The impact of social media marketing on the attitude and mental health of users: An empirical investigation

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Abstract

Extant studies have shown that marketers can influence user attitude towards products or services offered by using social media platforms. Evidence also suggests that social media use is associated with a myriad mental health issues, including depression, anxiety, and stress. While the potential of social media platforms for marketing is evident, empirical studies have not fully investigated its impact on user attitude and mental health. The study, therefore, examines the impact of social media marketing (SMM) on user attitude and mental health. A quantitative method was adopted in this study, whereby a questionnaire was distributed to social media users for data collection. Partial Least Squares-Structural Equation Modelling (PLS-SEM) (version 3) was used to analyse the data collected from 203 social media users. Research findings provide support for most hypotheses regarding the significant influence of the variables proposed in the model. The use of SMM affects both cognitive (awareness and knowledge) and affective (liking and preference) attitude, which in turn, affects purchase behaviour. Also, mental health is affected by SMM, but not by purchase behaviour. The findings provide useful insights for the industry and government agencies to better understand the impact of SMM on user attitude and mental health, thereby assisting them to understand consumer behaviour, develop product branding strategies, and establish guidelines that could protect the state of the mental health of users.

Introduction

The evolution of social media, such as Facebook, Twitter, YouTube, and WhatsApp, has attracted the attention of users significantly. Technology has become an essential means to communicate among users [1], and to connect with friends who

have similar interests [2]. Users are expected to play more unique roles in the social media era as opposed to the times before the advent of technologically advanced tools. This is partly because the web 2.0 tools, such as social media platforms, have now enabled users to become 'content creators' [3], by providing feedback and sharing their experience with other users.

Given its popularity, social media has proven to be a useful mechanism for businesses to achieve their marketing objectives of customer service, advertising, and completing transactions with targeted users [4]. Marketers are expected to comprehensively consider social media as a new marketing platform since consumers nowadays view information shared across the social media platform as reliable and meaningful to facilitate their intended purchase [5]. With greater awareness of the essence of relationship marketing, marketers nowadays are shifting to social media as a potential marketing strategy, particularly to strengthen the relationship with their suppliers, supply chain partners, and potential consumers, especially the younger generation [6]. There is a strong notion among the marketers that the provision of entertaining and current contents via social media platforms could encourage the younger generation to communicate or to share product or brand-related information with their peers [7].

While the potential of social media platforms for marketing is evident, empirical studies have not fully investigated its impact on user attitude and mental health. Our study addresses this gap. Research on the impact of SMM on the attitude and mental health of users should not be ignored and should aim to determine in-depth if there is a need to change online behaviour. The study adds to the body of knowledge on the domain of SMM, particularly its effect on cognitive and affective attitude, as well as on the mental health of users. The study also examines the effect of cognitive and affective attitude on the purchase behaviour of users, and the effect of users' purchase behaviour on their mental health. The findings provide useful insights to both the industry and businesses to strategise their product branding and establish guidelines that could protect the state of mental health of users.

Literature Review and Hypotheses Development

Social Media and Marketing

The use of various social media platforms for marketing activities, known as SMM [8, 9], is considered an emerging business practice to sell products, services, as well as information [10]. SMM could greatly benefit from various applications, including blogs, social networks (Facebook), content communities (YouTube), forum/bulletin boards, and content aggregators (RSS websites) [11].

SMM offers various advantages. From one aspect, SMM makes businesses more visible online, thereby enabling these businesses to establish a communication medium with their potential consumers [9]. This is particularly because social media offers wider accessibility compared to traditional marketing media, as social media is connected to the Internet and web-based technologies. From another aspect, SMM enables businesses to customise marketing strategies as needed [8]. Effective use of SMM can also positively influence brand awareness [1] and brand loyalty [12]. Social media also offers value-added marketing functionalities as it allows for many-to-many interactions [13]. Such functionalities pave the way for contemporary approaches to keeping in touch with consumers [9]. However, in the context of SMM, the user has become more dominant and a key influencer of the company-user interaction [11]. Hence, with extensive user-generated contents via social media platforms, businesses may have a greater ability to assess user behaviour besides making a more accurate prediction of their purchasing patterns [14]. More importantly, from the businesses' as well as users' perspectives, the use of social media does not demand expensive financial investment [15].

Considerable efforts have been made to view social media from the perspective of marketing. The emerging importance of social media as a means of interaction among users, is resulting in SMM becoming one of the crucial components that deserves special attention in today's business scenario [16]. Table 1 shows the focal issues and insightful perspectives of SMM that have been reviewed by researchers on the SMM domain, either from the business or user perspective. Overall, significant attempts have been made to examine the impact of SMM on various aspects, such as user behaviour, brand-related perception, as well as business performance. There has been not much attempt, however, that links SMM practices to social media usage.

T a b l e 1

Prior Work on SMM

Focus of Research	Authors
SMM strategic actions for marketing	[6]
Factors affecting SMM usage	[3, 9]
Consumers' perceived value of SMM	[17]
Systematic literature review/Bibliometrics analysis	[18-21]
Dimensions of SMM	[22]
Strategies and tactics in SMM	[23]
The elements of strategic SMM	[16]
SMM usage	[15, 24]
SMM strategy	[25]

Several studies have focused on the impact of strategies/tactics of SMM at the firm level [e.g., 6, 16, 23, 24]. [24] for instance, examined SMM practices under different business models (B2B, B2C, and B2B2C). The study [24] reports considerably different practices of SMM across business models concerning the perceived importance of SMM and its effectiveness. Another study has recommended marketing strategy taxonomy from the social media perspective [25]. This study underlines four SMM strategies, namely, social commerce, social content, social monitoring, and social customer relationship management (CRM). As such, businesses are expected to move beyond the use of social media by leveraging information exchanged with users via the platforms for greater interactive engagement and outcomes.

Apart from assessing the firm perspective, several studies have examined the issues surrounding SMM from the perspective of users. Some studies have also concentrated on the factors affecting SMM and SMM usage/adoption or perceived value of users. For example, [3] found that the effect of users' level of income, the current level of social media use, knowledge of social media, and their fears of purchasing via social media platforms, as among the key predictors of SMM acceptance. In a study conducted in Saudi Arabia based on 372 consumers, [9] reported the importance of consumers' knowledge of social media and attitude toward SMM usage, but not the fear and foresight of social media.

Other studies have examined various possible impacts of SMM as shown in Table 2 below. Taken as a whole, SMM has been linked to, among others, purchase behaviour [1, 26, 27], social media usage [9], as well as consumer perception toward a brand and equity [28, 29, 30]. At the firm-level investigation, the impact of SMM on sales [31] and business performance [32] has been reported in earlier studies.

Table 2

Prior Studies on the Impact of SMM

Impact of SMM on...	Prior Studies
Purchase intention/Purchase behaviour	[1, 26, 33-36]
Online purchase intention	[27]
Social media usage	[9]
Young consumers' attitude	[7]
Consumer relationship development	[30]
Consumers' preferences on brand	[37]
Consumer engagement	[29, 38]
Brand loyalty	[2, 28, 39]
Consumers' brand trust	[36]
Brand equity	[37]
Brand and value consciousness	[40]
Brand experience	[41]
Customer equity	[14]
Sales	[31]
Business performance	[22, 42]

The impact of product/service branding via SMM has been reported by several studies. [37] proved the hypotheses that SMM efforts (entertainment, interaction, trendiness, customisation, and word-of-mouth) have considerable influence on brand equity and consumer preferences, based on their survey of consumers of luxury products. In a similar context of luxury brands, [29] employed a big data approach to test the impact of SMM efforts (except customisation) on ensuring greater customer engagement. They, however, did not examine the word-of-mouth dimension as reported by [37]. Similarly, [28] tested the relationship between SMM activities and brand loyalty. A survey amongst consumers in telco companies has revealed that three SMM activities (trendiness, customisation, and word-of-mouth) directly affect consumers' brand loyalty. [39], who investigated university students, reported that several factors of SMM (advantageous campaign, relevant content, and updated content) affect consumers' brand loyalty. From a wider perspective, [2] examined the impact of SMM on value and brand consciousness, as well as brand loyalty. Using university students as a proxy of consumers, the study confirms the positive impact of SMM activities on value and brand consciousness, as well as brand loyalty.

Several researchers have examined user attitude towards SMM. For example, [43] examined the impact of SMM on brand management as a result of users' capability to create brand stories and share with other users. [44] investigated CRM practices in the social media environment and reported the impact of social media on businesses' core areas (acquisition, retention, and termination) and the supporting business areas. A survey on Facebook users to assess their attitude towards advertising via Facebook has revealed three distinct profiles of users with different attitudes towards Facebook advertising [45]: the respondents in the negative group had a greater tendency to block or avoid advertisements on Facebook; the positive group had no issues; while the last group was neutral towards Facebook advertisements.

Several studies have explored the association between SMM and different aspects of consumer behaviour. For example, [38], who studied cosmetic-based products, reported a substantial impact of SMM on various stages of consumer engagement, namely, connection, satisfaction, retention, commitment, advocacy, and engagement. [17] investigated teenagers in South Africa and found a substantial influence of SMM on the components of consumer attitude (cognitive, affective, and behavioural components); while [30] found SMM has an important role in enhancing consumer relationship. [7] argued that in the context of SMM, consumers go through three major dimensions of attitude: firstly, a cognitive dimension, that includes awareness of the existence of the brand name (awareness and acquiring knowledge of what is being offered by those brands (knowledge); secondly, the affective dimension when the consumers start to have their favourable brand (liking) and set their preference for one brand relative to the other brands (preference); and thirdly, this attitude leads to the last dimension, that is, behavioural attitude, represented by the final purchase of the chosen brand.

In summary, taking into consideration the use of SMM by most businesses nowadays, it is essential to establish a better understanding as to how such practices influence users' behaviour, particularly in the aspects of their cognitive and affective attitude as well as purchase behaviour, as suggested by [7]. The following hypotheses are, therefore, formulated:

H1a-b	:	SMM positively affects users' cognitive attitude (awareness and knowledge).
H2a-b	:	SMM positively affects users' affective attitude (liking and preference).
H3a-b	:	Users' cognitive attitude (awareness and knowledge) positively affects their purchase behaviour.
H4a-b	:	Users' affective attitude (liking and preference) positively affects their purchase behaviour.

Social Media and Mental Health

While social media is beneficial (e.g., easy and free access to online resources, and keeps users connected to friends), the risks of its use cannot be discounted. Evidence has suggested that social media is linked to a myriad mental health issues, including depression, anxiety, and stress. The World Health Organisation (WHO) defines health as a "complete state of physical, mental, and social well-being and not merely the absence of disease or infirmity". The terms, 'mental health' and 'mental well-being', have been used interchangeably in studies when reference is made to the state of an individual's ability to manage or deal with the usual stresses in life. Depression, anxiety disorders, and stress contribute to poor mental health. Depression has been identified as one of the leading causes of disability globally by the Global Burden of Disease Study 2017. More than 300 million people of all ages suffer from depression, and in the worst-case scenario, depression could lead to suicide [46].

In view of the increasing concerns with the potential impact of extensive social media use on the health and other related issues of users, a number of studies have been undertaken to assess the health-related impact of social media use on individualist users. Table 3 summarises selected studies on the impact of social media on various health-related concerns. The important point to note is that studies on the impact of SMM on the mental health of users are scant. Taken as a whole, earlier studies on the health-related impact of social media use on different groups of society, have reported mixed findings. While some studies have reported no observable effects

of social media use on mental health, others have unveiled a small or moderate number of effects on users' mental health.

T a b l e 3

Social Media Impact on Health-Related Issues

Social Media Impact on…	Study
Well-being of young adults or adolescents	[47-49]
The mental health of university students	[50]
Mental health of youth	[51-53]
Mental health of adolescents	[54-58]
Depressive symptoms among early to late adolescents	[59]
Psychological distress among adolescents	[60]
A systematic review of prior studies on social media use and mental health impact	[61, 62]

Several studies have provided weak or even no support for the impact of social media use on mental health. For example, [55] eight-year longitudinal study on the effects of social media use on mental health (particularly on depression and anxiety), has reported no clear link between the amount of time spent on social media and the extent of mental health issues at a within-person level. However, positive effects do emerge when analysed at the between-person level. In a similar vein, [59] assessed the potential influence of social media use on depressive symptoms at an individual level over certain periods. A longitudinal study approach has also concluded a weak interlink between social media use and depressive symptoms among both early and late adolescent groups. [51] found no substantial influence of social media use on mental health and suggested that young adults practising vague-booking (posting vague messages to get the attention of other users), may be indicative of a more serious mental health concern.

More recently, [47] conducted a longitudinal study to confirm the same issue. The outcome of more than 2,000 observations suggests a substantial variance of patterns among different groups of adolescents. The results indicate that in the short term, the effect of social media use on mental health is relatively small. In the case of the presence of short-term effects, these effects are mainly positive rather than negative. [48] focused on the impact of digital technology usage on a sub-component of mental health, that is, well-being. The findings show that the general effects of digital technology use are negative, with a relatively insignificant impact on the users' well-being. More importantly, the negative effects are closely linked to the passive use of digital technology compared to the social and active use of the same technology.

A further review of related literature has shown that several studies have found a likely negative effect of social media use on mental health. For example, [49] concluded that despite invaluable information made available on social media, there is a negative effect of its use over time with a considerable decline in users' subjective well-being (moment-to-moment and life satisfaction). Similarly, [58] surveyed 725 Malaysian university students to explore the impact of social media networking on mental illness and psychological well-being. The results reveal that more than 60% of the respondents have either severe or extremely severe anxiety level, followed by

depression (31%) and stress (20%); while the effect on psychological well-being is moderate. However, the study is descriptive.

[57], in their study of 10,904 adolescents in the UK, evinces a higher level of depression among those with more active social media use. This could be the result of online harassment, poor sleeping patterns, decreased self-esteem, and poor body image. [60], who conducted a longitudinal study, affirmed the positive association between social media use and mental health, specifically on anxiety, depressive mood, and physical anxiety. The results suggest a stronger correlation between time spent on social media and symptoms of depression amongst girls than boys. The study concludes that despite the weak but significant link between social media use and mental health, the possible cause-and-effect for such a relationship has yet to be ascertained. A similar relationship was found by [50], who affirmed a positive relationship between social media use and mental health among medical students in Abha City, Saudi Arabia. The survey results reveal that a substantial number of the respondents use social media for more than six hours a day. Consequently, poor mental health (in the form of insomnia, experiencing a loss of confidence, or feeling worthless), was reportedly higher amongst the students with excessive use of social media use.

Several other studies have argued the need to observe the positive side of social media use. Positive use of social media can help students to develop social capital and establish personal identity and better engagement with their peers [52]. More importantly, [56] indicated that today's society is facing a transitional process that does not go away from embracing the 'digital screen' phenomena as the digital screen is no longer an entertainment platform. In fact, the digital screen has become an essential part of people's daily activities nowadays. Other researchers have been quite sceptical on the effectiveness of initiating various restrictions and prohibitions to counter the likely negative effects of social media use by people, particularly the younger generation. What is being suggested is that various interventions, such as limiting social media and smartphone use, should be introduced to promote more positive values that can navigate users away from the possible harm that social media usage can create [54].

Besides empirical studies, several studies have reviewed prior studies related to the impact of social media use on mental health. Using a literature review analysis approach, [62] reported a lack of qualitative as well as longitudinal studies on assessing the impact of social media use on mental health. Besides, most earlier studies have focused on assessing the negative impact of social media on mental health, while ignoring the positive aspects of its use. From another perspective, [53] suggested a longitudinal approach with more objective measures or direct observations to examine the impact of digital media usage on mental health. It has also been suggested that the assessment of social media usage should move beyond the amount of users' screen time to consider other aspects that potentially can lead the younger generation to be more susceptible to the negative elements brought on by the use of social media. [61] reviewed selected studies on the impact of social media use on mental health and revealed two dominant outcomes, namely, anxiety and depression. Considering the mixed findings, they suggested more qualitative and vertical cohort studies to further validate the findings.

Prior studies have adopted various indicators to measure mental-health related issues. These include depression and anxiety [55, 59, 60]; stress [58]; feeling worthless, insomnia problem, and lack of confidence [50]; well-being [48]; as well as subjective well-being, such as life satisfaction [49]; and psychological well-being [58]. Different approaches have been utilised to examine the link between social media use and mental health problems among individuals of different age ranges. The evaluation of the impact of social media use on health-related issues has also focused on 'between persons' or 'within-persons/individuals' [47, 55].

Since social media now appears to be the primary means for people to connect with their friends and peers, SMM has become a potential means for marketers to reach their potential consumers. To some extent, social media users could specify their preferences; however, repeated and persistent posting of advertising materials on social media platforms could be emotionally and psychologically disturbing. Although some efforts have been taken to assess the psychological implications of social media use, very few attempts have been made to assess the possible influence of SMM usage and purchase behaviour on various aspects of psychological effects on the users. Hence, the present study proposes mental health that could be impacted by SMM and also purchase behaviour. SMM differs from social media use, in that it focuses specifically on the marketing elements that are posted involuntarily on the users' social media page. Accordingly, the following hypotheses are postulated:

H5	:	SMM positively affects users' mental health.
H6	:	Users' purchase behaviour positively affects their mental health.

Taken as a whole, based on the literature review, we illustrate our research model as below:
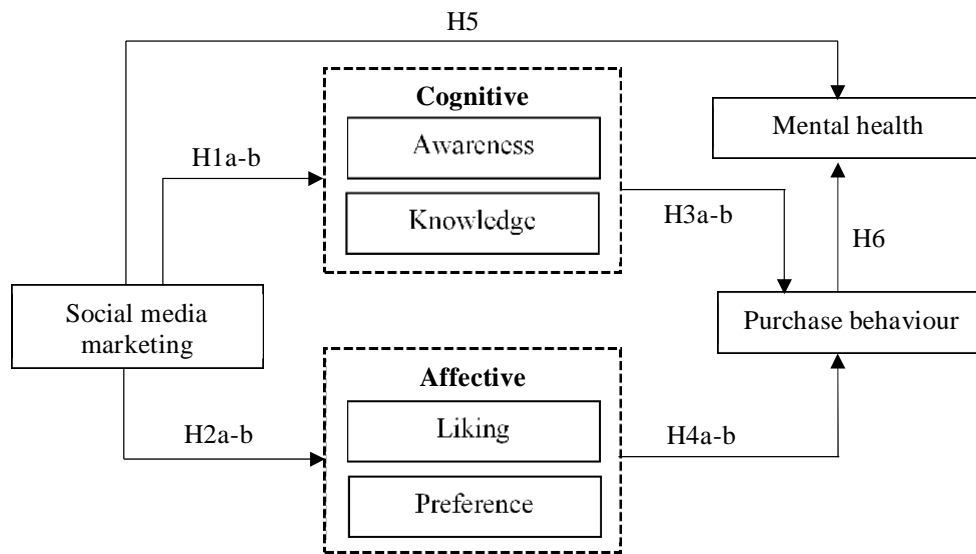

Figure 1.   The Research Framework

Research Method

Measures

All the latent variables in the research model are based on a comprehensive literature review and cannot be measured directly. These variables are therefore measured via items that allow direct measurement. SMM is operationalised into a range of use of social media technologies [63] as a marketing tool from the perspective of users, and the time users spend on social media platforms. Cognitive (awareness and knowledge) and affective (liking and preference) attitude, as well as purchase behaviour are adapted from [7]: awareness (nine items), knowledge (eight items), liking (eight items), preference (eight items), and purchase behaviour (five items).

The study adopted the Depression, Anxiety, and Stress Scale (DASS-21) instrument [64] to assess the psychological effects of SMM on mental health. The DASS is a 42-item instrument (21 items for the shorter version) that was developed for assessing three interrelated negative emotional situations of an individual, encompassing depression, anxiety, and stress [65]. This instrument's popularity is attributed to its ability to assess three fundamental psychological domains using a single survey instrument [66].

Data Collection

A quantitative research design, via a questionnaire, was used for data collection. To assist respondents' understanding of the meaning of the items and to increase the response rate, the survey was prepared in both English and Malay. We used a back-translation procedure to ensure that the translation was of high quality and accuracy. Compared to paper surveys, online surveys do not only provide faster and more extensive results but are also the most cost-effective way to collect data, especially during this unprecedented coronavirus disease 2019 (COVID-19) pandemic. In addition, respondents can record their answers at a time most convenient to them.

The survey questionnaire was both pre-and pilot tested prior to distribution to the respondents. The pre-testing stage involved six academicians and six users of social media. The survey questionnaire was then pilot tested with a small sample group of 30 social media users. The values of the reliability test, as measured by Cronbach's alpha, were all above the acceptable cut-off value of .60 as recommended by [67], indicating the internal consistency between the items in the scale.

The 10 - 15-minute online survey questionnaire, designed using LimeSurvey, was distributed to users through social media platforms (particularly Facebook and WhatsApp), by applying the convenience sampling method. Data collection took a month to complete. Three reminders were issued during the data collection period.

Overall, we received 203 responses (Table 4). As the online survey was used, no missing responses were reported; respondents would not have been able to proceed if a previous question was missed. Most of the respondents are female (85.7%), single (54.2%), and live in urban areas (63.1%). Most of them are from generations Z (45.8%) and X (34.5%).

Table 4

Demographic Profile

Demographic		Freq	%	Demographic		Freq	%
Gender	Male	29	14.3	Location	Rural	75	36.9
	Female	174	85.7		Urban	128	63.1
	Total	**203**	**100.0**		**Total**	**203**	**100.0**
Education	Primary school	1	.5	Generation[a]	Baby Boomers	8	3.9
	Secondary school	9	4.4		Gen X	70	34.5
	College/University	193	95.1		Gen Y	32	15.8
	Total	**203**	**100.0**		Gen Z	93	45.8
					Total	**203**	**100.0**
Length of using social media	≤ 1 year	1	.5	Average time spent on single log-in to social media	≤ 1 hour	72	35.5
	2 years	1	.5		2 hours	50	24.6
	3 years	6	3.0		3 hours	34	16.7
	4 years	7	3.4		4 hours	14	6.9
	≥ 5 years	188	92.6		≥ 5 hours	33	16.3
	Total	**203**	**100.0**		**Total**	**203**	**100.0**
Ways of accessing social media	Mobile device	200	98.5	[a]This classification is made based on the categories suggested by [68];); Baby boomers (Born 1946-1964); Gen X (1965-1980); Gen Y (1981-1994); Gen Z (1995-2012).			
	Personal Computer (PC)	113	55.7				

Compared to personal computers (PC) (55.7%), most respondents use mobile devices to access social media platforms (98.5%). The majority of them have used social media for more than five years (92.6%). Consistent with a BBC report [69], more than half of the respondents spent on average, more than two hours on social media (60.1%), while 16.7% and 16.3% spent three to more than five hours, respectively.

Data Analysis and Findings

To test the research model, the Partial Least Squares-Structural Equation Modelling (PLS-SEM) technique (version 3.0) was used. SEM allows testing an overall model involving multiple latent variables, rather than testing each hypothesis individually. The use of PLS is particularly common in information systems research [70] when the research is exploratory (the constructs of the model have not been well established) and the number of constructs is relatively large.

For the analysis, we followed the established procedure for applying PLS-SEM, in which the measurement model was first tested. The measurement model evaluates the relationship between the items and the constructs. The assessment of the structural model was carried out later, whereby the relationship between the constructs was evaluated.

Assessment of the Measurement Model

The assessment of the measurement model involves determining construct validity, convergent validity, and discriminant validity. A composite reliability score

ranging from 0 (i.e., completely unreliable) to 1 (i.e., completely reliable) is used to evaluate the reliability of the structure. When the composite reliability score of the construct is higher than the recommended critical value of .70, the construct is considered reliable [71, 72]. As shown in Table 5, the overall reliability score exceeds .70; hence, the model is considered reliable.

Table 5

Item Loadings for Indicators of Latent Constructs

Latent Variable	Item	Loading		CR	AVE	Latent Variable	Item	Loading		CR	AVE
		ALL	After					ALL	After		
Awareness (AWA)	AW1	.790	.787	.925	.674	Liking (LiK)	LiK1	.804	.813	.918	.657
	AW2	.800	.797				LiK2	.860	.862		
	AW3	.028*	-				LiK3	.553	.532		
	AW4	.834	.836				LiK4	.843	.847		
	AW5	.103*	-				LiK5	.877	.878		
	AW6	.859	.861				LiK6	.870	.877		
	AW7	.829	.834				LiK7	.127*	-		
	AW8	.809	.810				LiK8	.371*	-		
	AW9	.167*	-								
Knowledge (KN)	KN1	.825	.825	.934	.677	Preference (PR)	PR1	.520	.520	.918	.591
	KN2	.889	.889				PR2	.783	.783		
	KN3	.029*	-				PR3	.809	.809		
	KN4	.893	.892				PR4	.516	.516		
	KN5	.873	.872				PR5	.834	.834		
	KN6	.400	.402				PR6	.888	.888		
	KN7	.847	.847				PR7	.768	.768		
	KN8	.913	.914				PR8	.923	.923		
SMM	SM1	.923	.922	.725	.583	Purchase behaviour (PB)	PB1	.919	.919	.938	.752
	SM2	.561	.562				PB2	.917	.917		
Mental health (MH)	MH1	.954	.948	.970	.914		PB3	.854	.855		
	MH2	.948	.954				PB4	.859	.859		
	MH3	.967	.967				PB5	.779	.779		

*Removed from the final analysis due to weak loadings.

Convergent validity refers to the degree of correlation between indicators [73]. Convergent validity is tested by item loadings, and the recommended value of .40 indicates that they measure the same structure [74]. Six items (AW3, AW5, AW9, LiK7, LiK8, and KN3) did not pass this test, and were, therefore, removed from the final analysis. The remaining items were above the threshold .40 when loaded. The average variance extracted (AVE) value of each construct is higher than the .50 threshold suggested by [75], thus indicating convergent validity.

Discriminant validity shows that each construct is different. The Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio of correlations were used to

assess discriminant validity. For the Fornell-Larcker criterion, the square root of AVE was checked and the correlation between all constructs was compared. As shown in Table 6, the square root of the AVE of each construct is greater than the cross-correlation between them [75], thereby indicating discriminant validity. The loading of each indicator is also greater than all of its cross-loadings [71].

Table 6

Discriminant Validity

Construct	AWA	SMM	KN	LiK	MH	PR	PB
Awareness (AWA)	**.821**						
SMM	.260	**.764**					
Knowledge (KN)	.778	.202	**.823**				
Liking (LiK)	.708	.204	.773	**.811**			
Mental health (MH)	-.126	.127	-.120	-.150	**.956**		
Preference (PR)	.669	.210	.731	.788	-.109	**.769**	
Purchase behaviour (PB)	.664	.206	.638	.782	-.056	.797	**.867**

Table 7 reports the HTMT results, where the highest correlation of the variables is between preference and purchase behaviour (.862), which is less than the recommended value of .90 [76, 77]. Hence, there is no issue of discriminant validity.

Table 7

Discriminant Validity (HTMT)

Construct	AWA	SM	KN	LiK	MH	PR	PB
Awareness (AWA)							
SMM	.412						
Knowledge (KN)	.850	.362					
Liking (LiK)	.771	.324	.848				
Mental health (MH)	.141	.233	.142	.183			
Preference (PR)	.746	.356	.816	.883	.172		
Purchase behaviour (PB)	.725	.342	.689	.857	.072	.862	

Assessment of the Structural Model

An assessment of the structural model involves testing hypotheses using a bootstrap value of 500 resamples as suggested by [78]. The model explains 71% of the variance in purchase behaviour (hence, substantial), and only 2% of the variance in mental health (hence, weak). [79] suggested that the amount of variance (R^2 values) close to .670 should be regarded as substantial, a value close to .333 as average, and a value close to .190 and lower as weak.

T a b l e 8

Hypotheses Testing

	Hypothesis	B	SD	t-stat	*p*-value	Supported/ Not supported
H1a	SMM -> Awareness	.260	.069	3.796	.000[a]	Supported
H1b	SMM -> Knowledge	.202	.073	2.781	.006[b]	Supported
H2a	SMM -> Liking	.204	.067	3.035	.003[b]	Supported
H2b	SMM -> Preference	.210	.063	3.319	.001[b]	Supported
H3a	Awareness -> Purchase behaviour	.195	.078	2.514	.012[b]	Supported
H3b	Knowledge -> Purchase behaviour	-.170	.077	2.210	.028[b]	Supported
H4a	Liking -> Purchase behaviour	.401	.080	4.988	.000[a]	Supported
H4b	Preference -> Purchase behaviour	.474	.076	6.201	.000[a]	Supported
H5	SMM -> Mental health	.145	.071	2.032	.043[b]	Supported
H6	Purchase behaviour -> Mental health	-.085	.079	1.084	.279	Not Supported

[a]*At an alpha significance level of .01 (p < .01).*   [b]*At an alpha significance level of .05 (p < .05).*

The model fit was evaluated by assessing the statistical significance of path coefficients and the amount of variance explained in the dependent variable. Statistical results provide support for all the hypotheses, except for Hypothesis 6, where there is inadequate evidence to support the effect of purchase behaviour on mental health (Table 8).

Discussion, Conclusion, and Research Implications

The study focuses on the impact of SMM on the attitude and mental health of users. Mental health constitutes depression, anxiety, and stress, as suggested by the DASS21 instrument. SMM has been identified as having a significant impact on users' cognitive (awareness and knowledge) and affective (liking and preference) attitude; both are at medium effect sizes. [80] suggested that values of standardised path coefficients close to .10 or below should be interpreted as corresponding to small effect sizes, values close to .30 correspond to medium effect sizes, and values close to or greater than .50 correspond to large effect sizes. SMM has a stronger effect on awareness (β = .260, p<.01) than knowledge (β = .202, p<.05), preference (*β* = .210, *p*<.05), and liking (β = .204, *p*<.05).

[81] defined brand awareness as the "strength of a brand's presence in the consumers' mind". [82] pointed out that brand awareness is related to the tracking power in consumers' memory, reflecting the ability of consumers to remember or recognise a brand under different conditions. In line with [7] findings, our study suggests that users who spend more time on social media platforms show a more favourable attitude, in terms of brand awareness, knowledge, liking, and preference for one brand compared to other brands. In this regard, our findings are consistent with existing literature. For example, [83], in their study on the impact of brand communication on brand equity through Facebook, suggested that the use of social media positively affects awareness. [84] found that social media use influences the cognitive attitudinal responses regarding brand interaction in social media settings. [85] suggested that the use of social media platforms, such as Facebook, affects affective responses in the form of likes and comments. [86] and [87] revealed that

women exhibit a more favourable attitude to social media, while [88] found that older people have more positive behavioural responses.

Our study also reveals that users' cognitive (awareness and knowledge), and affective (liking and preference) attitude significantly influence purchase behaviour. Particularly, preference appears to be the most significant factor that affects purchase behaviour (β = .474, p<.01), compared to liking (β = .401, p<.01), awareness (β = .195, p<.05), and knowledge (β = -.170, p<.05). Preference and liking affect purchase behaviour with large effect sizes, while awareness and knowledge with medium effect sizes. This finding implies that users' preference for a brand displays a more favourable attitude toward purchase behaviour as compared to those who know and like the brand. Interestingly, there is a negative association between knowledge and purchase behaviour, which indicates that the more knowledge consumers have about a brand, the less likely they would be to purchase the product. The finding indicates that consumers care about a brand's name before making a purchase. Nonetheless, the finding contradicts those of [89], who discovered that product knowledge does not influence the intention to purchase counterfeit products. They argued that counterfeit products can be similar to the original product. The more knowledgeable a person is about the product, the more he or she is aware of this fact. Although users know the differences between counterfeit and original products, they still purchase counterfeit products.

The impact of social media use on mental health has been examined in a number of studies [55, 57-60]. [57] believed that many potential intervention pathways are related to young people's mental health, the time they spend on social networks, and the way they engage and interact online. In line with this, we find that SMM has a significant effect on users' mental health with a medium effect size (β = .145, p<.05). The finding suggests that users who spend a long time on social media platforms are more likely to suffer from mental illness (depression, anxiety, and stress), thus, concurring with the findings of prior studies. [57], for instance, found that the association between social media use and depressive symptoms of girls is greater than that of boys. In addition, more use of social media can lead to online harassment, lack of sleep, low self-esteem, and poor body image; these are in turn, related to higher scores for depression symptoms. The finding is, however, inconsistent with the study by [55], which has found no significant association between time spent on social media and depression and anxiety. [55] study is an eight-year longitudinal study involving 500 adolescents (ages of 13 and 20). [58, 59] also discovered an insignificant association between social media use and mental health symptoms.

[90] believed that pressure related to purchasing can be experienced before and after purchase. During the purchase stage, consumers may be under pressure due to the unavailability of the product, the inability to locate and evaluate the product, the long checkout line, and the required payment method [91]. In the post-purchase stage, pressure may come from unexpected products, which may lead to unsatisfactory conditions (e.g., [92]. Therefore, the greater the pressure at each stage of the decision-making process, the higher the consumers' participation in the product or purchase. However, we find that purchase behaviour does not appear to be significant to users' mental health (β = -.085, p = .333). This finding may be explained by the fact that being involved in purchase activities can bring happiness to consumers [93], as opposed to depression, anxiety, or stress.

The findings of the study can contribute significantly to both scholars and practitioners. Theoretically, the findings of the study contribute to the understanding of the relationship between SMM and cognitive and affective attitude, the relationship between cognitive and affective attitude and purchase behaviour, and the relationship between SMM and purchase behaviour and mental health. Hence, the present study adds to the existing literature on these interrelationships.

This study reveals the significant effect of SMM on users' awareness and knowledge of and liking and preference for certain products that are promoted using

social media. Therefore, businesses should carefully plan their advertisements on social media platforms to ensure that they can attract users. In this regard, advertisements via social media platforms could increase awareness and knowledge of the products or services offered. An effective advertisement with appropriate content could create liking and preferences by the consumers for the products and/or services.

Our study highlights the impact of SMM on users' mental health. The use of social media for prolonged periods may lead to potential pitfalls in people's mental health. This finding is highly relevant to the establishment of guidelines for the safe use of social media and calls on the industry to more strictly regulate the time spent on social media platforms. Any attempt to instigate bullying or other forms of negativity via social media platforms must be prohibited. Intervention measures by government agencies (like the Malaysian Communications and Multimedia Commission) and community support, must be visible to ensure the prevention of the mental degradation of users (especially youth). Hence, business owners must not only use social media platforms to ensure their business profitability but also need to be responsible for minimising the potential threats that could arise due to the use of social media.

While this study addresses important gaps in the extant literature, it is not without limitations. The study uses convenience sampling, whereby an online survey questionnaire was distributed to respondents (regardless of what generation they belong to) who use social media platforms, particularly Facebook and WhatsApp. Wider channels of distribution, with a more systematic sampling technique, may be used to reach more respondents in future. Future studies may also consider personal determinants, such as age, gender, and generation (e.g., Baby boomers, Gen X, Gen Y), as moderators in the relationship between SMM and consumers' behaviour.

The study uses cross-sectional data. A longitudinal study that examines the association between SMM and mental health, may be useful for looking into the impact of SMM on users' attitude and mental health.

Mental health constitutes depression, anxiety, and stress, as suggested by the DASS21 instrument. However, our findings do not reveal which dimension of mental health has the stronger impact. Further analysis of the relationship between SMM and mental health could be conducted to determine its impact on each of the mental health dimensions.

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