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Exploring Social Media Chatter during a Rumoring Phenomenon

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Abstract—Online rumors are unverified messages that spread on the Internet. Despite the lack of evidence, such messages spread rapidly as digital wildfires, and even some are reported on news outlets. When rumors receive significant social support and eventually turn out to be false, the consequences would be dire. Given that social media facilitate users to react to and to discuss, it is important to explore the discussions factors associated with rumoring phenomena. Hence, the aim of this paper is to identify discussion factors in a rumoring phenomenon on social media. Tweets were collected to capture the messages related to the rumoring phenomenon. A total of 1,070 tweets were admitted for the purpose of qualitative content analysis. This paper extends news value theory in the context of online rumoring. Discussion factors such as rumor acceptance, rumor refutation, aggression, facticity and uncertainty stimulated discussions among the members of the online community.

Keywords—online rumor, rumoring phenomenon, discussion factors, rebuttal, anti-rumor, social media, news value theory.

I. INTRODUCTION

Online rumors are unverified messages that spread easily on social media platforms [1]. Although rumours have always existed, they are flourishing in era of social media. Despite the lack of evidence, online rumors spread rapidly as digital wildfires, and even some are reported on news outlets. When rumors receive significant social support and eventually turn out to be false, the consequences would be dire. Online rumors such as fried rat found in a chicken tender were utterly false. However, they became viral on social media [2].

Research on online rumors has attracted attention from a variety of perspectives ranging from their detection [3] to their spread on social networks [4]. Specifically, these studies examined the volume of rumor related content over time during crisis events. For example, work such as [5] studied variation of the social context in the rumor transmission over time. Likewise, some studies focused on rumor spreading process to examine the nature of virality [6]. However, these studies did not offer rich insights into a rumor outbreak by taking into consideration the discussion factors associated with a rumoring phenomenon.

Owing to the potential effects of rumors on users' perceptions, this paper seeks to offer insights into the rumor outbreak by exploring the discussion factors associated with a rumoring phenomenon. This paper uses news value theory, which posits that a news item can be selected depending on various factors such as facticity and unexpectedness [7]. The news value theory, which has been widely leveraged to study social media users' comments on news items [8], was deemed appropriate to study discussion factors associated with rumors. This is because news and rumors share quite a

few similar traits. For one, both resemble a factual claim. Moreover, both can give rise to controversy. In addition, both are capable of stirring public emotions.

This research has the following contributions. First, it has the potential to explain rumoring phenomena, which first appears as a claim similar to news stories but eventually busted as false. Second, rumors also share similar properties to news stories such as controversy and negativity. Previous rumor literature suggests that dread rumors are prevalent and become viral easily compared with wish rumors [9]. As news items are widely spread on social media, online discussions associated with a news items explore other information and can create awareness for a particular event. When rumors spread across social media, the messages attract individuals' attention to the stories though unverified.

Given that social media facilitate users to react to and to discuss, it is important to explore the discussions factors associated with rumoring phenomena. Hence, the aim of this paper to identify discussion factors in the wake of a rumor outbreak on social media.

For this purpose, it qualitatively analyzes tweets collected for a rumoring phenomenon to explore the discussion factors on social media platforms. Specifically, a rumor case where a global food-chain was accused by a false rumor of selling rat in their chicken tender.

II. LITERATURE REVIEW

Access to news continues to become more distributed in the online setting. People are getting news in many different ways such as online news outlets. To enhance a global reach, news outlets are using multiple channels to spread their journalistic content. Eventually such content spread through the internet users in the sake of spreading information among their peers. Thus, social media enable creation, consumptions and sharing of news on the Internet.

The online community is exposed with a growing volume of user-generated content that supplements professionally generated online news content [10]. In this digital era, users are trying to make sense of situations through online communications than from traditional news sources [11]. Users are not only consuming news items on social media but also sharing news on such outlets [11]. Social media facilitate a greater and more diverse news consumption, which breaks the sphere of echo chambers on social media. This is mainly because users are not only looking news on their feed but also they receive rational viewpoint in the form of public-initiated discussion on social media platforms [12].

Individuals' processing of online news influences how they invest their cognitive effort in a situation [7, 10]. In this

III. RESEARCH METHOD AND RESULTS

A. Description of the Case

A rumor claimed that a fried rat was found in a chicken tender from global food-chain. The rumor became viral easily due to its sensational nature. Initially, social media users tended to believe the rumor. Eventually, a DNA test result confirmed that the product was chicken. Thereafter, the rumor was debunked.

B. Data Collection

A dataset was collected from Twitter (now known as X) to capture the messages related to this rumoring phenomenon. Twitter was chosen as the site for data collection due two reasons. First, it helps to collect rumor related content from social media repository. Second, twitter represents large user base from diverse populations. Twitter is the ninth most trafficked websites worldwide [22]. Hence, this makes online rumors viral easily to large user base.

Data were collected from Twitter using a combination of phrases and hashtags related to the rumoring phenomenon. This approach of data collection was chosen for two reasons. First, such an approach to collect tweets is informed by the literature [24]. Second, this approach is suited to collect event-specific tweets containing specific hashtags. Given that this paper intends to collect event-specific tweets, the approach of data collection was appropriate. The platform's search interface was queried using event-specific phrases and hashtags. A total of 1,408 tweets that were returned as a results of queries was collected. After removing 338 tweets that were not related to the chosen case, the remaining 1,070 tweets (1,408 - 338) were admitted for analysis.

C. Data Analysis and Findings

Informed by prior studies [8, 23], a code book was developed deductively to identify discussion factors in tweets for the rumoring phenomenon. The news value theory helped identifying the discussion factors associated with a rumor outbreak. While some users attempted to refute rumors, some other users tend to believe false messages. The heterogeneity of the posted messages indicates an interaction among the message characteristics, the users' interest, and the situational aspects in a rumoring phenomenon.

Content analysis was employed on tweets to identify discussion factors in the rumoring phenomenon. Each tweet was considered as the unit of analysis. To avoid observation bias, two trained coders were recruited to carry out the coding process. Before initiating the coding process, a brief introduction of the rumor case was described to the coders. Thereafter, the two coders coded all the tweets independently, and the average inter-coder agreement was 0.82 (Cohen's κ). Table I summarizes the descriptions of the discussion factors with examples in the context of the chosen rumoring phenomenon.

Rumor acceptance. It refers to the acceptance of a rumor claim. At the inception stage of a rumor outbreak, determining veracity of a claim might be difficult. Individuals may perceive a false claim as true, and therefore are more likely to accept such dubious messages.

Rumor refutation. Such online messages reflect rejection of a rumor claim. The messages are popularly known as anti-rumors [25] or counter-rumors [26] or rebuttals [27, 28].

vein, users perceive news values differently depending on their allocation of cognitive resources in a situation [7, 13]. First, individuals assign relevance to news items based on individuals' interest, newsworthiness, novelty and factual consequences associated an item. Second, from the concept of socialization, relevance can be perceived from social identity and the perceived relevance for society.

The concepts associated with news values are quite aligned with the spread of online rumors, which refers to unverified messages circulating on the internet. Online rumors gain traction because users spread the messages with their online peers. Such messages can often be viewed as verified information from media sources. The line between online news and online rumors remain blurry at the point of their inceptions. As user-generated content has provision for a free flow, both online news and rumors can be shared in the online setting without giving much thought. Given their inherent nature of timeliness, both spread on social media speedily and become viral easily. The speed of reach accelerates when both are found to possess characteristics such as sensationalism, novelty, conflict, and negativism.

Rumors can create anxiety and panic among members of the online community. Such messages often lead individuals to take actions such as spreading the messages and performing a target behavior [14]. Without adequate evidence, online rumors are difficult to distinguish from other factual claims.

Both online news and rumors have some degree of facticity in their claim. This is why it is very difficult to distinguish news and rumors in online setting. Online false messages have become widespread on social media [15]. When individuals are exposed to these online false messages, they end up believing the messages to be true [16]. Previous works have made references to these false messages using different terms as described below.

The term 'fake news' is a broad term and it has a political flavor [17]. A recent report concluded that it is a term that "is bandied around with no clear idea of what it means, or agreed definition" [18]. Therefore, this paper did not use this term to explore social media chatter.

When online false messages are transmitted intentionally, these messages are termed as disinformation. On the other hand, when false messages are spread inadvertently, these messages are termed as misinformation [19]. Therefore, it is difficult to distinguish between disinformation and misinformation on the basis of its content.

Next, conspiracy evolves from subjects who tend to rely on the false messages. Conspiracy helps providing immediate understanding of a situation yet without having adequate explanation [20]. The claims evolved from conspiracy are difficult to verify. However, this paper particularly focuses on the false messages that are possible to verify.

Finally, this paper uses the term 'rumor', which has been defined as the false messages circulating on social media platforms. The news value theory has the potential not only to guide journalistic decisions but also help identifying factors on how users select messages and generate discussions in a rumor outbreak [21]. Therefore, this paper aims to gain insights in the discussion factors associated with a rumoring phenomenon.

Through refutation, individuals express their disbelief in a rumor claim.

Aggression. In the case of online rumors, this aggression is often directed at individuals or groups within the online community who are accused of contributing to the spread of rumors. For example, when users criticize others for sharing unverified or false information, they may use aggressive language to express frustration or anger. These messages can contain derogatory language to threaten others. The purpose of such aggression is often to hold others accountable or to discourage the continued sharing of misleading information. Such messages not only criticize the online community for spreading rumors [30], but also create a hostile environment, potentially escalating conflicts within the online community.

Facticity. It refers to the extent to which a claim on social media contains factual evidence. With respect to news articles, high facticity occurs when an article includes concrete evidence [12]. In contrast, messages with low facticity lack factual evidence and are completely fictitious. Rumors often thrive in environments of uncertainty, where clear information is lacking. In such environment, facticity helps fill this gap, providing factual evidence to debunk false claims. When rumors thrive on social media, fact-based interventions (e.g., fact-checking, rebuttals, official statements) can directly counter-attack such messages [27, 28, 29]. With the presence of facticity, it becomes easier for users to recognize a false claim and refrain from spreading it further.

Uncertainty. It refers to the psychological state of doubt that can be stemmed from a situation and/or an event [31]. In the wake of a rumor outbreak, online messages often reflect uncertainty. Users ask questions to their online peers in order to fill knowledge gaps created by rumors. News value theory suggests that journalists rely upon with facts and therefore, select news items that are free from uncertainties [21]. However, in the context of rumor outbreak, users express uncertainty in messages by asking questions in the search for truth.

Controversy. It comprises public disagreement or heated discussions in online rumoring. Users involve in making explicit claims including unfounded demands and asking provocative questions, which lead to more intense controversy in rumor outbreak.

Unexpectedness. This factor describes events that are rare and beyond expectations [21]. Users often discuss unexpected situations that they may perceive in the wake of a rumor outbreak. Such messages offer alternative interpretations of the situations.

Humor. Humor often emerges in discussions, creating a sense of enjoyment and entertainment. Users frequently share jokes or witty comments when rumors spread on social media.

Opinion. It represents the netizens' viewpoint in a situation. Netizens use social media to express their beliefs, attitudes, and emotions on some situations that are closely related to their own interests.

TABLE I. DISCUSSION FACTORS IN A RUMOR OUTBREAK

Discussion factors	Description with examples
Rumor acceptance	When online messages reflect acceptance of a rumor claim. Example: a) <i>it was a rat for real!</i> b) <i>a batter-fried rat was found in a meal.</i>
Rumor refutation	When online messages reflect rejection of a rumor claim. Example: a) <i>It wasn't a rat, they investigated and had lab work done, it was chicken.</i> b) <i>It was chicken surprise surprise. Avoid the clickbait</i>
Aggression	When online messages contain derogatory language Example: a) <i>should banned .its dirty ... i boycott KFC</i> b) <i>KFC is still disgusting, because it's fried to hell and back.</i>
Facticity	When online messages include concrete facts or statistics Example: a) <i>"it definitely looks like chicken in the picture [PIC]."</i> b) <i>"Old news this was on CNN last week [URL]"</i>
Uncertainty	When online messages express doubts and questions that reflect individuals' knowledge gaps Example: a) <i>are you sure?, perhaps its rat shaped chicken, What's that long piece of meat then? and why does it look like a rat?)</i> b) <i>Did anyone actually open it? I mean what if it's actual chicken in that shape</i>
Controversy	When online messages comprise public disagreement or heated discussions Example: a) <i>Chicken comes in different shapes too... LIES. That's obviously a lizard.</i> b) <i>Rat tastes EXACTLY like chicken but there's too many bones to have it fried whole.</i>
Unexpectedness	When online messages deviate from expectation Example: a) <i>Terrible Headline "I don't believe it for one second."</i> b) <i>OMG ~ How Sick</i>
Humor	When online messages make jokes Example: a) <i>I can make doggy shape, can I get money?</i> b) <i>When do chickens have tails?</i>
Opinion	When online messages convey personal views Example: a) <i>That person should be sued for defamation of character. This guy has to prove his case and not just on social media. Otherwise he's going to face a counter lawsuit from the fastfood giant. The lawyers from both sides will be the ones gobbling this all up in the end!</i> b) <i>Just because it looks like a rat, doesn't mean it's a rat.</i>

IV. DISCUSSIONS AND CONCLUSION

Online rumors often gain traction as users share these messages with their online peers. Such messages are sometimes mistaken for verified news. In terms of face value, the distinction between legitimate news and rumors is often unclear, especially at the early stages of their circulation. Users are drawn to disseminate intriguing information before it becomes widely known. Thus, online rumors often spread quickly like breaking news due to their freshness and sensational nature.

This research extends the applicability of news value theory in the context of online rumoring. Discussion factors such as rumor acceptance, rumor refutation, facticity, and uncertainty stimulate discussions among the members of the online community. These discussion factors seem to stimulate individuals' knowledge to fill the gap in their worldview. As stated earlier, uncertainty refers to the psychological state of doubt that can be stemmed from a situation and/or an event. When adequate information is not available to make sense of a situation, users tend to express their doubts and ask questions to their online peers. Crisis situations are characterized by extreme uncertainty that create a breeding ground for discussions in the emergence of rumors [32]. Users tend to gather information to fill the knowledge gap created in a rumor outbreak [33].

Humors can also be seen in discussions as it creates a sense of hedonic enjoyment. Humorous messages add entertainment in discussions, and create a scope for individuals to further engage in discussions. Users with minimum or no interest in the rumor phenomena stimulate discussions by telling a humorous story in a given context [34].

A rumor outbreak added fuel to controversial assertions in social media chatter. The controversial discussion around rumors includes the spread of false messages. The presence of spurious messages create confusion among the members of the online community. Without proper gate-keeping mechanism on content creation and sharing, social media websites facilitate access to a huge volume of user-generated content. Such discussion factors influence social media communication, and the evolution of debate on social networks, especially when issues are controversial. Amid many controversial assertions, individuals tend to acquire messages that are consistent with their worldview [33]. They tend to ignore dissenting information from their online peers.

In terms of limitations, this paper investigates a single case of rumoring phenomenon. Future research can examine multiple cases of rumoring phenomena to enhance the generalizability of the findings and provide broader insights into their underlying patterns. Moreover, this paper collected data only from Twitter. Future research can leverage on other social media platforms to collect data for the purpose of investigation. A relatively rich and large dataset could facilitate a broader analysis of the interactions between different discussion factors associated with rumoring phenomena.

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