Infodemic and Digital Literacy: The Role of Digital Literacy in Combating Misinformation of COVID-19 on Facebook

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Abstract:

Amid the spreading of COVID-19 globally since March 2020, Facebook has played a vital role in spreading information about the virus, its effects, and its consequences. However, the viral nature of Facebook and its ease of spreading the information helped in circulating the misinformation about the virus and made it hard for its users to seek the correct sources of information about COVID-19 Pandemic among the millions of misinformed posts and content on it. Hence, large populations of our world were facing the COVID-19 and an infodemic along with it. This is where digital literacy shows up as a vital skill to be possessed by the users of Facebook to find and evaluate information about COVID-19 Pandemic to help them understand the current situations and consequences of the ongoing pandemic. The paper tackles the role of digital literacy as a skill possessed by Egyptian users in combating misinformation of COVID-19 Pandemic on Facebook amid the breakthrough of the pandemic since March 2021. The paper also sheds light on the relevance of the topic on SDG no.3 (Good Health and Well-being) and SDG no.4 (Quality Education). A survey was conducted to collect primary data to test the hypotheses of the paper's suggested model.

The results indicate that the chosen sample from Egyptian Facebook users have a low level of digital literacy skills despite their high level of education and income. Moreover, the results prove that information sharing, status-seeking, and information overload are associated with sharing fake news on COVID-19 Pandemic by them. The paper recommends adopting digital literacy programs for Egyptians, as it will develop needed skills to navigate and use the internet and social media safely especially during the ongoing pandemic, which will reflect positively on their quality of education and their health.

Introduction:

COVID-19 Pandemic has become one of the most significant news in Egypt since February 14th 2020 when the Egyptian Ministry of Health had announced the first case of COVID-19 in Egypt. The news about the pandemic has gained significant importance when Egypt imposed nationwide lockdown on March 17th 2020 as a quarantine to contain the situation and flatten the curve of the number of cases that had increased rapidly back then. The total lockdown for quarantine was a huge trigger for Egyptians to follow the news on COVDI-19, in television, radio and most particularly through social media, which prioritized COVID-19 news as the first news in the Egyptian media agenda and that was the same case for the whole world. Alongside the pandemic, an infodemic about COVID-19 Pandemic has started especially on social media, since it is not censored. Social media, especially Facebook, have witnessed and still a widespread of information on COVID-19, and large portion of it are incorrect and misinformed.

Misinformation is defined as sharing and communicating incorrect and inaccurate information without knowing (Jack, 2017). Moreover, misinformation about health topics especially on social media contributes into the infodemic, which results in confused and risky behaviors that can negatively affect the health. Henceforth, interventions are needed for social media users, especially Egyptian Facebook users, to combat infodemic of COVID-19 Pandemic and avoid sharing misinformation on COVID-19 on Facebook.

Guess et al. (2020) stated that digital media literacy played a role in encountering misinformation, as it works as an intervention to decrease the perceived accuracy for misinformed and fake news on

social and digital media that have negative implications in the real world. Nevertheless, Guess et al. (2020) argued that digital media literacy should be reinforced from time to time as the strengths of its skills tend to decline over time if it didn't reinforce with recurring interventions.

1 . Literature Review:

Global data showed that 59% of the whole population of 7.75 billion were internet users, 49% were active users on social media, the percentages were higher compared to 2019 percentages, with the most used social media platforms were Facebook, Youtube, and Whatsapp. The increased percentage number is normal due to the reduced amount of face-to-face communication and quarantine restrictions while the internet can easily connect people with similar ideas and interests. Consequently, it makes fertile soil for the growth of infodemic, which in turn influence peoples' decision-making and behaviors due to the very limited time to evaluate and analyze the accuracy of information (Sari, 2021).

1.1 . Misinformation and Fake Information on Social Media:

Rubin (2019) stated that fake news was classified into two main categories misinformation and disinformation, which refer to incorrect, inaccurate, and misleading information. Misinformation is not intended it may include errors or inaccuracy. Disinformation is intended deception with false and misleading information. Hancock (2012) called misleading information "digital deception" as an intended control of information that creates false conclusions.

There are several motivations for misinformation like making money, polarizing people, or shifting blame, on the other hand, it may happen because of ignorance, individual egos, or misguided intention (Posetti & Bontcheva, 2021).

Social Media has a complicated role in the mental health of people, it can provide positive and supportive communication during physical isolation as well as it can increase depression and anxiety based on the spread of distressing information (Primack et al., 2017; Figueroa & Aguilera, 2020). Many studies showed that misinformation and fake news could cause negative effects on public health, especially in the context of pandemics fake news plays in masking and hiding the

correct and healthy behaviors while promoting wrong practices and information, which lead to the increase of the pandemic spread result in poor mental and physical outcomes (Tasnim et al. 2020).

A . Misinformation on COVID-19 through Social Media:

Recent studies that investigated the dissemination of COVID-19 Pandemic misinformation had reported that there were perfect conditions for the misinformation and rumors to find their way between social media and to be adopted by general users. Moreover, lockdowns and restrictions on everyday activities around the world was one of the main triggers for this misinformation growth, due to the ease use of social media networks and they were the only outlet for people to spend their time. Thus, increasing their consumption and engagement by sharing medical content regarding the pandemic (Bruns et al., 2020; Apuke & Omar, 2021).

A study conducted in Spain also had reported that Facebook, as well as Whatsapp, was the most used social media platform to learn about COVID-19 (Fernández-Torres et al., 2021).

It is also noticeable that social media contributed to the excessive flow of information about COVID-19, which resulted in spread of misinformation on COVDI-19 Pandemic on social media. the recent report conducted from more than 8000 from six countries showed that one-third of the respondents were exposed to a huge amount of misleading information regarding COVID-19 Pandemic on social media (Figueroa & Aguilera, 2020; Nielsen et al., 2020; Apuke & Omar, 2021).

B . Infodemic on COVID-19 on Social Media:

The World Health Organization (WHO) has described the flow of information that accompanied the COVID-19 pandemic as an infodemic (Ghebreyesus, quoted in United Nations, 2020a), the pattern of disseminated information included virus origins, spreading causes, symptoms, and treatment of the virus and remedies were rapid and uncontrolled in both online and offline social networks and media outlets. Untested experimental drugs and folk remedies either found their way to be media mainstream by sharing them on social media or even echoed by celebrities, politicians, and sometimes untrusted doctors (Lewis, Holland & Govender, 2021).

Some of this misinformation peddled fake cures or treatments like eating garlic, or saltwater and injecting with bleach, (WHO, 2020). High consumption level of alcohol, drinking bleach, and using sun ultraviolet rays, hydroxychloroquine as a treatment for the virus were some of the rumors declared by celebrities and politicians like the US President Trump and Brazilian President Jair Bolsonaro who also claimed that (Constine, 2020). On the other hand, some of the fake news contained conspiracy theories claiming that the virus is man-manufactured and bioengineered in Wahan, or this virus was the result of the 5G (fifth Generation) technology (Anderesen et al., 2020; Cohen, 2020; Moscadelli, et al., 2020).

Following these rumors and pieces of misinformation may lead to serious health problems or death. (Sari, 2021). The spreading of misinformation, rumors and conspiracy theories reflect the low level of people's trust in official information sources and services available to them, in which it can slow the crucial medical interventions and policies and increase the situation's complexity (Naeem & Boulos, 2021).

Sari (2021) stated that in a social media analysis that investigated "rumors, stigma and conspiracy theory", that was spread through online platforms like Facebook, Twitter, and online newspapers, it was identified that 2311 reports in 25 languages from 87 countries. Percentages were divided from the mode of transmission and deaths (24%), prevention efforts (21%), treatment (19%), and the origin of the virus (15%), with 82% of the claims being false.

An infodemiological study stated that infodemic led to stigma and perception bias towards China that it was the main reason behind the COVID-19 (Roozenbeek, et al, 2020). Ofcom (2020) conducted a poll in UK and US to measure the exposure of fake news and results were 46% of the UK population reported being exposed to fake news, similar results were reported by Mitchell & Oliphant (2020) in the US which were 48% were exposed to fake news.

Infodemic and misinformation of COVID-19 have led to disrupted and critical mental health in 93% of worldwide countries (WHO, 2020), Li et al. (2020) also found that 25% of those videos contained misleading information which reached 62 million views worldwide in a recent analysis on the most viewed YouTube videos about COVID-19 (as cited in Linden, Roozenbeek & Compton, 2020).

Some countries introduced public awareness campaigns to counter fake news, like the UK with the partnership with WHO made "#Stop the spread", in which they promote verified news and public health advice. The UK also established a "rapid response unit". In India, they established a chatbot via Whatsapp to counter misinformation related to COVID-19. (Posetti & Bontcheva, 2020). Figueroa & Aguilera (2020) stated that large social media platforms started to take steps to erase any false data or even conspiracy theories using AI (Artificial Intelligence) and spread reliable information from WHO. China started to take over this infodemic by providing online mental health education via social media platforms.

1.2 . Digital Literacy and Social Media Usage:

Digital literacy is one of the notions of Media and Information Literacy. UNESCO (2018) defined digital literacy as *the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital technologies. Digital literacy is also referred to as computer literacy, information-communication-technology (ICT) literacy, information literacy, and media literacy."*

Kaeophanuek, Na-Songkhla, & Nilsook, (2018) conducted a study to identify digital literacy skills and their results revealed that to develop digital literacy the person should practice three skills which are: information management skills, digital tools usage, and the creation of new content of information. These skills are developed by improving cognitive skills (Owen, Hagel, Lingham, & Tyson , 2013).

Korany (2020) argued that the sample of her study positively acquire digital literacy and its skills. In addition, they relied on social media by 20% when they switched to online learning due to the lockdown to gain digital literacy skills, however, a formal training in the technical skills of digital literacy was recommended in order to ensure how to learn and use them positively.

Goodyear et al. (2021) found in their study people tend to respond to social media in health-related content, and that social media can be used for health-related behaviors, they also ensured in their study the value of social media in understanding information and interacting with them.

Hence, social media users should acquire an adequate level of digital literacy skills that enable them to deal with health-related content

and topics in a positive manner, aid them in extracting beneficial information that would help their health, and avoid misinformation and fake news.

Media and digital illiteracy is the engine for fake and hoax news to be disseminated between societies especially on digital media, with the emergence of fake news people often panic and make wrong decisions due to their lack of needed skills to validate and fact check the origin of the message. The consequences would lead to a fertile soil for rumors and misinformation; this led to many negative impacts, like stress and mental discomfort, which indeed affects the psychological state of the person (Saptanto, 2018).

Priatna (2018) stated that people need good media and digital literacy skills to avoid any fake or hoaxes news, many studies conducted digital health literacy using different measuring instruments. People generally, and young ones especially, need digital literacy skills as these skills make it possible for them to place information in context and to distinguish fiction from facts (Bulfin and McGraw, 2015). The negative impacts of the COVID-19 infodemic urged the need for digital literacy skills.

Sari (2021) conducted a survey on Indonesian digital literacy and the study found that 30-60% of the survey respondents had been exposed to hoaxes and fake news while only 21-36% were able to identify hoaxes and fake news during the COVID-19 Pandemic.

According to UNESCO (2011), digital literacy has become a vital element due to the penetration of ICT in all aspects of today's life. The skills of digital literacy transcended the basic level of the ability to handle computer and technological gadgets into encompassing skills that enable *"the use and production of digital media, information processing and retrieval, participation in social networks for creation and sharing of knowledge, and a wide range of professional computing skills."*

Therefore, digital literacy and its skills are needed as an essential form of educational asset for social media users to be used like a tool to critically use and analyze social media platforms and their messages to avoid misinformation and combat an infodemic especially in cases of an ongoing pandemic like COVID-19.

1.3 . Infodemic, Digital Literacy & SDGs:

Montoya (2018) stated that digital literacy is included under the

4.4.1 indicator, which measures *"how many youth and adults have the right information technology skills, giving them a path of better jobs for youth (people aged 15 to 24 years) and adults (aged 15 years and older)"* under the fourth SDG 'Quality Education'. Furthermore, Montoya (2018) argued that digital literacy is considered an essential skill for everyone everywhere and everyone should know how to benefit and make use of the existing technologies for a better future. Hence, digital literacy should be included in the education of individuals; otherwise, individuals will face the danger of being eliminated in a seemingly full digital world.

In 'Will the COVID-19 pandemic threaten the SDGs?' (2020), COVID-19 Pandemic is attributed as a threat to reverse the achieved advancements in the third SDG 'Good Health and Wellbeing' that aims to "ensure healthy lives and wellbeing for all" due to interrupting or neglecting medical services such as childhood vaccination programs, health services for cancer screening, family planning, or non-COVID-19 infectious diseases to fight COVID-19 pandemic. Moreover, an article from the United Nations in Western Europe stated that the sudden emergence of COVID-19 Pandemic destabilized the global health care systems around the world and shook the preparedness of health ministries.

Hence, infodemic on COVDI-19 Pandemic would be an extra burden on the current fighting efforts against the pandemic, and an extra threat to the efforts done in this particular SDG. As it hinders people from seeking the right source of information and impose obstacles on implemented medical policies that people might object about them due to being argued against from a false source.

2 . Research Problem:

Globally, people are immersed and bombarded with much information about the virus since COVID-19 Pandemic has spread all over the world. Scientists are still exploring the novel virus and evolving an understanding for it; national and international public health organizations are communicating updates about the status the pandemic, its mutations and cases; and people are expressing their thoughts about the pandemic, its progress, and vaccines through different traditional and digital mass media. Moreover, digital media generally and social media specifically imposed itself as a mainstream

medium that facilitated communication about COVID-19 Pandemic particularly when lockdowns were forced at the beginning of the pandemic. Furthermore, social media enforced itself as a mean of socialization, and COVID-19 Pandemic was and still is the topic of the hour that mainly imposes itself in almost every conversation on social media. Consequently, all of these formulated perfect conditions for misinformation that contributed into an infodemic about COVID-19 Pandemic. Conversely, digital literacy and its skills have the ability to enable its possessors to filter and evaluate online information, which in return can eliminate misinformation and stop infodemic about COVID-19.

Henceforward, the research problem is formulated as follows:
Identifying and measuring factors that result in sharing fake news on COVID-19 Pandemic by Egyptian Facebook users, as well as identifying how digital literacy as a set of possessed skills by them influence such factors in order to combat misinformation about the pandemic.

3 . Research Objectives:
The research aims to:
• Measure the level of digital literacy skills of Egyptians Facebook users.
• Distinguish the contributing variables in sharing fake news on COVID-19 Pandemic on Facebook by Egyptian Facebook users.
• Illustrate the influence of digital literacy and its skills possessed by Egyptian Facebook users on contributing variables in sharing fake news on COVID-19 Pandemic on Facebook.

4 . Research Significance:
The public had been attracted to rumors since old ages; as rumors travel and go viral when the events are important to people's lives, like in the COVID-19 Pandemic, people were scared and worried about the virus and what it might lead to (Ali, 2020).
Posetti & Bontcheva (2021) also stated that fake news threatens individuals and societies as a whole, it also might lead to disasters as individuals tend to ignore scientific advice, losing trust in governments and policymakers; which highlights the importance of digital literacy

and its skills to help them in identifying the fake news especially online. Misinformation has effects in different life aspects such as politics, health, social life, and technology (McDougall, Brites, Couto, & Lucas, 2019; Smith, 2019; Chou, Gaysynsky, & Cappella, 2020; Freelon & Wells, 2020; Rampersad & Althiyabi, 2020).

Therefore, digital literacy can put an end to sharing fake news and misinformation on crucial health topics such as COVID-19 Pandemic, and cut the vital source of formulating an infodemic along with it as the world currently faces.

5 . Theoretical Framework:

The paper is based on the model of "Fake News Sharing on COVID-19" by Apuke and Omar (2021). The model consists of six external variables are driven from The Affordance Theory and Cognitive Load Theory, as follows: Information Sharing, Status Seeking, Self-Expression, Trust in Information, Information Overload, and News-Find-Me Perception. In addition, the model consists also of demographic variables that influence sharing fake news on COVID-19 Pandemic, such as Education, Gender, and Age.
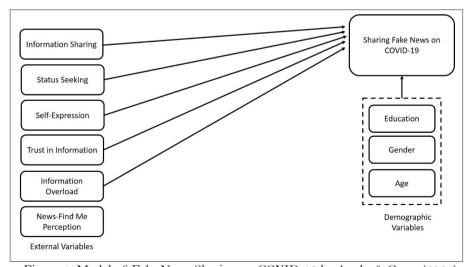
5.1. External Variables of the Model:

Figure 1: Model of Fake News Sharing on COVID-19 by Apuke & Omar (2021)

5.1.1 . First: Information Sharing:

According to Apuke & Omar (2021), the ease of posting and sharing information on social media contributed in the excessive flow of information about COVID-19 Pandemic since the start of the pandemic. Bicher & Fathy (2020) contended that social media provide the opportunity for its users to share false information, especially there is an option of anonymity on those online platforms that facilitates sharing without being questioned or held responsible. Moreover, fear and anxiety of the users from the pandemic contributed in instantly sharing any received or provided information on social media about COVID-19 Pandemic without verifying its authenticity. Hence, it resulted in virally circulating numerous messages that contained false information about COVID-19 Pandemic on social media.

5.1.2. Second: Status Seeking:

Apuke & Omar (2021) argued that social media users have the desire to disseminate information and share content on social media for seeking status and gain recognition among their networks. They consider sharing information a contribution to the community that heightens their senses of self-importance and self-status. It also promotes their knowledge among their network and satisfies their need for likes, shares, retweets, and comments that enhance their self-importance & status. Hence, the desire to seek status sometimes surpasses authenticating the information included in a social media post about the COVID-19 Pandemic.

5.1.3. Third: Self-Expression:

Social media users incline to express themselves through their sharing their opinions and experiences regarding several topics on their accounts (Bicher & Fathy, 2020). In addition, Apuke & Omar (2021) claimed that self-expression is always a significant value especially on social media. They defined this term in their study as "*social media ability to permit expressing one's feelings, thoughts, or ideas pertaining COVID-19*" (Apuke & Omar, 2020, p.5). Therefore, they argued that self-expression might lead to freely express their opinions and feeling regard COVID-19 Pandemic and share unverified information, which resulted to an infodemic of false posts and tweets on the pandemic disseminated to millions of people around the world.

5.1.4. Fourth: Trust in Online Information:

In their proposed model, Apuke & Omar (2021) believed that individuals, who consider social media as their primary source of being updated and informed, presume that it is reliable and trustworthy. Therefore, they are more prone to consume fake news and misinformation as well as sharing them. Islam et al. (2020) supported such claim by arguing that online trust is one of the various reasons for sharing fake news online.

5.1.5. Fifth: Information Overload:

According to Pan American Health Organization 'PAHO' (2020), The WHO argued that an infodemic has happened along with COVID-19 Pandemic due to the increased access to internet and social media that had led to enormous production and consumption of mostly false information about the pandemic. In the same context, Apuke & Omar (2021) argued that individuals might not be able to effectively handle an enormous amount of produced and shared information when they are exposed to it. Hence, an information overload occurs, and it further reduces their ability to verify information in circulated messages especially on social media and distinguish between false and correct, so the probability of contributing to an infodemic with false information would be higher in such case.

5.1.6. Sixth: News-Find-Me Perception:

In the last external variable, Apuke & Omar (2020) defined news-find-me (NFM) as "*the extent to which individuals believe they can indirectly stay informed about public affairs through general internet use, information received from peers and connections within online social networks despite not actively following the news*" (p. 6). They resonated the existence of NFM due to the perceived importance of social media as their predominantly source for finding news and no need for following other media especially traditional mass media. Apuke & Omar (2020) contended that individuals who hold NFM perception rely on self-curated networks to get news that they find important on their timelines without actively seeking them. Based on this premise, Apuke & Omar (2020) argued that those individuals are susceptible to consume and share false news about COVID-19 Pandemic on social media.

5.2. . Demographic Variables:

In their study, Apuke & Omar (2021) found that education had a significant influence on sharing fake news; individuals with lower education levels tend to share fake news on the COVID-19 Pandemic more than individuals with higher levels due to their ability to distinguish between what is fake or not. On the other hand, age and gender had no significant influence in their study. However, the influence of the three demographic variables of the model would be considered in this paper.

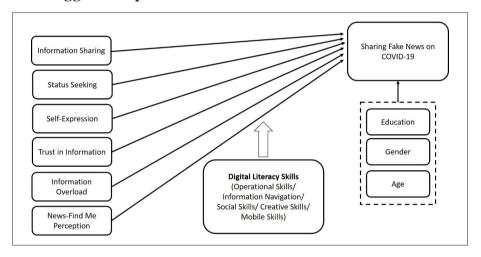**5.3. .Suggested Update for the Model:**

Figure 2: A Suggested Update for Apuke & Omar (2021) Model by Bicher & Fathy (2021)

Based on the literature, digital literacy and its skills is considered an intermediate variable in the model that should contribute in combating sharing fake news on COVID-19, which consequently would help in combating the infodemic. The skills of digital literacy are obtained from Van Deursen, Helsper & Eynon (2014) as following:

a) Operational Skills: technical skills in using online platforms and the Internet, such as going to different webpages, adjusting privacy settings on social media platforms, the level of readiness to deal with technical problems while using the internet and digital media, and uploading and downloading content on social media.

b) Information Navigation: skills in looking for information online, such as finding the appropriate keywords to search with online, looking for information online, verifying retrieved information from different sources, the need to have a course to search and verify information, and level of confidence in personal evaluation of verified information.

c) Social Skills: skills used in social and communicative activities that place on digital platforms, such as deciding who to follow, unfollow or being friend with on social media, appropriate personal information to share (when and what), and appropriate behavior to act upon in different situation on social media.

d) Creative Skills: skills used in formulating and creating content online, such as writing comments and engaging on social media, safe online engagement and contribution, and the ability to create new content from online images, music or video.

e) Mobile Skills: skills in using mobile devices, such as installing and removing application on a mobile device, and tracking the cost of using data and applications.

6 . **Research Hypotheses:**

The researchers assume that digital literacy can lessen sharing fake news on COVID-19 Pandemic on social media, and as a result combat the infodemic about the pandemic. It acts like a filter that enables individuals to think thoroughly about the posts in which they encounter on social media and make a decision about their worthiness and authentication in order to share them or not. Therefore, individuals who possess higher digital literacy skills would have lower contributions in sharing fake news on COVID-19 Pandemic compared to individuals with lower digital literacy skills.

Based on the suggested model, the six external variables (*information sharing, status seeking, self-expression, trust in online information, information overload*, and *news-find-me perception*) are considered the independent variable that affects *sharing fake news on COVID-19*, which is considered the dependent variable. Additionally, *digital Literacy and its skills* is added to the model as an intermediate variable based on the recommendation of Apuke & Omar (2021) who suggested that their model are needed a mediator that would increase understanding of fake news sharing. Moreover, according to the literature, Facebook was the chosen social media platform in which the suggested model

would be applied on.

Accordingly, there are six research hypotheses to be measured in this paper as follows:

• **H1**: Information sharing is positively associated with sharing fake news on Facebook on COVID-19 Pandemic for individuals with low digital literacy.

• **H2**: Status seeking is positively associated with sharing fake news on Facebook on COVID-19 Pandemic for individuals with low digital literacy.

• **H3**: Self-expression is positively associated with sharing fake news on Facebook on COVID-19 pandemic for individuals with low digital literacy.

• **H4**: Trust in online information on Facebook is positively associated with sharing fake news on COVID-19 pandemic for individuals with low digital literacy.

• **H5**: Information overload is positively associated with sharing fake news on Facebook on COVID-19 Pandemic for individuals with low digital literacy.

• **H6**: News-find-me perception is positively associated with sharing fake news on COVID-19 pandemic for individuals with low digital literacy.

7 . Research Methodology:

The research paper is a quantitative study. A survey was conducted and an online questionnaire was used as its tool for data collection, to identify and measure how the illustrated six external variables in the model affect sharing fake news on COVID-19 Pandemic, and identify how digital literacy as possessed skills by Egyptian Facebook users influence such external variables as an intermediate variable to lessen sharing fake news on COVID-19 Pandemic in order to combat misinformation about it.

The questionnaire was statistically validated via SPSS. Cronbach's Alpha was used to measure reliability statistics for the questionnaire ; and it has scored 0.702.

7.1 .Research Sample:

The questionnaire was online due to the nature of the paper and the characteristics of the data sample. The researchers selected a

nonprobability purposive sample for the paper. Despite the sample doesn't represent the whole population, but it represents the specific segment from the society who fit the following characteristics:

• Upper middle & middle class from age of 18-49 from both genders.
• They live in urban cities such as Cairo, Giza, or Alexandria.
• They have 24/7 access to the internet and smartphones.
• They have a Facebook account and moderately to extensive active users.

This specific segment was selected for the paper because their data input will specifically facilitate measuring the possibility of correlation between the six external variables and sharing fake news on COVID-19 on Facebook and the influence of digital literacy and its skills possessed by Egyptian Facebook users as an intermediate variable on these correlations.

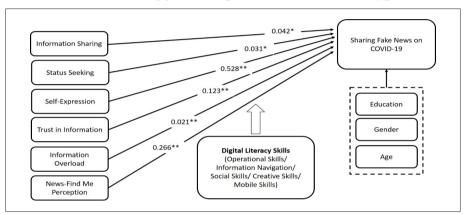## 8. Data Analysis and Results:

Measurements of digital literacy skills, sharing fake news on COVID-19 Pandemic, and six external variables of the suggested theoretical model was measured using a three-point Likert scale, in which one symbolizes agree, two symbolizes neutral and three symbolizes disagree. The final sample size was 300 respondents, divided equally into 150 females and 150 males. The online questionnaire has been distributed online for three weeks starting from the last week of October (23/10/2021) until the end of the first two weeks of November (15/11/2021) on Facebook social and COVID-19 Pandemic support groups.

The age of the respondents ranged from 18-35, 48% of them are from 25-29, 23% are from 18-24, and 20% from them from 30-34, while only 8% are from 35 and up. The respondents fall under the category of middle and upper middle classes, 40% of them are having an income per month of 3,000-6,000 EGP, 27% of them are having an income of 6,000-10,000 EGP, and 18% are having an income of more than 14,000 EGP. Fifty percent from the respondents are proceeding in a postgraduate degree; following 47% are holding a bachelor's degree. The survey was evenly distributed between females and males.

Despite the high level of education and income, 82% of the respondents demonstrated low level of digital literacy, while 18% demonstrated medium level. None of the respondents scored a high

level of digital literacy. The highest age range that shared COVID-19 Pandemic news is 25-29; and they were proceeding a postgraduate degree from middle and upper middle class with a monthly income of 3,000 to 14,000 EGP. They were also the highest age range with low digital literacy. The study results haven't found any significant influence of gender on the level of digital literacy skills as well as on sharing fake news on COVID-19 Pandemic, which complies with the findings of Apuke & Omar (2021).

8.1.1. .Results of Suggested Updated Model & its Hypotheses:

According to the results of the survey, the hypotheses have been statistically tested via SPSS for both cases of low and medium levels of digital literacy. Pearson Chi-Square was used to test the hypotheses.

• **H1:** Information sharing is positively associated with sharing fake news on Facebook on COVID-19 Pandemic for individuals with low digital literacy:

Table (1) Information Sharing and Sharing Fake News on Facebook						
Chi-Square Tests						
Digital Literacy Skill: **Information Sharing**		**Value**	**df**	**Asymptotic Significance (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. ((1-sided**
Low	Pearson Chi-Square	5.981[b]	2	.042		
	Likelihood Ratio	5.777	2	.056		
	Linear-by-Linear Association	2.516	1	.113		
	N of Valid Cases	244				

Medium	Pearson Chi-Square	.052^c	1	.819		
	Continuity Correction^d	.000	1	1.00		
	Likelihood Ratio	.052	1	.819		
	Fisher's Exact Test				1.000	.652
	Linear-by-Linear Association	.048	1	.827		
	N of Valid Cases	56				
Total	Pearson Chi-Square	.816^a	2	.090		
	Likelihood Ratio	.122	2	.077		
	Linear-by-Linear Association	.230	1	.135		
	N of Valid Cases	00				

In the first hypothesis, Pearson Chi-Square between *Information Sharing* and *Sharing Fake News on Facebook* is significant for individuals with low digital literacy skills (P-Value = 0.042< 0.05) but it is insignificant for individuals with medium digital literacy skills (P-Value = 0.819 > 0.05). **Hence, the first hypothesis is accepted.**

- **H2**: Status seeking is positively associated with sharing fake news on Facebook on COVID-19 Pandemic for individuals with low digital literacy.

Table (2) Status Seeking and Sharing Fake News on Facebook			
Chi-Square Tests			
Digital Literacy Skill: **Status Seeking**	**Value**	**df**	**Asymptotic Significance (2-sided)**
Low	Pearson Chi-Square	6.916^b	2	.031
	Likelihood Ratio	6.802	2	.033
	Linear-by-Linear Association	.103	1	.749
	N of Valid Cases	244		
Medium	Pearson Chi-Square	1.397^c	2	.497
	Likelihood Ratio	1.778	2	.411
	Linear-by-Linear Association	.008	1	.927
	N of Valid Cases	56		
Total	Pearson Chi-Square	7.761^a	2	.021
	Likelihood Ratio	8.260	2	.016
	Linear-by-Linear Association	.371	1	.543
	N of Valid Cases	300		

In the second hypothesis, Pearson Chi-Square between *Status Seeking* and *Sharing Fake News on Facebook* is significant for individuals with low digital literacy skills (P-Value = 0.031< 0.05), but it is insignificant for individuals with medium digital literacy skills (P-Value = 0.497> 0.05). **Hence, the second hypothesis is accepted.**

- **H3**: Self-expression is positively associated with sharing fake news on Facebook on COVID-19 Pandemic for individuals with low digital literacy.

Table (3) Self-expression and Sharing Fake News on Facebook			
Chi-Square Tests			
Digital Literacy Skill: Self-Expression	Value	df	Asymptotic Significance (2-sided)
Low	Pearson Chi-Square	1.279^b	2	.528
	Likelihood Ratio	1.504	2	.471
	Linear-by-Linear Association	.339	1	.560
	N of Valid Cases	244		
Medium	Pearson Chi-Square	3.740^c	2	.154
	Likelihood Ratio	4.609	2	.100
	Linear-by-Linear Association	3.314	1	.069
	N of Valid Cases	56		
Total	Pearson Chi-Square	1.812^a	2	.404
	Likelihood Ratio	2.694	2	.260
	Linear-by-Linear Association	.066	1	.797
	N of Valid Cases	300		

In the third hypothesis, Pearson chi-Square between *Self-Expression* and *Sharing Fake News on Facebook* is insignificant for both, individuals with low digital literacy skills (P-Value = 0.528 > 0.05) and individuals with medium digital literacy skills (P-Value = 0.154 > 0.05). **Hence, the third hypothesis is rejected.**

● **H4**: Trust in online information on Facebook is positively associated with sharing fake news on Facebook on COVID-19 Pandemic for individuals with low digital literacy.

Table (4) Trust in Online Information and Sharing Fake News on Facebook					
Chi-Square Tests					
Digital Literacy Skill: **Trust in Online Information**		**Value**	**df**	**Asymptotic Significance (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
Low	Pearson Chi-Square	4.196[b]	2	.123		
	Likelihood Ratio	4.198	2	.123		
	Linear-by-Linear Association	2.892	1	.089		
	N of Valid Cases	244				
Medium	Pearson Chi-Square	.782[c]	1	.376		
	Continuity Correction[d]	.076	1	.782		
	Likelihood Ratio	.790	1	.374		
	Fisher's Exact Test				.567	.392
	Linear-by-Linear Association	.711	1	.399		
	N of Valid Cases	56				
Total	Pearson Chi-Square	3.945[a]	2	.139		
	Likelihood Ratio	4.176	2	.124		
	Linear-by-Linear Association	3.027	1	.082		
	N of Valid Cases	300				

In the fourth hypothesis, Pearson chi-Square between *Trust in Online Information* and *Sharing Fake News on Facebook* is insignificant for both, individuals with low digital literacy skills (P-Value = 0.123 > 0.05) and individuals with medium digital literacy skills (P-Value = 0.376 > 0.05). **Hence, the fourth hypothesis is rejected.**

- **H5:** Information overload is positively associated with sharing fake news on Facebook on COVID-19 Pandemic for individuals with low digital literacy.

Table (5) Information Overload and Sharing Fake News on Facebook				
Chi-Square Tests				
Digital Literacy Skill: **Information Overload**		**Value**	**df**	**Asymptotic Significance (2-sided)**
Low	Pearson Chi-Square	4.352[b]	2	.021
	Likelihood Ratio	4.961	2	.084
	Linear-by-Linear Association	4.202	1	.040
	N of Valid Cases	244		
Medium	Pearson Chi-Square	1.421[c]	2	.491
	Likelihood Ratio	1.801	2	.406
	Linear-by-Linear Association	.260	1	.610
	N of Valid Cases	56		
Total	Pearson Chi-Square	6.097[a]	2	.047
	Likelihood Ratio	7.284	2	.026
	Linear-by-Linear Association	5.440	1	.020
	N of Valid Cases	300		

In the fifth hypothesis, Pearson chi-Square between *Information Overload* and *Sharing Fake News on Facebook* is significant for individuals with low digital literacy skills (P-Value = 0.021 < 0.05), but it is insignificant for individuals with medium digital literacy skills (P-Value = 0.491 > 0.05). **Hence, the fifth hypothesis is accepted.**

• **H6:** News-find-me perception is positively associated with sharing fake news on Facebook on COVID-19 Pandemic for individuals with low digital literacy.

Table (6) News-Find-Me Perception and Sharing Fake News on Facebook						
Chi-Square Tests						
Digital Literacy Skill: **News-Find-Me Perception**		**Value**	**Df**	**Asymptotic Significance (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
Low	Pearson Chi-Square	2.648[b]	2	.266		
	Likelihood Ratio	2.277	2	.320		
	Linear-by-Linear Association	.984	1	.321		
	N of Valid Cases	244				
Medium	Pearson Chi-Square	2.037[c]	1	.154		
	Continuity Correction[d]	.413	1	.521		
	Likelihood Ratio	2.793	1	.095		
	Fisher's Exact Test				.455	.273
	Linear-by-Linear Association	1.852	1	.174		
	N of Valid Cases	56				
Total	Pearson Chi-Square	1.904[a]	2	.386		
	Likelihood Ratio	1.751	2	.417		
	Linear-by-Linear Association	.186	1	.666		
	N of Valid Cases	300				

In the sixth hypothesis, Pearson chi-Square between *News-Find-Me Perception* and *Sharing Fake News* is insignificant for both, individuals with low digital literacy skills (P-Value = 0.266 > 0.05) and individuals with medium digital literacy skills (P-Value = 0.154 > 0.05). **Hence, the sixth hypothesis is rejected.**

9. Discussion of Findings:

Three external variables have been proved in positive association with sharing fake news on COVID-19 on Facebook, which are *Information Sharing*, *Status Seeking*, and *Information Overload*. Information overload has been proved the most influential external variable that affects sharing fake news on COVID-19 Pandemic on Facebook (P-Value = 0.021 < 0.05), then status seeking (P-Value = 0.031< 0.05), and finally information sharing (P-Value = 0.042< 0.05) by Egyptian

Facebook users with low digital literacy. On the other hand, the hypotheses of those three external variables have been rejected for the individuals with medium level of digital literacy, which indicates that digital literacy as a set of skills plays a factor in sharing fake news on COVID-19 Pandemic on Facebook. These findings comply with findings of Prianta (2018) and Bulfin & McGraw (2015) about the role of digital literacy in combating misinformation and distinguishing fake news.

Fear and anxiety from the COVID-19 Pandemic in addition to possessing a low level of digital literacy might have contributed in instantly sharing encountered fake news posts about the pandemic without verifying them on Facebook by the study sample. Consequently, instantly sharing those information contributed in building up the ongoing infodemic. As a result, the sample couldn't handle the occurred information overload, and they got locked up in an endless loop of sharing fake news on COVID-19 Pandemic that nourishes the infodemic, in which causes information overload and social media fatigue for them. On the other hand, sharing information could reflect status seeking by the sample to distinguish themselves as important individuals to their communities through providing information about the pandemic that causes fear and anxiety because of its ambiguity. Additionally, their low digital literacy level couldn't help them in verifying the shared news, hence, they ended up sharing fake news on COVID-19 Pandemic on Facebook, which can deteriorate the situation as stated by Tasnim et al. (2020).

The hypotheses of Self-Expression, News-Find-Me Perception, and Trust in Information have been rejected for both individuals with low and medium level of digital literacy. Hence, these external variables do not influence sharing fake news on Facebook on COVID-19 Pandemic by Egyptian Facebook users whether they possess a minimum level of digital literacy or not. The findings indicate that the sample might not like to express their thoughts and feelings on COVID-19 Pandemic rather than showing to their network their keenness on the topic through disseminated information to gain recognition and status. However, further investigation is needed to identify the reason beyond not trusting online information despite their sharing of news on the pandemic by themselves. The sample also does not solely rely on the timeline of their Facebook accounts to know the latest news

on COVID-19 Pandemic despite their low level of digital literacy. Therefore, further investigation is needed to know the other types of media and sources that they rely on when they look up for news about the pandemic.

Although the sample of the survey possesses a high level of education and income, however, 82% of them have a low level of digital literacy and the rest of them have a medium level. Moreover, 91% of the sample are young adults and adults millennial who are labelled "digital natives". According to Velasco (2020), millennials are distinctive about the use of technology and growing up during the booming of internet, laptops, cellphones and social media. Eastman et al. (2014) argued that social media is distinguished as one of the facets of millennials, and hand-held electronic gadgets are considered as one of their body parts (as cited in Velasco, 2020). Therefore, their low level of digital literacy is in spite of being digital natives. This indicates they need proper and formal education about digital literacy as a part of their educational attainment besides their personal efforts and firsthand experience with digital media and technology. This indication complies with the findings of Montoya (2018) and Korany (2020) that stressed on the proper inclusion of digital literacy in education of individuals in order to use digital tools in a positive way.

Conclusion:

Information sharing, status seeking and information overload have been proven positively associated with sharing fake news on COVID-19 on Facebook by young adult and adult Egyptian users from middle and upper-middle class from both genders who have low level of digital literacy skills. On the other hand, self-expression, news-find-me perception, and trust in information have been rejected. The study sample possess low level of digital literacy skills despite their high educational level and income, and being digital natives. Digital literacy can have a role in combating misinformation on COVID-19 Pandemic and stopping the infodemic about it. Digital literacy is related to SDG no.4 (Quality Education) as higher education does not necessarily mean a high quality one or reflects the necessary skills for today's world. Infodemic and misinformation contribute to SDG no.3 (Good Health and Well-being) as same as COVID-19 Pandemic as they might hinder the progress of provided medical services and policies due to

the hardship of sending and receiving the correct information from both parties, audience and health institutions.

Limitations:
1. The results of the study cannot be generalized overall the Egyptian population and on all social media platforms; the study mainly focuses only on specific segment of Facebook users.
2. A specific number of the respondents should be larger but the time was limited.

Recommendations:
1. Future research can expand on identifying the reasons of the research sample of not trusting online information on COVID-19 Pandemic on Facebook despite sharing such news by themselves for their Facebook timeline.
2. Future research can expand on identifying the other types of media and sources that the research sample rely on when they look up for news about the pandemic.
3. Future research can expand on identifying the correlation between the level of education and level of digital literacy skills, and reasons beyond possessing low level of digital literacy skills.
4. Replicating the study with the included updated model on different and broader samples.

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