The Impact of Digital Platform Satisfaction on Continued Utilization of Digital Health Information

Philomina Pomaah Ofori[*]

Department of Mobile and Pervasive Computing, Ghana Communication Technology University- Ghana

Email: pofori12@outlook.com

Abstract

Expectant mothers have increasingly turned to digital platforms as a supplementary source of information for managing their health during pregnancy. This article aims to investigate the impact of platform satisfaction on the continued usage of healthcare information and explore the role of trust in social media on digital platforms in shaping information usage. The data used in this study were from 580 expectant mothers in five hospitals in Ghana. The data were subjected to rigorous analysis using the SmartPLS statistical technique. The findings reveal that satisfaction with social media (SATSM) significantly influences social media health information continuance usage (SMHIC). Moreover, trust in social media (TRSM) exhibits a positive and significant effect on SMHIC. SATSM positively influences TRSM. Furthermore, the results suggest that trust in social media partially mediates the relationship between satisfaction and information continuance usage. These findings contribute to a deeper understanding of expectant mothers' expectations of digital platforms and health. Digital health providers can use this to improve their activities on digital platforms.

Keywords: Expectant mothers; Satisfaction; Trust; Social media; Healthcare information.

1. Introduction

Social networking platforms have gained significant popularity across diverse domains, encompassing areas such as commerce [1, 3] politics [4], learning [5, 6], healthcare [7, 9] and various other disciplines. The inclusive characteristics of the platform have attracted individuals in search of health-related information as well as professionals serving as health educators. Within this cohort of healthcare seekers, pregnant women stand out as a notable group. Pregnancy represents a pivotal stage in a woman's life, marked by significant physiological and psychological changes and characterized by a complex set of health-related concerns [10, 11]. Drawing upon the physiological transformations associated with pregnancy, expectant mothers have embraced digital platforms as an additional outlet for accessing healthcare-related information.

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* Corresponding author.

Studies have shown that pregnant women frequently access the internet as a means of acquiring knowledge, with varying objectives and intentions underlying their utilization of this digital resource [12]. It is revealed that expectant mothers' motivations for seeking various types of information during pregnancy are individualized and multifaceted. The reasons and purposes for seeking such information appear to vary significantly from one individual to another. Various authors have conducted research on the utilization of digital media for obtaining healthcare information by pregnant women in different countries. According to a study conducted by [13], it was posited that a significant proportion of expectant mothers (exceeding 50%) turned to search engines, such as google, as their primary means of acquiring health-related information pertaining to pregnancy. The researchers concluded that online platforms dedicated to women's forums and commercial websites focusing on maternity and childhood health information were frequently visited by users. Additionally, pregnant women utilized popular social media platforms, such as Facebook, Twitter, and YouTube, to access educational health-related content. Prominent areas of inquiry encompassed within the search by pregnant women included aspects such as the progression of fetal development, the various stages of pregnancy, and the physiological transformations occurring during this period [13]. Accordingly, [14] revealed that expectant mothers employed Facebook for a plethora of motives, exemplifying the utilization of the aforementioned social networking platform throughout the gestational period to avail themselves of both emotional encouragement and enlightening content. References [15] posits that expectant mothers relies on digital platforms for social support. Burleson [16] postulated that expectant mothers exhibit a tendency for acquiring health-related information through diverse channels, as they possess a strong inclination towards obtaining readily available knowledge. A recent study [17] concluded that expectant mothers discovered social media-centered approach optimally situated to offer prenatal healthcare and assistance throughout the antenatal period. The review shows that pregnant women have adopted social media; however, this study proposes to study the continuance usage of the social media platform and the factors that contribute to the decision among pregnant women in Ghana.

1.1. Literature Review and Hypotheses Development

Continuance intention (CI) refers to an individual's proclivity to persist in utilizing a specific system [18]. CI represents the intention of users to sustain their usage of a particular system beyond the initial adoption stage [19], and the satisfaction experienced by users, as highlighted by [20], significantly influences this continuance intention. Within the field of empirical investigations pertaining to users' sustained adoption of health technology, scholars have endeavored to examine the influence of various factors on the ongoing behavioral patterns associated with the utilization of health applications [21]. Cho [22] conducted an analysis to ascertain the effects of perceptual and affective factors in motivating the continuous usage of health applications. It was revealed that usefulness, ease of use and satisfaction contribute to users' continuance intention. An additional scholarly investigation delved into the examination of expectation-confirmation model on the intention to continue using health applications [23].

It was postulated that usefulness and satisfaction serve as predictors of individuals intention to continue using a fitness app. This gives a clear indication that continuance intention has been studied with different variables, and it is vital for this study to add to the literature.

1.1.1 Satisfaction

As indicated by [24], DeLone and McLean assert that user satisfaction is the most comprehensive measure for evaluating information systems, as it encapsulates the holistic assessment of the system's effectiveness and performance. Satisfaction is the degree of contentment experienced by a customer in relation to the provided product or service [25]. User satisfaction exerts a critical influence on users' behavioral tendencies in relation to computer usage, consequently impacting their overall system utilization patterns [26]. The attainment of user satisfaction assumes paramount significance in upholding the continual utilization of a system, as it fosters an elevated level of commitment from users and consequently encourages them to persist with the current arrangement [27]. The authors propose that user satisfaction can be regarded as an indicator of the comprehensive excellence of a system, signifying users' subjective evaluations of its utility, user-friendliness, and efficacy in addressing their requirements. Conclusive empirical findings indicate that user satisfaction plays a pivotal role in fostering the formation of ingrained usage behaviors and unwavering commitment towards a specific service, thereby augmenting the probability of sustained utilization over an extended duration [28]. Accordingly, it is hypothesized that:

H1: Satisfaction with social media [SATSM] has a significant effect on social media healthcare information continuance usage [SMHIC].

H2: SATSM has a direct positive influence on trust in social media [TRSM].

1.1.2 Trust

It is noteworthy to highlight that trust contribute to establishing the connection between active participation and meaningful engagement [29]. The concept of trust, in its application to health information technologies, has been identified as a catalyst for enhancing patients' decision-making capabilities and promoting their engagement with health information exchange systems [30].

When individuals possess a sense of trust in the system's ability to deliver reliable and valuable information, it enhances the likelihood of prolonged utilization [30]. Notwithstanding these advantages, the effectiveness of information sharing hinges on the level of trust users hold in the overall experience [31].

The current body of literature concerning this subject matter is notably inadequate and warrants further comprehensive exploration [32]. Accordingly, it is hypothesized that:

H3: TRSM has a significant influence on SMHIC.

H4: Trust in social media improves the positive *correlation* between satisfaction with social media and social media healthcare information usage.
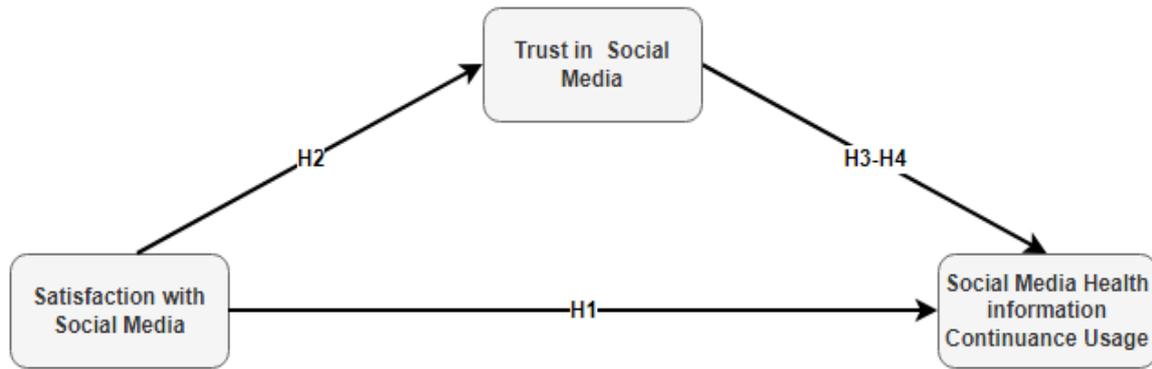
Figure 1: Conceptual model.

2. Material and Methods

2.1 Measurement development and survey design

The study was carried out among expectant mothers in the capital city of Ghana, Accra. The constructs that were used for this study were adapted from previous studies. Satisfaction with social media was measured using four items from [33, 34] and three items were used to measure trust in social media, which were from [35].

Social media health information continuance usage was measured using three items from [19]. All the constructs were measured using five-point items ranging from 1 = strongly disagree to 5 = strongly agree. The study used quantitative methods and employed a convenience sampling approach.

A questionnaire was used for the data collection, and it was in English language. The questionnaire was administered to pregnant women who had reported to one of the five healthcare facilities. Questionnaires were administered by the researcher and field agents. All pregnant women consented to be part of the study.

2.2 Data collection

Among the data collected, a total of 580 observations were deemed suitable for inclusion in the final data analysis. Examination of the age distribution within the participant pool revealed that the largest segment, constituting 44.8% of the sample, fell within the 26-30 age bracket.

The subsequent major age group consisted of individuals aged 31-40, comprising 35.7% of the participants. Regarding educational attainment, the majority of respondents, representing 42.4% of the sample, had completed their high school education.

Regarding the stage of pregnancy, a notable proportion, accounting for 26.0% of the sample, was identified as being in the first trimester. Detailed insights into the demographic characteristics of the study participants can be found in Table 1.

Table 1: Demographic information.

Variables	Category	Frequency	Percentage (%)
Age Group			
	18-25	107	18.4
	26-30	260	44.8
	31-40	207	35.7
	41 and above	6	1.0
	Total	**580**	**100**
Educational Level			
	High School	246	42.4
	Diploma	119	30.5
	Degree	177	20.5
	Postgraduate	19	3.3
	Other	19	3.3
	Total	**580**	**100**
Marital Status			
	Married	489	82.6
	Single	101	17.4
	Total	**580**	**100**
Pregnancy Stage			
	1st Trimester	151	26.0
	2nd Trimester	224	38.6
	3rd Trimester	205	35.3
	Total	**580**	**100**

3. Results

3.1 Measurement model analysis

Table 2: Measurement model results.

Construct	Outer loadings	AVE	CR	α	HTMT < 1	VIF < 3	R^2
SATSM1	0.858						
SATSM2	0.817	0.677	0.895	0.893	Yes	Yes	-
SATSM3	0.851						
SATSM4	0.763						
SMHIC1	0.792						
SMHIC2	0.691	0.579	0.808	0.803	Yes	Yes	0.56
SMHIC3	0.794						
TRSM1	0.769						
TRSM2	0.747	0.577	0.804	0.804	Yes	Yes	0.67
TRSM3	0.761						

This research employed SmartPLS and structural equation modeling techniques to analyse the collected data. To assess the validity of the proposed hypotheses, a sample of 580 valid responses was utilized for the model evaluation. Rigorous evaluations of internal consistency, convergent validity, and discriminant validity were conducted. The results of these assessments demonstrated that the outer loadings and average variance extracted consistently met the predefined threshold [36]. Specifically, the values of the outer loadings exceeded 0.69, the average variance extracted surpassed 0.576, Cronbach's alpha exceeded 0.804, and the composite reliability

achieved a value above 0.804 [36]. The HTMT values were less than 1, while variance inflated factor values were less than 3, confirming the recommendations of [37, 38] respectively.

Abbreviation: SATSM = satisfaction with social media, TRSM = trust in social media, SMHIC = social media healthcare information continuance usage.

3.2 Structural model analysis

The model evaluation involved the examination of two key variables, namely SATSM and TRSM, to investigate their impact on social media healthcare information continuance usage (SMHIC). The findings revealed that SATSM ($p > 0.00$) and TRSM ($p < 0.000$) exhibited statistically significant effects on SMHIC. Additionally, SATSM demonstrated a significant influence on TRSM ($p < 0.000$). Consequently, supporting the proposed hypotheses (H1-H3). The direct path of SATSM-SMHIC was $\beta = 0.351$ ($p < 0.001$), while the specific indirect effect path of SATSM-SMHIC through TRSM was $\beta = 0.354$ ($p < 0.050$). Using bootstrapping analysis, the 95% confidence intervals bias corrected was [0.205, 0.544]. The results indicate that the direct effect was significant, while the indirect effect showed positive significance, indicating partial mediation. Table 3 presents the results of trust in social media, mediating the relationship between satisfaction with social media and continued social media healthcare information usage. Figure 2 presents the results of the structural model. The R-square values for SMHIC and TRSM were 0.56 and 0.67, respectively. The R-square values were moderate and substantial, as suggested by [39]. The Q^2 values obtained for SMHIC (0.356) and TRSM (0.472) indicate a strong level of predictive relevance within the model [40].

Table 3: Hypothesis testing results.

Hypothesis	Path	Beta	T-statistics	P-value
H1	SATSM -> SMHIC	0.351	3.419	0.001
H2	SATSM -> TRSM	0.813	27.008	0.000
H3	TRSM -> SMHIC	0.435	4.257	0.000

The mediating results

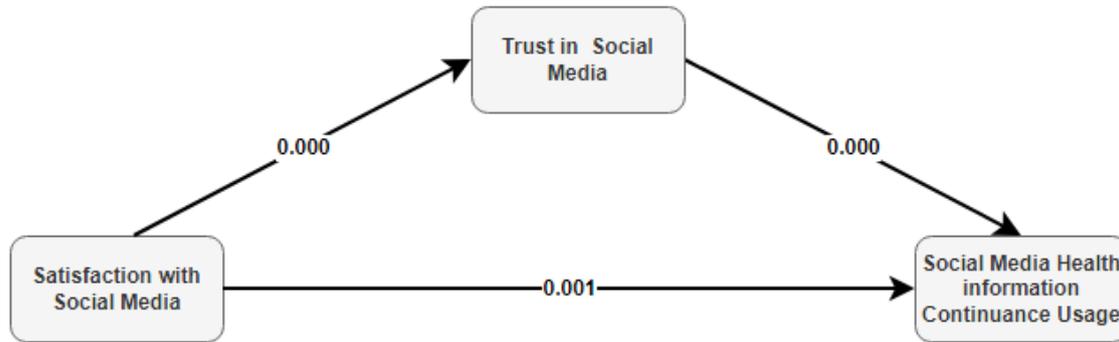|	Hypothesis	Direct path relations	Direct effect	P value	Direct Sign	Indirect Path relations	Indirect effect	P value	Indirect sign	Mediation
	H4	SATSM->SMHIC	0.351	0.000	Yes	SATSM -> TRSM -> SMHIC	0.354	0.000	Yes	Partial

Figure 2: Values of structural model.

4. Discussion

Patient satisfaction and trust are key determinants that significantly impact the ongoing utilization of digital health information platforms. Studies have shown that expectant mothers' usage of digital healthcare information is high [17, 41, 42], and based on this, their decisions to continue usage were studied, and there was a significant contribution. The results of this study provide valuable insights into the factors influencing expectant mothers' decisions to continue using social media for health information. The findings indicate that satisfaction with social media (SATSM) is a significant predictor of SMHIC. The regression analysis revealed that SATSM had a positive and significant effect on SMHIC ($\beta = 0.351$, $p < 0.001$), suggesting that when expectant mothers experience higher levels of satisfaction with social media platforms used in accessing healthcare information, they are more likely to continue using these platforms. This suggests that satisfaction with social is vital in the ongoing engagement and utilization of digital platforms for obtaining health-related information during pregnancy. It highlights the importance of providing a satisfactory user experience on social media platforms to encourage expectant mothers to rely on them as a valuable source of health information throughout their pregnancy journey. The current findings substantiate and reinforce the conclusions drawn from previous studies [43, 44].

Moreover, the results revealed a strong relationship between SATSM and TRSM ($\beta = 0.813$, $p < 0.000$), indicating that higher levels of satisfaction with social media are associated with greater trust in the platform as a source of health information. This finding suggests that expectant mothers who are satisfied with their social media experience are more likely to trust the information shared on these platforms. Consequently, satisfaction acts as a key driver for establishing trust in social media for healthcare information, further reinforcing the importance of user satisfaction in promoting the continued usage of digital health platforms. It is noteworthy that the findings explained a considerable portion of the variance in trust in social media healthcare information (67%, $R^2 = 0.67$). This highlights the influential role of satisfaction with social media in shaping trust among expectant mothers. The present findings provide further support and validation to the conclusions derived from prior research investigations [45].

Furthermore, the findings demonstrated that TRSM emerged as a factor with a significant impact on SMHIC (β = 0.435, p < 0.000). The results show that pregnant women's trust in social media influences their decision to continue using digital platforms for healthcare information. The results unequivocally demonstrate that establishing trust in the source of a digital platform is pivotal for pregnant women to forge an enduring reliance on said platform for future health-related information. These results underscore the significance of trust in shaping individuals' attitudes and behaviors regarding information sources. In the specific context of pregnant women, trust in social media emerges as a key factor that influences their decision to sustain the use of digital platforms for obtaining healthcare information. The outcomes of this study align harmoniously with prior scholarly investigations in other fields [46, 47].

More so, trust in social media (TRSM) mediated the relationship between satisfaction with social media (SATSM) and social media healthcare information continuance usage (SMHIC). The findings support the notion that the impact of satisfaction with social media on the continuance usage of social media for health information is contingent upon the level of trust placed in social media as a reliable source. It suggests that while pregnant women may initially utilize digital platforms for healthcare purposes, the presence of trust in the information source enhances their decision to regularly engage with these platforms. Trust serving as a mediator is in line with a similar study where trust was used as a mediating variable [48, 49].

5. Limitations

The study conducted was cross-sectional in nature, limiting the generalizability of its findings. Future researchers are encouraged to employ a longitudinal approach to enhance the study's validity and enable a better understanding of the topic over time. Additionally, the study specifically focused on expectant mothers in the Greater Accra Region. It is recommended that future investigations include expectant mothers from other regions to ensure a more comprehensive representation of the population.

6. Conclusion

Utilizing digital platforms for healthcare information offers diverse benefits to health seekers. This model elucidates the factors that influence the sustained usage of digital health platforms among expectant mothers, underscoring their crucial role in the adoption process.

The unique combination of satisfaction and trust in this study fosters continued usage, contributing to the advancement of previous depictions of health information utilization. The empirical evidence presented herein not only provides theoretical and practical insights for healthcare professionals but also opens avenues for further enhancement by researchers in the field.

Acknowledgements

7. Ethical considerations

This study was approved by the Ghana Health Service Ethics Review Committee (GHS-ERC:001/01/22). Prior to data collection, official authorization was obtained from the Directors of the health facilities to ensure compliance with ethical and administrative requirements.

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