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Updated Version: Adherence to Quarantine Protocols to Prevent the Spread of COVID-19: The Moderating Effect of Social Media Campaigns (Revised and Updated)

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Abstract

The COVID-19 pandemic fundamentally reshaped how communities' access and respond to public health information, positioning social media as a dominant channel for behavioral guidance. This study investigates the moderating role of social media campaigns on the relationships between Theory of Planned Behavior (TPB) constructs—attitude, subjective norm, self-efficacy, and controllability—and adherence to COVID-19 quarantine protocols among Metro Manila residents. Using a quantitative predictive design, data were collected from 413 respondents across 16 cities and one municipality in Metro Manila during the August-September 2020 Enhanced Community Quarantine and General Community Quarantine transition. Partial Least Squares Structural Equation Modeling (PLS-SEM) revealed that attitude, controllability, and social media directly and significantly predicted quarantine adherence. Social media significantly moderated all four TPB-adherence relationships—attitude, subjective norm, self-efficacy, and controllability—indicating that social media universally amplified compliance-related behavioral antecedents. Subjective norm and self-efficacy did not significantly predict adherence in their direct paths; several explanations are considered, including autonomous motivational orientations, measurement constraints associated with social isolation conditions, enforcement intensity during the ECQ-to-GCQ transition, and risk perception effects not directly captured in the model. Findings carry important implications for pandemic communication strategy design, health behavior theory, and digital media policy in collectivist, high-social-media-use societies.

Keywords

Covid-19, Social Media, Theory of Planned Behavior, Quarantine Adherence,

Digital Campaigns

1. Introduction

The COVID-19 pandemic, formally declared by the World Health Organization (WHO) on March 11, 2020, triggered one of the most consequential public health crises in recent history (Cucinotta & Vanelli, 2020). Within weeks, governments worldwide imposed sweeping quarantine measures while simultaneously confronting a parallel crisis: an "infodemic"—a flood of accurate and inaccurate information that complicated public understanding and behavioral compliance (Eysenbach, 2020; Tangcharoensathien et al., 2020). Social media platforms emerged as the primary arena in which health guidance, misinformation, fear, and community solidarity competed for public attention and shaped behavioral responses (Cinelli et al., 2020; Roozenbeek et al., 2020).

In the Philippines, the Enhanced Community Quarantine (ECQ) was announced on March 13, 2020, initially covering the National Capital Region (NCR) before expanding to nearby provinces as local transmission accelerated (Vallejo & Ong, 2020). Metro Manila, as the country's most densely populated region and undisputed pandemic epicenter, experienced the most stringent enforcement of quarantine protocols and the most intense public scrutiny of compliance with these protocols—much of it conducted on social media platforms (Prasetyo et al., 2020). This digital-behavioral intersection makes Metro Manila a uniquely appropriate context for examining how social media moderates adherence behaviors during public health emergencies.

The Philippines consistently ranks among the world's highest social media engagement nations; Filipinos spend an average of more than five hours daily on social networking platforms, a figure that increased substantially during pandemic-era lockdowns as in-person interaction ceased and digital channels became the primary mode of information access and social connection (Kemp, 2023; Nguyen et al., 2020). Against this backdrop, the influence of social media on COVID-19 health behaviors acquired particular empirical salience. Yet few studies have empirically tested social media's moderating—rather than its direct predictive—role in shaping the relationship between behavioral intentions and actual quarantine compliance in the Metro Manila context.

The present study addresses this gap by extending the Theory of Planned Behavior (Ajzen, 2006) to include social media as a moderating variable, testing this extended model with data gathered during the critical ECQ-to-GCQ transition period. The study contributes to three areas of scholarship: 1) The empirical literature on social media and health behavior compliance during infectious disease crises; 2) TPB theory by demonstrating social media's conditioning role on attitudinal and control-related behavioral predictors; 3) Digital health communication practice by providing evidence-based insights relevant to future pandemic response design in high-social-media-use, collectivist societies.

2. Literature Review

2.1. Theory of Planned Behavior: Core Constructs and Extensions

The Theory of Planned Behavior (TPB), developed by Ajzen (2006), proposes that behavioral intention—and through it, actual behavior—is determined by three socio-cognitive antecedents: attitude toward the behavior, subjective norm, and perceived behavioral control. Attitude reflects an individual's positive or negative evaluative orientation toward performing a given behavior. Subjective norm captures the perceived social pressure to comply with or deviate from that behavior, based on the expectations of significant referents. Perceived behavioral control is decomposed into self-efficacy—confidence in one's personal capability to perform the behavior—and controllability—the degree to which enabling resources and external conditions facilitate the execution of the behavior (Ajzen, 2006; Suplico-Jeong et al., 2021).

The TPB has been applied extensively in health behavior research across vaccination, hygiene compliance, dietary behaviors, and—more recently—pandemic-era protective actions (Schmid et al., 2017; Laato et al., 2020; Zhao & Basnyat, 2022). Zhao & Basnyat (2022) conducted a systematic review of TPB applications during the COVID-19 pandemic and confirmed that attitude and perceived behavioral control consistently predicted protective health behaviors across diverse national contexts, while the predictive validity of subjective norm varied significantly across cultural settings. The framework's explicit allowance for additional constructs beyond the original triad—what Ajzen (2006) termed 'background factors'—provides theoretical justification for incorporating social media as a moderating variable in the current model.

2.2. Attitude and Quarantine Protocol Adherence

An individual's evaluative orientation toward quarantine protocols constitutes one of the most robust behavioral antecedents in health compliance research. Residents who positively evaluate quarantine measures—perceiving them as necessary, proportionate, and beneficial—demonstrate significantly stronger compliance intentions and behaviors (Prasetyo et al., 2020). This relationship is consistent with foundational attitude-behavior research demonstrating that positive evaluative orientations reliably predict behavioral follow-through when the behavior is clearly specified and attitudinally salient (Agarwal, 2014; Yang, 2015).

During COVID-19, the attitude-adherence relationship was conditioned by risk perception and information environment. Kim & Kreps (2020) found that individuals who perceived COVID-19 as personally threatening and who trusted government health communications demonstrated stronger compliance with quarantine measures, suggesting that attitude formation during the pandemic was substantially shaped by risk framing and source credibility. Omodior et al. (2015), in a pre-pandemic context, confirmed that attitude consistently predicted intentions across six distinct personal protective behaviors, underscoring its generalizability as a behavioral antecedent.

H1: Metro Manila residents with a positive attitude toward quarantine protocols will adhere to quarantine protocols to prevent the spread of COVID-19.

2.3. Subjective Norm and Quarantine Protocol Adherence

Subjective norms—perceived expectations of family members, peers, healthcare providers, and community figures—have been theoretically and empirically linked to health-protective behaviors, though the strength of this relationship varies across behavioral contexts and cultural settings (Zhao & Basnyat, 2022). Mo et al. (2019) demonstrated that peer support significantly increased HIV testing intentions, illustrating the normative influence of close social networks on stigmatized health decisions. Ay et al. (2019) found that hand hygiene norms among intensive care unit staff were shaped by team cohesiveness and professional group identity.

In the pandemic context, Bridgman et al. (2021) found that social media use was associated with greater perceived social norms around mask-wearing and physical distancing in Canada, suggesting that digital platforms can amplify normative signals. White et al. (2015) established that Australian nurses' normative compliance was multi-layered, shaped by coworkers, supervisors, infection control authorities, and family expectations simultaneously. In the Philippine setting, Prasetyo et al. (2020) documented that visible behavioral modeling in community settings motivated compliance among NCR residents, highlighting the descriptive normative pathway to quarantine adherence.

H2: Metro Manila residents with strong subjective norms toward quarantine adherence will adhere to quarantine protocols to prevent the spread of COVID-19.

2.4. Perceived Behavioral Control: Self-Efficacy and Controllability

Perceived behavioral control encompasses two theoretically distinguishable mechanisms: self-efficacy, reflecting individuals' confidence in their personal capacity to adhere to quarantine protocols, and controllability, concerning the availability of enabling conditions—financial, logistical, and social—that facilitate compliance (Ajzen, 2006). Both constructs operate as behavioral enablers: high self-efficacy without corresponding controllability may leave residents willing but structurally unable to comply, while favorable external conditions without self-belief may produce compliance opportunities that are not acted upon.

Prasetyo et al. (2020) confirmed that Filipino NCR residents with elevated self-efficacy and controllability demonstrated stronger tendencies to observe lockdown restrictions. Ali et al. (2021), in a cross-national study of COVID-19 protocol compliance across Asia, similarly found that perceived controllability—particularly access to food, financial resources, and reliable information—was a significant structural predictor of quarantine adherence independent of attitudinal variables. Nguyen et al. (2020) further highlighted that perceived control over one's information environment during COVID-19—including access to reliable digital platforms—was associated with stronger health-protective behavioral engagement.

H3: Metro Manila residents with greater self-efficacy toward quarantine protocols will adhere to quarantine protocols.

H4: Metro Manila residents with greater controllability toward quarantine protocols will adhere to quarantine protocols.

2.5. Social Media as a Public Health Communication Channel

Social media platforms played an unprecedented and dual role during the COVID-19 pandemic: serving simultaneously as primary channels for evidence-based public health guidance and as vectors for the rapid spread of misinformation (Cinelli et al., 2020; Germani & Biller-Andorno, 2021). Cinelli et al. (2020) conducted a large-scale content analysis across Twitter, Instagram, YouTube, Reddit, and Gab, finding that platform architecture and algorithmic amplification meaningfully shaped which pandemic-related narratives—accurate or not—achieved viral reach. Roozenbeek et al. (2020), studying misinformation susceptibility across 10 countries, found that individuals with lower health literacy and higher social media consumption showed greater susceptibility to COVID-19 misinformation, underscoring the quality-of-engagement dimension as critical to behavioral outcomes.

Eysenbach (2020) characterized this information environment as an "infodemic"—a crisis superimposed upon the pandemic itself—and proposed a four-pillar framework for infodemic management, emphasizing the need for credible source amplification, real-time monitoring, social listening, and community-based communication. Tangcharoensathien et al. (2020) operationalized these principles within WHO's formal infodemic response strategy, recommending that health authorities leverage social media for targeted, scientist-delivered messaging designed to counter misinformation while promoting protective behaviors.

Garfin et al. (2020) cautioned that excessive or unmanaged social media exposure during pandemics could generate anxiety, stress, and maladaptive behaviors, recommending that responsible public health campaigns delivered through social media avoid sensationalism and prioritize actionable, credible guidance. Bilal et al. (2020) identified medical practitioners and scientists as the most credible messengers in pandemic social media campaigns, given their professional authority and public trust.

2.6. Social Media Engagement and the Philippine Digital Landscape

Social media engagement operates through distinct mechanisms: content consumption, active interaction (liking, sharing, commenting), and networked information diffusion (Kotler & Keller, 2018). In the Philippine context, where Facebook functions as the dominant platform for news, community coordination, and interpersonal communication, these engagement mechanisms took on pronounced public health significance during the pandemic. Kemp (2023) reported that Filipino internet users averaged more than five hours per day on social networking platforms—among the highest globally—with news and information consump-

tion representing a primary use case during lockdown periods.

The Philippines' social media landscape is characterized by high platform penetration, strong community reliance on peer-shared content, and heightened sensitivity to viral health misinformation (Roozenbeek et al., 2020). During the COVID-19 pandemic, digital platforms became central channels through which individuals accessed health updates, government advisories, and community discussions related to preventive behaviors. Research on digital health communication indicates that social media functions as a critical environment for the dissemination of health information, influencing public risk perception and shaping behavioral responses to health crises (Chen et al., 2020; Zhao & Basnyat, 2022). Through mechanisms such as rapid information diffusion, peer-to-peer interaction, and visibility of collective behaviors, social media platforms contribute to the formation and reinforcement of attitudes, perceived norms, and behavioral intentions related to health compliance. These dynamics position social media not merely as a passive conduit of information but as an active behavioral environment that may amplify or attenuate the influence of cognitive and motivational antecedents underlying health-protective behaviors.

2.7. Attitude, Social Media, and Adherence

Health media exposure has been consistently linked to attitudinal reinforcement and protective behavior adoption. Lovejoy et al. (2015) found that both exposure and favorable attitude toward health media channels predicted greater avoidance of unprotected sun exposure, demonstrating that media's behavioral effect operates in part through attitudinal reinforcement. Stryker et al. (2008) provided complementary evidence showing that newspaper health content consumption correlated with superior cancer prevention knowledge and practices among readers with positive health information attitudes.

In the pandemic context, Kim & Kreps (2020) documented that COVID-19 social media health campaigns that combined factual information with emotional resonance—acknowledging fear while providing actionable guidance—were most effective in sustaining positive behavioral attitudes and compliance intentions. Vraga & Bode (2021) found that exposure to corrections of COVID-19 misinformation on social media significantly improved attitudinal accuracy and behavioral intentions, suggesting that the quality of social media content may moderate attitude formation and its downstream behavioral effects.

H5a: Social media (SM) significantly moderates the relationship between attitude (ATT) and adherence to quarantine protocols (ATQP).

2.8. Subjective Norms, Social Media, and Adherence

Interactive social media health campaigns have demonstrated capacity to shift perceived social norms around health behaviors. Namkoong et al. (2017) found that anti-smoking campaigns on Facebook and Twitter stimulated deliberate cognitive engagement—rather than passive consumption—shifting attitudinal orientations and perceived social norms around smoking. Bridgman et al. (2021) further

established that social media use during COVID-19 was associated with stronger perceived community norms around mask-wearing and physical distancing, with trusted information sources playing a key moderating role.

Boyd & Ellison (2008) established that social network sites are deeply embedded in the daily social lives of young adults, who are particularly susceptible to peer-mediated normative influence through digital channels. Duggan & Street Jr. (2015) highlighted the cost-effectiveness of social media for large-scale normative messaging campaigns, given continuously expanding user bases and algorithmically mediated content amplification. Together, these findings suggest that social media may strengthen normative pathways to quarantine adherence by making community behavioral expectations more visible and socially salient.

H5b: Social media (SM) significantly moderates the relationship between subjective norms (SN) and adherence to quarantine protocols (ATQP).

2.9. Perceived Behavioral Control, Social Media, and Adherence

Theory-based multimedia campaigns have consistently demonstrated the capacity to enhance self-efficacy and controllability perceptions relevant to health behaviors. Sundstrom et al. (2018) found that "It's Your Place", a campus sexual assault prevention campaign, significantly elevated intervention self-efficacy, strengthened normative expectations of action, and improved attitudinal orientations among participants. LaBelle et al. (2020) demonstrated similar effects through "Rethink", a multi-platform prescription stimulant misuse prevention campaign, which successfully modified behavioral attitudes and perceived controllability around academic performance enhancement.

Erku et al. (2021), examining the COVID-19 infodemic's impact on health behaviors in Ethiopia, found that individuals who actively used social media for health information reported higher self-efficacy and behavioral capability relative to their health-protective behaviors. This suggests that beyond campaign design, social media's ambient informational environment—when credible and actionable—may independently enhance both perceived capability and structural controllability perceptions, potentially amplifying their relationships with quarantine adherence.

H5c: Social media (SM) significantly moderates the relationship between self-efficacy (SE) and adherence to quarantine protocols (ATQP).

H5d: Social media (SM) significantly moderates the relationship between controllability (CONT) and adherence to quarantine protocols (ATQP).

3. Theoretical and Conceptual Framework

This study extends Ajzen's (2006) Theory of Planned Behavior by incorporating social media as a moderating variable between the framework's core cognitive constructs and quarantine adherence. The original TPB posits that attitude, subjective norm, and perceived behavioral control determine behavioral intention and, subsequently, actual behavior. In the present adaptation, perceived behav-

ioral control is decomposed into its two constituent components—self-efficacy and controllability—following established precedent in health behavior research (Prasetyo et al., 2020). Critically, the study departs from prior applications that position media as a direct behavioral antecedent or mediating variable, instead treating social media as a contextual amplifier that conditions the strength of relationships between pre-existing behavioral antecedents and compliance outcomes.

The theoretical rationale for treating social media as a moderator rather than a mediator or direct predictor warrants explicit justification. As a mediator, social media would transmit the effect of TPB antecedents to adherence—implying that attitudinal or control-based influences must pass through social media exposure to affect behavior. As a direct predictor, social media would independently generate compliance regardless of pre-existing cognitive orientations. Neither specification is theoretically supportable in this context: residents' attitudes, subjective norms, and control beliefs develop prior to and independently of their social media environments; exposure alone cannot produce compliance without antecedent motivational states (Germani & Biller-Andorno, 2021). The moderating specification, by contrast, positions social media as a contextual amplifier that strengthens or attenuates the behavioral translation of pre-existing cognitions—a role supported by emerging empirical evidence that the behavioral effects of TPB antecedents vary meaningfully across levels of digital health information engagement (Zhao & Basnyat, 2022). Allington et al. (2021), in a UK pandemic compliance study, demonstrated that higher social media health campaign engagement intensified the relationship between risk-protective attitudes and actual preventive behaviors, consistent with a moderating rather than mediating role. Zhang & Wang (2023) similarly found in a cross-national COVID-19 compliance study that social media moderation of TPB constructs was more theoretically and statistically defensible than mediation or direct prediction models, particularly where behavioral antecedents are strongly pre-determined by personal experience and community context. The moderating role is further grounded in the information environment literature: in a digital ecosystem where behavioral norms, risk perceptions, and compliance guidance are primarily communicated through social platforms, individuals' attitudinal orientations and perceived control beliefs do not operate in isolation from their social media environment (Cinelli et al., 2020; Luo et al., 214). Social media exposure may reinforce positive attitudes, increase normative salience, and provide practical resources that enhance perceived controllability, thereby amplifying pathways from behavioral antecedents to compliance behaviors.

Figure 1 presents the study's conceptual framework. The model positions social media (SM) as a moderating variable between attitude (ATT), subjective norms (SN), self-efficacy (SE), controllability (CONT), and adherence to quarantine protocols (ATQP). Direct paths (H1-H4) retain the original TPB structure, while moderation paths (H5a-H5d) represent the study's central theoretical contribution.

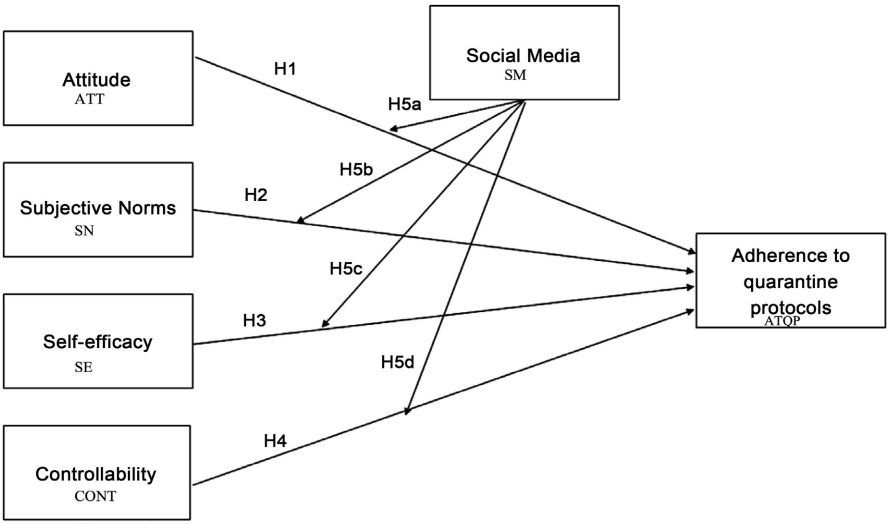

Figure 1. Conceptual framework: extended theory of planned behavior with social media as moderating variable.

4. Methodology

This study employed a quantitative, predictive research design to examine the moderating role of social media campaigns in the relationship between TPB constructs and COVID-19 quarantine adherence among Metro Manila residents. Predictive research design is appropriate when the objective is to assess directional relationships between specified antecedents and behavioral outcomes while controlling for confounding influences (Hair et al., 2017).

Primary data were gathered through an online, self-administered survey distributed across Metro Manila's 16 cities and one municipality from August 15 to September 20, 2020. This period corresponds to the government-mandated transition between the Enhanced Community Quarantine (ECQ) and General Community Quarantine (GCQ), capturing behavioral compliance at a moment of regulatory flux when residents depended heavily on social media for updated quarantine protocol information.

Convenience sampling yielded 413 usable responses. The survey was distributed through online channels given the ECQ-period restriction on face-to-face contact. Specifically, the survey link was disseminated via Facebook community groups organized by barangay and city, institutional pages of De La Salle University and partner organizations, professional network chains through respondents' workplaces, and snowball referral through initial respondents' personal networks. Inclusion criteria required respondents to be Metro Manila residents during the August-September 2020 data collection period, aged 21 - 40 years, and active social media users (defined as daily platform use for any purpose). The restriction to respondents aged 21 - 40 was deliberate: this cohort constitutes the primary economically active, internet-connected population segment in Metro Manila and represents the highest social media engagement demographic in the Philippines (Kemp, 2023). This age bracket was also most directly subject to work-from-home

mandates and quarantine pass enforcement during the ECQ period, making their compliance behaviors both theoretically and practically significant. Researchers acknowledge that this restriction limits generalizability to younger (below 21) and older (above 40) Metro Manila populations, for whom social media's moderating effects on quarantine compliance may differ. The sample comprised 217 males (52%) and 196 females (48%) respondents. Occupationally, 84% were employed and 16% were students. Educational attainment was predominantly at the college graduate level (69%), with 13% holding master's degrees. Monthly income was concentrated in the PHP 21,000 - 30,000 range (69%). Regarding social media use, 81% of respondents reported spending four to seven hours daily on social media platforms, with 58% primarily using these platforms for news and information consumption—a pattern consistent with pandemic-era digital behavior documented in similar contexts (Kemp, 2023; Nguyen et al., 2020).

The survey instrument comprised seven sections covering attitude, subjective norm, self-efficacy, controllability, social media use, adherence to quarantine protocols, and demographic characteristics. All construct items were measured using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). For this study, social media campaigns are operationally defined as structured, purposive health communication initiatives disseminated by government agencies (e.g., the Department of Health, local government units), public health authorities, or credible community organizations through social networking platforms—primarily Facebook, which served as the dominant platform for COVID-19 public health communication in the Philippines during this period. Respondents' engagement with social media campaigns was measured as a composite of two dimensions: a) exposure, operationalized as the frequency of encountering COVID-19-specific public health guidance content on social media; b) engagement, operationalized as the degree of active behavioral interaction with that content, including reading in full, liking, sharing, and following embedded guidance. This construct is explicitly distinguished from general social media use—referring to overall platform time regardless of content type or purpose—and from passive incidental exposure to health-adjacent content not produced by credible health authorities. All TPB constructs (attitude, subjective norm, self-efficacy, controllability) and quarantine adherence were measured reflectively, consistent with standard practice in TPB research where items are theorized as interchangeable manifestations of a latent construct rather than its formative causal indicators (Hair et al., 2017). Scale items were adapted from the Handbook of Marketing Scales (Bearden & Netemeyer, 1999) and supplemented with domain-specific items developed through a systematic review of the COVID-19 health behavior literature. Appendix A provides the full item wording and source references for all constructs. The instrument underwent pre-testing with a pilot sample to assess item clarity and preliminary reliability. Participation was voluntary and anonymous, and informed consent was obtained from all respondents prior to survey participation. No personally identifiable information was collected.

Data analysis employed Partial Least Squares Structural Equation Modeling

(PLS-SEM) via SmartPLS 3.0 (Ringle, Wende & Becker, 2015). PLS-SEM is particularly well-suited for this study's complexity, given its capacity to simultaneously model multiple moderating relationships, handle non-normal data distributions, and yield reliable estimates with moderate sample sizes (Hair et al., 2017). A two-stage analysis approach was followed: first evaluating the measurement model for reliability and convergent/discriminant validity, then assessing the structural model's predictive relationships and moderation paths.

5. Results and Discussion

5.1. Sample Profile

Table 1 presents the full sociodemographic profile of respondents. The sample's concentration among employed, college-educated adults aged 21 - 40 is consistent with Metro Manila's economically active population during the ECQ period, where remote work was mandated for most non-essential sectors. The predominance of respondents spending four or more hours daily on social media (94%) and using platforms primarily for news and information (58%) confirms that this sample was deeply embedded in the social media information environment—an important contextual precondition for detecting social media's moderating behavioral influence.

Table 1. Socio-Demographic profile of respondents (N = 413).

Variable	Category	Frequency	Percent
Gender	Male	217	52%
	Female	196	48%
Age	21 - 40 years	413	100%
Occupation	Student	65	16%
	Employed	347	84%
Monthly Income	Below PHP 20,000	125	30%
	PHP 21,000 - 30,000	283	69%
	PHP 31,000 - 50,000	4	1%
Education	College level	65	16%
	College graduate	287	69%
	Master's degree	57	13%
	Doctorate degree	3	1%
Daily Social Media Hours	2 - 3 hours	23	5%
	4 - 7 hours	335	81%
	More than 8 hours	54	13%

Continued

Primary SM Purpose	News and information	234	58%
	Connect with family/friends	123	30%
	Work from home	177	43%
	Online classes	99	24%

5.2. Measurement Model Evaluation

The measurement model was evaluated for internal consistency reliability, convergent validity, and discriminant validity prior to structural model assessment. Table 2 presents Cronbach's (1951) alpha, rho_A, composite reliability, and average variance extracted (AVE) for all constructs. All reliability indicators exceeded the recommended threshold of 0.70 (Peterson, 1994; Nunnally, 1978), and all AVE values surpassed 0.50, confirming adequate convergent validity (Bruin, 2006). Discriminant validity was assessed through the Heterotrait-Monotrait Ratio (HTMT), with all inter-construct values falling below the 0.90 threshold, confirming empirical distinctiveness among constructs (Hair et al., 2017). Results are presented in Table 2 and Table 3.

Table 2. Reliability and convergent validity of constructs.

Latent Construct	Cronbach's Alpha	rho_A	Composite Reliability	AVE
ATQP	0.850	0.855	0.861	0.700
ATT	0.843	0.852	0.857	0.745
CONT	0.882	0.822	0.880	0.816
SM	0.832	0.833	0.862	0.732
SE	0.848	0.844	0.864	0.765
SN	0.866	0.846	0.874	0.726

Table 3. Heterotrait-Monotrait ratio (HTMT)—discriminant validity assessment.

	ATQP	ATT	ATT × SM	CONT	CONT × SM	SM	SE	SE × SM	SN
ATQP	—								
ATT	0.807	—							
ATT × SM	0.820	0.705	—						
CONT	0.820	0.717	0.699	—					
CONT × SM	0.827	0.739	0.927	0.746	—				
SM	0.722	0.595	0.556	0.635	0.575	—			
SE	0.809	0.686	0.700	0.913	0.713	0.677	—		
SE × SM	0.810	0.748	0.836	0.721	0.875	0.570	0.727	—	
SN	0.745	0.725	0.651	0.695	0.644	0.618	0.746	0.652	—

Note: All HTMT values below 0.90 threshold confirm discriminant validity (Hair et al., 2017).

6. The Structural Model Results and Discussion

Table 4 presents the structural model results via bootstrapping in SmartPLS. The significance threshold was set at $p < 0.01$ (Rumsey, 2010). Attitude significantly predicted quarantine adherence (H1: $\beta = 0.518$, $t = 4.695$, $p < 0.001$), supporting the hypothesis and aligning with extensive prior research confirming attitude as a robust behavioral antecedent across health compliance contexts (Agarwal, 2014; Mo et al., 2019; Schmid et al., 2017; Yang, 2015; Zhao & Basnyat, 2022). Controllability similarly demonstrated significant direct effects on adherence (H4: $\beta = 0.242$, $t = 3.789$, $p < 0.001$), confirming that structural enabling conditions play a material role in compliance behavior independently of attitudinal and normative factors. Subjective norm (H2: $\beta = -0.002$, $p = 0.934$) and self-efficacy (H3: $\beta = 0.074$, $p = 0.100$) did not significantly predict adherence. These null findings are theoretically meaningful and may reflect several complementary explanations. One plausible account draws on Self-Determination Theory (Deci & Ryan, 1985), which distinguishes behaviors arising from genuine personal valuation versus those performed in response to external expectations—suggesting compliance may have been driven more by autonomous motivations than by normative pressure or capability assessments alone. However, additional mechanisms warrant consideration. The non-significant subjective norm effect may partly reflect measurement constraints: ECQ-era social isolation reduced visibility of in-person normative behavioral cues that standard subjective norm items were designed to capture. The non-significant self-efficacy effect may similarly reflect ceiling conditions, with near-universal public awareness of quarantine protocols—repeatedly amplified through social media—rendering individual capability assessments less behaviorally discriminating at this stage of the pandemic. Enforcement intensity during the ECQ-to-GCQ transition, characterized by barangay-level checkpoints, legal penalties for violations, and visible community monitoring, may further have compressed self-efficacy's behavioral variance by making compliance a structural expectation rather than a purely capability-dependent choice. Risk perception, which was not directly measured in this study, represents another plausible driver of autonomous compliance behavior that merits examination in future research. These alternative accounts suggest the null direct effects of subjective norm and self-efficacy should be interpreted with appropriate caution rather than as definitive evidence of intrinsic motivation dominance; future studies incorporating motivational regulation scales would clarify the underlying mechanisms. This pattern is broadly consistent with Self-Determination Theory, which distinguishes between behaviors arising from genuine personal valuation versus those performed in response to external expectations.

Table 4 also presents the moderation results for H5a-H5d, testing whether social media (SM) significantly moderates the relationships between each TPB construct and adherence to quarantine protocols (ATQP). Remarkably, all four moderation hypotheses were supported, indicating that social media consistently and

significantly conditioned the influence of attitude, subjective norm, self-efficacy, and controllability on quarantine compliance.

Table 4. Structural model results—direct and moderation path.

Hypothesis	Path	β	Sample Mean	SD	T-Statistic	*p*-Value	Decision
H1	ATT → ATQP	0.518	0.482	0.110	4.695	0.000	Supported
H2	SN → ATQP	−0.002	−0.001	0.026	0.083	0.934	Not Supported
H3	SE → ATQP	0.074	0.072	0.045	1.650	0.100	Not Supported
H4	CONT → ATQP	0.242	0.248	0.064	3.789	0.000	Supported
H5a	SM X ATT → ATQP	0.492	0.458	0.127	3.870	0.000	Supported
H5b	SM X SN → ATQP	0.391	0.376	0.108	3.633	0.000	Supported
H5c	SM X SE → ATQP	0.497	0.472	0.112	4.425	0.000	Supported
H5d	SM X CONT → ATQP	0.601	0.587	0.084	7.146	0.000	Supported

Note: $^{**}p < 0.01$. β = standardized path coefficient; SD = Standard Deviation.

To further specify the nature of the moderation effects, conditional effects were examined by interpreting the direction and magnitude of each interaction coefficient across varying levels of social media engagement. Consistent with all positive and significant interaction terms in Table 4, each TPB-to-adherence path strengthens as social media engagement increases from low (−1 SD below the mean) to high (+1 SD above the mean) levels. At high social media engagement levels, the controllability-adherence path is most steeply amplified (H5d: β-interaction = 0.601), meaning that residents who were both highly engaged with social media campaigns and high in controllability demonstrated the strongest quarantine adherence in the entire model. Similarly, the self-efficacy-adherence and attitude-adherence paths show meaningful positive slope increases at higher social media engagement (H5c: β-interaction = 0.497; H5a: β-interaction = 0.492), confirming that both capability-based and evaluative antecedents are behaviorally activated more fully for high social media users. The subjective norm-adherence path, while showing the smallest interaction effect (H5b: β-interaction = 0.391), still demonstrates a meaningful positive slope at higher engagement levels—indicating that normative pressure acquires behavioral relevance primarily under conditions of active social media campaign engagement. Critically, the subjective norm and self-efficacy direct paths remained non-significant (H2, H3), yet their moderated slopes are positive at high social media levels, confirming that these pathways are activated rather than merely amplified by social media. This conditional pattern—where dormant direct paths become behaviorally operative through social media moderation—represents the study's most theoretically distinctive finding and underscores the importance of high-quality, accessible social media campaigns in mobilizing the full range of behavioral antecedents available to public health communicators. Social media most powerfully moderated the

controllability-adherence relationship (H5d: β = 0.601, t = 7.146, $p < 0.001$), the strongest path in the entire model. This suggests that social media functioned as an information infrastructure during the pandemic, providing residents with real-time access to resource guides, assistance programs, and updated protocol information that strengthened their perceived structural capacity to comply. The stability of this effect across bootstrapping iterations (SD = 0.084) further confirms its robustness.

The moderation of the attitude-adherence relationship (H5a: β = 0.492, t = 3.870, $p < 0.001$) indicates that social media reinforced pre-existing positive orientations toward quarantine, translating favorable attitudes into actual compliance behavior more effectively than attitude alone predicted. This is consistent with evidence that health media exposure amplifies attitudinal pathways to protective behavior (Lovejoy et al., 2015; Kim & Kreps, 2020).

Theoretically significant are the supported moderation effects for self-efficacy (H5c: β = 0.497, t = 4.425, $p < 0.001$) and subjective norm (H5b: β = 0.391, t = 3.633, $p < 0.001$)—both of which had no significant direct effects on adherence. Social media effectively activated these otherwise dormant pathways, suggesting it does not merely reinforce existing behavioral dispositions but creates new ones. Digital platforms enhanced self-efficacy by exposing residents to practical compliance guidance and peer behavioral modeling, while making community normative expectations visible and salient in ways that face-to-face interaction during lockdown could not (Bridgman et al., 2021; Erku et al., 2021). The hierarchy of moderation strength—controllability, self-efficacy, attitude, subjective norm—implies that social media's most critical behavioral function during the pandemic was structural enablement rather than attitudinal reinforcement alone, a distinction with direct implications for public health campaign design.

Taken together, these findings position social media as a universal behavioral activator across both attitudinal and structural pathways, with implications discussed in the sections that follow.

7. Conclusion

This study provides evidence that social media campaigns functioned as powerful behavioral amplifiers of quarantine adherence among Metro Manila residents during the 2020 ECQ-to-GCQ transition. The extended TPB model confirms that attitude and controllability are robust direct predictors of compliance, while social media universally strengthened all four TPB-adherence pathways—including the subjective norm and self-efficacy pathways that showed no significant direct effects. This finding reveals that social media's behavioral influence extends beyond reinforcing pre-existing dispositions: it activates dormant pathways and creates compliance-enabling conditions that would not otherwise emerge.

The study's central theoretical contribution is the empirical demonstration that social media conditions—rather than independently determining—the behavioral influence of cognitive and structural antecedents. The hierarchy of moderation

strength, with controllability yielding the strongest effect, further suggests that social media's most critical pandemic function was structural enablement rather than attitudinal persuasion alone. This distinction carries direct implications for how public health authorities design and deploy digital campaigns during future health emergencies—prioritizing resource information and compliance facilitation alongside motivational messaging.

8. Managerial and Policy Implications

For public health authorities and government communicators, findings recommend that social media investment prioritize content that simultaneously reinforces positive behavioral attitudes and addresses structural barriers to compliance. LGU-level social media accounts and national health agencies would benefit from integrating real-time resource guides—detailing food assistance programs, financial support mechanisms, and updated quarantine protocol tiers—within their campaign content, directly targeting the controllability pathway identified in this study.

For marketing practitioners operating in post-pandemic consumer markets, the sustained association between social media engagement and health-protective behavioral attitudes in this study reflects a broader shift in Filipino consumer expectations. Social media strategies that position brands within health-protective, community-enabling frameworks may find stronger resonance with audiences conditioned by pandemic-era digital health communication than those relying exclusively on traditional commercial messaging frames.

9. Limitations and Future Research

This study's cross-sectional design limits directional inference beyond the predictive associations identified through PLS-SEM. The convenience sample, while sufficiently large for model estimation, was restricted to Metro Manila residents aged 21 - 40 with internet access, likely underrepresenting older residents, those without digital connectivity, and more economically and educationally diverse populations—segments for whom social media's moderating influence on quarantine adherence may differ considerably.

Future research should employ longitudinal designs to examine how social media's moderating role shifts across pandemic phases, from initial lockdown through vaccine rollout and endemic normalization. Platform-specific analyses distinguishing Facebook, YouTube, and short-form video platforms would deepen theoretical understanding, given that the present study treats social media engagement without differentiating by platform or content quality. Incorporating misinformation exposure as a parallel moderating variable would address this gap directly. Regional comparative studies across Philippine provinces would further extend the model beyond the Metro Manila context and allow examination of geographic and cultural variation in the social media-TPB-adherence relationship.

Author's Note

This manuscript is a revised and updated version of the article originally published in Advances in Journalism and Communication (Vol. 9, 2021, pp. 85-101; DOI: 10.4236/ajc.2021.93007). The revision ameliorates theoretical perspectives and remedies the discussion of post-pandemic insights. The original dataset (N = 413 Metro Manila residents surveyed August-September 2020), research design, and statistical findings are retained unchanged. The updated version also addresses similar observations identified in the earlier version, which arose inadvertently and have since been carefully reviewed and corrected through improved citation, paraphrasing, and attribution. These revisions aim to strengthen the clarity, academic rigor, and scholarly contribution of the study. The author declares no conflict of interest.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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Appendix A. Survey Instrument: Construct Items and Sources

All constructs were measured on a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree) and modeled reflectively. Items are listed below with their source references.

Attitude toward Quarantine Protocols (ATT)—adapted from Agarwal (2014) and Omodior et al. (2015)

ATT1. I believe that following quarantine protocols is an effective way to prevent COVID-19 from spreading.

ATT2. I think that quarantine protocols are necessary given the current state of the pandemic.

ATT3. Complying with quarantine measures is a responsible action that I support.

Subjective Norm (SN)—adapted from Ajzen (2006) and White et al. (2015)

SN1. People who are important to me expect me to comply with quarantine protocols.

SN2. My family members think I should follow quarantine measures.

SN3. Most people in my community are complying with quarantine protocols.

Self-Efficacy (SE)—adapted from Ajzen (2006) and Prasetyo et al. (2020)

SE1. I am confident that I can follow quarantine protocols even when it is inconvenient.

SE2. I have the ability to stay at home and avoid unnecessary travel as required by quarantine rules.

SE3. I feel capable of adhering to quarantine protocols for an extended period.

Controllability (CONT)—adapted from Ajzen (2006) and Ali et al. (2021)

CONT1. I have access to sufficient food and basic necessities that allow me to stay at home.

CONT2. My living situation makes it possible for me to comply with quarantine protocols.

CONT3. External conditions (financial, social, logistical) make it feasible for me to adhere to quarantine protocols.

Social Media Campaign Engagement (SM)—adapted from Namkoong et al. (2017) and Bridgman et al. (2021)

SM1. I regularly encounter COVID-19 health campaign posts from government or health authorities on social media.

SM2. I actively read or watch COVID-19 prevention content shared by health agencies on social media.

SM3. I share COVID-19 health campaign information from credible sources on my social media accounts.

Adherence to Quarantine Protocols (ATQP)—adapted from Prasetyo et al. (2020) and Ali et al. (2021)

ATQP1. I stay at home except when going out for essential needs, as required by quarantine protocols.

ATQP2. I wear a face mask and face shield when going outside, as required by quarantine rules.

ATQP3. I observe physical distancing and avoid mass gatherings in accordance with quarantine protocols.

ATQP4. I comply with curfew hours and travel restrictions imposed under quarantine guidelines.