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« Fake News », Lies and Propaganda : Health Related Information Verification Behaviours (HRIVB) Models among Youth on Social Networking Sites

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Abstract

Covid19 pandemic has caused more than 2 million death across the globe and its information dissemination needs to be accelerated as it might reduce the infection risks and social media can play a significant role. Youth are closely attached to social media and are expected to be the main receiver of health-related information. Understandably, it is important for them to verify first the information they received before using or sharing it or otherwise there is a possibility of fake news/information being spread and create chaos to the community. Moreover, the existing models on health related information verification behaviour (HRIVB) have several deficiencies and improvements are needed to suit the current setting. Hence, this review focuses on what are the complexity of the existing models and the background of youths using these models, why there are exclusions of some importants factors and what are the current concerns on social media.

Keywords: Fake News, Covid19, Health, Verification Behaviours Models, Social Media.

Introduction

Social media has become a very important information tool nowadays. Virtual networks such as Facebook, Twitter and Instagram have provided much related socio-economic information to the community. At the current state, much of the information shared in these channels are related to health information. In the case of Covid19 pandemic for example, social media has played more important roles especially in desseminating important information to the public. This pandemic poses a big threat to human lives and up to 31st January 2021, a total of 2.2 million deaths were recorded across the globe while in Malaysia, a total of 746 were reported (World Health Organization, 2021). Such role is not just restricted only to Covid19 cases, social media has been an effective channel in the past, for example in the case of Influenza and it is

expected for them to continue to play important roles in the future. The current global health situation is unpredictable, the sudden strike of Covid19 demonstrates a concrete proof. The community should be well prepared to response to other similar strike in the future and to do this, dissemination of rapid and reliable information to the community is vital. Social media has the potential to cater this role, if responsibly and appropriately used, it offers fast and effective dissemination routes for important (Chan et al., 2020).

Youths are highly attached to social media. Most of them rely on it for sharing and seeking information, entertainment, socializing, and seeking information, entertainment, socializing and conducting business (Ghazali et al., 2020). Due to this, it is expected that they are among the largest group that receive health related information. Nevertheless, it should be noted that Chan et al (2022), have stressed that social media must be responsibly and appropriately used, or otherwise, there are possibilities that dissemination of fake news/information might occur. Fake news dissemination can create chaos to the community, the recent incident of the Capitol invasion in Washington DC has demonstrated the dangers of fake news. In the recent local incident, there was a speculation on a doctor's death related to lethargy and fatigue caused by overwork and in this case the Ministry of Health has been wrongly accused by the netizen whereby the actual causes to the doctor's death is his critical illness. To avoid futher incident of these situations, information verification skills might play an important role (Torres et al., 2018).

Recently, searching health information online has become a preferred way due to its availability and coverage of information, the convenience of searching, affordability of access, interactivity and anonymity (Lagoe & Atkin, 2015 ; Asibey et al., 2017). Health information sought online includes « anything regarding the symptoms, diagnoses, and treatments of different diseases or simply general information about weight loss, healthy diets or wellness tips » (Ghahramani & Wang, 2019). In the case of some Asian countries, the percentages of the proportion of online health information seeking behaviour in mainland China, Philippines, Hong Kong, Indonesia and Vietnam are 79 %, 80%, 85%, 85% and 86% respectively (Shen et al., 2017; Wang et al., 2020). Within the social media context, the need to verify information has gained renewed significance amidst the appearance of fake news and the spread of misinformation Khan & Idris, 2019). Fake news which is defined as "news articles that are intentionally and verifiably false and could mislead readers" (Allcott & Gentzkow, 2017), encompasses notions such as manipulation, disinformation (information purposefully mislea ding), misinformation (information that is verifiably fake) and rumors (Lagoe & Atkin, 2015). It has become a common occurrence, as audiences increasingly rely on peer to peer information transmission through sites such a s Facebook, Twitter and YouTube in comparison with traditional media institutions (Gottfrie d & Shearer, 2017). This has led to rising fears over the credibility of this shared information (Khan & Idris, 2019)..

We conclude from our readings that there is the possibility that no to less recent studies that try to understand how people verify health related information via social media channels. We however managed to find several related studies that reported information verification behaviour. A Study by Koohikamili and Sidorova (2017) for example, attempted to understand how university students in the United States verify fake news from the perspective of their behaviour. Nevertheless, they stressed the limitation of the study – there is no element of

information quality that is needed to ascertain the causal nature of the relationships between verification practices and human behaviour. Another study by Choi and Lim (2019), has tried to conclude how people in South Korea are verifying news they received from the news site by checking the online news authorship. However, they have noted the issue of social desirability bias in their study as they found that heavier Internet users tended to claim in surveys that they verified information, but they actually did not when observed. Hence, the respondents in their study may have overestimated their verification behaviour. Guess et al (2019), have focused on the predictors of fake news dissemination related to political matters, and how receivers verify it, but, the result might be hard to be generalized to other social media as it just focuses on Facebook. Schaewitz et al (2020), tested how good individuals in detecting disinformation when reading online, but as stated in their article, their respondents are overall highly educated, which is not representative of the online public potentially confronted with disinformation. Although Torres et al (2018), tried to examine a model for verifying fake news, improvements are needed. As the model developed contains too many dependent variables (three), Dwivedi et al (2021), have warned us on the possibility of too many dependent variables to create « chaos » instead of creating an understanding of the issue studied.

Health Related Information Verification Behaviour (HRIVB) Models

There are several models that explain how community seek and verify their health related information. Models such as Two expectancy-value models, expectancy value model approach, information seeking theory and two step flow models. Most of these models explain how people are receiving the information, kind of information that they want and how do they verify the information before they use it. Despite its existence these models have several dificiencies such as its study's scope (not focusing specifically on social media) and its methodological problem (sampling bias, sample size, the realibility of analysis performed, not having a mediating factor) (Marton & Choo, 2012).

Khan & Idris (2019), have conceptualized information verification as an information literacy based on two simple questions. One is about verifying social media information using an online tool, and the other is about understanding what a search engine is for. Metzger (2007) referred to the use of a search engine to establish the credibility of information as "critical evaluation skills".

Khan & Idris (2019), furthermore hypothesized that when online users try to establish the veracity of information by searching for that information via a search engine they are more likely to recognize misinformation. Information literacy has also been described as a "set of modern skills needed to discover, access, verify, and correctly interpret information in an age of abundant misinformation on the internet" (Parrot, 2018). The information literacy is built upon three skills which are information seeking skills, information sharing skills and information verification skills.

According to Bukhari et al. (2018), *« information-seeking activities were identified as informal searching, deciding, interacting, following, verifying and saving. The sources were search engines, social media and face-to face settings. However, social media are more dominant than search engines and face-to-face communication. The questionnaire validated the*

proposed model and demonstrated that demographic variables exert a significant effect on the information-seeking behaviour of international students as they use social media".
From the research, we can say that there is a relation between "information seeking behaviour" and "information verification behaviour" as one of the activities identified in "information seeking" is to verify information.

From Bukhari et al (2018), we can also highlight the importance of demographic variables such as sex, level of study, age, nationality, faculty, current semester, fulltime or part-time student, duration of stay in Malaysia and proficiency in written and oral English. Other factors that can be taken into account includes the types of information needs and peer selection (family, friends, relatives, supervisors and administrative staff) to obtain information and acquire a preference for using social media.

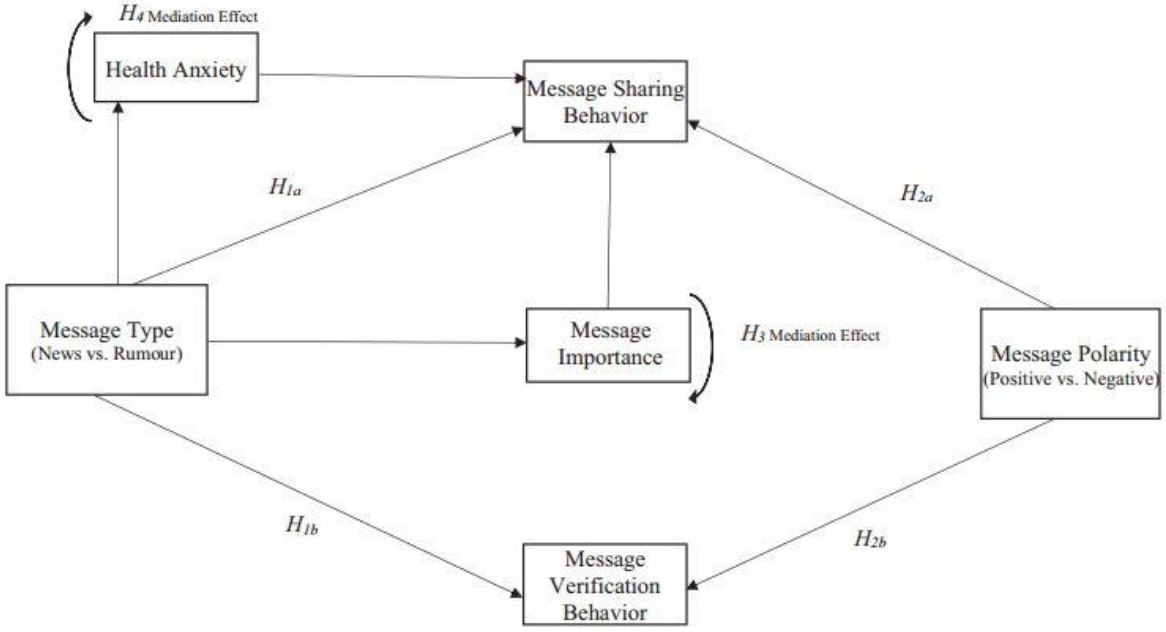
In another development, Khan & Idris (2019), revealed that income, education level, information seeking and verification skills, and attitude towards information verification were significant predictors of PSERM, a model they developed to predict the perceived self-efficacy of individuals in recognizing misinformation. since belief in the reliability of information in the strongest predictor of SWV (social media without verification), it is important for information literacy interventions to first emphasize the process of information production on social media and the quality of information circulated on social media before introducing other forms of knowledge.

According to Sharma and Kapoor (2021), the behaviour of information sharing and verification using social media technologies during the COVID-19 pandemic can be explained by the Heuristic Systemic Model (HSM) Chaiken (1980), and cognitive load theory (CLT) (Sweller, 1988) of information processing. The HSM states that individuals process messages either heuristically or systematically. While systematic processing entails detailed and careful processing of a message, heuristic processing entails using mental shortcuts or "heuristics" to assess the message. Individuals process large amounts or frequent contents in the online environment; however, their ability to assess information is limited. For this reason, individuals rely on heuristics or mental shortcuts to reduce the complexity and simplify judgements of information on social media (Hadjimarcou & Hu, 1999). Applying this theory to the widespread dissemination of health information during the COVID-19 pandemic, it is likely that mental shortcuts and heuristics were used to simplify the complex health information. The believability of the health information is likely influenced by the source, as the first path of information (Son et al., 2020). As such, the message source, a credibility heuristic, of the health information exchanged on social media may have influenced widespread dissemination.

Similarly, the CLT suggests that the human memory is split between short-and long-term memory, and the brain has a limited processing capability that often gets overloaded (Sweller, 1988). Further, according to Laato et al (2020), "only small amounts of new information can be processed at a time". While the CLT primarily explained instructional science and learning (Chandler & Sweller, 1991), it has since been used to explain people's ability to acquire knowledge in different situations. One particular application is the online environments such as social media. Online environments where information is abundant can be "too much for the human cognitive circuit to process causing cognitive overload" (Laato et al., 2020).

Therefore, individuals overloaded with information tend to make careless decisions because of their inability to process surrounding information, as was observed during the widespread dissemination of rumours in form of health information on social media during the COVID-19 pandemic. Stemming from the review of HSM and CLT, the current experimental investigation of a message type and message characteristics is likely to be salient in explaining the dissemination of health-related news and rumours via social media during the COVID-19 pandemic.

From the two theories, Sharma and Kapoor (2021) developed a two-factor message type and message polarity between-subject experimental designs. We can see the model presented below:



In this model, we can see two factors that are influencing « message verification behaviour » and « message sharing behaviour », which are message type and message polarity. « Message type » gauge either a message is perceived more as « news » or more as « rumour » and has been categorised based on veracity. « Message polarity » refers to the perceived tone of the message which may be positive, negative or neutral (Chua & Chen, 2019). Positive messages invoke « pleasant » feelings in the recipients while negative messages instil fear, dismay and agression (Oh & Lee, 2019).

There are two hypothesis (H_{1b} and H_{2b}) that governs the relationship between « message verification behaviour » and the two factors « message type » and message polarity ». The first one stipulates that « message type » (news vs rumour) will significantly influence the « message verification behaviour » such that the message perceived as rumour will lead to high message verification. Furthermore, «message polarity» (positive vs negative) will significantly influence the «message verification behaviour» such that the message perceived as negative will lead to higher verifying behaviour.

A similar pattern has been proposed as hypothesis (H_{1a} and H_{2a}) for the relationship between « message sharing behaviour ». Messages that are perceived as rumours will lead to lower

message sharing and messages that carries positive polarity will lead to higher message sharing.

The relationship between « message type » and « message sharing behaviour » will be furthermore mediated by two factors (H_3 and H_4) which are « message importance » and « health anxiety ». Messages perceived as news will lead to greater message importance than rumour and messages perceived as news will lead to greater anxiety than rumour.
All of these recent studies have shown several issues that need to be improved. Moreover, it proves that the existing literature needs a study that aims to develop a model that tries to understand how youths in Malaysia verify health related information via various social media such as Facebook, Twitter, Instagram and other channels. Having few studies on the issue denotes lacking understanding of how youths – the largest social media users, verifying the health related information before they use or disseminate it to others. Fewer studies also represent higher risk of fake news/information to be shared among the community and create chaos while at the same time restricted the spread of valuable information to the community. Furthermore, due its deficiencies (related to study's scope and methodology) the existing models on information verification needs some improvement to suit it to the current setting. This review aims to improve dificiencies of previous studies by developing a fundamental model that enhance understanding on how youths verify health related information, developing a model that focuses only on one dependent variable (information verification behavior), to include information quality in the model, focusing on several social media channels (eg. Facebook, Twitter, and Instagram) and focusing on Malaysian youths that are represented by diverse demographic backgrounds.

Methodology

The initial step in developing a HRIVB model was to analyse related papers and discuss between researchers to try to connect, explore similarities and identify relationships between data, striving to meet the trustworthiness criteria according to Nowell et al. (2017). Within this process, relevant articles were sought based on a manual searching technique such as « handpicking » from search engines including Emerald Publishing (http://www.emeraldinsight.com), Sage Publications (http://.sagepub.com/home.nav), Taylor & Francis (http://www.tandfonline.com) and Science Direct (http://sciencedirect.com). Keywords, such as « information verification behaviours model », « health related information verification behaviours models », « factors affecting health related information verification behaviours models » and « factors affecting youth information verification behaviours on social networking sites » were used in this process. Based on the searching efforts, a total of 2985 potential articles were identified from the selected databases.

Factors Associated With Health Related Information Verification Behaviours Models among Youth on Social Networking Sites.

There are three independent variables namely social tie variety, cognitive homogeneity and information quality, two intervening variables (mediating) namely fake news awareness and trust in networks and one dependent variable namely health related information verification behaviour.

Social Tie Variety

Social tie variety refers to « the diversity of offline groups and contexts represented in one's online social network (Gerhart & Sidorova, 2016). The network of youths may consist of different type of people who are introduced to each other over a long period of time and in a diverse social contexts. This social links is connected to how and when relationships between people were formed. It might resulted changes in individual as from time to time they might face new situation, contexts and different type of people. Furthermore, youths via their social media might share different identity depending on what type of group they meet (Styven & Foster, 2018). This situation strengthens the possibility of having diversity of perspectives and viewpoints in the community (Ellison et al., 2014; Torres et al., 2018). Such situation might stimulates members to question any information shared within the community especially if the sharing are contradict with knowledge or information they have. Instead of this contradiction, such disagreement demonstrates a lack of « general acceptability » and serves as a cue to deception (Kumar & Geethakumari, 2014). Hence, even it is unclear whether the news items received are valid and reliable, the presence of conflicting viewpoints shows an increasing of the individuals awareness of possibility of fake news (Torres et al., 2018).

The quality of the relationship between youths within the social networking channels depend on the level of trust that they have on their colleagues (Ellison et al., 2014). For those with a strong level of trust demonstrates a frequent communication and information sharing while at the same time, facing no problem to have face to face interaction outside the social media channels. While for those with low level of trust, they are more careful in receiving and use information from their networks (Cruwys et al., 2020). Furthermore, the strong influence of networks ties on trust is based on the facts that the establishment of trust is commonly associated with their ability to assess the competence, benevolence, integrity, and predictability of their networks in vary situations and over a long period of time (McClain, 2017).

Cognitive Homogeneity

Perceived cognitive homogeneity is another potential factor to influence information verification behaviour among youth. This factor refers to « the extent to which a person perceives members of his/her network to share his or her views and beliefs » (Gerhart & Sidorova, 2016). There are some youths groups that construct their social networks by eliminating contradicting opinions or pespectives (Allcott & Gentzkow, 2017). Such behaviour known as homophily, a situation where people prefer to be in the same network with those that they perceive as similar (Miller et al., 2021). Nevertheless, due to the underlying beliefs of network members are reflected in what they post, network segments characterized by a large degree of cognitive homogeneity reflect less topic diversity than segments which are more heterogeneous in nature (Kim & Kane, 2019). Within this situation, individuals are less exposed to vary perspectives, arguments and debates associated to their beliefs, thus decreasing their opportunities to detect false information and lower awareness of fake news.

The determination of common belief structures needs knowledge-based familiarity, a strong pillar of trust (Torres et al., 2018). Youths are expected to be used to project a desired social identity which then enable them to assess the level of cognitive homogeneity that exists between themselves and other associates (Gerhart & Sidorova, 2016). Youths who perceive themselves as having similar viewpoints with other are expected to be more attached to each

other than individuals that perceive themselves as having similar viewpoints with other are expected to be more attached to each other than individuals that perceive themselves as different (Shriver et al., 2013). Moreover, youths are more likely to trust those with beliefs similar to themselves and without the element of cognitive homogeneity, interpersonal trust between the youths and other network members may not exist (Iyengar & Westwood, 2014).

Information Quality

Quality information might affect youths awareness on fake news. The quality is depending on how usable and how much benefits they received from the information (Koohikamali & Sidorova, 2017). The quality of the information might be a subjective matter and might provide an opportunity for fake news or false information to be considered as legitimate sources. Information that is written and arranged properly might be considered as having a good quality though it contains misleading information (Guess et al., 2019). Information quality also affects their trust in networks, the more frequent quality information they received, the more trust youths will have in the networks that they settle in.

Mediating Factor : Trust in Networks

Several previous studies have demonstrated the effect of trust on the information verification behaviour. A study by Grabner-Kräuter & Bitter (2013), for example, noted trust as a vital governance tool that regulates the behaviours of network members. Understandably, trust acts as a mental shortcut, enabling interaction in complex situations without overpowering the cognitive ability of the individual (Torres et al., 2018). There is a possibility when youths have a high level of trust in someone and closely attached to them, they may forgo validation and might not fully verify the information shared to them.

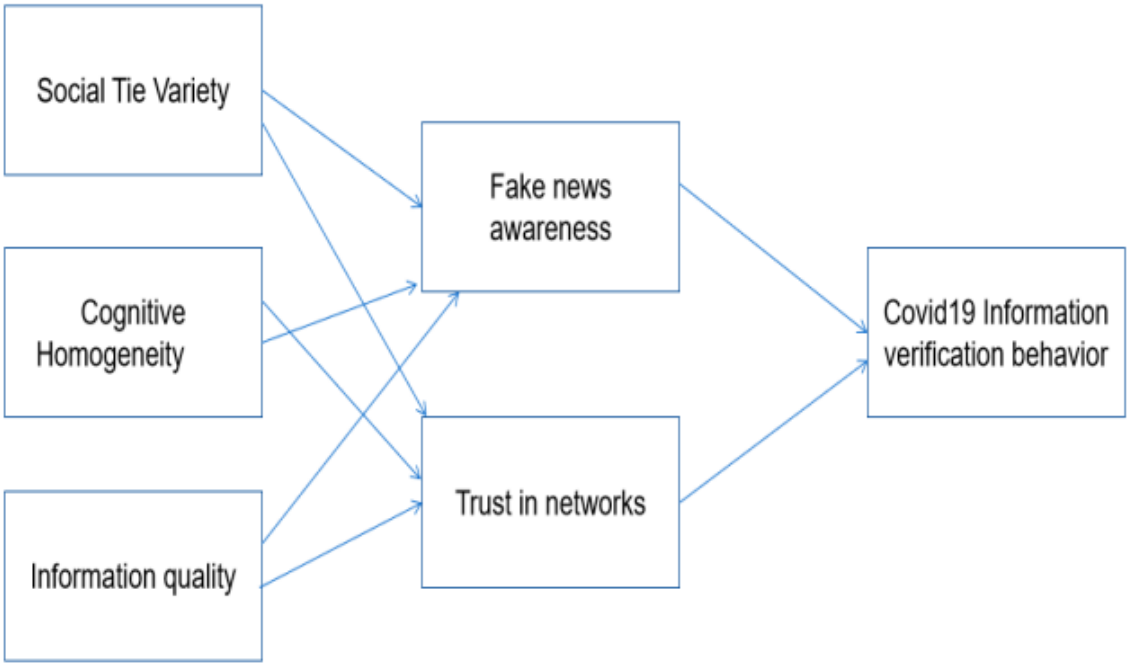
Mediating Factor : Fake News Awareness

It is a challenge to identify the fake news/information as they might be represented similarly as the legitimate one. People might have several ways to identify fake news and their ways might be different due to their individual abilities and experience. While news/information sources might report erroneous information from time to time, youths that can detect inaccuracies and may seek alternative sources of information to clarify their understanding (Torres et al., 2018). That is, if the youths are unaware of the disseminated fake news, they possibly are not interested to verify the information they received while for other, they serve « self-editor », and are responsible for evaluating the quality of information they receive (Chunsuttiwat & Thammakoranonta, 2017). Thus, while youth might actively involve in information seeking additional knowledge, they should practice information verification behaviours, and to do this, it requires awareness on the legitimacy of the information. As such, individuals that are keenly aware of the existence of fake news are more likely to demonstrate verification behaviours compared to those who less able to differentiate between legitimate and illegitimate information items.

Conclusion

The recent literature of the verification behaviours models among youths reflects a basic understanding of how they verify health related information on social networking sites. Based on the narrative review, for the model, we can highlight three independent variables namely social tie variety, cognitive homogeneity and information quality, two intervening variables

namely fake news awareness and trust in networks and one dependent variable namely health related information verification behaviour.
We can therefore suggest a HRIVB model as below :



This HRIVB model suggests that « fake news awareness » and « trust in networks » are the mediating factors of the relationship between « 'social tie variety », « cognitive homogeneity », « information quality » and « covid 19 information verification behaviour »
For future studies, a more systematic literature review method (SLR) can be implemented to generate themes that can be used to further critically analyze the subject. To further improve the process, future researches can systematically collect relevant articles by employing the identification, screening, and eligibility processes recommended by Shaffril et al. (2018). Using these methods, we are able to comprehensively locate and incorporate studies, ensuring a systematic and transparent execution of a well-structured SLR. Higgins et al. (2011) added that SLR systematically detects and synthesizes relevant research and involves organized, transparent, and reproducible processes at each step of the review, combining qualitative, quantitative, and mixed methods studies.

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