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Information Adoption of User-Generated Content: An Applied Model for COVID Pandemic Case

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Abstract

This study proposes and empirically tests an alternative information adoption model to investigate how information quality and religiosity impact people's intake of user-generated COVID vaccination information posted on social media. Our results based on 359 survey responses suggest that the two constructs examined significantly impact the perceived usefulness of the user-generated vaccination information and the subsequent vaccination intention. Furthermore, our model shows that religiosity exerts a supplementary partial mediating impact through the information evaluation process, adding empirical evidence to clarify the inconsistency of direct and indirect effects from extant studies. This theory-guided applied study aims to decipher vaccination intention specifically and contributes to building knowledge about user-generated content and the online information adoption process in general.

Information Adoption of User-Generated Content:
An Applied Model for COVID Pandemic Case

Wei Xie and Gurpreet Dhillon

1. INTRODUCTION

User-generated content (UGC) is a web- or mobile-based digital communication used for interactive dialogues, forming communities, and exchanging information (Mesko, 2013). UGC has emerged as a leading source of healthcare information since the mid-2000s (Reno et al., 2021). According to the first health information national trends survey (2013), up to 63% of internet users in the USA look for healthcare-related information online, and more than 48% follow online suggestions. In addition, 84% of people surveyed said they treat online reviews and content like personal recommendations (Bloem, 2017). Many people see UGC as the most authentic and trusted source of healthcare information (Ahmed et al., 2019). To this end, UGC results in a paradigm shift in how people share and access healthcare information.

However, because of the user-level participation, a lay user may be unable to critically comprehend online healthcare UGC, leading to a false sense of information usefulness and causing potential medical noncompliance (Tonsaker et al., 2014). For example, Wakefield (1998) published an article in Lancet with inaccurate information about the non-existent link between the MMR vaccine and autism (Godlee et al., 2011). Fear caused by this misleading information led to an increasingly featured search on Facebook and YouTube (Wong, 2019) and more than a half-million antivaccine posts on Twitter between 2009 and 2015 (Tomeny et al., 2017), even after the article was retracted and the key authors were discredited. The United Nations warned about the link between low MMR vaccination fueled by false information on social media and large outbreaks in several countries (UN.org, 2019). The COVID pandemic heightens this problem. During pandemic shutdowns, minimal knowledge, fear, and anxiety drive people to seek information from social networks and UGC to decide whether to take the COVID vaccination (Christensen, 2020). Compelling personal narratives on UGC, working together with people's beliefs, modify people's attitudes toward taking COVID vaccination, leading to

vaccination hesitancy that directly threatens public health (Reno et al., 2021; Puri et al., 2020). The COVID vaccination hesitancy makes understanding the online UGC adoption process prominent and imperative.

To understand the information adoption process, Sussman and Siegal (2003) proposed a knowledge adoption model. This model focuses on aspects of information, namely quality and credibility. However, information adoption is a user-engaged and initiated process. Therefore, besides the factors of information and sources, users' characteristics also play essential roles in the UGC adoption process. The theory of planned behavior (TPB) suggests that human attitude as a motivational factor affects intention and behavior (Ajzen, 1991). Studies in the context of COVID vaccination show that personal narratives and postings on UGC can resonate with pre-existing attitudes and modify behavior (Christensen, 2020). For example, public health surveys show anecdotal evidence that religiosity predicts less compliance to protective behavior during the pandemic (Dein et al., 2020; Milligan et al., 2021). Other studies suggest that religiosity as a pre-existing attitudinal factor, coupled with the appropriate knowledge efficacy, can increase or decrease vaccination intention and impact vaccination inoculation (Garcia & Yap, 2021). What's more, disregarding the religious festivals of ethnic groups undermines trust, a common reason for vaccination hesitancy (Razai et al., 2021). Although extant empirical studies indicate that religion and spirituality are significant attitudinal factors associated with healthcare decision-making, few studies theoretically examine them in the UGC context (e.g., Thomas et al., 2015; Borges et al., 2021; Troiano & Nardi, 2021). Motivated to help decrease vaccination hesitancy and aiming to theorize and investigate the anecdotal and empirical evidence of religiosity in the UGC evaluation and adoption process, this study proposes and tests an attitude-oriented information adoption model. In particular, this model incorporates UGC information quality and religiosity into the knowledge adoption model, asking the following research questions: (1) How do UGC information quality and religiosity affect

the perceived UGC usefulness and COVID vaccination intention? (2) How does religiosity exert its effect, direct or indirect?

The rest of the paper is organized as follows. In the next section, we review the literature regarding the supporting theory, build a conceptual research model, and propose hypotheses. Afterward, the methodology and results will be presented for this theory-guided empirical study. In the end, we discuss the study results, theoretical and practical implications, limitations, and future research.

2. THEORETICAL BACKGROUND AND HYPOTHESIS

Perceived Usefulness of COVID Vaccination UGC and Adoption Intention

The knowledge adoption model posits that argument quality and source credibility impact the perceived information usefulness, which further influences the information adoption intention (Sussman & Siegal, 2003). As a key construct, the perceived usefulness of using particular information to make decisions has been empirically supported. Studies show a significant positive relationship between perceived information usefulness and information adoption in different contexts (Sussman & Siegal, 2003; Venkatesh et al., 2003). For example, empirical research in consumer industries suggests that because of perceived usefulness, consumer-generated media and online reviews predict service acceptance and product purchase (e.g., Thao & Shurong, 2020; Filieri & McLeay, 2014). In addition, social media marketing influences online decision-making (Aggarwal et al., 2013). Electronic word of mouth (eWOM) affects travel planning (e.g., Muñoz-Leiva et al., 2012; Ayeh, 2015; Lee et al., 2012). Hence, this study proposes the following:

H1: The perceived usefulness of COVID vaccination UGC positively influences the UGC vaccination adoption intention.

Perceived UGC Information Quality on Perceived UGC Usefulness

The knowledge adoption model is inspired by the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986) and Technology Acceptance Model (TAM). The Elaboration Likelihood Model (ELM) suggests two cognitive ways to persuade people of something (Petty & Cacioppo, 1986). Sussman and Siegal (2003) thus propose that knowledge adoption results from two alternative elaborations on the information. First, when a person is motivated and able to critically and comprehensively analyze the information, he or she will elaborate on the argument (information) quality. The perceived argument quality is measured by the persuasive strength of completeness, consistency, and accuracy in the presented information (Sussman & Siegal, 2003). Second, without sufficient cognitive ability and motivation, a person is likely to rely on superficial cues to elaborate on the information. The original model proposes the perceived source credibility as the peripheral cue, measured by the information source's reliability, competency, knowledge, and trustworthiness. Extant research empirically applied and verified the effectiveness of the model on the information adoption in different information systems context such as websites (Tseng & Wang, 2016; Fillieri et al., 2015; Chung et al., 2015), online customers review, and online communities UGC (Cheung et al., 2008). A handful of studies also applied the model to assess the effect of the original constructs of source credibility and information quality on healthcare information adoption and healthcare-related behaviors (e.g., Ma & Atkin, 2017; Jin et al., 2016; Lagoe & Atkin, 2015).

However, questions remain about the factors, patterns, and outcomes of the UGC healthcare information adoption, especially in public health crises loaded with emotions. This study draws from the knowledge adoption model and the theory of planned behavior and proposes an attitude-oriented knowledge adoption model, shedding light on the importance of the information recipients in an extreme context.

Petty and Cacioppo (1986) posit that elaboration likelihood is a temporal state and that situational context will change the elaboration. Cyr et al. (2018) indicate that the level of elaboration in information depends on the information's relevancy to receivers. COVID-19 is a disease about life and death. COVID vaccination is highly relevant. The public has a strong motivation to understand what the disease is, what causes its spreading, and how COVID vaccination can mitigate the situation. Thus, this study argues that recipients will carefully evaluate and judge the quality of UGC vaccination information. The higher perceived information quality will positively influence the perceived information's usefulness. Following this argument, this study proposes the following:

H2: The perceived information quality of COVID vaccination UGC positively affects perceived COVID vaccination UGC usefulness.

Although people use social media for COVID vaccination information, the minimal knowledge about the disease and its vaccination makes it hard to tell the credibility of contributors in the study context (Puri et al., 2020; Liao & Mak, 2019). Studies indicated that people turn to friends, family, and people who suffer the same for anecdotal information. Facing crisis and the shutdowns, dealing with the deadly and lengthening pandemic around the globe, the public is overwhelmed by fear, anxiety, worries, and hopelessness. Studies demonstrated that users might be more vulnerable to narrative and emotional appeals of UGC and that users' baseline personal values and attitudes may affect responses to UGC (Puri et al., 2020). In this emotion-laden context, this study introduces an attitudinal construct, religiosity, as the independent construct, replacing source credibility.

Religiosity on Perceived UGC Information Quality and COVID Vaccination UGC Adoption Intention
Although individual attitude is a classic construct in information systems research, the effect of religiosity on behavioral intention has been largely overlooked (Ajzen, 1985; Kelecha & Belanger, 2013). Religiosity is how a person believes and follows a particular religion and practices the same (Panzini et al., 2017). The definition encompasses the importance of and belief in religious values and associated behavior (Wilkes et al., 1986). Studies have found that religion and spirituality strongly influence physical and mental health (Lucchetti & Lucchetti, 2014). For example, research suggests that religious individuals can better cope with adverse circumstances through social capital systems and mutual support (Abbott & Freeth, 2008; Abdulahad et al., 2014). In addition, individuals engage in religious practices to form optimistic attitudes (Rutter, 2012; Schwalm et al., 2022), and alter negative thoughts, increasing their resilience (Dolcos et al., 2021).

Interestingly, in COVID vaccination-related studies, the evidence of religiosity as a direct predictor of vaccination compliance and hesitancy is inconclusive. Some studies demonstrate the negative influence of religiosity on COVID vaccination intention (Murphy et al., 2021). Others show that the religiosity association of medical experts increases the intention of vaccination (Chu et al., 2021). An observational comparison study crossing 89 counties also shows mixed results to establish religiosity as a direct antecedent to predict a COVID vaccination (Omidvar & Perkins, 2022).

Careful examination of these studies indicates that the religiosity effect may be mediated through other factors, such as specific coping strategies and behaviors (Maltby & Day, 2003; Fabricatore et al., 2004). For example, in consumer behavioral studies, the effect of religiosity is activated through motivation and social utility (Junaidi et al., 2021). Orlandi et al. (2022) highlight the importance of perceived risk in the relationship between religiosity and COVID vaccination compliance. Mckinley and Lauby's (2021) study supports that the relationship between pre-existing vaccination beliefs and behavioral intention is mediated by information seeking on social media. Allport and Ross (1967) proposed differentiated intrinsic and extrinsic religiosity, stating that internalized (intrinsic) religiosity needs to be externalized (extrinsic) to realize its external effect. Hence, we argue that religiosity can directly influence the COVID vaccination intention while also mediated by the perceived COVID vaccination information quality to impact the COVID vaccination intention.

We also argue for an accentuation effect of religiosity (Wei & Zhu, 2023), meaning that religiosity can make good things better or bad things worse in mediated relationships. COVID vaccination decision concerns a life-threatening situation with uncertainties and emotional stress. Therefore, the vaccination decision can trigger an individual's mental coping mechanisms, such as religiosity, to regulate emotional stress and adjust behavioral responses, including comprehending and responding to vaccination UGC. We argue for the positive predictive power because of the emotional calming capacity provided by religiosity. We propose the following:

H3: The perceived religiosity positively affects the perceived COVID vaccination UGC information quality.
H4: The perceived religiosity positively affects the COVID vaccination UGC adoption intention.
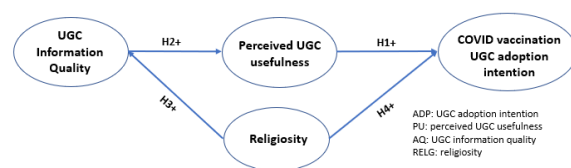
Figure 1 shows our research model.

Figure 1 Research Model

3. METHODOLOGY

The primary objective of this applied study is to investigate how the COVID vaccination UGC on social media impacts the UGC adoption intention.

Data Collection Procedure
Our empirical data is collected between October 2021 and June 2022. Information or heated topics on social media usually take the form of hashtags for propagation. Extant studies utilized hashtags to study UGC's role in shaping vaccination discourse (Puri et al., 2020). Therefore, respondents were instructed to explore two hashtags for 5 mins each on Instagram or Facebook before taking the survey to ensure enough readings about the COVID vaccination UGC. First, we conducted a quick screening survey among college students about the popular social media used for COVID vaccination information. Instagram (26 votes), Twitter (22 votes), and FaceBook (11 votes) are the top three. Four graduate students then researched and identified the most popular hashtags for pros and cons opinions of COVID vaccination based on the total number of posts. Studies demonstrated that pros and cons content naturally cluster into distinct communities, possibly due to the self-selection of like minds (Gunaratne et al., 2019). Twitter is removed because it lacks the metrics of the total post count. Next, the ten most popular hashtags (five for each opinion) were cross-checked on Facebook and Instagram to ensure their popularity and content consistency. Afterward, two top hashtags, namely *#getvaccinated* (217k Instagram; 219k FaceBook) and *#protectyourfamily* (129k, Instagram; 200k, FaceBook), were selected to represent pros or cons attitudes accordingly. The four graduate students also suggested five minutes as a proper length for reviewing the content of each hashtag.

All survey responses were recorded on a 7-point Likert scale. After two Information Systems professors examined items, the first pilot survey collected 82 responses from college students. The items' wording was revised based on the results. The second pilot survey collected 116 data from the Amazon Mechanical Turk (MTurk) respondents with a 99% or higher HIT rate (Berinsky et al., 2012). At last, the primary survey collects an additional 311 data. The final admissible data of 359 was accumulated from the two MTurk data collections after deleting data that were (1) answered in less than 200 sec, using a suggested 7.5 sec each question as a guideline (qualtrics.com), and (2) answered the manipulation questions wrong. The consistent PLS algorithm in SmartPLS (version 4.0.9.3) is used to test our reflective research model. Partial least squares structural equation modeling (PLS-SEM) focuses on the variance captured in proposed constructs, which enables us to explore the hypothesized new predictive relationships between latent constructs (Hair et al., 2017, 2019). Table 1 below shows the basic demographics of respondents in the study. Figure 2 below gives us a snapshot of the data collection process.

		359 Count	%
GEN	Male	192	53%
	Female	167	47%
ETH	Native Indian	6	2%
	Asian	13	4%
	Black	38	11%
	Latino	17	5%
	Islander	1	0%
	White	284	79%
AGE	18-23 years	16	4%
	24-35 years	186	52%
	36-55 years	129	36%
	56-65 years	22	6%
	Over 65 years	6	2%

Table 1 Demographics
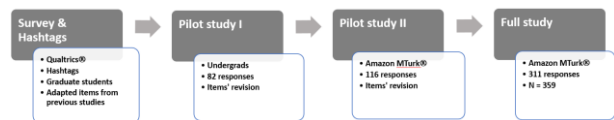
Figure 2 Data Collection Process

Survey Instruments
This study's constructs and measurement items were adapted from previously validated studies (Appendix A). For example, we adopt two items from Sussman and Siegal (2003) to gauge the UGC adoption intention. Respondents are asked to rate their intention for the COVID vaccination, such as "To what extent does the COVID vaccination UGC on social media motivate you to take COVID vaccination?" Wilkes et al. (2003) developed four short items to assess the consumers' religious values (importance and confidence), behavior (church attendance), and self-perceived religiousness, independent of any conditions. Three original items also measure respondents' perception of UGC usefulness (Sussman & Siegal, 2003). UGC information quality includes three original items plus one additional item to measure information relevancy in the study context (Filieri & McLeay, 2014). Three manipulation questions, such as speeder trap and attention filter, were used to eliminate common method bias (Oppenheimer et al., 2009; Meade & Craig, 2012; Berinsky et al., 2014).

4. FINDINGS

Measurement Model

The measurement model estimates the accuracy of measurable items (variables), the relationships between the measured items, and the latent constructs these items represent. In addition, the measurement model estimates items' loadings, the construct's composite reliability, and convergent and discriminant validity. Table 2 below provides a snapshot of the final operationalized items' loadings and cross-loadings.

	ADP	AQ	PU	RELG
ADP1	**0.82**	0.68	0.77	0.61
ADP2	**0.82**	0.69	0.80	0.54
AQ1	0.69	**0.78**	0.69	0.63
AQ2	0.63	**0.80**	0.63	0.49
AQ3	0.71	**0.80**	0.72	0.56
AQ4	0.56	**0.71**	0.57	0.33
PU1	0.87	0.77	**0.89**	0.62
PU2	0.83	0.71	**0.85**	0.52
PU3	0.82	0.74	**0.88**	0.54
RELG1	0.70	0.67	0.65	**0.82**
RELG2	0.61	0.61	0.57	**0.83**
RELG3	0.31	0.23	0.26	**0.70**
RELG4	0.57	0.52	0.52	**0.83**

Table 2 Loadings & Cross Loadings

Item loading, Composite reliability, and rho_A should be 0.7 or higher to demonstrate adequate reliability for a construct in the study context (Nunnally, 1978). Convergent validity refers to the extent to which items for a construct measure the same construct, validated by a larger than 50% average variance extracted (AVE) of the construct (Hair et al., 2019). All metrics shown in Table 3 are at a 0.000 significant level, indicating that all reflective items are free from random measurement errors and consistent in measuring what they should measure. Items' loadings are all 0.7 and above.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)	P-value
ADP	0.80	0.80	0.80	0.67	0.000
AQ	0.86	0.86	0.86	0.60	0.000
PU	0.91	0.91	0.91	0.77	0.000
RELG	0.87	0.88	0.87	0.63	0.000

Table 3 Reliability & Validity

The discriminant validity ensures that each construct is empirically unique, and items only measure their associated constructs. It can be evaluated using a Fornell-Larcker criterion, cross-loading, and a heterotrait-monotrait ratio of correlations (HTMT). Henseler et al. (2015) criticize Fornell-Larcker's poor performance in PLS and propose a less-constrained HTMT based on observed correlations. Henseler et al. (2015)

suggest a threshold value of 0.90 if the path model includes constructs that are conceptually very similar, or 0.85 if the constructs in the path model are conceptually more distinct (Franke & Sarstedt, 2019). Table 4 (below) is HTMT readings. All values of HTMT are smaller than 0.85 except for HTMT between UGC adoption intention and perceived UGC usefulness is 0.96. In addition, cross-loadings of UGC adoption intention and perceived UGC usefulness are also very close to the loadings of perceived UGC usefulness, suggesting a lack of discriminant validity of the two constructs. In other words, in the respondents' minds, the perceived UGC usefulness almost equals an intention to take the COVID vaccination in the study context. This is an interesting and significant finding.

HTMT			
	ADP	AQ	PU
AQ	0.84		
PU	0.96	0.85	
RELG	0.70	0.64	0.63

Table 4 HTMT

Structural Model and Hypotheses Testing

The structural model estimation includes assessing construct relationships' multicollinearity, significance, relevance, and model fit in R^2, Q^2, and F^2. For the multicollinearity assessment, the variance inflation factor (VIF) ranges from 1.547 to 3.378 for all the variables (items) used in the model, smaller than the suggested cut-off value of 5, indicating admissible correlations among constructs (Ringle et al., 2015).

R^2 represents the variance explained in each endogenous construct, measuring the model's predictive accuracy. Our model significantly explains COVID vaccination UGC adoption intention ($R^2 = 0.934$, P = .000), UGC usefulness ($R^2 = 0.714$, P = .000), and information quality ($R^2 = 0.423$, P = .000) in the study (Hair et al., 2011; Chin, 1998). Q^2 is a latent construct score that measures the predictive relevance of the model and endogenous constructs. COVID vaccination UGC adoption intention ($Q^2 = 0.334$), UGC usefulness ($Q^2 = 0.301$), and information quality ($Q^2 = 0.312$) have values larger than 0, indicating the model is relevant and well-constructed (Fornell & Larcker, 1981). F^2 is also called the effect size. It is an important complement to null hypothesis significance testing (e.g., p-values), offering practical significance in the magnitude of the effect in endogenous constructs, and is independent of sample size (Kline, 2004). All paths' F^2 are significant (0.202 – 6.729). Figure

3 and Table 5 provide the psychometric structural model results, including the standardized path coefficients for each hypothesized relationship and associated p-values. As we can see from the results, all paths' coefficients significantly support our hypotheses in this model and context.
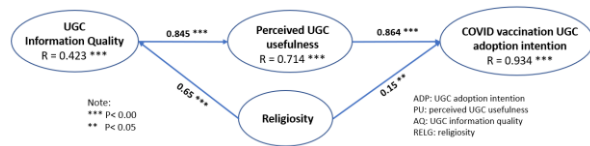

Figure 3 Research Model Results

Hypothesis	Model Path	Path Mean Coefficient	STDEV	T Stats	P Value	Result
H1	AQ -> Usefulness	0.85	0.04	20.76	0.000	support
H2	Usefulness -> ADP	0.86	0.06	14.12	0.000	support
H3	RELG -> ADP	0.15	0.07	2.27	0.023	support
H4	RELG -> AQ	0.65	0.05	12.28	0.000	support

Table 5 Research Hypotheses Results

The mediated effects of religiosity in the model were also tested using bootstrapping simulations (e.g., Hair et al., 2017). All indirect and direct effects of religiosity are significant (p=0.000). To analyze and decide on the mediating effect, Zhao et al. (2010) suggest a flow chart (Hair et al., 2017). Following the procedure in the flow chart, we conclude a complementary (partial) mediation of religiosity. The calculated Variance Account For (VAF) is 0.768, also suggesting a typical partial mediation (Hair et al., 2016; Nitzl et al., 2016). The result adds an empirical explanation to why the inconsistent effects of religiosity from extant studies.

5. IMPLICATIONS AND FUTURE RESEARCH

Millions of users go online daily to seek healthcare information for various reasons (Ma & Atkin, 2016). Therefore, understanding how people take on user-generated healthcare information is vital. This is especially critical if people follow the UGC content to make decisions about COVID vaccination. However, the emerging extant research on the effectiveness of UGC in vaccination shows inconclusive evidence, calling for better research designs (Giustini et al., 2018). This study, thus, is motivated to develop and test a theory-oriented model, proposing that the COVID vaccination intention is the function of the users' elaboration about the UGC quality and their religious attitude. Our major findings offer theoretical and practical implications and directions for future research.

Theoretical Implications and Limitations

The first theoretical implication of our study is the development of a theory-guided research model, which enables a more rigorous explanation of the effectiveness of UGC on COVID vaccination intention. Our study draws on the knowledge adoption model and planned behavior theory and introduces religiosity into the model. COVID is a novel disease with devastating death consequences. High uncertainty and unknown about the disease make people cognitively elaborate on UGC information quality more deeply and carefully. In the meantime, strong emotions such as fear and anxiety also drive people to rely on beliefs as coping mechanisms. The results demonstrate that UGC information quality and religiosity are significant exogenous constructs that greatly predict UGC usefulness and COVID vaccination adoption intention. As such, this study provides a successful empirical example to expand the knowledge adoption theory further to the context of social media UGC.

The multidimensional and abstract nature of religiosity often makes it challenging to establish direct relations with other psychological constructs and outcomes (Dolcos et al., 2021). This study proposes that the effects of religiosity can be realized and regulated through a mediator (Maltby & Day, 2003). The eventful coefficients add evidence to religiosity's direct and indirect effect, verifying its intrinsic and extrinsic influence routes (Allport & Ross, 1967). In addition, this study also proposes and proves an accentuated moderating effect of religiosity. Our mediated theorizing and convincing evidence contribute to the religiosity literature in healthcare and UGC contexts. Future research should continue to test medicated religiosity in different contexts to verify the differentiation between intrinsic and extrinsic religiosity effects (Omidvar & Perkins, 2022). In addition, future research should continue the investigation of the accentuated religiosity effect. Further, although the extreme COVID pandemic made information source credibility difficult to measure, future research should also add it back into the model to reflect the completeness of the knowledge adoption model.

Lastly, the discriminant criterion shows that respondents treat UGC information usefulness the same as the COVID vaccination intention. Given the extreme pandemic case, future studies should examine whether this holds in other less intense contexts. In addition, despite our efforts to conduct a theory-guided study and its robust empirical results, the data collected

during the early COVID vaccination also limits our model's generalization power.

Practical Implications

This study has major practical implications. For public health regulators and organizations, vaccination reduces high infection, morbidity, and mortality rates, develops herd immunity, and alleviates overburdened healthcare systems and massive economic costs (Omidvar & Perkins, 2022). Our results tell that COVID UGC on social media significantly influences the perceived usefulness of the information and shapes the vaccination adoption intention. Given that social media plays a major role in disseminating healthcare information and influencing vaccine uptake (e.g., Stahl et al., 2016; Giustini et al., 2018), the UGC's strategic importance for public health has become self-evidenced. Therefore, healthcare regulators and organizations should be mindful of UGC's new opportunities and challenges to reducing vaccination hesitancy.

Research indicates the growing influence of social media as a source of information on the vaccination rate because of its "direct, unfiltered, and up-to-date" nature (Daley & Glanz, 2021). Our study proves that UGC on social media has become an essential form of public healthcare discourse. However, the UGC influence has dual effects. For example, a randomized experimental study shows that interactive social media components could increase the vaccine acceptance rate (Glanz et al., 2018). Yet another study shows that people's vaccine concerns might be magnified by the complex and fluid UGC ecosystems (Daley and Glanz, 2021). The outbreaks of infectious measles, which had been under control for years, showcased the negative impact of social media (CDC, 2021). Therefore, improving UGC's quality and credibility on social media is necessary to maximize the influential power of UGC while defending against the menace to people and public health systems. As such, regulation frameworks that oversee social media should be established and communicated to the public to improve awareness and ensure the positive effect of UGC.

Extant literature points out that vaccination attitudes result from various factors such as healthcare access, risk perception, social norms, trust, and beliefs (Ahmad et al., 2018). Religiosity is a belief that provides the cognitive base of attitude. Our evidence suggests that perceived intrinsic religiosity has significant attitudinal effects. Our evidence also suggests that intrinsic religiosity also plays out its effect through methods and channels that engage internal beliefs. Therefore, healthcare practitioners and organizations should design methods and utilize proper channels to operationalize the individual's perceived intrinsic religiosity to achieve the target results and promote vaccination.

6. CONCLUSIONS

User-generated content (UGC) and its effects on public health have been studied since the 2000s, but the evidence of its effectiveness is inconclusive (Giustini et al., 2018). The reasons could be attributed to the study designs and contexts. The vaccination against COVID zeroes in on the emergency of understanding UGC's effectiveness in the information adoption process. This study is thus motivated to apply theories to conduct more rigorous research in understanding UGC's effect on information adoption in a highly relevant practical context. The study demonstrates the opportunities for theory-guided applied research. Furthermore, the results of this study provide healthcare practitioners with insights to develop and implement UGC to increase vaccination rates and achieve public health interventions effectively.

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Editor's Note:

APPENDIX A
Survey Items

Construct		ItemCode	Items	Source
Basic Demographics			With what gender do you identify?	
	Gender	GEN	(Male, Female, Prefer not to answer)	
			Your ethinicity?	
	Ethnicity	ETH	(American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian orother Pacific Islander, White)	
			What is your age?	
	Age	AGE	(18-23 years, 24-35 years, 36-55 years, 56-65 years, Over 65 years)	
UGC Information Quality			Not at All = 1, Very Little =2, Little = 3, Somewhat = 4, To Some Extent = 5, To a Moderate Extent = 6, To a Great Extent = 7	
	Complete	AQ1	The vaccination HUGC on the social network is complete	Sussman & Siegal, 2003
	Consitent	AQ2	The vaccination HUGC on the social network is consistent	Sussman & Siegal, 2003
	Accurate	AQ3	The vaccination HUGC on the social network is accurate	Sussman & Siegal, 2003
	Relevant	AQ4	The vaccination HUGC on the social network is relevant	Filieri & McLeay, 2014
Religiosity			Not at All = 1, Very Little =2, Little = 3, Somewhat = 4, To Some Extent = 5, To a Moderate Extent = 6, To a Great Extent = 7	
		RELG1	I go to church regularly.	Wilkes et al., 1986
		RELG2	If Americans were more religious, this would be a better country.	Wilkes et al., 1986
		RELG3	Spiritual values are more important than material things.	Wilkes et al., 1986
			What is your self-perceived religiousness?	
		RELG4	(Anti-religious, not at all, slightly, moderately, Very religious)	Wilkes et al., 1986
UGC Information Usefulness			Not at All = 1, Very Little =2, Little = 3, Somewhat = 4, To Some Extent = 5, To a Moderate Extent = 6, To a Great Extent = 7	
	Valuable	PU1	The COVID vaccination HUGC on social media is valuable	Sussman & Siegal, 2003
	Informative	PU2	The COVID vaccination HUGC on social media is informative	Sussman & Siegal, 2003
	Helpful	PU3	The COVID vaccination HUGC on social media is helpful	Sussman & Siegal, 2003
	Useful	PU4	Overall, I find COVID vaccination HUGC on social media useful	Bhattacherjee & Sanford, 2006
UGC Information Adoption			How closely did you follow the COVID vaccination HUGC on social media?	
		ADP1	Not at all (1) - To the letter (7)	Sussman & Siegal, 2003
			To what extent does the COVID vaccination HUGC on social media motivate you to take COVID vaccination?	
		ADP2	Not motivated (1) - Highly motivated (7)	Sussman & Siegal, 2003
Attention Questions			We want to test your attention, so please click on the answer '**Little**'.	
		SPEED	Not at all, Very little, Little, Somewhat, To Some Extent, To a great Extent	Meade, A. W., & Craig, S. B., 2012
			When a big news story breaks people often go online to get up-to-the-minute details on what is going on. We want to know which websites people trust to get this information. We also want to know if people are paying attention to the question. To show that you've read this much, please ignore the question and select The Drudge Report as your answer.	
		ATTN	*New York Times *MSNBC *The drudge Report *Fox News *CNN *Huffington Post *Washington Post	Berinsky, A. J., Margolis, M. F., & Sances, M. W., 2014
			The postings for hashtag #getvaccinated is dominated by Pro-vaccination voices.	
		MANIP	Yes / No (1)	Weber et al., 2019