains on concrete surfaces, garage floors, and metal car protection bars.**

The researchers published the results of a study according to which a liter of the X brand of carbonated soft drinks contains 110 grams of sugar, the equivalent of 22 teaspoons. The recommended daily dose of sugar is 60 grams per day, so by consuming 1 liter of X brand of carbonated soft drinks, you consume the amount of sugar recommended for 2 days. **As a result of excessive sugar consumption, you will surely damage your tooth enamel, you will be obese, or you will have a heart attack, high blood pressure, or diabetes.**

Note: The participants read the negative fake news stories in the Romanian language. The fake news stories used as stimuli were created based on real news reports. We combined real information with false information in order to mislead the participants – as is common in fake news. The bold text indicates the false information regarding the brand. At the end of the study, we conducted a debriefing session in which participants were told that the news was fake and had been used only to assess their trust in the brand.